SCALING A BUSINESS: HOW TO INCREASE THE EFFECTIVENESS OF PAID FACEBOOK POSTS. A CASE STUDY ON AN ONLINE LOCAL TOOLS BUSINESS

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Abstract

Businesses can improve the effectiveness of online advertisements in several ways. This research specifically examines the role of colour on performance and engagement. The colours blue, red and white were tested to find whether one of them has a superior outcome over the others. Three products were chosen from a local online tool retailer's stock: renovators, shelving units and wall chaser blades. Facebook was the social media platform used to publish adverts to investigate how colour affects post impressions, reach and post engagement. Furthermore, the study shows the effect of campaign duration on the cost per engagement.

The results showed that colour makes a significant difference in online advertising. A blue-coloured background would have worked best if the tools business intended to generate more post reactions. However, followed by the colour white, red achieved the best results in the other tested metrics.

Ultimately, this cannot be put in principle as the choice of colour depends on the strategy adopted by the respective business.

Keywords: Online business, Facebook advertising, impressions, reach, post engagement.

I dedicate this dissertation to my fiancée Miriana, my parents, Anthony and Carmen, my sister, Svetlana, and my late grandparents, Philip, Philippa, Carmelo and Maria Rosaria.

You have given me the moral and spiritual support to persevere throughout life and this journey. Thank you for making me the person I am today.

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Chapter 1: Introduction

1.1. Background of the Research

A modern definition of advertising is "The activity of attracting public attention to a product or business, as by paid announcements in the print, broadcast, or electronic media." (American Heritage Dictionary, 2000, cited in Richards and Curran, 2002). Ha (2008) states that recent technological advancements have amplified online advertising. Having said that, its necessity was already visible earlier. Former United States President Coolidge (1927, cited in Lamont, 1928) once said, “Advertising is the life of trade and the foundation for enlarged production”.

Advertisements have been around for a very long time. In India, rock paintings used for advertising have been found dating back to around 6,000 years ago (Bhatia, 2000). More so, in the Middle Ages, manufacturers started using street callers and signs with images to show what they sold, such as an image of a bag of flour to advertise a bakery. Text was not used most of the time as many people were illiterate (Montenegro Morales, 2012). The invention of the mechanical printing press by Johann Gutenberg led to the start of the mass production of books, which eventually led to mass media communications with the invention of the newspaper (Usharani, 2015).

Montenegro Morales (2012) says that advertising exploded at the beginning of the twentieth century when technology gave rise to the mass production of goods previously produced domestically, such as soap and clothing. Then, media became an essential source of advertising through the use of radio and television stations. The latter was so popular that channels were introduced entirely dedicated to advertising in the last two decades of the twentieth century. To this day, radios and televisions have retained their followership.

The dot-com boom led to a breakthrough in the world of advertisement, which took over society in many forms. New advertisement techniques were introduced, such as search engine advertising, social media advertising, native advertising, email marketing, affiliate marketing, content marketing, mobile advertising and in-app advertising, to name a few.

Several researchers found that online platforms offer the most cost-effective means of advertising (Korenkova et al., 2020; Bhayani and Vachhani, 2014; Paşcalău and Urziceanu, 2020). By and large, most small businesses tend to have a limited cash flow. Therefore, entrepreneurs can make huge strides in their businesses by learning more about the factors that make advertisements more effective. After all, what counts the most is how the advertisement's message is perceived by the customers rather than the size of the budget allocated for it. An advertising innovator once said, “People read what interests them, and sometimes it’s an ad” (Howard Luck Gossage, 1986, cited in Rotfeld, 2008).

1.2. Research Objectives

This dissertation aims to help marketers and local business owners find ways to get more positive results for the money invested. This research was conducted explicitly on a small, local tools business which serves its customers primarily via online channels. Facebook is the online platform used in this research to post adverts with the aim of finding common denominators in adverts with a good return on investment.

The upscaling of businesses is an area of interest for the researcher. This brought him to start exploring methods that make Facebook posts more cost-effective, especially in the local scenario. Thus, the research is led by the title:

"Scaling a Business: How to increase the effectiveness of paid Facebook posts. A case study on an online local tools business."

1.3. Research Outline

Primary research as part of this dissertation was obtained by posting several adverts on Facebook. This dissertation used secondary data in the Literature Review chapter, which focused on Facebook advertisement, people's perception of colour, colour in advertising, colour in online advertising, the role of frequency and timing in online advertisement, pricing strategies in marketing and advertising avoidance. The secondary data was then compared to the data obtained in the primary research to test whether they correlated with the data obtained in this case study.

1.4. Practical Relevance

Most business owners are aware of the importance of advertisement. However, most people may need to realise that it is more than just the cost of advertising that matters. The adverts' quality and content are as important as publishing effective advertisements. Jay Wanamaker, who used to be an American merchant and political figure, was quoted saying, “I know half the money I spend on advertising is wasted, but I do not know which half” (Rossolatos, 2013). The author goes on to say that the structure of semiotics in brand positioning is more critical. Therefore, this case study should simultaneously showcase several elements that a marketer can apply to the adverts, which, as a result, would get more people to engage with them at an efficient cost.

1.5. Analytical Requirements

In order to evaluate the results, the data collected was analysed using two tools. First, the data was extracted from the business’ Facebook account. Afterwards, the same data was tested using a statistical technique named Analysis of Variance, which is better known as ANOVA, to show whether there is a significant difference between the means of the groups in question.

1.6. Structure of the Dissertation

Following the Introduction is the Literature Review. This is intended to refer to past research on online advertising, people’s perception of different colours,

advertisement scheduling, and the burdens caused by people avoiding adverts. The information gathered defined the critical elements of effective advertising.

The Methodology chapter thoroughly explains the procedure followed by this study, along with crucial measures considered throughout the process. Following this is the Results chapter, where the reader will find the documentation of the outcomes.

The chapter that follows is the Discussion. This chapter is paramount to this research, as it gives more weight to the results of an in-depth comparison and analysis. Ultimately, there is the final chapter, which is the Conclusion. The chapter completes the whole research in a manner that answers this dissertation's research questions, which were identified earlier in this chapter. Complementing this report is a Glossary, which provides definitions of the technical terms used.

Chapter 2: Literature Review

2.1. Introduction

The literature review aims to provide a comprehensive overview of existing studies in this space. In order to explore various areas of interest, desk research was done, mainly using research papers. This led the researcher to establish three research questions.

