

UNIVERSITY OF LJUBLJANA
SCHOOL OF ECONOMICS AND BUSINESS

MASTER'S THESIS
**COLOUR ANALYSIS IN PAID SOCIAL MEDIA ADVERTISING:
THE INFLUENCE OF ANALOGOUS AND COMPLEMENTARY
COLOURS ON LIKEABILITY, TRUST AND PURCHASE
INTENTION**

Ljubljana, February 2026

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ABSTRACT

This master's thesis examines the impact of colour contrasts (complementary vs. analogous colours) in paid social media advertising on consumer liking, trust, and purchase intention. The research is based on a quantitative research approach with an online survey in which participants evaluated the perceived likeability of advertisements, as well as trust and purchase intent. The advertisements differed only in the colour contrasts used. A Paired Samples t-test and Repeated Measures ANOVA statistical methods were used to test the hypotheses of the thesis. The results of the study show that advertisements with cool analogous colour combinations, especially those that include blue, are rated higher in terms of likability, trust, and purchase intent compared to advertisements with warm analogous and highly contrasting colour combinations. The findings of this master's thesis are consistent with previous research and confirm the important role of colours in shaping consumer perceptions in social media advertising. This thesis contributes to a better understanding of the use of colour contrasts in paid social media advertising and provides practical recommendations for digital marketers. Due to the limitations of this study, future studies should consider including a wider range of colours, different product categories, and different cultural backgrounds.

KEYWORDS

Colours, colour contrast, analogous colours, complementary colours, social media advertising, likeability, trust, purchase intention

SUSTAINABLE DEVELOPMENT GOALS



POVZETEK

Magistrsko delo preučuje vpliv barvnih kontrastov, zlasti komplementarnih kontrastov v primerjavi z analognimi barvnimi kontrasti v plačljivem oglaševanju na družbenih omrežjih, na všečnost, zaupanje in nakupno namero potrošnikov. Raziskava temelji na kvantitativnem raziskovalnem pristopu na podlagi spletne ankete, v kateri so anketiranci ocenili zaznano všečnost oglasov, zaupanje in nakupno namero. Za namen raziskovanja je bil pripravljen en oglas, ki se je razlikoval le v uporabljenih barvnih kontrastih. Za preverjanje hipotez magistrske naloge so bile uporabljene statistične metode: t-test za odvisne vzorce in ANOVA za ponovljene meritve. Rezultati raziskave kažejo, da so oglasi s hladnimi analognimi barvnimi kombinacijami, zlasti tisti, ki vključujejo modro barvo, ocenjeni najvišje v vseh merjenih konstrukti: všečnosti, zaupanju in nakupni nameri. Medtem ko so oglasi, ki vsebujejo tople analogne kontraste, ter ostre komplementarne kombinacije v vseh preučevanih konstrukti ocenjeni slabše. Ugotovitve te magistrske naloge so skladne s prejšnjimi raziskavami in potrjujejo pomembno vlogo barv pri oblikovanju potrošniških zaznavanj v oglaševanju na družbenih omrežjih. Magistrsko delo pomembno prispeva k boljšemu razumevanju uporabe barvnih kontrastov v plačanem oglaševanju na družbenih omrežjih in ponuja praktična priporočila za digitalne tržnike. Zaradi omejitev te študije je priporočljivo, da prihodnje raziskave upoštevajo širši spekter barv, različne kategorije izdelkov in različna kulturna okolja.

KLJUČNE BESEDE

Barve, barvni kontrast, analogne barve, komplementarne barve, oglaševanje na družbenih omrežjih, všečnost, zaupanje, nakupna namera

CILJI TRAJNOSTNEGA RAZVOJA



TABLE OF CONTENTS

1	INTRODUCTION	1
2	Colour and its importance in paid social media advertising	2
2.1	Colours and colour theory.....	3
2.2	Colour psychology.....	8
2.3	Colours in marketing.....	10
2.4	Colours in paid social media advertising	12
2.4.1	Social media	12
2.4.2	Paid social media advertising	14
2.4.3	Colours and colour contrasts in paid social media advertising	15
3	IMPACT OF COLOUR ON LIKEABILITY, TRUST, AND PURCHASE INTENTION	17
3.1	Likeability	17
3.2	Trust.....	18
3.3	Purchase intention	19
3.4	Effect of colours on likeability, trust and purchase intention.....	20
4	EMPIRICAL RESEARCH ON ANALOGOUS VS. COMPLEMENTARY COLOURS USED IN PAID SOCIAL MEDIA ADVERTISING	22
4.1	Definition of the research problem and research objectives.....	22
4.2	Research hypotheses formulation.....	23
4.3	Research methodology	25
4.4	Research findings	26
4.4.1	Sample description	26
4.4.2	Comparison of means	28
4.4.3	Analysis of the results.....	30
4.5	Hypothesis testing	31
4.6	Discussion of results and marketing implications.....	34
4.7	Limitations of the research	36
4.8	Opportunities for further research	38
5	CONCLUSION	39
	LIST OF KEY LITERATURE	40
	REFERENCES	40
	APPENDICES.....	46

LIST OF TABLES

Table 1: Colours and their positive and negative associations.....	9
Table 2: Sample characteristics	27
Table 3: Comparison of means (likeability, trust and purchase intent)	29

LIST OF FIGURES

Figure 1: Itten's colour wheel	4
Figure 2: Colour dimensions (hue, saturation, brightness)	4
Figure 3: Colour harmony examples	6
Figure 4: Complementary colour palettes	7
Figure 5: Analogous colour palettes.....	8
Figure 6: Examples of social media advertisements in various formats	14
Figure 7: Social media advertisement displayed in warm analogous, cool analogous, and complementary colour contrasts	26

LIST OF APPENDICES

Appendix 1: Survey questions.....	1
Appendix 2: Survey results	3
Appendix 3: Hypotheses, variables and testing methods	6
Appendix 4: Hypotheses testing.....	7

1 INTRODUCTION

Colours play a crucial role in shaping perception, emotional responses, and consumer behaviour. In today's digital environment, visual content continues to dominate while users' attention spans are becoming increasingly shorter. Consequentially, the strategic use of colour has become a key component of effective advertising. Social media in particular offers a prime platform to leverage the power of colours, which can establish trust, evoke emotions, and influence consumer behaviour beyond merely capturing attention (Labrecque et al., 2013).

With the rapid growth of social media, the advertising market has become highly competitive. As consumers encounter numerous digital ads daily (Perrin, 2015), visual cues and hooks play a central role in shaping purchase decisions (Broeder & Snijder, 2019). Colours are proven to be one of the most influential visual cues as they have the ability to build trust and influence purchase intention, especially in fast decision-making processes (White et al., 2021).

Despite increasing interest in colour psychology, most research focuses only on isolated hues or colour temperature (Broeder & Snijder, 2019; Labrecque & Milne, 2011), whereas in practice, digital advertisements rarely use a single colour. This highlights a gap in research concerning the effects of colour combinations, particularly analogous and complementary palettes, on consumer perception and behaviour (White et al., 2021).

The aim of this master's thesis is to examine how different analogous and complementary colour combinations and colour temperatures in social media advertisements affect likeability, trust, and purchase intention, and to answer the research questions concerning their influence on consumers' attitudes and behavioural intentions, as well as their implications for more effective paid social media advertising. The thesis seeks to provide valuable insights and recommendations for digital marketers, advertisers and designers to create persuasive social media ads.

The theoretical part of the thesis is based on the descriptive research method, providing a detailed overview of the literature from various academic sources addressing the topic of colour psychology in marketing and the use of analogous and complementary colour contrasts in advertising. The theoretical part serves as the basis for the empirical part of the thesis. Given the lack of research on colour contrasts in digital advertising, especially on social media platforms, the empirical part of this thesis is based on primary data collection (by means of an online survey). The results were then analysed and used to test the hypotheses.

This thesis is structured into five chapters to guide the reader from the theoretical foundations to the empirical analysis and practical implications. After an introduction of the key research topic and question, the second chapter then establishes the theoretical framework and key concepts of colour theory and colour psychology, as well as examining the role of colours and colour contrasts in marketing. The third chapter then focuses on the theory behind the main constructs being researched: likeability, trust, and purchase intention. The fourth chapter and the vital part of this thesis presents the empirical research on the use of analogous versus complementary colours in paid social media advertising. This chapter further discusses the research findings, hypothesis testing, and practical recommendations, while also addressing the limitations of the study and suggesting directions for future research. The final chapter summarises the main findings of the research and presents the overall conclusions of the thesis.

During the preparation of this master's thesis, I also made partial use of artificial intelligence, specifically the ChatGPT tool. In the initial phase, I used it primarily to generate ideas for the topic of my master's thesis, and then for an introductory familiarization and understanding of certain concepts that I had not encountered before. The tool also helped me structure my thesis and chapters. However, I used artificial intelligence most to improve the tone of the text throughout the entire master's thesis, to correct stylistic and grammatical errors, as English is not my native language. This was especially useful when interpreting the statistical results. The use of artificial intelligence thus facilitated the research process and contributed to a clearer and more coherent presentation of the content.

2 COLOUR AND ITS IMPORTANCE IN PAID SOCIAL MEDIA ADVERTISING

Colour plays a vital role in paid advertising on social media platforms. Despite marketers using colour in new creative ways to catch the attention of consumers, colour and the psychology behind it are often overlooked as tools for influencing customer response (Labrecque & Milne, 2011). Social media has drastically changed in recent years. Developers are increasingly positioning their social media platforms as advertising channels and enabling companies to precisely target their potential customers, thus making social media an essential part of their digital strategy (Rijitha, 2021). In order to maximize their social media campaigns, digital marketers should understand colours and use them accordingly, especially because of their strong psychological and visual impact on perception. (Choi et al., 2020).

Colours have the ability to convey messages, elicit emotions, and evoke responses, ultimately driving engagement in the saturated landscape of paid social media advertising. Regardless of the importance of colour use in digital marketing, research focused on the exact ways in which colour is able to shape consumer perceptions (e.g., likability, trust, and purchase intent) remains limited. (Choi et al., 2020). This chapter explores colour theory,

colour psychology, and the emotions and messages colours evoke, while also discussing the use of colours in marketing.

2.1 Colours and colour theory

There are five senses that shape human perception: taste, smell, touch, hearing, and sight. Among all these senses, it is believed that healthy individuals perceive approximately 90% of the world around them through the latter, making sight the dominant sense in forming human perception. (Trstenjak, 1996).

According to Trstenjak (1996), colour is a result of the subjective interpretation of objective electromagnetic radiation. Subjectivity is most evident in the fact that every individual sees the same colour differently. Fundamentally, the visual perception of colours is a response to different wavelengths of light interacting with the human eye, which are then processed within the retina. When light interacts with the retina, the retina transmits the signals to the brain (Gegenfurtner & Kiper, 2003), where the signals are then processed and interpreted as colours. This means that actual colour perception takes place in people's minds rather than in their eyes (Hornung, 2005) and results in the perception of diverse hues, shades, and tones. Consequently, this phenomenon not only shapes each individual's experience, but also impacts one's aesthetics, psychology, and cognition (Gage, 1999).

Colour theory was developed through interdisciplinary research in various fields, from physics and physiology to art, psychology, and even sociology (Trstenjak, 1996). To truly understand how, in what ways, and to what extent colours have the ability to affect customer perceptions and behaviour, it is important to first familiarise oneself with the fundamentals of colour theory and learn more about its most important principles, such as colour wheel theory, colour dimensions, colour temperature, and colour harmony.

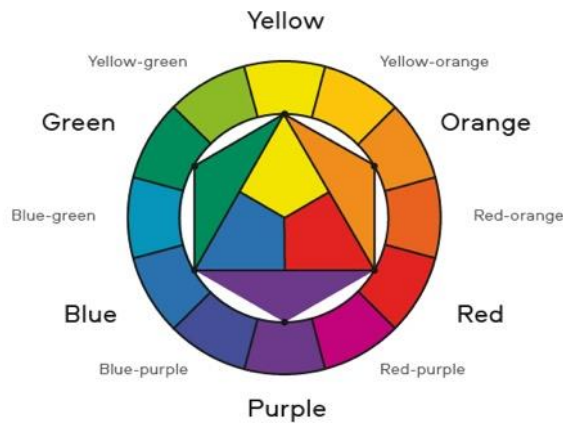
2.1.1 Colour wheel

The most essential and fundamental tool of colour theory is the colour wheel (Figure 1), which was created in 1961 by Johannes Itten, a Swiss painter and designer. The colour wheel was based on existing colour systems developed by Johann Wolfgang von Goethe, Michel Eugène Chevreul, and Willy Mayer. It is a circle divided into 12 equal parts, which organises hues in a circular form. It visually displays the relationships and harmony between various colours. The colours are divided into three groups: primary, secondary, and tertiary colours (Itten, 1999).

Primary colours are the basis for all other colours, as they cannot be created by mixing any other colours together. According to Itten (1999), the primary colours are red, yellow, and blue. These colours also set the foundation for secondary colours, which can be created by mixing equal parts of two primary colours. The results of the mixing are the secondary colours: orange, green, and purple. Lastly, tertiary colours result from combining primary

colours with secondary colours, resulting in the following colours: red–orange, yellow–orange, yellow–green, blue–green, blue–violet, and red–violet (Itten, 1999).

Figure 1: Itten's colour wheel



Source: Sargsyan (2020).

2.1.2 Colour dimensions

Traditionally, colours are described based on three basic dimensions: hue, saturation, and brightness (Burns & Shepp, 1988). The hue attribute refers to a basic colour family. These colours are red, blue, and green, and it is directly associated with the wavelength of light (Burns & Shepp, 1988; Wyszecki & Stiles, 2000). Saturation, often known as chroma or intensity, determines how vivid a colour is and how sharp or dull the colour appears (Wyszecki & Stiles, 2000). Additionally, the characteristic of brightness, also known as luminance or value, describes how light or dark a colour appears based on the perceived intensity of light that reflects off the object (Wyszecki & Stiles, 2000). Figure 2 presents a visual representation of all three dimensions of colour.

Figure 2: Colour dimensions (hue, saturation, brightness)



Source: Sims (2022).