2.2. Facebook Advertisement

Facebook is undisputedly the world's most widely used social media application. In fact, by the end of the fourth quarter of 2022, it had almost three billion Monthly Active Users (MAUs) (Meta, 2023). In a survey conducted by Misco in 2022 across Malta, it was found that 85% of those who have access to the Internet browse social media at least once a day. In addition, there appears to be a trend where traditional offline advertisements are decreasing in popularity whilst exposure to online advertising is increasing. Almost two-fifths of the respondents of this survey claimed that they preferred to watch, hear or read advertisements on social media, making it the most popular group compared to television, radio and other mediums (Spiteri Axiak, 2022). This further gives substance to the declaration by Lee and Hong (2016) that social media is becoming an appealing way to increase advertising effectiveness.

Facebook allows users to set up and deploy advertisements via their Facebook account. It allows marketers to target specific people based on demographic, behavioural and psychographic factors. Besides, it allows other users to engage with advertisements by liking, commenting, and sharing, which is a feature that generates additional “free” advertising (Curran, Graham and Temple, 2011). Apart from the fact that creating an advertisement is simple, Facebook provides insights, such as the Click Through Rate (CTR) and Cost Per Click (CPC), amongst many others, to allow businesses to track the performance of their advertisement campaigns (Houk and Thornhill, 2013).

Facebook uses native adverts, which “typically blend with their surrounding context, stem from sources or placements that do not signal advertising, lack overtly persuasive or sales-focused messaging, and have less clear material outcomes” (Campbell and Grimm, 2018). Thus, Facebook users do not always realise that the post they are interacting with is a paid advert. Furthermore, when a marketer posts a paid advert, it will transform into an organic advert for subsequent shares (Sanne and Wiese, 2010). As a side note, one must remember that Facebook is a double-edged sword in that whilst it can increase positive returns on advertisements, it can also amplify negative word of mouth. Thus, it is essential for marketers to carefully monitor and take action when such occasions arise (Yap and Lee, 2014).

2.3. How different people perceive different colours

Morton (2001, cited in Lee, 2002) stated that colour has a physiological impact on humans as they may get relaxed or tense. There is also the psychological impact of

colour on humans through subliminal communication, which helps to either strengthen or weaken thoughts and opinions on a particular product. From an aesthetic point of view, colour can help to produce either harmonic or cluttered, chaotic visuals (Morton, 2001). It has also been found that the human brain's reaction depends on colour. This happens through the hypothalamus, which is the main link between the endocrine and nervous systems, affecting our “moods, mental clarity and energy levels” (Engelbrecht, 2003).

Two primary schools of thought exist on the relationship between colours and human behaviour. According to Humphrey (1976, cited in Porter, Mikellides and Farrell, 2019)**,** perceptions of colour may be innate or instinctive, whilst Langenbeck (1913, cited in Hupka et al., 1997) states that these reactions can be learned. When thinking of colours in marketing, one must keep in mind that a particular colour might have a different effect on people coming from other parts of the world. For example, black is associated with death in most parts of the Western world, whilst white, which we usually associate with purity, is associated with mourning in many Asian countries (Ricks, 2006; Hajdú, 2021). In China, red symbolises good luck and celebrations, whereas in Japan, it symbolises anger and danger. Moreover, while China sees the colour green as a symbol of new life, green is a symbol of harvesting in India (Kumar, 2017).

Various studies have shown that the same colour might have a different meaning among people, even those living in the same geographical area. In fact, younger people tend to prefer colours of long wavelengths, whereas shorter wavelengths are

preferred as one grows older (Biggs, 1956). Another research has shown that people coming from the working class in the United States typically prefer colours that can easily be named, like blue or red. In contrast, people not forming part of this class prefer colours like taupe or mauve. Moreover, men coming from the West have a higher tendency to be colour-blind, so they might find it difficult to distinguish colours (Kyrnin, 2006, cited in Kumar and Joshi, 2006). Gender is another factor affecting how the human brain perceives colour; according to Guilford and Smith (1959), women are more conscious about colour than men and have more diverse colour tastes (Eysenck, 1941).

2.4. Colour in Advertising

According to White (1996), colour "makes everything look better, raises perception of quality, improves competitive position, grabs attention, simplifies complex information, initiates action, spotlights key elements, organises information, focuses observation, increases participation, speeds learning, improves recall, persuades and sells more" amongst others. Various studies have been done which show that colourful advertisements are more read than black and white advertisements (Valiente, 1973; Hoyer, Youell and Etkin, 1975; Waring, 1981; Percy and Rossiter, 1983, cited in Lichtlé, 2007). Often, a distinctive colour works better than a colour representing the general characteristics of the product. Perhaps one of the best examples of this is the trademarked colour schemes of Cadbury's Dairy Milk chocolate (Spence and Velasco, 2018).

In contrast to the above, Lee et al., (2014) found out that colourful adverts are good at highlighting a product's secondary and superficial features due to their eye-catching effect. On the other hand, if a product that is being advertised has a more robust primary component, then black-and-white advertising is better suited to pass on the message to potential consumers.

Sable and Akcay (2010) claim that people in five out of eight countries have chosen blue as their favourite colour, while blue is their second favourite colour for those living in the other three countries. Moreover, a study conducted by Eysenck (1941) based in the United States found that blue is the preferred colour, followed by red, green, violet, orange and yellow in that order. That may explain the fact that blue is the favourite corporate colour in the United States (Schmitt and Pan, 1994).

Blue, which is the colour of our oceans and sky, is serene and has a calming effect. It symbolises reliability, honesty, and intelligence, amongst others. In the Western world, it is commonly used among tech companies and in the banking industry like Facebook, Twitter, Intel, American Express and Visa (Hajdú, 2021).

According to Jacobs and Suess (1975), the colour red is associated with relatively high levels of anxiety. Other researchers state that red is a bold colour that represents love and affection. It is known to attract people’s attention, increase the pulse rate, and increase the willingness to purchase. Red is commonly used for promotions and advertisements. It is found to increase the appetite and, hence,

encourages impulsive behaviour. The latter is probably the main reason why most famous brands related to the food and beverage industry, such as Coca-Cola and Kellogg's, use red in their logos (Hajdú, 2021).

Green is the colour that is mainly associated with nature and peace. It is the first colour that comes to mind when considering the environment. It is interesting to observe that green is present in the logos of companies like Animal Planet, Starbucks and Spotify. This may be because, like blue, the colour green is known to bring about calmness. In fact, green is commonly used in doctors' offices and health logos to emit a calm reaction in the human brain (Hajdú, 2021).

The proper use of colour in advertising is essential. In fact, "Corporate colours represent a more insidious kind of communication. Carefully chosen, they can help convey a message that would otherwise be difficult to express - and perhaps appear less credible - in words alone" (Fraser and Banks, 2004).

Neal, Quester and Hawkins (2007) state that packages with bright colours capture people's attention more than those with dull colours. As a matter of fact, McManus, Jones and Cottrell (1981) found that very bright colours are usually preferred. The importance of colour in advertising is further substantiated by two researchers claiming that a newspaper advertisement printed in full colour is almost as effective in bringing attention as a thirty-second television advert (Rossiter and Bellman, 2004, cited in Aslam, 2006).

Bellizzi and Hite (1992) found that shopping experiences were more positive when the environment was blue rather than red. In their experiment, for instance, there were fewer purchase deferrals, a higher interest to shop and browse in stores, and higher sales when the shop had a blue environment.

Conversely, other studies have shown that colour preference and, thus, perception towards an advert depend on personal characteristics, such as the Optimal Stimulation Level (OSL). This phenomenon is defined as the ideal arousal to which all individual behaviour strives to attain a satisfactory level of stimulation (Steenkamp and Baumgartner, 1992). Nelson, Pelech and Foster (1984) claim that people with high OSL prefer red, whereas those with a lower OSL prefer blue because of its more calming effect.

Lichtlé (2007) goes on to say that there is no direct effect between colour and the emotions evoked by an advert, as these depend upon the individual's stimulation level. Therefore, marketers should aim to adapt their ad's colour depending on the target market should their aim be to increase advertising effectiveness. This is not a very complicated thing to do as it transpires that the optimal stimulation level is strongly associated with personality characteristics and demographic variables. For instance, younger, more educated and employed people had higher stimulation levels (Raju and Venkatesan, 1980).

2.5. Colour in Online Advertising

Like in other types of marketing, colour schemes in online advertising must also be considered in order to build a successful campaign. Viswanathan and Swaminathan (2017), who have researched the importance of the main elements that drive internet users to a landing page, found that having a high colour impact leads to a higher click-through rate. According to Cyr, Head, and Larios (2010), a blue or grey colour scheme is preferred over a yellow one. Similarly, although both generate high trust for blue and green, Lee and Rao (2010) show that the difference between them is significant.

A study by Aboubaker Ettis (2017) suggests that a cool colour, like blue, has a higher chance of increasing traffic to an online store than a warm colour, like yellow. Moreover, Rizomyliotis, Konstantoulaki and Kostopoulos (2018) found evidence that people become more positive and are more likely to ask further questions about the promoted item when the background colour is blue compared to red. A further study by Gorn et al. (1997) found that using light colours in adverts tends to increase the advert's likeability. On a similar note, colours which have added shades of black to make them look dark tend to induce negative feelings since white is generally seen as positive, as opposed to black, which tends to induce negative feelings (Broeder and Snijder, 2019). In addition, a study by Guilford and Smith (1959) reveals that people are more likely to prefer colours with a short wavelength, like blue or green, over those with a long wavelength, like red, orange and yellow. One may realise that blue, green and similar colours are the most preferred colour families, whereas the

colours humans integrate the least with are yellow or any other colour with a tint of yellow. An interesting observation is that red was only found to be slightly better than the average (Helson and Lansford, 1970).

An experiment on web pages conducted by Hall and Hanna (2004) involving one hundred and thirty-six partakers found that readability is enhanced when there is a larger contrast ratio between colours, and retention is not impacted much by the combination of colours. Besides, colours that are usually preferred, such as blue, typically result in better aesthetic quality and, subsequently, higher purchase intentions.

In their study, Huang, Ou and Yuan (2016) observe how older people prefer a significant contrast in the luminance between text and background. In contrast, younger people are more comfortable with a lower contrast in luminance. The decline in eyesight due to ageing explains this result. Moreover, according to Zhu and Wu (1990), having a medium lightness contrast is the best option. Similarly, Lothia, Donthu and Hershberger (2003) found that for banner advertisements, a medium level of colour gives better results than high or low colour levels. This applies to both adverts targeting businesses and those targeting consumers. Other researchers state that when there is a similarity between the background colour of a banner and that of the web page, people will see the items integrated even though they are two different elements. This is, in fact, in line with the Gestalt theory (Chiu,

Lo and Hsieh, 2016). O'Connor (2013) highlights the importance of colour and contrast, as they both help capture or deflect attention.

According to Harvard Catalyst, Gestalt is defined as "a system which emphasizes that experience and behaviour contain basic patterns and relationships which cannot be reduced to simpler components; that is, the whole is greater than the sum of its parts." (Harvard Catalyst, 2018) In other words, structures have unique qualities that set them apart from the sum of their components. For instance, when reading some text, this is typically discerned as a whole rather than as separate characters. While each word is made up of several characters, the greater meaning is dependent upon the letters' sequence (Bustamante, 2021).

Similarly, an example of Gestalt is when the content's background on a webpage and banner adverts appearing on the same webpage have a similar colour. This might increase the users' fixation time and count. Furthermore, the scanning of advertisements is increased, and brand positivity might also rise simultaneously (Chiu, Lo and Hsieh, 2016).

2.6. Research questions

In view of the content of the Literature Review and the research objectives of this dissertation, the questions that the researcher aims to answer are:

1) How does background colour affect impressions and reach?

2) How does background colour affect post engagement?

3) How does the cost per engagement vary with the duration of the advert?

The following are other factors which are not directly related to the objectives. However, they offer more insight into advertisements and the marketing of products, which complement the preceding content of the literature review.

2.7. Frequency and Timing of Online Advertisements

Certain types of advertisements are known to use particular time slots so that many people reach them. Examples include broadcast advertisements using an electronic medium like radio or television. This is commonly found in the drive time adverts often heard on the radio during peak driving hours. However, this is less obvious for online advertisements. Despite this, a study on Yahoo! Movies shows that trends can still be observed as it is proven that the highest spike in unique audience was during weekends. In contrast, those visiting the website during weekdays were largely movie fans (Bruner and Gluck, 2006).

Online trends were captured intraday. For example, Lee (2012) has found that people are more inclined to check their social media platforms on their way home from work. In another study, Zarella (2011) found that it is more effective when adverts are posted during lunch time or just after seven o'clock in the evening.

According to a study conducted by Nielsen and Meta (2022), campaigns which were fifty weeks long were almost two-thirds more effective than campaigns that lasted for just ten weeks. Moreover, those Facebook adverts that managed to reach two

and a half impressions weekly had practically double the effectiveness of those adverts that obtained just one impression a week. Having said that, Peruta and Shields (2018) do not recommend publishing as many daily posts as possible on Facebook. This is because Facebook pages that posted just once or twice a day were found to have an additional forty per cent user engagement than those that published three or more posts daily.