2.1.3 Colour temperature

A distinction of colours by temperature (warm colours and cool colours) was initially presented in early-stage cultures by the Papuan Dani people (Luo et al., 2002). Warm colours give off an impression of high temperature, whereas cool colours suggest low temperature (Itten, 1999). Warm colours have a larger wavelength and range from red to yellow on the colour wheel (Pantone, n.d.). They evoke a sense of action and motivation. Since they are brighter and therefore more visible, they quickly attract the attention of the observer. Objects in warm and bright colours seem to appear larger and are preferred by women and extroverted people who are dynamic and non-conservative (Bilban & Marjan, 2015).

On the other hand, cool colours have a calming effect and evoke comfort and a sense of depth. The colours referred to as cool colours originate from the colour blue. They range from blue to purple, covering half of the colour wheel, with shorter wavelengths (Pantone, n.d.). They are less noticeable in comparison to warm colours, and objects in this colour scheme often appear more distant or smaller. Cool-toned colours are ideal for backgrounds since they have little visual salience. They tend to be preferred by more mature individuals and are associated with connotations of status, as well as positive effects on mental focus and cognitive performance (Bilban & Marjan, 2015).

2.1.4 Colour harmony

To create the right perception in potential customers' minds, digital marketers and graphic designers must understand colour harmony. According to Itten (1999), harmony means balance and symmetry of power. In colour theory, colour harmony refers to the compatibility of various colour combinations that create visually attractive and balanced designs. Harmonious colours create pleasing contrasts and consonances. Despite Itten's work and systematisation of colour harmony, colour science nowadays divides colours into four harmonious colour schemes: monochromatic harmony, complementary harmony, analogous harmony, and split-complementary harmony (as shown in Figure 3). However, this categorization primarily focuses on relationships between hues while minimizing the importance of other dimensions of colour, such as saturation and brightness, which also play a crucial role in creating a harmonious design (Westland et al., 2007).

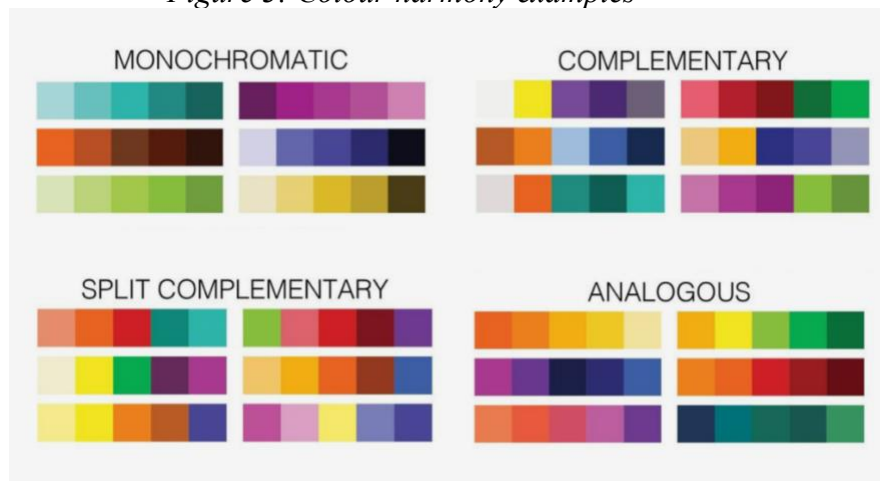
Contemporary colour harmony categorization:

- Monochromatic colour harmony is based on only one hue/colour and its lighter and darker variations (which are achieved by adding different amounts of black and white). This type of harmony usually creates a very unified look (Westland et al., 2007).
- Complementary colour harmony uses complementary colours; these are situated directly opposite one another on the colour wheel. The colours therefore produce the highest

possible contrast; however, when mixed together, they create a neutral or grey colour (Westland et al., 2007).

- Split-complementary colour harmony usually uses one primary colour (e.g., red) and two tertiary colours (e.g., yellow–green, blue–green). Due to the higher variety of colours, it is more challenging to create a cohesive and harmonious visual design (Westland et al., 2007).
- Analogous colour harmony is based on three to five colours that are adjacent to each other on the colour wheel, meaning they have similar hues. This kind of harmony is one of the most aesthetically pleasing colour combinations and is among the simplest to use. In comparison to monochromatic harmony, it contains higher visual contrast (Westland et al., 2007).

Figure 3: Colour harmony examples



Source: Adapted from Clark (n.d.).

2.1.5 Complementary colours

As mentioned previously, the simplest explanation of complementary colours is that they are pairs of opposing colours that lie directly opposite each other on the colour wheel (Itten, 1999). According to Itten, complementary colours (as shown in Figure 4) produce a grey or neutral colour when mixed together. Despite this simple definition, complementary colours can be categorized into three types: subtractive, optical, and afterimage complements (Westland et al., 2007; White et al., 2021). A pair of subtractive complementary colours, when subtractively mixed together, results in a grey or neutral colour due to the mutual cancellation of their corresponding wavelengths (e.g., mixing green with red). The most common subtractive complementary pairs are blue–orange, red–green, and yellow–purple. Similarly to subtractive complements, optical complements, when used in additive colour mixing, result in a greyish colour (e.g., mixing blue and yellow). Lastly, afterimage complements occur after staring at a colour for a prolonged period, where the complementary colour appears in a person's vision after shifting their focus (gaze) onto a neutral surface (e.g., a white wall) (Westland et al., 2007). This means that the

complementary colour is not actually present but is created in the mind of the observer (Itten, 1999).

Even though complementary colours neutralize each other when mixed together, creating a cancellation phenomenon, they are usually placed next to each other to make one stand out more. This departure from the cancellation phenomenon of complementary colours was first described by Chevreul in the 19th century. According to him, when complementary colours are placed together in a visual design, the contrast between them is heightened, the colours thus exaggerating and enhancing each other (White et al., 2021). A good example of how complementary colours are used in real life to attract attention and make an object more visible is orange life vests in the blue sea (White et al., 2021). Furthermore, since complementary colour combinations tend to be bold, many sports teams turn to those colour combinations as their team colours (e.g., LA Lakers, Florida Gators, Milwaukee Bucks). Nevertheless, complementary colours can often be harsh on the eyes, creating a very unpleasant experience for the observer. To create appealing visuals using complementary colours, it is recommended to reduce the saturation of the colours, resulting in more pleasant and harmonious designs (Pantone, n.d.).

Figure 4: Complementary colour palettes



Source: Meredith (2020).

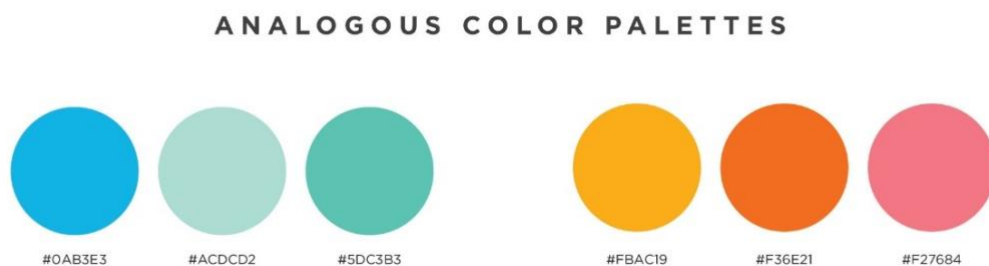
2.1.6 Analogous colours

The term “analogous colours” refers to colours that are situated next to each other on Itten's colour wheel. As mentioned previously, when a visual design uses analogous colour harmony, it contains up to five neighbouring colours (Westland et al., 2007), usually with a primary colour as the dominant hue, accompanied by a secondary and tertiary colour acting as support (for creating small accents and details) (White et al., 2021). The difference in wavelength between the colours is much smaller in comparison to complementary colours, meaning analogous colours are inherently harmonious (Garber et al., 2016). Due to their close relationship on the colour wheel, their hues are similar and only vary slightly. An example of an analogous colour palette is red, red–orange, orange, and yellow–orange (for more examples of analogous colour palettes, see Figure 5). In nature, analogous colours are usually represented by leaves changing colour in autumn, from yellow to orange (White et

al., 2021). Due to the similarity of the hues, analogous colour combinations appear more pleasing to the eyes, which often results in more positive attitudes from observers.

In addition, researchers Ou and Luo (2006) investigated how individuals perceive two-colour combinations. The colour combinations included analogous and complementary colours, as well as black, white, and grey. The study suggested that despite traditional theories on colour harmony, individuals did not perceive some colour combinations as harmonious, regardless of the contemporary colour harmony classification. The perception of disharmony is especially common with complementary colours because of their unpleasant and harsh effect on the eyes. Moreover, equal hue was considered the only principle of colour theory that presented good predictive performance. According to Ou and Luo (2006), individuals are most likely to perceive colours as harmonised if the colours have equal hue and chroma, while brightness can differ.

Figure 5: Analogous colour palettes



Source: Meredith (2020).

Understanding the fundamentals of colour theory provides a solid foundation for further exploring the psychology behind colour.

2.2 Colour psychology

Colour psychology is a branch of psychology that studies the relationship between colours and human responses by analysing how various hues of colours impact human perception. Its main objective is to understand how people's emotions and behaviours are influenced by colour in different contexts and scenarios. Despite psychologists' efforts in exploring the influence of colour on human experience, empirical research on the psychological effects of colour remains limited. Nevertheless, existing research suggests that colours can be used as a powerful tool for triggering emotions, favourable attitudes, and desired behaviours (Bruce et al., 2001).

Each colour, hue, or tone brings up specific associations that guide and determine an individual's behaviour (Trstenjak, 1996). Research on the topic of colour associations and emotions has generally been consistent in its findings, with smaller deviations depending on

age, gender, cultural background, preferences, and other factors. Table 1 lists colours and their most common positive and negative associations.

Table 1: Colours and their positive and negative associations

Colour	Positive associations	Negative associations
Red	- love, - passion, - sex, - excitement, - fire, - importance	- explosiveness, - war, - blood, - devil, - danger, - aggression
Orange	- vibrancy, - ambitions, - energetic, - playfulness, - creativity,	- irritability, - change,
Yellow	- joy, - sunshine, - hope - youth - optimism	- cowardice, - betrayal, - deceit, - danger
Green	- nature, - environment, - money, - health, - life/growth - hope/abundance	- greed, - inexperience, - envy, - jealousy, - enemy
Blue	- calm, - intelligence - stability - responsibility, - justice, - peace - rationality	- melancholy, - darkness, - doubt - depression - coldness
Purple	- royalty, - loyalty, - creativity	- sadness - nostalgia
White	- purity, - perfection, - innocence - cleanliness - light	- emptiness, - absolute silence - coldness
Grey	- autonomy, - neutrality	- monotony, - fear, - depression, - old age
Black	- elegance, - authority - power - style - formality	- death, - illness, - mystery - evil - darkness

Source: Adapted from Bilban & Marjan (2015); Kumar & Joshi (2007); Labrecque & Milne (2011); SocialSEO (2023).

Even though there is a rough consensus on what kinds of associations and emotions specific colours elicit, colour psychology largely depends on personal preferences as well as the cultural background of individuals. Kumar and Joshi (2007) stated that despite the diversity of cultures, the meanings of colours overall had more similarities than differences. Each person and culture has a spectrum of preferred colours through which they influence their emotions and choose to express themselves (Trstenjak, 1996). According to Trstenjak

(1996), each colour has its own energy and particular value, which is why people respond to the same colours differently. Colour preferences are widely affected by age (younger people tend to prefer brighter and more solid colours compared to mature adults), education (working-class individuals prefer simple colours such as blue and green, while upper-class individuals prefer more obscure colours like azure and mauve), and gender (women prefer warmer colours while men prefer cooler ones; women's colour preferences are more diverse compared to men's) (Kumar & Joshi, 2007).

Given the significant impact of colours on human perception, utilizing colours strategically in marketing is very important. However, this aspect of marketing is often overlooked. In order for marketers to select the right colour palette for their marketing activities, they need to understand which emotions, behaviours, and messages are triggered by specific colours, while also taking into consideration possible negative effects of the colour choice. Furthermore, they should be aware of the symbolic meanings of colours and how these can vary across cultures, as such differences can drastically affect consumer perception, especially for businesses with an international customer base. The following chapter explores how marketers use colours strategically to shape consumers' perceptions of the product and brand.

2.3 Colours in marketing

In the world of marketing, visuals such as shapes, colours, textures, graphical elements, and logos have long been recognized, especially in terms of customer attraction (Zailskaitė-Jakštė et al., 2017), as they play a significant role in the customer decision-making process. Consumers most often decide whether they will purchase a product within 90 seconds, with 62–90 percent of their assessment based solely on colour (Singh, 2006). Colours extend beyond aesthetics; they are an essential part of how companies communicate their brand, form relationships with consumers, and position themselves in the competitive landscape (Labrecque & Milne, 2011). Nevertheless, brand managers and marketers often lack knowledge of colour theory and psychology, leading them to rely only on past experiences, recommendations from consultants, personal preferences, or gut feelings (Labrecque & Milne, 2011).

Like a brand's name, colour possesses an intrinsic meaning that becomes an integral part of the brand's identity, recognition, and communication of a specific brand image. Studies found that the hue and saturation of a logo alone greatly influence the perception of the brand's personality, which consequently shapes and determines consumers' purchase intentions (Labrecque & Milne, 2011). Furthermore, it was found that different brightness values of the same colour on the colour wheel have a significant influence on the level of trust in e-commerce environments. According to Broeder & Snijder (2019), the use of darker blue colours on e-commerce platforms elicits higher levels of trust, resulting in favourable consumer perception and behaviours.

Nevertheless, certain colour groups elicit distinct emotional reactions, positive or negative, that influence the decision-making process of the individual (Choi et al., 2020). Research by Bellizzi and Hite (1992) found that long-wavelength colours, like red and yellow, evoke higher levels of arousal but are often perceived as tense, consequently leading to negative associations. On the other hand, short-wavelength colours, like green and blue, tend to induce more positive and calm associations (Bellizzi & Hite, 1992).

Multiple studies confirmed that customers prefer cool-toned colours compared to warm-toned ones. A study by Biers and Richards (2005), which explored the effect of background colour in an e-commerce environment, found that cool-toned backgrounds (blue and purple) led to higher purchase intention compared to warm-toned backgrounds (red, orange, yellow). In addition, consumers are more likely to prefer cool-toned store environments and rate them as more likable compared to warm-toned store environments (Babin et al., 2003).