2.8. Pricing Strategies in Marketing

Another essential element with regard to online marketing is the positioning of the price in an advert. Suri and Grewal (2011) demonstrate that the perception of the value of a product is affected by whether the price is located to the left or right of an item in the advert. Suri et al. (2017) state that for low-involvement products, having a price to the right of a product leads to higher intentions to buy.

Another study found that items which have prices ending in “99” give the impression that they are more affordable than those ending in “00” (Bizer and Schindler, 2005). This aligns with what Sokolova, Seenivasan and Thomas (2020) found. However, the latter add that this bias's degree of effectiveness depends on other factors, such as the consumer and whether the price is used during sales in conjunction with a tag showing an original price.

2.9. Advertising Avoidance

Nowadays, society has become inundated with many daily adverts, from catalogues we receive by post to billboards located on most arterial roads, radio and television advertisements, and online advertisements. Most of these adverts are paid no heed to because they generally distract people while they are focusing on something else. Users then tend to ignore the adverts or skip them altogether - an action known as advertising avoidance. If systems that can track the effectiveness of these adverts are not used to their advantage, the marketers' bottom lines can be heavily impacted (Hervet et al., 2010).

Cognitive advertising avoidance is when a person visually cancels out certain sections of content to unsee advertisements. It is an automatic process and happens without the person having to think about it consciously. For example, users might avoid fixating on banner adverts because they are located in a cognitively avoided position (Chatterjee, 2008). According to Chiu, Lo and Hsieh (2016), several researchers studied and subsequently questioned the success of online adverts. Todri, Ghose and Singh (2019) say that advertisers must efficiently alter their media scheduling techniques to capture users' attention without causing discomfort.

Active advertising is a marketing technique used by online marketers to avoid the problem of people not seeing their advertisements. Some examples include pop-up or interstitial adverts, which is when a full page of adverts is inserted between web pages (Chiu, Lo and Hsieh, 2016). However, while enhancing attention, recall, and

the Click-Through Rate, these adverts are known to impact people negatively. Subsequently, this leads to lower brand attitudes (Chatterjee, 2008).

Another type of advertising avoidance takes place physically. This happens when people actively avoid adverts whenever they see a message or a hint of something that looks like an advertisement. People get this reaction because the advertisement is perceived to influence their behaviour. In fact, the fixation time for banner advertisements is usually less than the fixation time for the main content of a web page (Duff and Faber, 2011).

Chapter 3: Methodology

3.1. Introduction

This chapter presents the research process. The objectives determine whether the background colour of Facebook adverts affects the performance and engagement of the adverts themselves. The goals also aim to determine whether the cost per engagement varies with the number of days that the adverts have been published.

3.2. Research Strategy

The use of a case study was first established to satisfy the scope of this research. A case study is “an intensive study of a single unit with an aim to generalize across a larger set of units” (Gerring, 2004). Research based on a case study makes it possible to answer the questions “Why?”, “What?” and “How?” Moreover, a case study often uses raw or compiled data (Saunders, Lewis and Thornhill, 2007). Raw data is when data is in its original state, whereas compiled data is when data has been collated and condensed in some form (Kervin, 1999, cited in Saunders, Lewis and Thornhill, 2007).

For the scope of this dissertation, the method of revolving this research on a case study enables an in-depth analysis that can be made of the online local tools industry without the limitation of briefly analysing a sector in general. Moreover, since Malta is tiny compared to other countries, the number of existing businesses is very limited.

As part of this research, the primary data was gathered from the business' Ad Manager tool on Facebook. The two types of data that were collected are quantitative and qualitative. Quantitative data was in the form of performance for several adverts, whilst qualitative data was in the form of the adverts' design.

3.3. Choice of colours and font for the adverts

Facebook's A/B testing feature was used to find methods to increase the effectiveness of paid Facebook posts. Using this facility, Facebook made sure that the test was conducted fairly in such a way that the audience was split in the same proportion according to the criteria given, and no individual holding a Facebook account could see multiple versions of the same post. Adverts were placed with backgrounds of different colours. Three colours chosen were white (#FFFFFF), the reason being that white is, in essence, an absence of colour, blue (#0000FF) due to it being very popular and red (#FF0000) due to it being eye-catching and stimulative. Blue and red have been used in their pure forms so that the results of this study are correct with respect to the colours mentioned in the literature review. In simpler terms, had navy blue, azure or cobalt been used, the results would have probably been different, but it would not have been possible to compare them with the literature that has been gathered.

Three products were marketed, specifically renovators, which are machines that scour walls in preparation for plastering, galvanised shelving units, and wall chaser blades. These three items were chosen since their body parts do not have any white,

blue or red, which could interfere with the clarity of the adverts. Moreover, these items had a good return on investment in previous marketing campaigns, so it was deduced that by using them, the number of results generated would be sufficient for the case study. The font used across all nine adverts is a sans serif font named “Helvetica”. It was chosen for its clarity, making it one of the most popular fonts in commercial applications. In fact, it is often used in company logos of global companies such as motor giants BMW and Kawasaki, and other brands including 3M, Nestlé and Skype (Newlyswissed, 2010, cited in Lindström, 2016).

3.4. Design of the adverts which were used in the research

Below is a replication of the adverts used in this case study. The company logo, contact number, email address and Facebook page have all been blurred to preserve the company's identity. Moreover, the prices used for the campaign were provided by the company itself and were equal to the price at that time. Thus, any offers which are visible in the adverts were not specifically tailored for the campaign but were ongoing at that point in time.

Figure 1 below shows the three renovator adverts that were used, specifically $R_{B,}$ the one having a blue (#0000FF) background (top left); $R_{R,}$ the one having a red (#FF0000) background (top right); and $R_{W,}$ the one having a white (#FFFFFF) background (bottom centre).

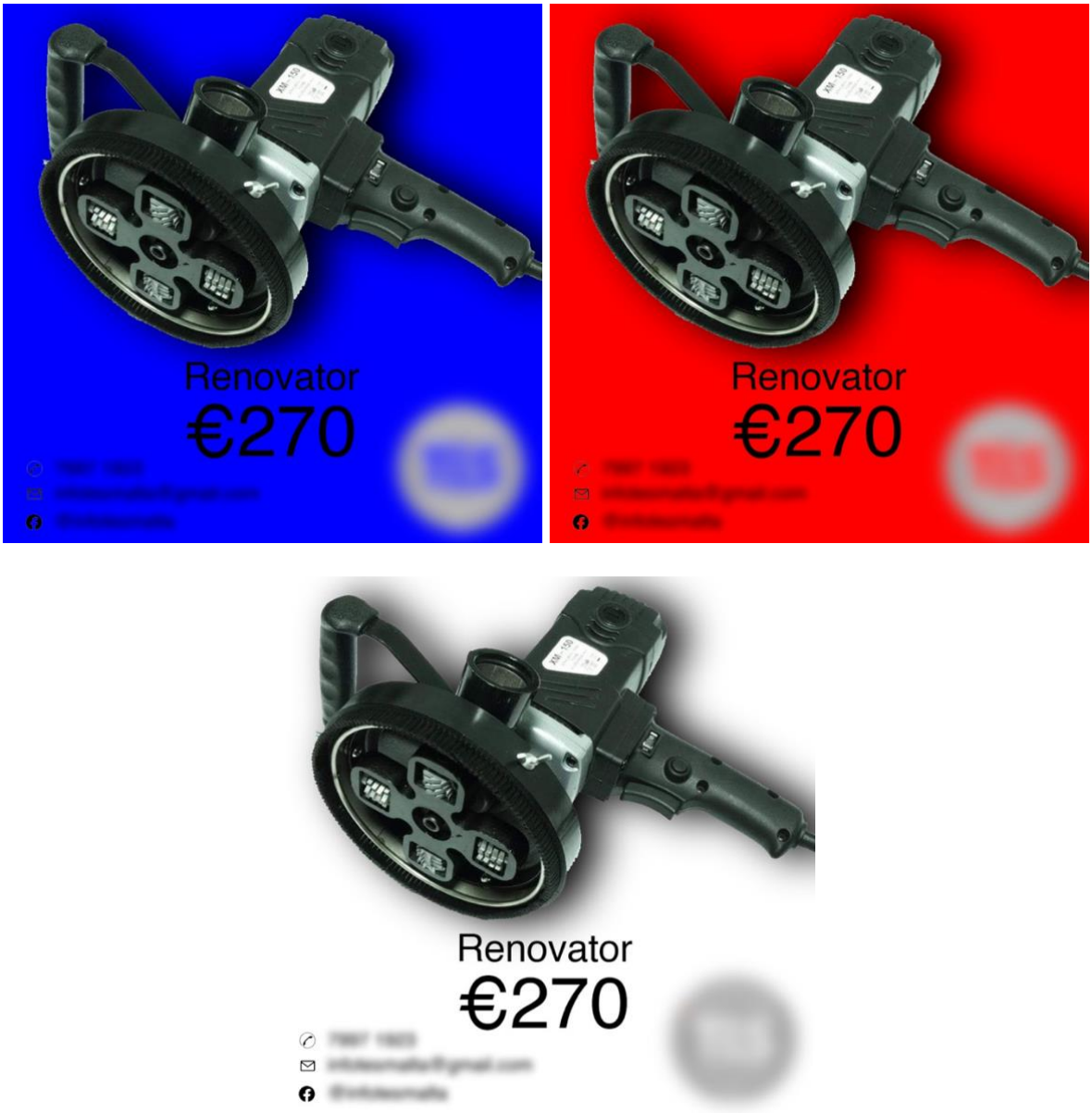

Figure 1: Renovator adverts: blue background - R_B (top left), red background - R_R (top right), white background – R_W (bottom centre)

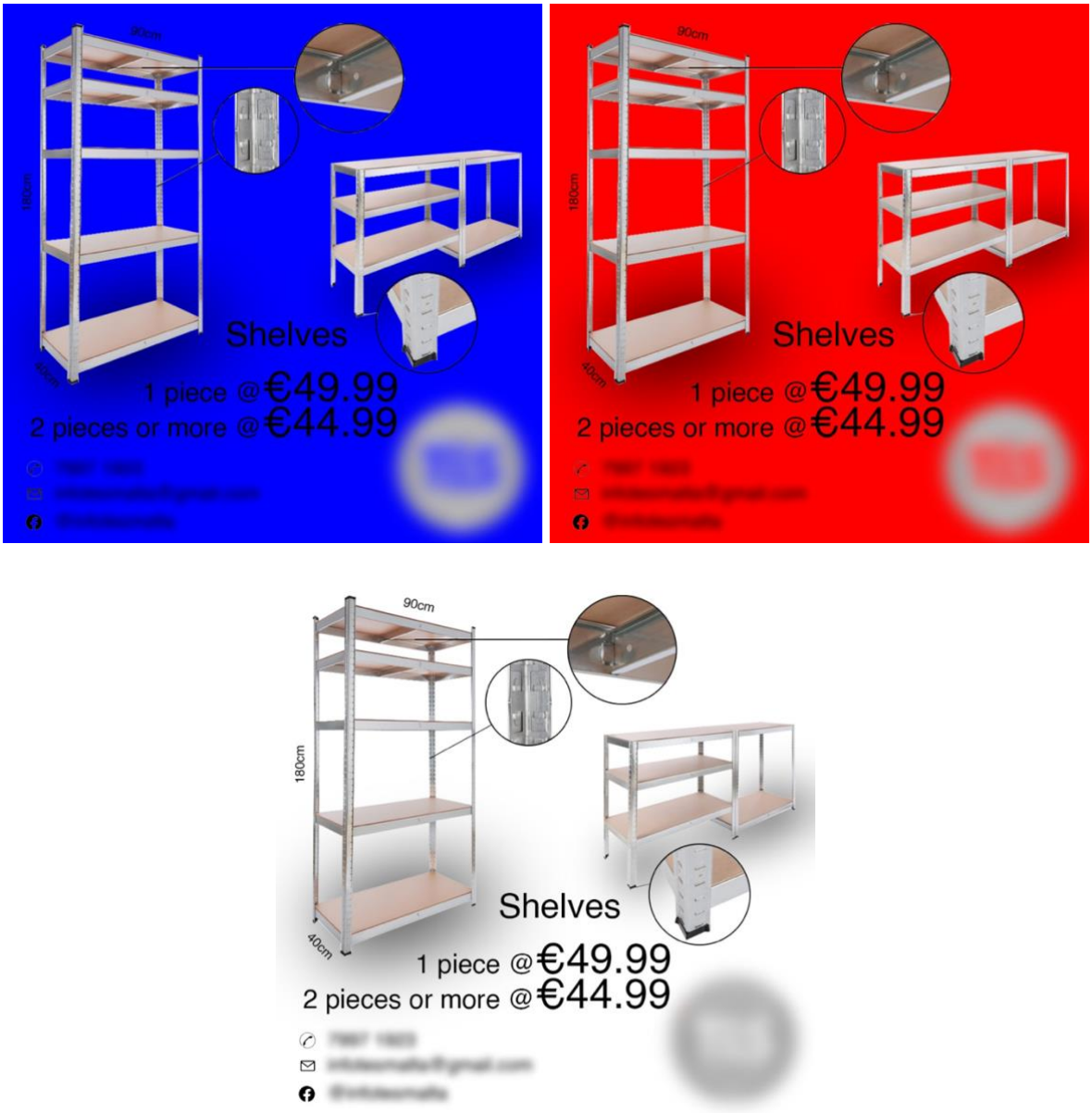

Figure 2: Shelving units adverts: blue background - S_B (top left), red background - S_R (top right), white background – S_W (bottom centre)

Figure 2 above shows the three shelving adverts that were used, specifically S_B, the one having a blue (#0000FF) background (top left); S_R, the one having a red (#FF0000) background (top right); and S_W the one having a white (#FFFFFF) background (bottom centre). One may note that these adverts had a discount applied

when two or more pieces were bought together. Moreover, the prices for the shelving units ended in “99”, unlike that of the other two products. This might have positively affected the performance and engagement of this item but should not have impacted the objectives of this research because these only concern different background colours rather than one item vis-à-vis another item.