The context in which colour is used is also crucial for creating a successful marketing campaign (Jonauskaite et al., 2016). A study exploring the use of colour in charity appeals revealed important insights: positive appeals set against a cool-toned background attracted the highest donations. On the other hand, negative appeals against a warm-toned background nearly matched this donation level. However, when the colours and appeals were interchanged, cool-toned background with negative appeals and warm-toned background with positive appeals, donations decreased by almost a third (Choi et al., 2020). This emphasizes the importance of aligning the colour palette of the marketing campaign with the message, implying that the choice of colour should be a conscious decision, as it can significantly affect the outcome of a marketing campaign.

Due to the significant influence of colour on consumer behaviour and trends, numerous organisations have focused on the domain of consumer colour trends. These include the American Association for International Color Directions (AICD), Color Marketing Group, and the Color Association of the USA (CAUS). These organisations are especially important due to their expertise in analysing colour preferences across diverse consumer markets. Furthermore, their importance also lies in their responsibility for setting the latest colour trends and forecasting future ones (Whelan, 1995).

In today's digitally-driven world, online platforms serve as primary touchpoints for consumers (Dahl et al., 2018). The importance of colour in digital marketing is paramount, given the highly competitive environment and the overwhelming volume of daily ads. The next chapter dives deeper into the world of social media platforms and advertising, focusing on the use of colour in paid social media advertising.

2.4 Colours in paid social media advertising

To better understand how colour tone and contrasts can be used in paid social media advertising, it is essential to familiarise oneself with the fundamentals of social media platforms.

2.4.1 Social media

Social media encompasses a variety of online platforms, tools, and applications that facilitate networking, content sharing, communication, and collaboration between users. Social media prioritises engagement, interaction, and user-generated content, and by providing digital environments for users, it enables them to send and receive digital content. Social media is said to shape digital social communication in modern culture (Carr & Hayes, 2015). Even though there is no official definition of social media, there is a wide consensus that social media platforms usually involve real-time communication, offering two-way interaction while decreasing response times and minimising anonymity (Carr & Hayes, 2015).

Carr and Hayes (2015, p. 8) define social media as: *'Internet-based channels that allow users to opportunistically interact and selectively self-present, either in real-time or asynchronously, with both broad and narrow audiences who derive value from user-generated content and the perception of interaction with others.'*

Similarly to Carr and Hayes (2015), Howard and Parks (2012) specified social media as comprising three key components:

- Digital infrastructure and tools utilized in the creation and distribution of content
- Digital content (digital forms of messages, news, ideas...)
- Individuals, organisations, and industries who create and consume digital content (Carr & Hayes, 2015)

Nowadays, there are numerous social media platforms (Facebook, Instagram, Snapchat, Pinterest, TikTok, LinkedIn, etc.). Each social media platform was invented to serve a different purpose (to watch videos, share photos, message friends, expand one's professional network, etc.); however, all platforms share the same three components of social media mentioned previously. Nevertheless, in the last decade, social media platforms have shifted their focus from entertainment to advertising and sales. Companies that own social media platforms (e.g., Meta, which owns Facebook and Instagram; X Corp., which owns X, formerly known as Twitter) describe their platforms as the ideal marketing tool due to their creation of special advertising systems that enable businesses to use the information of social media platform users and utilise it for precise and accurate targeting (Rijitha, 2021).

In the marketing world, social media is used for direct communication with target consumers via a variety of digital channels. From a marketing perspective, social media platforms are particularly efficient because they allow us to reach an extremely broad base of potential

customers in a relatively inexpensive way while offering options of detailed targeting. Due to their characteristics, they are especially suitable for brand marketing communication, primarily due to the possibility of extremely effective word-of-mouth marketing (Tomše & Snoj, 2012).

The most important social media platforms at the time of this research are:

1. Facebook: With over 3 billion monthly active users, Facebook is the largest social media platform (Statista, 2025). Meta, the company that owns Facebook, provides companies with a variety of advertising possibilities, offers its own analytics tools, and has a precise targeting system (Rijitha, 2021). Due to its versatility, it is one of the most used platforms for social media advertising.
2. YouTube: YouTube as a platform is especially important for companies that use video marketing. With almost 2.5 billion active monthly users (Statista, 2025), it ranks as the second largest search engine, right behind Google (Davies, 2024).
3. Instagram: Meta's Instagram has over 2 billion active monthly users (Statista, 2025) and is considered to cater more towards younger demographics due to its focus on visual content. This type of visual content is especially useful for companies in building their online brand identity, awareness, and recognition. Furthermore, Instagram is well known for influencer marketing opportunities. Since Meta also owns this platform, the advertising possibilities are similar to Facebook's, with numerous tools and very precise targeting options (Rijitha, 2021).
4. TikTok: With its rapidly growing user base of 1.5 billion users (Statista, 2025), TikTok offers opportunities to reach a wide audience with engaging video content. A number of businesses have significantly increased their customer base with just one viral video. TikTok also opens doors for advertising to small businesses since the virality of posted videos does not depend on previous following (Next Generation Learning, n.d.). Like Meta, TikTok also introduced advertising options for businesses in 2022, but this feature was not available in Slovenia before September 2024. In comparison to Meta's advertising options, TikTok is not as advanced yet.
5. X: The platform previously known as Twitter is primarily used for sharing opinions and discussing various topics. It has over 600 million monthly users (Statista, 2025) and is known and loved for its real-time interaction. Businesses frequently utilize X to create brand awareness, promote content, and offer customer service (Shastri, 2024).
6. LinkedIn: Serves as a valuable platform for business-to-business marketing, with over 310 million monthly active users (Statista, 2025). It offers opportunities for businesses to network within their industry and generate leads (DC Analytics, 2024).
7. Pinterest: As a visual platform, Pinterest is often utilized by brands that create visually appealing content. Since users on this platform often search for inspiration regarding fashion, décor, do-it-yourself products, and lifestyle brands, those with aesthetic and trendy content benefit from easier discovery, creating opportunities for brand awareness (Markerly, 2023).

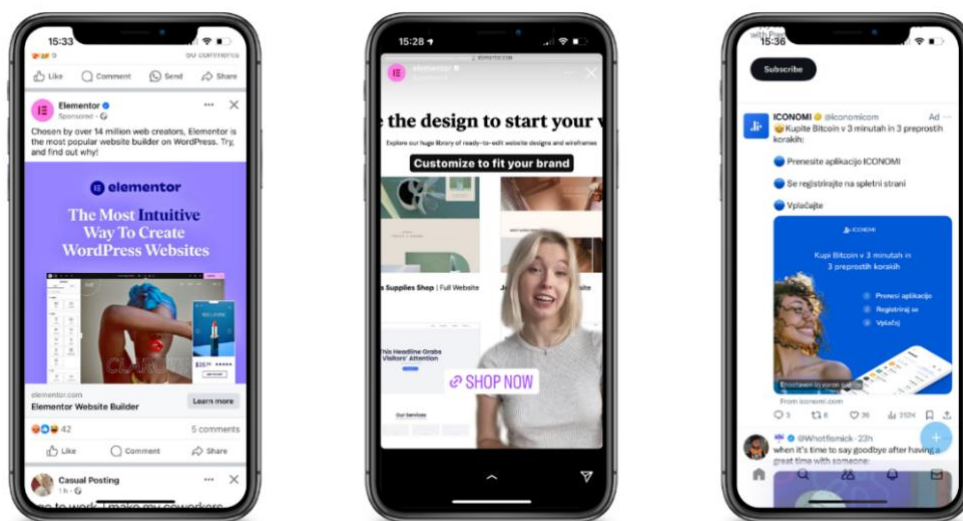
Digital marketers can reach consumers on these platforms organically (through their own or earned content) or through paid advertising. Organic reach refers to brand content that is

seen naturally by people on their explore pages or news feeds, meaning companies do not have to spend any money on promoting the content (SocialPilot, 2024). However, the organic reach of brands has been declining in recent years, especially on Facebook and Instagram, urging digital marketers to resort to paid social media advertising options to expand their reach and target their preferred audience effectively (Manson, 2014). The next chapter explores the field of paid social media advertising and provides a better understanding of various types of social media advertisements.

2.4.2 Paid social media advertising

Paid social media advertising is an efficient way of promoting content or advertisements on social media platforms. Contrary to organic content, paid social media advertisements are strategically placed on social media platforms in exchange for monetary payment. Paid social media advertising aims to boost visibility, reach, create engagement, promote clicks to the website or collect leads by intentionally targeting specific audiences relevant to your brand (Malik & Srivastava, 2025). Through analytics and data-driven targeting options, this type of advertising enables companies to reach a higher number of potential customers, build brand recognition, drive traffic to their site, and gain important insights from the market. Depending on the social media platform, there are different forms and formats of paid advertising (Figure 6), such as sponsored posts, video advertisements, carousel advertisements, display ads, and story advertisements.

Figure 6: Examples of social media advertisements in various formats



Source: Own work.

Due to the growing base of active users on social media platforms, as well as the many advantages that social media advertising offers (e.g., cost-efficiency, engagement, gaining trust, brand visibility) (Taylor, 2012), companies are spending more and more of their marketing budgets on social media advertising. Businesses spend an average of 20% of their

marketing budgets solely on social media advertising representing a record-high allocation (Statista, 2025a). The market for social media advertising is currently valued at \$207.1 billion. Global social media advertising spending is projected to grow at a compound annual growth rate of 11.71% from 2025 to 2030, reaching an estimated \$480.07 billion by 2030 (Statista, 2025b).

As companies recognize the influence of social media advertising and its effects on customer behaviour, they are increasingly employing various tactics and leveraging special social media features to optimize its impact (Joshi, 2024). In addition, since graphic design has always played a crucial role in advertising, digital marketers are now putting a lot of focus on enhancing their visuals in order to persuade consumers. One key strategy is the careful selection of colour palettes. Marketers in social media advertising can effectively express their product and brand by using colour psychology and the power of branding. These build trust and lead to the desired results. The following chapter will explore how colours are used in paid social media advertising.

2.4.3 Colours and colour contrasts in paid social media advertising

On digital platforms such as social media, colours can attract attention, impact the time spent on an advertisement, and influence memorisation of the product or brand (Zailskaitė-Jakštė et al., 2017). Visual content is especially important for social media advertisers since it has been proven to have a positive impact on customer engagement, helping marketers combat the recent trend of declining engagement (Manson, 2014; Zailskaitė-Jakštė et al., 2017). The significance of colour choice is confirmed by statistics showing that just by changing the colour of the Call-To-Action button on a paid social media ad, digital advertisers can increase conversion rates by 14.5% (Jain, 2020).

Since the effect of colours on paid social media advertising has not yet been specifically researched, the conclusions for colour and contrast use within this study are drawn from research conducted on other digital content, such as web banners and websites, despite possible deviations across different digital media channels (White et al., 2021).

Studies suggest that brighter colours boost engagement (Banerjee & Pal, 2018), while higher colour complexity (higher saturation, contrasts, use of different colours) leads to greater interest, more positive attitudes, and favourable customer behaviour (Kanuri et al., 2023). This suggests that complementary-coloured paid social media advertisements would elicit more favourable behaviours in comparison to analogous ones due to the use of a higher number of hues.

At the same time, some studies on colour use on digital platforms suggest this might not always be the case. According to Zailskaitė-Jakštė et al. (2017) there are four colours that are statistically used the most in social media images: shades of black, brown, grey, and navy, with dark blue (navy) and black being the preferred colours.

Furthermore, a study by Kuo et al. (2022) confirmed that despite differences in age and gender, individuals preferred blue (in any variation), and that dark blue, blue–green, and dark cyan were the most popular colour choices in terms of eliciting trust on a dynamic webpage. In another study, Kuo et al. (2022) investigated which colour combinations work best in website design. They found that royal blue paired with either cyan or black was especially appealing to consumers, somewhat confirming that consumers prefer analogous colour schemes in comparison to complementary colours in digital environments. Both studies also confirm the preference for cool-toned graphic designs over warm-toned designs in digital environments.

The most relevant research that could help understand the use of colour contrast in paid social media advertising was conducted by White et al., 2021, with the study exploring the use of warm-toned and cool-toned analogous colour palettes as well as complementary colour palettes in web banner advertising (for wireless headphones). Participants showed the highest purchase intention with the blue–green colour palette, while the use of the red–green complementary contrast was least favoured. However, the blue–green preference might stem from its resemblance to real-life scenarios (as seen often in nature: green trees, blue sky; blue sea, green coast), thus being perceived as more pleasant, calm, and familiar, eliciting higher levels of trust. Nevertheless, the study concludes that cool-toned web banner advertisements evoke more positive attitudes and higher purchase intention in comparison to warm-toned ones (White et al., 2021). Even though, according to Ou and Luo (2006), warm analogous colours are perceived as more harmonious, the yellow-purple colour scheme received a higher score in attitude and purchase intention compared to warm analogous web banner designs (White et al., 2021). This implies that the involvement of cool-tone colours, product category, and context might play a crucial role in driving customer attitudes (Jonauskaite et al., 2016; Whelan, 1995).

From existing research, it can be concluded that in practice, digital marketers should always consider context in paid social media advertising, ensuring that the colour palette selected conveys and emphasises the actual message of the advertisement, since colours can send strong messages and elicit specific emotions. Therefore, knowledge of colour psychology and colour theory is beneficial. Furthermore, it is recommended that digital marketers take into account the product category, which in some cases is strongly linked to a specific colour (e.g., technology and the colour blue, champagne and gold, luxury products and black) (Garaus & Halkias, 2020), since a misalignment of the colour and the product/product category could result in negative brand perception.

Overall, the results of the studies confirm that consumers in digital spaces prefer cool-toned analogous colour combinations; thus, such combinations could be seen as a safe and viable option. However, digital marketers should also always take into consideration brand colours, which play an important role in brand awareness, brand recognition, and trust, as they create a greater sense of familiarity in consumers' minds (LinkedIn Community, 2024).