Figure 3: Wall chaser blade adverts: blue background - B_B (top left), red background - B_R (top right), white background – B_W (bottom centre)

The above figure, Figure 3, shows the adverts pertaining to the wall chaser blade which were used in this campaign, specifically $B_{B,}$ the one having a blue (#0000FF) background (top left); $B_{R,}$ the one having a red (#FF0000) background (top right); and $B_{W,}$ the one having a white (#FFFFFF) background (bottom centre).

3.5. Setting of parameters for Facebook adverts

The following section outlines the Facebook settings for the deployed campaigns. Facebook offers two buying types: auction or reach and frequency buying. The latter is more suitable if one wants to control the number of times people see the respective ad, whereas the former is more efficient due to its less predictable results. Auction buying was used in this case as the researcher sought not to place any limitations on the adverts.

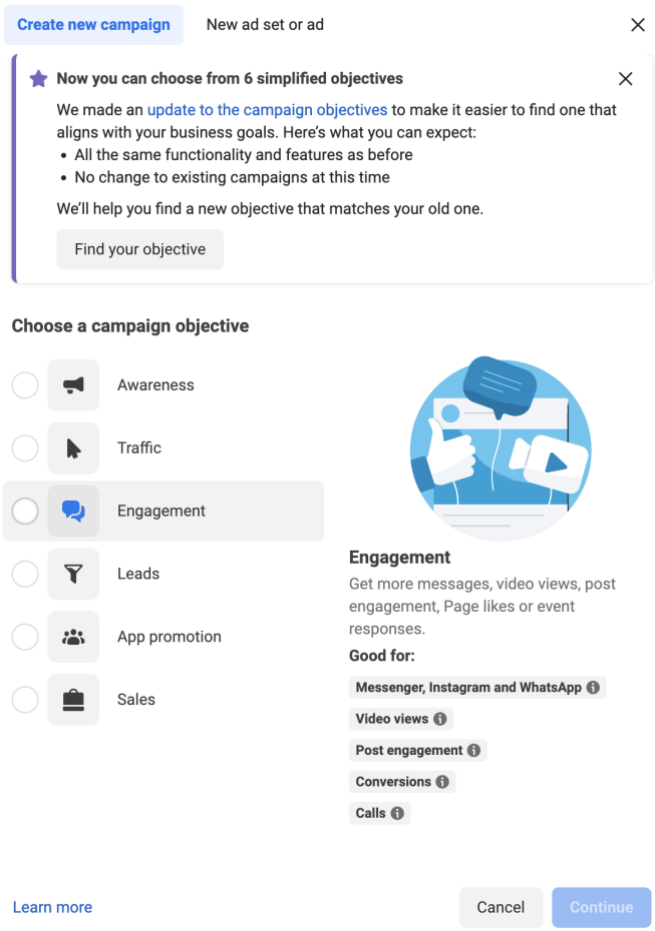

Figure 4: A screenshot showing the six campaign objectives available on Facebook

As shown in Figure 4 above, six campaign objectives exist on Facebook: sales, leads, engagement, traffic, awareness, and app promotion. In order to assess sales, leads and traffic, Facebook would require the company website's link. Until the data was gathered, the company did not have a live website. For this reason, the three campaign objectives mentioned could not be gauged.

More so, neither app promotion could be assessed since the company only uses Facebook as its sole selling medium. Therefore, assessment was only limited to

either engagement or awareness. Engagement was selected so that the results could be more measurable.

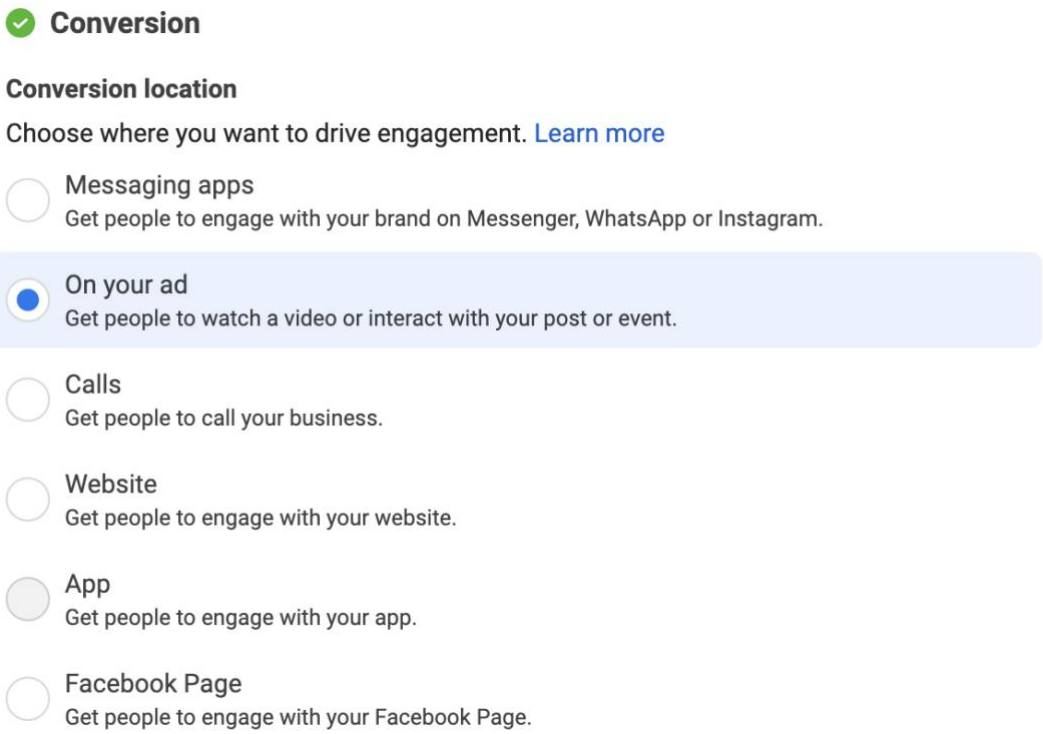

Figure 5: Conversion locations available on Facebook

With regard to the conversion location, Facebook offers six methods, specifically messaging apps, website, app, Facebook page, calls, app or on the advert itself. These are depicted in Figure 5 above. Similar to the campaign objectives, both the website and app were unsuitable for the business. The conversion type was to be on the adverts themselves. This decision was based on the inference that over time, engagement would rise, and people would see that the advert has high engagement. This would, in turn, encourage people to engage with it themselves.