In paid social media advertising, it is also important to consider target consumers' preferences. Every demographic and culture has its own preferences regarding colours; therefore, it is important for a digital strategy in social media advertising to follow them. A viable option for learning about preferences is A/B testing or using various tools on social media platforms (e.g., Facebook Ads Manager) and running experiments with ads in different colour schemes while analysing the results. Additionally, marketers can use a variety of platforms and tools, such as EyeQuant or Lyssna, to gather input on an advertisement's visual appeal (LinkedIn Community, 2024). With modern advertising systems, social media platforms allow advertisers to precisely target consumers, therefore allowing different colour palettes to be shown to various demographics. Luckily, in the digital landscape, the ability to adjust campaign colours has become easier than ever, presenting the opportunity to utilise colour as an effective marketing tool for shaping people's perception of the product and brand (Labrecque & Milne, 2011).

The next chapter will explore customer behaviour, focusing on likeability, trust, and purchase intent, which will be investigated later in relation to colour in the empirical part of the thesis.

3 IMPACT OF COLOUR ON LIKEABILITY, TRUST, AND PURCHASE INTENTION

To better understand how colours could, in practice, affect likeability, trust, and purchase intention, it is first important to not only understand the definitions of individual constructs of customer behaviour, but also to conduct a thorough review of the existing research to better understand the key factors influencing them.

3.1 Likeability

According to the Cambridge Dictionary, likable means pleasant and easy to like (Cambridge Dictionary, n.d.). This means that the item or person has qualities that elicit favourable regard (Merriam-Webster, n.d.).

However, according to Cialdini, Kenrick, Reysen, and other researchers cited in Nguyen et al., 2013, likeability, in psychology, is considered a strategy of self-presentation and persuasion. In advertising, likeability is seen as a strategy to stand out in the pool of advertisements by creating a positive impression on the consumer. When consumers like an advertisement, it attracts their attention and makes them stop their browsing behaviour (Neijens, 2006). Likeability is largely defined by first impressions, since if a consumer likes the advertisement, it captures their focus and encourages engagement. Consequently, they are more inclined to watch it again, ultimately increasing purchase intention (Nguyen et al., 2013). Studies have found that likeability is one of the most effective measures for forecasting sales and can be used to systematically predict sales (Polegato & Bjerke, 2009).

Furthermore, several research papers have proven that likeable content creates positive arousal, thus altering cognitive processing, leading to increased advertisement recall and better consumer perception and attitude (Neijens, 2006; Nguyen et al., 2013). According to research, likeability greatly enhances the memorability and effectiveness of advertising due to its influence on memory organisation, processing, and retrieval (Nguyen et al., 2013). In addition, likeability also includes an affective component, meaning it has the ability to elicit a positive emotional response, which often results in increased purchase intention and brand loyalty (Nguyen et al., 2013). In categories where differences in products and their functionality are minimal, likeable advertising could be seen as a brand attribute, resulting in better perception of the product in customers' minds (Neijens, 2006).

Over the years, many categorizations of likeability have been developed. According to researchers, likeability depends on various factors; however, Lindgaard (2007) notes that likeability could be a direct consequence of visual appeal. Visual design increases the level of aesthetics of the advertisement, which is positively linked to favourable responses in people's minds, thus increasing the likeability factor (Cyr et al., 2009). Furthermore, visual appeal has a bigger impact on consumer perception of likeability in comparison to usability (in terms of website design) (Lindgaard, 2007). This means that in the context of paid social media advertising, visuals such as colour can play a crucial role in determining the level of likeability.

In traditional studies of ad likeability, the attribute is often rated on scales that determine whether the ad was enjoyable, entertaining, appealing and interesting, as well as overall liked or disliked (Marketing Mind, n.d.).

3.2 Trust

Researchers have struggled when trying to define trust, especially since different disciplines (psychology, sociology, business, and economics) view trust from a different perspective. According to the Cambridge Dictionary, to trust means to believe that someone is honest and good, or that something is reliable and safe (Cambridge Dictionary, n.d.). In Cyr (2008), online trust is defined similarly to likeability, as it is comprised of both cognitive and emotional elements. According to the definition, online trust is an "attitude of confident expectation in an online situation of risk or belief that one's vulnerabilities will not be exploited" (Cyr, 2008, p. 49).

In the marketing world, trust plays an essential role, and many researchers recognised its importance decades ago. Many researchers identified trust as one of the key factors for building relationships in the field of marketing, whether with partners or with potential customers (Geyskens et al., 1998).

Even though digital environments are now becoming increasingly widespread, it is still common for consumers to perceive higher risk in e-commerce environments. Consequently,

consumers are inclined to act more carefully and avoid possible deceptions, often discouraging engagement in online transactions (Boas & Sousa, 2019, p. 12). This emphasises the importance of trust in online environments, since people are more likely to engage online if they trust the platform and the brand. According to Broeder & Snijder (2019), there are three types of trust involved in the purchasing process:

- Initial trust: the first judgement of the vendor; determining whether the vendor can be trusted.
- Institutional trust: the perception of safety and security on the Internet itself
- Dispositional trust: the willingness to depend on people and situations and the general tendency to trust others.

In the context of paid social media advertising, a user could have a high general tendency to trust others (high dispositional trust), but based on the visual cues of the advertisement (such as the use of mismatched colours), initial trust could be low, which would therefore lower overall purchase intention or even deter them from buying the specific product (Broeder & Snijder, 2019). As such, visual cues play a vital role in establishing trust in consumers' minds. Visual design is comprised of emotional and aesthetic appeal that can be expressed through colours, fonts, and shapes. Research by Cyr et al., 2006, suggests that there is a positive relationship between aesthetics and perceived trust (Cyr et al., 2006).

In the study conducted by Cyr (2008), it is confirmed that visual design in the context of website design is a key factor for inducing trust in consumers' minds, especially in collectivist cultures. The results show that designers and digital marketers should prioritize aesthetically pleasing design, since it increases confidence and trust among consumers (Cyr, 2008; Ramezaninia & Shokouhyar, 2020). These findings can be attributed to similar characteristics of digital environments applicable to social media advertising as well.

Trust is considered one of the key variables in influencing purchase intention, meaning lack of trust can create a barrier in the consumer's mind when making purchase decisions. Furthermore, it plays a mediating role in the colour–purchase intention relationship due to its strong direct influence on purchase intention (Broeder & Scherp, 2017). The next chapter explores research into purchase intention.

3.3 Purchase intention

Purchase intention is one of the components of customer behaviour, and it describes the extent to which consumers are inclined to buy a specific product, service, or brand, in other words, their willingness to purchase a product after evaluation. The higher the purchase intention, the higher the consumer's readiness to purchase (Nawaz & Kaldeen, 2020). Purchase intention is especially valuable, since it is considered a key predictor of consumer behaviour. However, purchase intent does not necessarily lead to a purchase as there is a notable gap between purchase intention and actual behaviour, also known as Intention-Behaviour gap. (Peña-García et al., 2020).

Purchase decisions tend to be complex, and the intent to purchase is usually related to multiple factors, such as customer perceptions, behaviours, and attitudes (Mirabi et al., 2015). Various studies have researched over 80 purchase intention variables, which were later categorized into three groups: consumer characteristics, product characteristics, and the perceived characteristics of the website (Toor et al., 2017).

According to a study by Mirabi et al. (2015), the factors that have the greatest influence on consumer purchase intention are quality, brand, and advertising, while packaging and price tend to have a much lesser effect (Nawaz & Kaldeen, 2020). Advertising has the power to inform customers about the product, form relationships, and thereby affect their behaviour. The discovery of a significant positive relationship between advertising and purchase intention (Mirabi et al., 2015) emphasises the importance of creating attractive advertising campaigns that persuade consumers and convince them to buy the product.

The primary goal of marketing communication is to guide consumers into the mental stage where they are willing to purchase the product (Hutter et al., 2013). Social media advertising, with its empowerment of customers and two-way communication, allows consumers to engage and provide feedback, which ultimately helps brands shape customers' perceptions and motivates them to actually consider purchasing a product. The attractive and creative visual designs that are typical for social media advertisements create more positive perceptions in consumers' minds, thus increasing levels of purchase intention (Alalwan, 2018).

3.4 Effect of colours on likeability, trust and purchase intention

Given the described research on likeability, trust, and purchase intention, it can be concluded that well-executed visual designs always positively affect all three variables. Based on the research, it can also be presumed that there is a complex interplay among these variables in customer behaviour and that they are somewhat correlated.

The use of colours in social media advertising plays an important role in capturing users' attention and evoking specific responses and behaviours. In order to be effective, the selected colour scheme needs to be attractive to consumers while simultaneously being aligned with the nature of the product and brand (Ramezaninia & Shokouhyar, 2020).

In visual design, colour is one of the main variables in determining the aesthetics and likeability of an advertisement (Ramezaninia & Shokouhyar, 2020). The research of Gorn et al., (1997), found that people perceive advertisements as more likeable when saturation (chroma) and value are higher; however, hue did not directly influence consumers' attitudes toward the advertisement. On the other hand, other studies have shown that the likeability of the advertisement is higher when advertisements are designed with cool-toned backgrounds or when the visuals are predominantly blue or black, even though arousal is higher with warm-toned backgrounds (e.g., red) (Gorn et al., 1997; Labrecque & Milne,

2011; Yu & Zhou, 2018). This confirms the findings from chapter 2.5, supporting that blue/cool-toned visuals elicit more favourable attitudes and increase likeability.

Moreover, a study by Pieters et al., 2010, found that advertisements containing more variations in colours negatively affect consumers' attention because of increased disorder, resulting in negative consumer attitudes. Furthermore, in relation to the use of various colour contrasts, consumers perceive the blue–green colour combination as more attractive than blue–orange (Witkowska, 2019). This leads to the assumption that analogous colour schemes increase likeability in comparison to complementary colour schemes. Nevertheless, it is important for marketers to take into consideration their target audience's preferences. Using colours that are favoured by target consumers is likely to result in higher likeability of the advertisement.

As mentioned previously, colour has a great influence on perceived trust, especially since the visual aesthetics of the advertisement positively influence levels of trust in individuals (Ramezaninia & Shokouhyar, 2020). Consequently, it is vital for digital marketers to use a cohesive and harmonious colour palette in their advertising. Focusing on the specific colours that elicit trust, blue has been consistently reported as the most trustworthy colour across multiple studies, followed by neutral colours, namely grey (Broeder & Snijder, 2019). However, the value and chroma of the colours can significantly affect the perception of trust in consumers. In digital environments, in the case of blue, people tend to perceive darker shades as more trustworthy than lighter shades (Broeder & Snijder, 2019). Trust is considered a significant mediator in the relationship between likeability of the advertisement and purchase intention (Ramezaninia & Shokouhyar, 2020). Even though the study by Broeder & Snijder (2019) found no direct effect of colour on purchase intention, there is evidence that colour choice indirectly affects purchase intention through trust as a mediator, which is primarily influenced by hue, chroma, and value (Broeder & Snijder, 2019).

As already stated, the use of specific colour palettes in social media advertising can influence individuals' purchase intention. Purchase intention is strongly influenced by trust, likeability, and familiarity with the brand or product. In a recent study, Rathee & Rajain (2019) found that colour scheme has a significant influence on purchase behaviour, and that colour can explain up to 35% of the variation in purchase decisions. Furthermore, the study found that blue web banners elicit the highest purchase intentions in both genders, while yellow seems to be the least favoured (Rathee & Rajain, 2019). Research by Bellizzi & Hite (1992) suggests that cool-toned environments tend to lead to a stronger urge to shop, fewer purchase deferrals, and a higher number of purchases (Broeder & Snijder, 2019). Another study analysing the effects of colour in web banner advertising found that purchase intention was highest in cool-toned analogous advertisements (White et al., 2021), again confirming that people significantly prefer pleasant cool-toned analogous combinations (White et al., 2021; Witkowska, 2018). In conclusion, the use of cool-toned, analogous colour schemes seems to be a favourable and safe option when trying to increase likeability, trust, and purchase intention in consumers.

Nevertheless, customers are more inclined to purchase a product when the visuals reflect personal preferences. That is why it is crucial for digital marketers to understand their target audience's preferences regarding colours and use them to their advantage to influence the likeability of the advertisement and increase trust as well as purchase intention (Labrecque & Milne, 2011). It is suggested that marketers use a harmonious colour palette that aligns with their brand as well as customer preferences to ensure the effectiveness of the digital campaign (Alshohaib, 2024).

4 EMPIRICAL RESEARCH ON ANALOGOUS VS. COMPLEMENTARY COLOURS USED IN PAID SOCIAL MEDIA ADVERTISING

4.1 Definition of the research problem and research objectives

With the rise of social media as one of the main digital sales channels, social media users are bound to encounter numerous advertisements (Perrin, 2015). That is why it is important that the ads they encounter attract their attention, are persuasive and elicit positive attitudes. As social media users rely heavily on visual cues, colours can be identified as one of the key tools for shaping emotions, thoughts and behaviours (Broeder & Snijder, 2019).

Despite the growing interest in colour psychology, research on the use of colour in digital environments is still in its early stages. Most studies to date have focused on isolated colours and hues as well as colour temperature (warm vs. cool-toned colours) (e.g., Broeder & Snijder, 2019; Choi et al., 2020; Labrecque & Milne, 2011). However, in real-life situations, digital advertisements rarely use only one colour. This suggests that there is a lack of research investigating more complex colour combinations and colour contrasts in advertising (especially in the digital landscape) and their effects on consumer emotions, perception, and purchase intention (White et al., 2021).

For this research to better reflect real-life situations in social media advertising, it focuses on examining how various colour combinations used in social media advertising affect consumers' perceptions.

The purpose of the empirical research is to provide firsthand investigation into the relationships and correlations between different colour combinations, likeability, trust, and purchase intention. The focus lies in understanding how analogous and complementary colour contrasts influence perceptions of likeability, trust, and purchase intention among consumers. The objective is to gain information and data that will ultimately provide answers to the following research questions:

- Research question 1: How do analogous and complementary colour combinations affect consumers' likeability of a paid social media advertisement?

- Research question 2: How do analogous and complementary colour combinations affect consumer trust towards products advertised on social media?
- Research question 3: How do analogous and complementary colour combinations in paid social media advertisements affect consumers' purchase intention?
- Research question 4: Can digital marketers and designers create more effective paid social media advertising by using specific colours and colour schemes?

4.2 Research hypotheses formulation

Based on the existing research and evidence, the following hypotheses were formulated:

H1A: Social media advertisements that contain the colour blue elicit higher levels of likability in comparison to advertisements that do not contain the colour blue regardless of the colour contrast.

Several studies on colour psychology have shown that most people appreciate the colour blue more than other colours, independent of culture (Broeder & Scherp, 2017), and prefer the use of blue in digital environments over other colours (Bellizzi & Hite, 1992; Kuo et al., 2022). The most popular shades of blue, according to Kuo et al., (2022), are dark blue (navy), blue–green, and dark cyan. The most popular colour combinations on websites have consistently included blue. The most favoured colour combinations are royal blue–cyan and royal blue–black. Due to the preference for the colour blue, especially in various colour combinations (Kuo et al., 2022), it is reasonable to assume its presence positively affects the likeability score.

H1B: Social media advertisements that contain the colour blue elicit higher levels of trust in comparison to advertisements that do not contain the colour blue regardless of the colour contrast.

As mentioned under hypothesis H1A, the studies mostly showed positive associations with the colour blue. A study by Broeder & Snijder (2019) even showed that the colour was reported as most associated with trust in comparison to other colours. Furthermore, in other research, the colour blue is mostly linked to competence, trust, efficiency, and logic (Wright, 1988), as discussed in the study by Labrecque et al. (2013). Due to the existing research, it is reasonable to hypothesise that advertisements where the colour blue is present elicit higher levels of trust.

H1C: Social media advertisements that contain the colour blue elicit higher levels of purchase intention in comparison to advertisements that do not contain the colour blue regardless of the colour contrast.

In their paper, Labrecque & Milne (2011) discuss how purchase intent is strongly influenced by various levels of colour saturation and hue. Studies show that cool-toned colours like blue are more likely to stimulate a purchase decision (Bellizzi & Hite, 1992; White et al., 2021). Furthermore, as mentioned in chapter 2.5, it is believed that the involvement of cool-toned

colours, especially blue, due to the fact that the colour is favoured by the majority of consumers (Broeder & Scherp, 2017), will thus increase the purchase intent of the surveyed sample even more (Jonauskaite et al., 2016; White et al., 2021).

H2A: Social media advertisements that use cool-toned analogous colours elicit higher levels of likability than warm-toned analogous colours.

As mentioned in chapter 3.4, various studies have confirmed that cool-toned physical and digital environments elicit more favourable attitudes and that people view them as more likeable (Babin et al., 2003; Biers & Richards, 2005; Gorn et al., 1997; Labrecque & Milne, 2011; Yu & Zhou, 2018). Moreover, research conducted by White et al., (2021) also shows that analogous cool-toned colour combinations used in web banner advertising had the highest scores when measuring variables related to the digital shopping experience. Thus, this hypothesis is in line with current findings in the field of colour psychology in digital advertising.

H2B: Social media advertisements that use cool-toned analogous colours elicit higher levels of trust than warm-toned analogous colours.

This hypothesis is driven by the findings of studies that confirm that cool-toned environments elicit more favourable attitudes as well as higher purchase intention (Babin et al., 2003; Bellizzi & Hite, 1992; Biers & Richards, 2005), especially since in White et al. (2021) trust appears to be a mediating factor for purchase intention, which was highest with the analogous cool-toned colour contrast.

H2C: Social media advertisements that use cool-toned analogous colours elicit higher levels of purchase intention than warm-toned analogous colours.

In White et al. (2021), the cool-toned analogous colour scheme received a higher score when measuring purchase intention in comparison to the warm analogous contrast and scored the highest of all colour contrast combinations in terms of purchase intention.

H3A: Social media advertisements that use cool-toned analogous colours elicit higher levels of likability than any variation of social media advertisements using complementary colours. According to White et al. (2021), the analogous cool colour combination is the most likeable when compared to other complementary and analogous colour combinations. This could be due to its colour harmony as well as the familiarity of the harmonious colour combinations, which are often seen in nature (blue–green could be associated with the sky and land) (White et al., 2021).

H3B: Social media advertisements that use cool-toned analogous colours elicit higher levels of trust than any variation of social media advertisements using complementary colours.

White et al. (2021) found that people prefer analogous cool colour contrasts in web banner advertisements over other colour contrasts. Additionally, as cool-toned colours originate from blue (Pantone, n.d.), a hue frequently associated with trustworthiness (Broeder &

Scherp, 2017), it is likely that cool-toned analogous colour combinations will be perceived as the most trustworthy compared to other complementary and analogous combinations. This could be due to their colour harmony, as well as due to the prevalence of the colour combination, which is often seen in nature (blue–green could be associated with the sky and land) (White et al., 2021).

H3C: Social media advertisements that use cool-toned analogous colours elicit higher levels of purchase intention than any variation of social media advertisements using complementary colours.

Research by Bellizzi & Hite (1992) suggests that cool-toned environments tend to lead to a stronger urge to shop, fewer purchase deferrals, and a higher number of purchases (Broeder & Snijder, 2019). Moreover, according to White et al. (2021), the use of analogous cool colour contrasts in digital advertising results in the highest scores of purchase intention.

4.3 Research methodology

To conduct research that will answer the described research questions, a structured plan was devised and adhered to. The set plan was also used to help define the data sources, research methods, and instruments. For primary data collection, the quantitative method was used, more specifically a survey, which was conducted utilizing a non-probability sampling technique to further explore the effects of colour contrasts (complementary vs. analogous) in paid social media advertising on likeability, trust, and purchase intention.

The survey was shared on Instagram and Facebook with the purpose of receiving responses from various age groups and nationalities, since such diversity better mimics the reality of a digital environment. The main survey questions included a visual of a social media advertisement promoting the same new wireless headphones in four different colour contrasts:

- Warm-toned analogous (red, orange)
- Cool-toned analogous (blue, green)
- Complementary (blue, orange)
- Complementary (red, green)

Figure 7: Social media advertisement displayed in warm analogous, cool analogous, and complementary colour contrasts



Source: Own work.

The product chosen was intentionally of a neutral colour (white), so as to not interfere with the survey results, as well as the text (also written in white). In order to explore how colours impact people's perception of the product and the advertisement, the same levels of lightness and saturation was maintained in all colours that were placed in the same spots, with changes only being made to the hue to create different types of contrasts. This means only the colour hue was manipulated, while the other colour dimensions remained constant.

Each question included one advertisement visual and three statements for each of the constructs researched in this study: likeability, trust, and purchase intention. Multiple statements for each variable were rated on a Likert scale (1 – strongly disagree, 5 – strongly agree) to ensure the reliability of the survey. For each visual, every respondent therefore had to rate nine statements on the Likert scale. Mostly, the statements were adapted from research papers by Broeder and Snijder (2019) and White et al. (2021). For a detailed overview of the entire survey, all statements for measuring constructs, and the research referenced, see Appendix 1. In order to conduct the hypothesis testing, the variables for each hypothesis had to be divided into two groups: dependent and independent variables. Following that, suitable testing methods were selected as seen in Appendix 3, Table 3.1.

4.4 Research findings

4.4.1 Sample description

A total of 102 respondents participated in the survey, of which 63% were women and 37% were men. Fifty-one percent belonged to the 25–34 age group, 19% to the 18–24 age group, 14% to the 45–54 age group, 12% to the 35–44 age group, 3% to the 55–64 age group, and 1% to the under-18 age group (Appendix 2, Figure 2.8). In terms of education, the distribution among respondents was fairly even (Appendix 2, Figure 2.9). The largest share held a bachelor's degree (38%), followed by a master's degree (31%) and a high school diploma or equivalent (29%), while only 2% had completed only primary education. In terms of employment status (Appendix 2, Figure 2.10.), the majority of respondents were

employed full-time (71%), 24% were students, 2% were employed part-time, 2% were retired, 1% were unemployed, and 1% selected “other.” The majority of respondents were Slovenian, and their native language was Slovene; however, there were a few isolated cases of respondents from the Dominican Republic (native language Spanish) (2), Serbia (Serbian) (2) and Poland (Polish) (1). Sample characteristics can be found in Table 2.

Table 2: Sample characteristics

Characteristics	N	%
Gender		
Male	37	37
Female	63	63
Age		
Under 18	1	1
18 – 24	19	19
25 – 34	51	51
35 – 44	12	12
45 – 54	14	14
55 – 64	3	3
65 – or over	0	0
Education		
Primary school	2	2
High School or equivalent	29	29
Bachelor’s degree	38	38
Master’s degree	31	31
Doctorate	0	0
Employment status		
Employed full-time	70	70
Employed part-time	2	2
Unemployed	1	1
Student	24	24
Retired	2	2
Other	1	1
Nationality		
Slovenian	95	95
Serbian	2	2
Polish	1	1
Dominican Republic	2	2

Source: Own work.

When asked about the frequency of social media use (Appendix 2, Figure 2.6.), most participants responded that they use social media several times a day (86%), followed by once a day (9%), a few times a week (2%), and less than once a week (3%).

The most popular social media platforms (Appendix 2, Figure 2.7) were Instagram (89%), Facebook (54%), TikTok (45%), and LinkedIn (22%), with X (17%), Snapchat (11%), and Other (9%) in the last positions.

The question regarding favourite colour was asked to determine whether colour preference affected the final results. Most participants preferred the colour blue (54%), which is consistent with the research referenced previously, followed by purple (14%), green (13%), red (9%), orange (8%), and yellow (3%) (Appendix 2, Figure 2.1).

4.4.2 Comparison of means

Warm-toned analogous advertisement

The advertisement within individual sets of measurements for likeability, trust, and purchase intention did not show significant deviations. The advertisement received an arithmetic mean score of 2.7 (Appendix 2, Figure 2.2) for likeability ($SD=1.02$) and trust ($SD=0.92$), and a slightly lower score of 2.33 ($SD=0.99$) for purchase intention. These rather average results indicate that the advertisement did not make a strong impression on potential buyers. Although respondents trusted the ad somewhat and found it fairly likeable, this did not translate into an equally strong behavioural response.

Cool-toned analogous advertisement

The advertisement in a cool-toned analogous colour scheme did show some deviations when comparing the results for likeability, trust, and purchase intention. However, it received exceptionally high scores in all measurement categories, with an arithmetic mean of 3.97 ($SD=1.01$) for likeability, 3.8 ($SD=1.00$) for trust, and 3.67 ($SD=1.16$) for purchase intention (Appendix 2, Figure 2.5). These results indicate that, despite minor deviations, the advertisement was well-received and had a positive impact on respondents' perception of the product and their purchasing decisions.

Complementary coloured advertisement (blue, orange)

In this variation of the advertisement, the results differed slightly more between the constructs of likeability, trust, and purchase intention. Likeability achieved the highest score, with an arithmetic mean of 3.6 ($SD=0.91$), followed by trust at 3.56 ($SD=0.92$), while purchase intention received the lowest score, at 3.23 ($SD=1.07$) (Appendix 2, Figure 2.3). These results indicate that the advertisement was generally well received, but its impact on purchase intention was not as strong as its effect on perceived likeability and trust.

Complementary coloured advertisement (red, green)

The final variation of the advertisement, using complementary shades (red and green), yielded rather poor results. Surprisingly, trust received the highest score, with an arithmetic mean of 2.33 (SD=0.92), followed by likeability at 2.23 (SD=1.05), while purchase intention had the lowest score, at 2.1 (SD=0.92) (Appendix 2, Figure 2.4). These results indicate that this colour combination was not effective in promoting likeability, trust, or purchase intention.

For the overview of the means and standard deviations of each social media advertisement see Table 3.

Table 3: Comparison of means (likeability, trust and purchase intent)

	Warm-toned analogous advertisement	Cool-toned analogous advertisement	Blue–orange complementary advertisement	Red–green complementary advertisement
Likeability	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
The overall look of this ad is appealing.	2.8 (0.99)	4 (1.03)	3.7 (0.92)	2.3 (1.05)
I like this ad.	2.7 (1.04)	3.9 (0.98)	3.6 (0.90)	2.2 (0.99)
The colours used in this ad are likeable.	2.6 (1.02)	4 (1.01)	3.6 (0.92)	2.2 (1.11)
Arithmetical mean	2.7 (1.02)	3.96 (1.01)	3.63 (0.91)	2.23 (1.05)
Trust	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
I perceive this ad as honest.	2.8 (0.94)	3.8 (0.94)	3.6 (0.92)	2.4 (0.93)
The colours of the ad are trustworthy.	2.6 (0.94)	3.9 (1.03)	3.6 (0.91)	2.3 (0.92)
I feel like I can trust this ad.	2.7 (0.88)	3.8 (1.02)	3.5 (0.92)	2.3 (0.90)
Arithmetical mean	2.7 (0.92)	3.83 (1.00)	3.67 (0.92)	2.33 (0.92)
Purchase Intention	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
I would like to buy this product for myself.	2.4 (0.98)	3.7 (1.13)	3.3 (1.04)	2.1 (0.93)
The chances of me buying this product are high.	2.3 (1.01)	3.6 (1.16)	3.1 (1.06)	2.1 (0.92)
The colours of this ad make me want to buy the product.	2.3 (0.99)	3.7 (1.19)	3.3 (1.09)	2.1 (0.92)
Arithmetic mean	2.33 (0.99)	3.67 (1.16)	3.23 (1.07)	2.1 (0.92)
Average result	2.58 (0.98)	3.82 (1.06)	3.51 (0.97)	2.22 (0.97)

Source: Own work.

Likeability

The collected data show that the cool-toned analogous advertisement received the highest rating in terms of likeability, with an arithmetic mean of 3.96 (SD=1.01). The complementary blue–orange advertisement also achieved an above-average rating (M= 3.63, SD=0.91), though still slightly lower than the cool-toned ad. In contrast, the warm-toned

analogous advertisement ($M=2.7$, $SD=1.02$) and the red–green complementary advertisement ($M=2.23$, $SD=1.05$) received considerably lower ratings for likeability. These results indicate that cool tones, as well as the presence of blue, positively influence perceived likeability, whereas overly warm tones in advertising may have a negative effect.