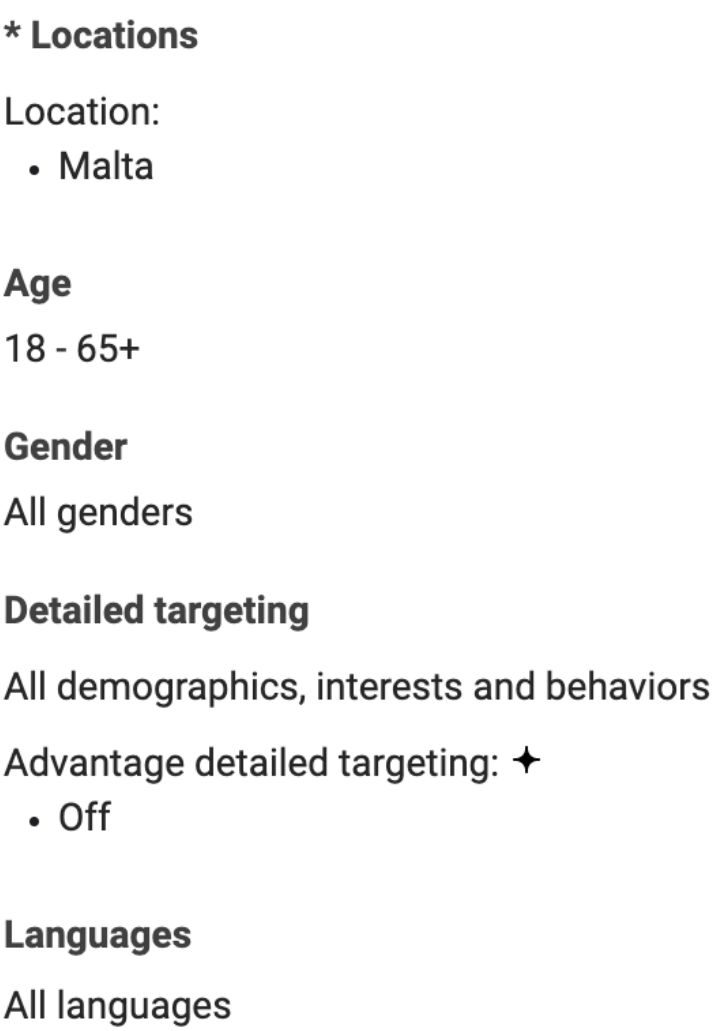

Figure 6: Campaign targeting settings applied for this case study

Figure 6 shows that the ads targeted people in Malta as the business is based locally. People who were targeted were at least eighteen years of age. This was done for two reasons, specifically, to avoid minors from being involved in the study, and as recommended by the company, users are to be of a certain age to use the power tools for safety reasons. It is not within the remit of this dissertation to compare and evaluate results among gender. For this reason, the research was left open to all genders.

For “Detailed targeting”, demographics, interests or behaviours could have been identified. Still, again, this option was left open as the aim was to have as many different types of people as possible view the adverts. Restrictions could have been made on people who have a certain level of education, for instance, as they might be less inclined to do DIY jobs than people who work as manual labourers. However, the researcher wanted this case study to be representative of the whole Maltese population in general.

Moreover, Facebook has the “Advantage detailed targeting” option, which is usually very useful as it seeks to target people, additionally from the specified audience, that will enhance the advert's performance. Having said that, for the scope of this case study, it was necessary to ensure that the advert is focused on the Maltese islands and that no minors are involved. Another option that could have been specified is the language. However, the adverts themselves do not contain much text apart from the contact details of the business, the price and the product's name, so this option was left open to all languages. In fact, it has been noted by the company being studied that even expats buy these products, even though they do not speak any Maltese or English, mainly Italian speakers, Arab speakers and Asians. Last but not least, even though the adverts were placed on Facebook, they were also allowed to be displayed on all Meta platforms, including Messenger and Instagram, using the option “Advantage + placements”.

3.6. Statistical Testing

In combination with the Facebook adverts, SPSS was used to test the statistical significance of the data collected. ANOVA was used to determine any significant difference between the means of three or more independent groups of data. In this particular scenario, the three independent groups represented each of the background colours: blue, red and white.

The null hypothesis is:

$H_0: \mu_1 = \mu_2 = \mu_3$

whereas the alternative hypothesis is:

$H_1: \mu_1 \neq \mu_2 \neq \mu_3$

where:

μ_1 = *the mean of the blue-coloured adverts*

μ_2 = *the mean of the red-coloured adverts*

μ_3 = *the mean of the white-coloured adverts*

Fifteen ANOVA tests were run in total, with each test focusing on a specific metric, namely, impressions, reach, post engagement, post reactions and cost per engagement for each product, respectively.

3.7. Ethical Considerations

Several ethical aspects were considered in this research. With respect to the business studied, the logo and contact details were blurred out in this report, so its identity is preserved.

The adverts were only displayed to people who were eighteen years or older. Therefore, no minors were involved. Moreover, given our multicultural society, the adverts targeted all living in Malta, irrespective of their nationality. These decisions enabled a fair selection of the target audience.

Other considerations relate to data collection. This was anonymous and contained no personal or identifiable information. It was gathered through Facebook, and the researcher was only provided with a report showing grouped numerical data.

3.8. Limitations of this research

A limitation is defined by Price and Murnan (2004) as “the systematic bias that the researcher did not or could not control and which could inappropriately affect the results”.

The limitations which the researcher had to face were various. To start with, this research is a case study on a particular business, but no company is like the other, so a portion of the results might be specific to that business. The results would have been more generalisable had more than one company been involved. Additionally, the primary study revolves around the effect of background colour on the

performance and engagement of online Facebook adverts. Having said that, colour is just one factor from an endless number of factors. This could have been mitigated by adding other elements to the study, such as font type and size, the product being sold, and the price itself. Moreover, the case study made use of three colours, but if other colours were used, the outcome would have been different.