Trust

When assessing trust, the difference between individual colour combinations was slightly less pronounced. The highest mean ($M=3.83$; $SD=1.00$) was again achieved by the cool-toned analogous advertisement, which resulted in the highest level of trust among participants according to their ratings. The complementary blue–orange advertisement ($M=3.67$, $SD=0.92$) also performed reasonably well, while the warm-toned analogous advertisement ($M=2.7$, $SD=0.92$) and the red–green complementary advertisement ($M=2.33$, $SD=0.92$) again received the lowest ratings. This confirms that cooler colour combinations (especially those including blue shades) can trigger associations with reliability and trustworthiness. The results for colour combinations containing red were significantly worse; one reason might be that red can have a stimulating and somewhat aggressive effect on potential buyers and, in this case, participants.

Purchase intention

When analysing purchase intention results, similar trends to those observed when measuring the previous two variables appeared. Participants expressed the highest probability of purchasing the product in the cool-toned advertisement ($M=3.67$, $SD=1.16$), while the complementary blue–orange version achieved a slightly lower, but still positive, rating ($M=3.23$, $SD=1.07$). The warm-toned advertisement ($M=2.33$, $SD=0.99$) and, above all, the red–green complementary advertisement ($M=2.1$, $SD=0.92$) received significantly lower ratings, indicating that combinations of warmer shades do not encourage purchasing decisions.

4.4.3 Analysis of the results

The results clearly confirm that the choice of colour contrasts has an extremely strong influence on the perception of a paid social media advertisement. The cool-toned analogous advertisement was rated highest for all constructs, being evaluated as the most likeable, most trustworthy, and most effective in inducing purchase intention. The blue–orange complementary advertisement also achieved relatively good results. In conclusion, the favourable results are due to the use of the colour blue, which was confirmed to be a major factor in affecting the ratings. In contrast, the red–green advertisement was the least effective, as it consistently received the lowest ratings in terms of likeability and trust, and at the same time had the lowest power to persuade people to buy the product.

From the results, it can be concluded that within this sample, cooler colour palettes, especially cool-toned analogous palettes, are much more successful in inducing higher levels of likeability, more effective in building trust, and more persuasive in encouraging purchase intention. Meanwhile, the use of excessively warm tones (especially red) and unusual contrasting combinations (red and green) reduces the visual appeal of the ad, trust, and purchase intention.

4.5 Hypothesis testing

The first step in verifying the reliability of the results was consulting the values of Cronbach's α . All three scales (likeability, trust, and purchase intention) showed very good internal consistency and great reliability (Cronbach's α for likeability was 0.92, trust 0.95 and purchase intent 0.87).

Hypothesis testing H1A-H1C

H1A: Social media advertisements that contain the colour blue elicit higher levels of likability in comparison to advertisements that do not contain the colour blue regardless of the colour contrast.

H1B: Social media advertisements that contain the colour blue elicit higher levels of trust in comparison to advertisements that do not contain the colour blue regardless of the colour contrast.

H1C: Social media advertisements that contain the colour blue elicit higher levels of purchase intention in comparison to advertisements that do not contain the colour blue regardless of the colour contrast.

To examine the effect of the colour blue on likeability, trust, and purchase intent in paid social media advertising, a paired samples t-test was used since each respondent saw both types of the paid social media advertisements: the visuals containing blue and the visuals not containing any blue. The analysis was used to compare the mean scores for likeability, trust, and purchase intention.

The results (Appendix 4, Tables 4.1- 4.3) showed statistically significant differences in all three aspects. The visuals containing the colour blue received significantly better ratings in terms of likeability ($M=3.8$; $SD=0.76$) in comparison to visuals not containing any blue ($M=2.46$; $SD=0.71$). Furthermore, the advertisements containing the colour blue were seen as more trustworthy ($M=3.68$; $SD=0.78$) compared to advertisements where no blue was used ($M=2.52$; $SD=0.61$). Lastly, following the pattern of higher ratings, the advertisement visuals containing the colour blue achieved higher scores in purchase intention ($M=3.44$; $SD=0.89$) compared to non-blue advertising visuals ($M=2.21$; $SD=0.66$).

Since all p-values are smaller than 0.001, and thus also smaller than the conventional threshold of 0.05 (Appendix 4, Table 4.3), the results are statistically significant. Therefore,

hypotheses H1A, H1B, and H1C are supported: the presence of the colour blue in advertisements significantly increases likeability, trust, and purchase intention, regardless of colour contrast. Consequently, the findings of this research align with prior research linking blue to positive responses when used in advertising (Broeder & Scherp, 2017; Labrecque et al., 2013; White et al., 2021).

Hypothesis testing H2A-H2C

H2A: Social media advertisements that use cool-toned analogous colours elicit higher levels of likability than warm-toned analogous colours.

H2B: Social media advertisements that use cool-toned analogous colours elicit higher levels of trust than warm-toned analogous colours.

H2C: Social media advertisements that use cool-toned analogous colours elicit higher levels of purchase intention than warm-toned analogous colours.

To examine whether the use of cool-toned analogous colours in social media advertisements results in favourable responses compared to warm-toned analogous colours, a paired-samples t-test was conducted once again, since each participant evaluated both versions of the advertisement (warm-toned analogous colours and cool-toned analogous colours). The analysis compared means for likeability, trust, and purchase intention between the two conditions.

The results (Appendix 4, Tables 4.4-4.6) showed statistically significant differences in all three constructs. The advertisement designed in a cool-toned analogous colour palette received significantly higher ratings in terms of likeability ($M=3.98$, $SD=0.96$) than the warm-toned analogous advertisement ($M=2.69$, $SD=0.94$). Moreover, the cool-toned advertisement was perceived as much more trustworthy ($M=3.82$, $SD=0.95$) in comparison to the warm-toned one ($M=2.72$, $SD=0.82$). Finally, the advertisement featuring cool-toned analogous colours achieved higher purchase intention ratings ($M=3.63$, $SD=1.11$) compared to the one featuring warm tones ($M=2.31$, $SD=0.91$).

As the p-values are smaller than the significance level of 0.05 ($p<0.001$) (Appendix 4, Table 4.6) the results of this research are once again statistically significant. Therefore, hypotheses H2A, H2B, and H2C can be supported: advertisements using cool-toned analogous colour schemes generate higher levels of likeability, trust, and purchase intention compared to those using warm-toned analogous colours. The findings are consistent with previous research done on this topic (White et al., 2021).

Hypothesis testing H3A

H3A: Social media advertisements that use cool-toned analogous colours elicit higher levels of likability than any variation of social media advertisements using complementary colours.

To see if the cool-toned analogous advertisement elicited higher levels of likeability in comparison to advertisements using complementary colour palettes, a one-way repeated measures ANOVA was conducted, as every respondent saw all the variations of the same advertisement. Descriptive statistics showed the highest rating in likeability for the cool-toned analogous advertisement ($M=3.98$, $SD=0.96$), followed by the blue–orange complementary advertisement ($M=3.61$, $SD=0.86$) and the red–green complementary advertisement ($M=2.24$, $SD=1.01$). The results already indicated that the findings may be in line with H3A (Appendix 4, Table 4.7–4.9)

However, Mauchly's Test of Sphericity (Appendix 4, Tables 4.8) did not verify the assumption of sphericity ($p=0.002$), which was less than the threshold of 0.05, thus violating the assumption. Consequently, the F statistic had to be adjusted with the Greenhouse-Geisser correction ($\epsilon=0.895$). After the correction was applied, the results remained statistically significant: $F(1.79, 180.82) = 113.12$, $p<.001$, indicating that the colour scheme had a significant effect on likeability. Pairwise comparisons after applying the Bonferroni adjustment confirmed that the cool-toned analogous advertisement (blue–green) was rated as significantly more likeable than both complementary advertisement variations ($p<.001$). These results support hypothesis H3A, confirming that cool-toned analogous colour schemes elicit significantly higher levels of likeability compared to any complementary colour combinations.

Hypothesis testing H3B

H3B: Social media advertisements that use cool-toned analogous colours elicit higher levels of trust than any variation of social media advertisements using complementary colours.

To examine whether the cool-toned analogous advertisement elicits higher levels of trust compared to complementary colour combinations (blue–orange and red–green), the same method and steps for conducting the analysis were taken as for the previous hypothesis testing.

The descriptive statistics (Appendix 4, Table 4.10) revealed that the cool-toned analogous colour scheme ($M=3.82$, $SD=0.95$) received the best responses in terms of trust, followed by the blue–orange complementary visual ($M=3.55$, $SD=0.87$) and the red–green complementary advertisement ($M=2.32$, $SD=0.85$).

Mauchly's sphericity test (Appendix 4, Table 4.11) showed that the assumption of sphericity was violated ($p=0.001$) once again; therefore, the Greenhouse–Geisser correction was applied ($\epsilon=0.903$). The results of the repeated measures ANOVA indicate that the colour scheme has a statistically significant effect on trust: $F(1.79, 180.82) = 85.14$, $p<.001$. This shows that the colour scheme significantly affects participants' trust ratings.

Finally, pairwise comparisons with the Bonferroni adjustment applied (Appendix 4, Table 5.12) revealed that the cool-toned analogous advertisement was rated significantly higher in

trust compared to both advertisements using complementary colour schemes (blue–orange; $p=0.015$, red–green; $p<.001$).

These results support hypothesis H3B, as cool-toned analogous colours (blue–green) elicit significantly higher levels of trust compared to any complementary colour combinations.

Hypothesis testing H3C

H3C: Social media advertisements that use cool-toned analogous colours elicit higher levels of purchase intention than any variation of social media advertisements using complementary colours.

To investigate whether cool-toned analogous advertisements elicit higher levels of purchase intention compared to complementary colour schemes (blue–orange and red–green), the same steps of the analysis as for the previous two hypothesis testings were followed.

The descriptive statistics (Appendix 4, Table 4.13) showed that the cool-toned analogous colour scheme ($M=3.63$, $SD=1.07$) had the highest ratings for purchase intention, while the blue–orange ($M=3.26$, $SD=1.01$) and red–green complementary advertisement visual ($M=2.10$, $SD=0.88$) received significantly lower ratings.

Mauchly's test (Appendix 4, Table 4.14) once again indicated a violation of the assumption of sphericity ($p=0.081$); therefore, the Greenhouse–Geisser correction was applied ($\epsilon=0.953$). The results of the repeated measures ANOVA revealed a statistically significant effect of colour scheme on purchase intention: $F(1.91, 194.96) = 48.85$, $p<.001$ showing that the colour scheme significantly influenced participants' purchase intention ratings (Appendix 4, Table 4.15).

4.6 Discussion of results and marketing implications

The results based on the sample data are in line with existing research and offer a good insight into consumers' preferences. Overall, the surveyed sample preferred the advertisements containing the colour blue over the ones not containing any blue. The advertisements containing blue actually had the highest scores in all three constructs: likeability, trust and purchase intention. When comparing warm-toned analogous advertisements and cool-toned analogous advertisements, cool-toned advertisements consistently scored noticeably higher in perceived likeability, trust and purchase intention, while also achieving the highest scores among all of the advertisements.

However, the warm-toned analogous advertisement and complementary advertisement (red–green) did not make such a strong impression on the sample. The complementary advertisement (red–green) continuously scored the lowest in all measured constructs while

the warm-toned advertisement was rated higher, but still much lower than the cool-toned advertisement and the other complementary advertisement (blue–orange).

As mentioned previously, all of the findings are in line with existing research. Based on the existing research, the analysis within this thesis and the corresponding hypothesis testing, this thesis provides several recommendations for creating effective advertisements on social media platforms.

Firstly, it is recommended to use cool tones, especially the colour blue, in visuals. The results of this study, as well as previous research, clearly show that advertisements using a cool-toned analogous colour combination achieve significantly higher ratings across all the measured constructs: likeability, trust, and purchase intention. The combination of cool tones and soft, analogous and harmonious transitions is particularly recommended for campaigns where professional and calm communication is important (e.g., for technology, financial, or sustainability brands). As already discussed in some of the previous research (Broeder & Snijder, 2019), cool tones, specifically blue, elicit higher levels of trust and calmness, resulting in an increased perception of credibility and higher effectiveness of social media advertisements.

Furthermore, it is recommended that social media advertisements avoid excessive use of warm tones and sharp, contrasting colour combinations, especially those that are less common. Combinations such as red and green and warm-toned analogous colours were rated as the worst on all constructs, meaning they were the least effective in terms of advertising. Such colour combinations often appear very intense or even aggressive, which, as stated in the studies by Gorn et al. (1997), Labrecque and Milne (2011), and Yu & Zhou (2018), as well as clearly shown in this research, can reduce the feeling of trust and negatively influence purchase decisions; thus, avoiding those colour combinations is recommended.

Besides recommendations that have been directly derived from the results of this survey and hypothesis testing, there are several recommendations which contribute to better coverage of the real-world situation in the world of social media advertising.

Even though ads containing the colour blue were favoured by respondents and received the best ratings from them, it is important to highlight that companies, especially well-established and known companies, rarely have complete freedom in choosing the design and colours used in their social media advertising. Companies have clearly designed corporate visual identities, with predetermined colours and fonts, which must also be followed in social media advertising in order to maintain consistency in their visual appearance. In addition, as mentioned in Chapter 2.5, colours play an important role in the communication of an individual brand and are a strong factor in creating brand visibility, awareness, and recognition. Given this situation, it is not recommended to blindly follow the results of this study, despite its important and interesting findings. Companies should continue to use their overall graphic image to leverage the power of the brand and its recognition, as consumers

are already accustomed to these visual elements, which helps them build trust. If a brand is repositioning itself, rebranding its visual identity, or creating a special campaign, the findings of this research are certainly useful.

Moreover, it is recommended that companies consider product category and features when positioning themselves on the market. As mentioned in Chapter 2.5, certain product categories are strongly associated with specific colours (blue: technology; black: luxury products; red: food & beverages; green: sustainable and natural products; gold: luxury and sparkling wine products) (Garaus & Halkias, 2020). Inappropriate use of colours in social media advertising in comparison to the product category can have a negative impact on the perception of customers and can negatively affect the success of the business. However, that can easily be avoided by proper research.

The context and meaning behind the advertisement are also extremely important for the choice of colours in the visual. When choosing a colour palette for an advertisement, the message that the advertisement conveys must be considered carefully. As mentioned in the study by Choi et al. (2020), it is important to meaningfully connect the content of the message with the colour palette. Advertisements with positive messages work much better when paired with a cool colour palette, while advertisements with negative messages work better in combination with warm tones. Therefore, it is recommended that the colour palette be adapted to the context of the message whenever possible.

In addition, another recommendation on colour use in social media advertising is directly connected to cultural backgrounds, target consumers, and their preferences. As colour perception can vary greatly across cultures (which is particularly important for global brands), advertisers should adapt colour strategies depending on the market they are entering or advertising in.

In social media advertising, as in any marketing communication effort, it is always necessary to keep in mind who we want to persuade and what their characteristics are (age, gender, preferences, lifestyle...). To approach the target group effectively and create a positive impression, thorough market research is recommended. To gain a better understanding of consumers' preferences, using all the tools for optimizing ad performance social media platforms have to offer, such as A/B testing, is also suggested. With the help of this feature, companies can compare the performance of ads in different colour schemes and better understand the preferences of potential customers, which they can leverage in the future. In addition, it is recommended that companies or their advertising agencies adjust targeting by showing different colour palettes to different demographics (age, gender, interests...).

4.7 Limitations of the research

Despite the significant findings of this research, there are several limitations which must be discussed. The first significant limitation is the size of the sample. Since the sample is quite

small and not diverse enough, the findings cannot be generalized. Another limitation is the sampling method - the respondents were recruited through social media and by sharing the survey acquaintances. The probability sampling method would be ideal.

As individuals perceive colours differently due to biological and environmental factors, the variability in how the respondents perceived the colours in the survey must also be considered a limitation. Additionally, what further emphasizes the differences in colour perception is the screen of the devices that respondents used to fill out the survey, as well as the lighting conditions of the environment in which they completed it. Each device displays colours differently, with options to adjust brightness and display resolution. There was also no standardisation of devices or the environment. These factors introduce inconsistencies in how colours were perceived, which could have altered participants' responses. Despite that, this limitation's impact on the results is believed to have been insignificant, especially since the experiments upon which multiple studies on colour in advertising were based were conducted in a similar way (White et al., 2021; Labrecque & Milne, 2011).

The next limitation of this research is related to the choice of colour combinations, as the options did not cover all possible complementary and analogous contrasts (e.g., yellow and purple, pink and purple, yellow and green) in order to avoid respondent fatigue and to obtain as many complete surveys as possible. In addition, the colour ratios could also influence the final results. Since the colours used were not in a 1:1 ratio and one colour always predominated, the outcome of the research might have been different if the colours had been proportionally distributed.

Another limitation to be considered is the fact that certain colours are often linked to specific product categories. The colour blue is usually associated with the technology product category (White et al., 2021). Since the advertisement used in the study promoted headphones, a very common and widely used product within the technology category, this may have influenced the results to some extent. Consequently, the association of blue with technology could have played a role in explaining the preference for advertisements containing this colour.

A further limitation concerns the selection of colours. The colour selection and design do not entirely mimic real-life situations in graphic design. In real life, the colours' saturation and lightness can be adjusted to achieve the most aesthetic design, which was not the case within this research, as saturation and lightness were kept constant while focusing on colour hue. Consequently, some designs might not be as appealing as they would be in real-life situations. Furthermore, saturation and lightness both have a significant influence on how dependent variables (likeability, trust, and purchase intention) are perceived (Gorn et al., 1997), since each shade of the same colour evokes different associations in people's minds.

It is important to note that people with different cultural backgrounds than those represented in this survey's sample could perceive the colour combinations differently. The respondents

were mostly from Central Europe, specifically Slovenia, which is not a representative sample for the wider population. Consequently, these findings cannot be applied generally without considering this limitation.

The final limitation is that digital environments and social media trends change very quickly. Due to the dynamic nature of social media and user-engagement patterns, this study could quickly become obsolete or less relevant.

4.8 Opportunities for further research

As mentioned previously, there is not much research in the field of colour contrast use in digital marketing, especially paid social media advertising. Therefore, future studies have many possibilities to explore how various types of colour contrasts affect consumer perception and attitudes in digital environments.

The first opportunity would be replicating the study on a bigger scale, with a bigger and more diverse sample, while employing a probability sampling method to minimize bias. This would allow the researchers to apply the findings to the general population. Furthermore, the environment of the recruited respondents as well as the devices used could be standardized.

It would also be interesting to see how the advertisements are perceived when the ratios of the colours used are adjusted; therefore, another opportunity could be replicating the study but experimenting with the ratios of each colour in the advertisements (e.g., 1:1, 70:30). Similarly, future studies could replicate this study but alter the hues, saturation, and brightness (keeping the saturation and brightness constant throughout the advertisements), as it majorly affects the aesthetics of the advertising and thus could lead to different results.

While literature suggests trust mediates the relationship between colour and purchase intention, this study examines direct effects. Future research should investigate trust and other psychological constructs as mediators to provide a more holistic perspective.

Future research could also focus more on exploring if and how the product category changes the effect of specific colour contrasts on attitude, likeability, trust, and purchase intention. It would be interesting to see if a different product category (e.g., food and beverages or luxury products) would yield different results in terms of the preferred colour scheme. Moreover, it is recommended that future studies test more pairs of analogous and complementary colours (analogous: red and purple, blue and purple, green and yellow; complementary: yellow and purple) to better assess how each colour scheme affects consumers and their attitudes towards the ad and the product. Future studies could also test whether there are any cultural differences in the overall perception of the ads when different colour contrasts are used.

5 CONCLUSION

This master's thesis highlights interesting discoveries about how the choice of colour contrasts used in paid social media advertising significantly impacts the likeability, trust and purchase intent of paid social media advertisements. The research shows that social media advertisements with cool tones, especially those that are similar in hue (analogous colour contrast), are generally viewed more positively by consumers. Consumers found these ads to be more likeable and trustworthy and had a higher intention to purchase compared to ads using warm colours or contrasting colours. Notably, the colour blue stood out as particularly effective, leaving a positive impression on consumers.

The findings align with previous research: cool tones in advertising tend to create a calming and trustworthy environment, which can encourage consumers to make a purchase. On the other hand, using warm tones or harsh colour contrasts can create heightened arousal, which often seems too intense or aggressive, making consumers less likely to have a positive attitude toward the advertisement.

These findings provide meaningful insights for anyone involved in advertising, whether in academia or industry. They highlight how crucial colour choice is in attracting attention and influencing emotions and perception. However, it is important for designers and digital marketers to consider corporate identity and the varying cultural and demographic contexts, as the effectiveness of certain colours can shift depending on product type and target audience. In summary, this research adds to our understanding of how colours affect consumer perceptions and behaviours in social media advertising. It offers practical guidance not only for making colour contrasts visually appealing, but also for strategically using them in digital settings. Successful paid advertising on social media relies on creativity, consistency in terms of brand identity, and understanding the psychological effects of colour. When used thoughtfully, colour can bridge the gap between visual design and the emotional experiences of consumers, ultimately leading to more positive perceptions and desired outcomes.

LIST OF KEY LITERATURE

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APPENDICES

Appendix 1: Survey questions

Table 1.1: Survey questions

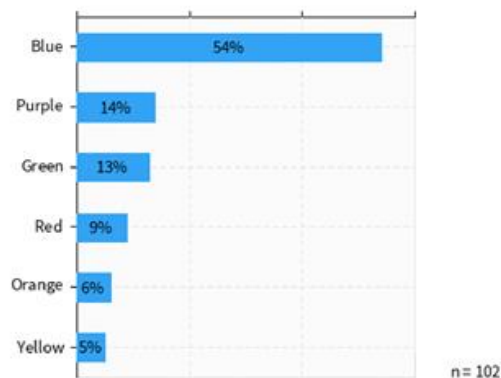
QUESTION	VARIABLE	MEASURING SCALE	CATEGORIES	REFERENCE FROM LITERATURE
What is your favourite colour?	Personal colour preference	Nominal scale	Red Blue Orange Green Yellow Purple	
ADVERTISEMENT EVALUATION FOR EACH COLOUR CONTRAST				
The overall look of the ad is appealing.	Level of Likeability	Interval (Likert)	1 (Strongly disagree) 2 (Disagree) 3 (Neutral) 4 (Agree) 5 (Strongly agree)	Adapted from Nguyen et al., (2015) and Broeder & Snijder (2019)
I like this ad	Level of Likeability	Interval (Likert)	1 (Strongly disagree) 2 (Disagree) 3 (Neutral) 4 (Agree) 5 (Strongly agree)	Adapted from Nguyen et al., (2015) and Broeder & Snijder (2019)
The colours used in this advertisement are likeable	Level of Likeability	Interval (Likert)	1 (Strongly disagree) 2 (Disagree) 3 (Neutral) 4 (Agree) 5 (Strongly agree)	Adapted from Nguyen et al., (2015)
I perceive this ad as honest.	Level of Trust	Interval (Likert)	1 (Strongly disagree) 2 (Disagree) 3 (Neutral) 4 (Agree) 5 (Strongly agree)	Broeder and Snijder (2019)
The colours of the ad are trustworthy.	Level of Trust	Interval (Likert)	1 (Strongly disagree) 2 (Disagree) 3 (Neutral) 4 (Agree) 5 (Strongly agree)	Broeder and Snijder (2019)
I feel like I can trust the ad.	Level of Trust	Interval (Likert)	1 (Strongly disagree) 2 (Disagree) 3 (Neutral) 4 (Agree) 5 (Strongly agree)	Adapted from Broeder and Snijder (2019)
I would like to buy this product for myself	Level of Purchase intent	Interval (Likert)	1 (Strongly disagree) 2 (Disagree) 3 (Neutral) 4 (Agree) 5 (Strongly agree)	Adapted from Broeder and Snijder (2019) and White et al. (2021)
The chances of me buying this product are high.	Level of Purchase intent	Interval (Likert)	1 (Strongly disagree) 2 (Disagree) 3 (Neutral) 4 (Agree) 5 (Strongly agree)	Adapted from Broeder and Snijder (2019) and White et al. (2021)

QUESTION	VARIABLE	MEASURING SCALE	CATEGORIES	REFERENCE FROM LITERATURE
The colours of this advertisement make me want to buy the product	Level of Purchase intent	Interval (Likert)	1 (Strongly disagree) 2 (Disagree) 3 (Neutral) 4 (Agree) 5 (Strongly agree)	Adapted from Broeder and Snijder (2019) and White et al. (2021)
SOCIAL MEDIA HABITS				
How often do you use social media platforms?	Social media habits	Ordinal	Multiple times a day Once a day Few times a week Once a week Less than once a week	
Which social media platforms do you use most frequently? (Select all that apply)	Social media platforms	Nominal	Facebook Instagram Twitter LinkedIn Snapchat TikTok Other (please specify)	
DEMOGRAPHIC INFORMATION				
Age:	Age	Ordinal	Under 18 18-24 25-34 35-44 45-54 55-64 65 or over	White et al. (2021)
Gender:	Gender	Nominal	Male Female Other Prefer not to say	White et al. (2021)
Education:	Education	Ordinal	Primary school High school or equivalent Bachelor's degree Master's degree Doctorate	White et al. (2021)
Employment status:	Employment status	Nominal	Employed full-time Employed part-time Unemployed Student Retired Other (please specify)	White et al. (2021)
What country are you from?	Nationality	Nominal	Open-ended question	
What is your native language?	Native language	Nominal	Open-ended question	

Source: Own work.

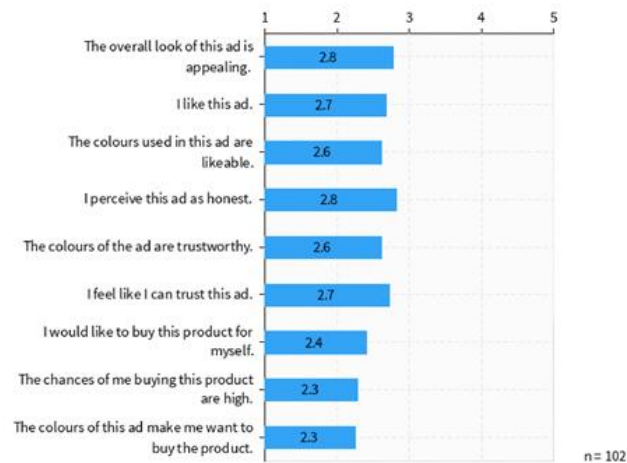
Appendix 2: Survey results

Figure 2.1: Results to question: What is your favourite colour?



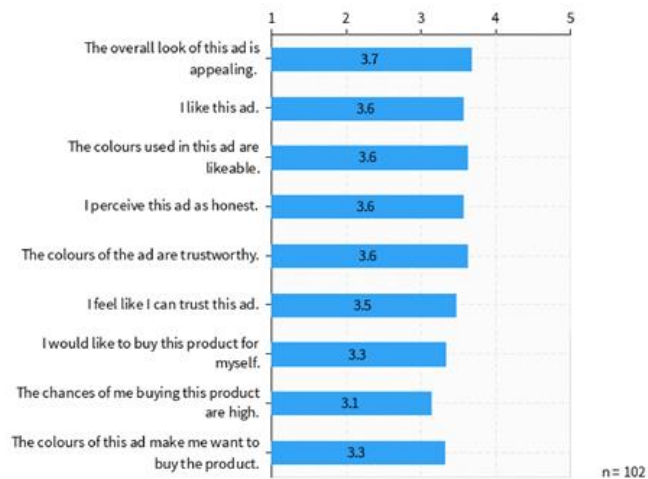
Source: IKA.

Figure 2.2: Results to question: Please rate the following ad on a scale 1 to 5 (1 = strongly disagree, 5 = strongly agree), warm analogous colour contrast



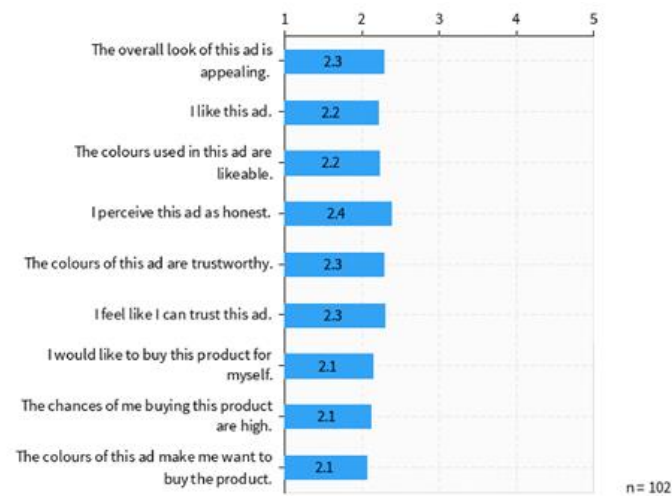
Source: IKA.

Figure 2.3: Results to question: Please rate the following ad on a scale 1 to 5 (1 = strongly disagree, 5 = strongly agree), complementary blue–orange colour contrast



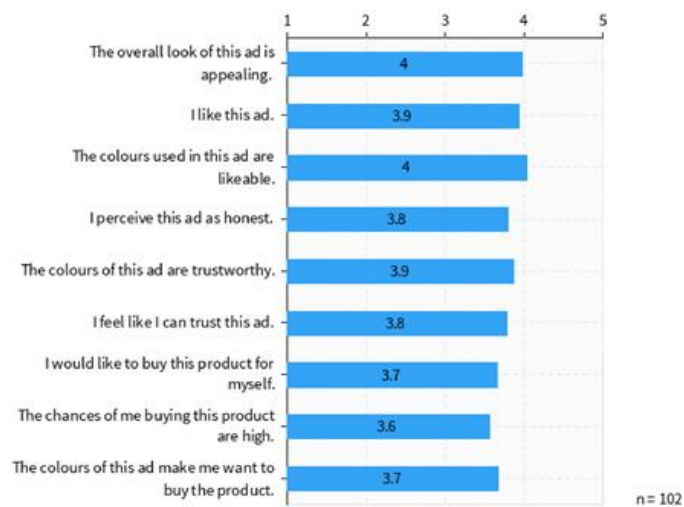
Source: IKA.

Figure 2.4: Results to question: Please rate the following ad on a scale 1 to 5 (1 = strongly disagree, 5 = strongly agree), complimentary red–green colour contrast



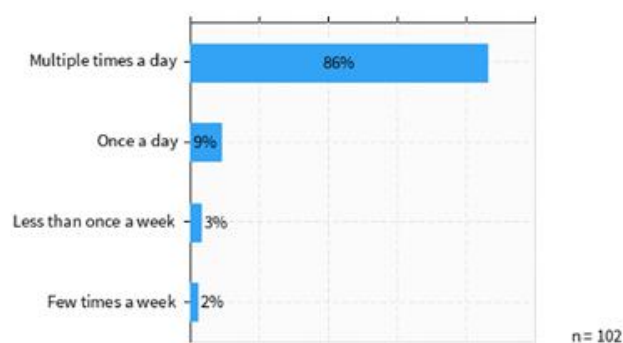
Source: IKA.

Figure 2.5: Results to question: Please rate the following ad on a scale 1 to 5 (1 = strongly disagree, 5 = strongly agree), cool analogous colour contrast



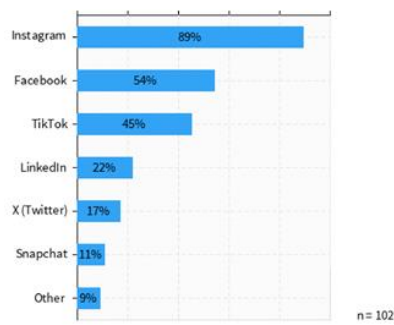
Source: IKA.

Figure 2.6: Results to question: How often do you use social media platforms?



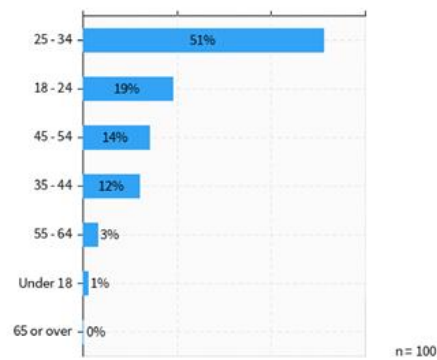
Source: IKA.

Figure 2.7: Results to question: Which social media platforms do you use most frequently?



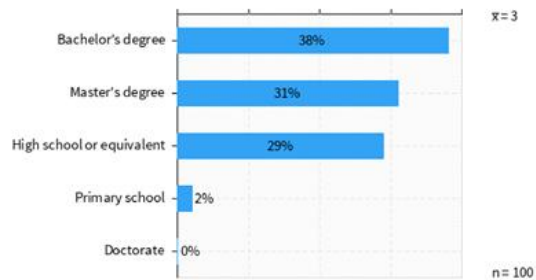
Source: IKA.

Figure 2.8: Age distribution of respondents



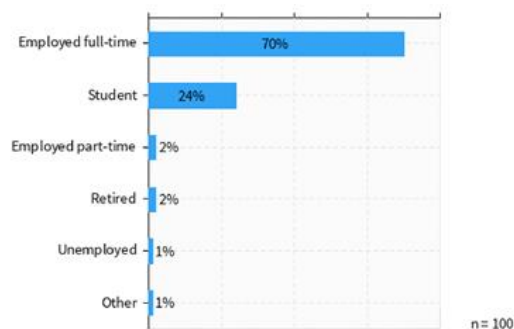
Source: IKA.

Figure 2.9: Education distribution of respondents



Source: IKA.

Figure 2.10: Employment status distribution of respondents



Source: IKA.

Appendix 3: Hypotheses, variables and testing methods

Table 4.1: Hypotheses, variables and testing methods

HYPOTHESIS	VARIABLES	TESTING METHOD
H1A	IV: Presence of the colour blue in advertisements DV: Levels of likability	Paired Samples t-test
H1B	IV: Presence of the colour blue in advertisements DV: Levels of trust	Paired Samples t-test
H1C	IV: Presence of the colour blue in advertisements DV: Levels of purchase intent	Paired Samples t-test
H2A	IV: Type of colour tone (cool-toned analogous colours vs. warm-toned analogous colours) DV: Levels of likability	Paired Samples t-test
H2B	IV: Type of colour tone (cool-toned analogous colours vs. warm-toned analogous colours) DV: Levels of trust	Paired Samples t-test
H2C	IV: Type of colour tone (cool-toned analogous colours vs. warm-toned analogous colours) DV: Levels of purchase intention	Paired Samples t-test
H3A	IV: Type of colour scheme (cool-toned analogous colours vs. complementary colours) DV: Levels of likeability	Repeated measures ANOVA
H3B	IV: Type of colour scheme (cool-toned analogous colours vs. complementary colours) DV: Levels of trust	Repeated measures ANOVA
H3C	IV: Type of colour scheme (cool-toned analogous colours vs. complementary colours) DV: Levels of purchase intention	Repeated measures ANOVA

Source: Own work.

Appendix 4: Hypotheses testing

Table 4.1: Paired samples statistics (H1A, H1B, H1C)

		Mean	N	Std. Deviation	Std. Error Mean
Pair1	Lik_Blue	3.7958	102	0.76463	0.07571
	Lik_NoBlue	2.4641	102	0.71354	0.07065
Pair2	Trust_Blue	3.6846	102	0.77924	0.07716
	Trust_NoBlue	2.518	102	0.61064	0.06046
Pair 3	Purch_Int_Blue	3.4444	102	0.89379	0.0885
	Purch_Int_NoBlue	2.2075	102	0.6552	0.06487

Source: SPSS.

Table 4.2: Paired samples correlations (H1A, H1B, H1C)

Pairs	N	Correlation	Significance	
			One-Sided p	Two-Sided p
Lik_Blue & Lik_NoBlue	102	0.174	0.04	0.08
Trust_Blue & Trust_NoBlue	102	0.055	0.292	0.584
Purch_Int_Blue & Purch_Int_NoBlue	102	0.22	0.013	0.026

Source: SPSS.

Table 4.3: Paired samples test (H1A, H1B, H1C)

Pair	Mean Difference	Std. Deviation	Std. Error Mean	CI Lower	CI Upper	t	df	One-Sided p	Two-Sided p
Lik_Blue - Lik_NoBlue	1.3317	0.95051	0.09411	1.145	1.5184	14.15	101	<.001	<.001
Trust_Blue - Trust_NoBlue	1.16667	0.9633	0.09538	0.97746	1.35588	12.232	101	<.001	<.001
Purch_Int_Blue - Purch_Int_NoBlue	1.23693	0.98516	0.09755	1.04342	1.43043	12.681	101	<.001	<.001

Source: SPSS.

Table 4.4: Paired samples statistics (H2A, H2B, H2C)

		Mean	N	Std. Deviation	Std. Error Mean
Pair1	Lik_analog_warm	2.6895	102	0.94428	0.0935
	Lik_Blue_Green	3.9771	102	0.96274	0.09533
Pair2	Trust_Analog_Warm	2.719	102	0.8242	0.08161
	Trust_Blue_Green	3.8203	102	0.95403	0.09446
Pair3	Purch_Int_Analog_Warm	2.3105	102	0.91349	0.09045
	Purch_Int_Blue_Green	3.6307	102	1.10694	0.1096

Source: SPSS.

Table 4.5: Paired samples correlations (H2A, H2B, H2C)

Pairs	N	Correlation	Significance	
			One-Sided p	Two-Sided p
Lik_analog_warm & Lik_Blue_Green	102	0.048	0.317	0.633
Trust_Analog_Warm & Trust_Blue_Green	102	0.088	0.191	0.381
Purch_Int_Analog_Warm & Purch_Int_Blue_Green	102	0.181	0.034	0.069

Source: SPSS.

Table 4.6: Paired samples test (H2A, H2B, H2C)

Pair	Mean Difference	Std. Deviation	Std. Error Mean	CI Lower	CI Upper	t	df	One-Sided p	Two-Sided p
Lik_analog_warm - Lik_Blue_Green	-1.28758	1.31593	0.1303	-1.54605	-1.02911	-9.882	101	<.001	<.001
Trust_Analog_Warm - Trust_Blue_Green	-1.10131	1.20486	0.1193	-1.33796	-0.86465	-9.232	101	<.001	<.001
Purch_Int_Analog_Warm - Purch_Int_Blue_Green	-1.32026	1.30154	0.12887	-1.57591	-1.06462	-10.245	101	<.001	<.001

Source: SPSS.

Table 4.7: Descriptive statistics (H3A)

	Mean	Std. Deviation	N
Lik_Blue_Green	3.9771	0.96274	102
Lik_Blue_Orange	3.6144	0.86204	102
Lik_Red_Green	2.2386	1.00754	102

Source: SPSS.

Table 4.8: Mauchly's test of sphericity (H3A)

Within-Subjects Effect	Mauchly's W	Chi-Square	df	Sig.	Greenhouse-Geisser	Huynh-Feldt	Lower-bound
ColourScheme	0.883	12.461	2	0.002	0.895	0.91	0.5

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept Within Subjects Design: ColourScheme

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Source: SPSS.

Table 4.9: Pairwise comparisons (H3A)

I ColourScheme	J ColourScheme	Mean Difference (I-J)	Std. Error	Sig.	CI Lower	CI Upper
1	2	0.363	0.099	0,001	0.122	0.604
	3	1.739	0.134	<0.001	1.413	2.064
2	1	-0.363	0.099	0,001	-0.604	-0.122
	3	1.376	0.13	<0.001	1.059	1.692
3	1	-1.739	0.134	<0.001	-2.064	-1.413
	2	-1.376	0.13	<0.001	-1.692	-1.059

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni

Source: SPSS.

Table 4.10: Descriptive statistics (H3B)

	Mean	Std. Deviation	N
Trust_Blue_Green	3.8203	0.95403	102
Trust_Blue_Orange	3.549	0.8708	102
Trust_Red_Green	2.317	0.84611	102

Source: SPSS.

Table 4.11: Mauchly's test of sphericity (H3B)

Within-Subjects Effect	Mauchly's W	Chi-Square	df	Sig.	Greenhouse-Geisser	Huynh-Feldt	Lower-bound
TrustColourScheme	0.875	13.408	2	0,001	0.889	0.903	0.5

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept Within Subjects Design: TrustColourScheme

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Source: SPSS

Table 4.12: Pairwise comparisons (H3B)

I TrustColourScheme	J TrustColourScheme	Mean Difference (I-J)	Std. Error	Sig.	CI Lower	CI Upper
1	2	0.271	0.094	0.015	0.042	0.501
	3	1.503	0.13	<0.001	1.187	1.819
2	1	-0.271	0.094	0.015	-0.501	-0.042
	3	1.232	0.123	<0.001	0.933	1.531
3	1	-1.503	0.13	<0.001	-1.819	-1.187
	2	-1.232	0.123	<0.001	-1.531	-0.933

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni

Source: SPSS.

Table 4.13: Descriptive statistics (H3C)

	Mean	Std. Deviation	N
Purch_Int_Blue_Green	3.6307	1.10694	102
Purch_Int_Blue_Orange	3.2582	1.01247	102
Purch_Int_Red_Green	2.1046	0.87752	102

Source: SPSS.

Table 4.14: Mauchly's test of sphericity (H3C)

Within-Subjects Effect	Mauchly's W	Chi-Square	df	Sig.	Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Purch_Int_ColourScheme	0.951	5.036	2	0.081	0.953	0.971	0.5

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept Within Subjects Design: Purch_Int_ColourScheme

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Source: SPSS.

Table 4.15: Pairwise comparisons (H3C)

I Purch_Int_ColourScheme	J Purch_Int_ColourScheme	Mean Difference (I-J)	Std. Error	Sig.	CI Lower	CI Upper
1	2	0.373	0.113	0.004	0.097	0.648
	3	1.526	0.133	<0.001	1.202	1.851
2	1	-0.373	0.113	0.004	-0.648	-0.097
	3	1.154	0.136	<0.001	0.821	1.486
3	1	-1.526	0.133	<0.001	-1.851	-1.202
	2	-1.154	0.136	<0.001	-1.486	-0.821

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni

Source: SPSS.