Another observation is that the research was solely based in Malta. Therefore, it cannot be assumed that the results obtained are representative of other countries too. If the researcher wanted to come up with conclusions representative of, say, Europe, then this effect could have been dampened by focusing on other countries as well. There was also the fact that only one sector was considered, so again, the results cannot be said to be representative of other sectors or industries. In addition, since the number of products used in these adverts is three, the sample size might have been a bit small. More accurate results could have been attained if it were possible to advertise more products during this observation. Finally, the adverts were placed during the summer months, which might have generated different results than if the adverts were placed in other months. This would have been overcome if the study had been replicated in other seasons throughout the year to eliminate seasonal fluctuations.

3.9. Conclusion

This chapter discussed how the case study has been structured to get the required information. In hindsight, the outcomes from this observation are very positive despite the limitations mentioned above, as we shall see in the following chapters.

Chapter 4: Results

4.1. Introduction

This chapter presents the data collected from Facebook and used to answer the three objectives of this dissertation concerning the difference in performance and engagement when using different background colours in an advert. The data was presented in the form of tables and graphs to easily interpret the relations between different variables, precisely the number of reach, impressions, post engagement, post reactions and cost per engagement over time.

€1,470 was spent on this marketing campaign to gather sufficient data and obtain reliable results. For a fair comparison, the budget was split equally across the study period and each of the nine adverts illustrated in the previous chapter.

Over 1.2 million impressions and just under 1.1 million reach were displayed, which generated 6,987 post engagements and 1,152 post reactions.

4.2. Impressions and Reach

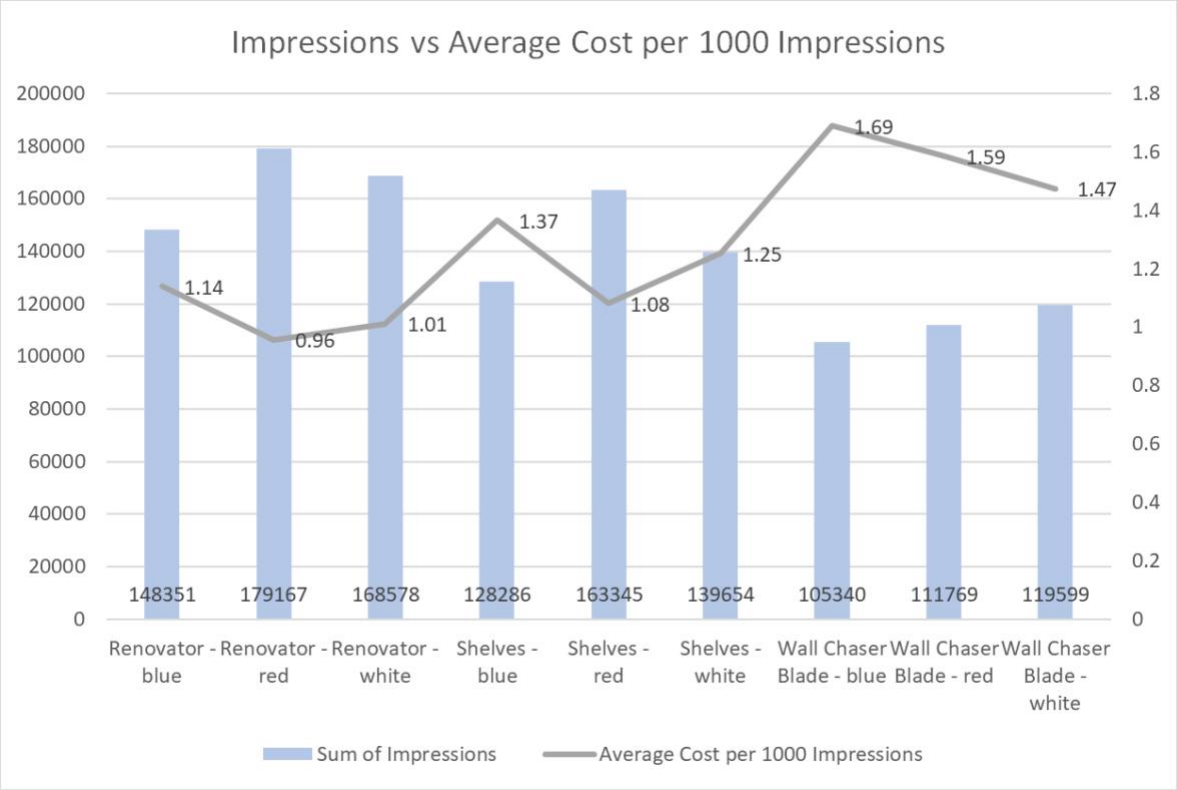

Figure 7: Chart showing the Number of Impressions and Average Cost per 1,000 Impressions

Figure 7 above shows the number of impressions and their corresponding cost per 1,000 impressions for each of the nine adverts placed during the campaign. It is discernible that the three adverts with a blue background had the least number of impressions and the highest average cost per 1,000 impressions compared to adverts with a background colour of red or white.

If one had to look at those adverts comprising a red background, these had the highest number of impressions for the renovator and shelves. Consequently, the average cost per 1,000 impressions was the lowest for R_R and S_R. With respect to

the wall chaser blade, B_R returned a number of impressions that were second in line.

One may also observe that the number of impressions for two of the products with a white background was slightly lower than for the corresponding products with a red background. These two adverts had the second-best average cost per 1,000 impressions on this account. Conversely, despite having a lower overall reach and a higher average cost per 1,000 impressions than the other two products across all background colours, the wall chaser blade had the highest number of impressions when a white background was used and the lowest average cost per 1,000 impressions.

The ANOVA tests relating to the impressions can be found in Tables 1, 2 and 3, depicted below. For each product, the significance is less than 0.05. Therefore, the null hypothesis must be rejected, with the alternative hypothesis having to be accepted instead.

Table 1: ANOVA test results pertaining to the renovator adverts' impressions

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	28840868.7	2	14420434.4	5.679	.006
Within Groups	121881885	48	2539205.94		
Total	150722754	50			

Table 2: ANOVA test results pertaining to the shelving units adverts' impressions

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	37639772.3	2	18819886.1	15.961	<.001
Within Groups	56598114.2	48	1179127.38		
Total	94237886.5	50			

Table 3: ANOVA test results pertaining to the wall chaser blade adverts' impressions

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5999216.12	2	2999608.06	3.958	.026
Within Groups	36376343.2	48	757840.483		
Total	42375559.3	50			

With reference to Figure 8 below, it can be noticed that in all instances of a blue background, the reach was lower than for a red or white background. Subsequently, given that the same amount was spent on each post, irrespective of the background colour, the average cost per 1,000 reach was the highest for adverts with blue backgrounds. This result is similar to that portrayed in the impressions graph discussed earlier.

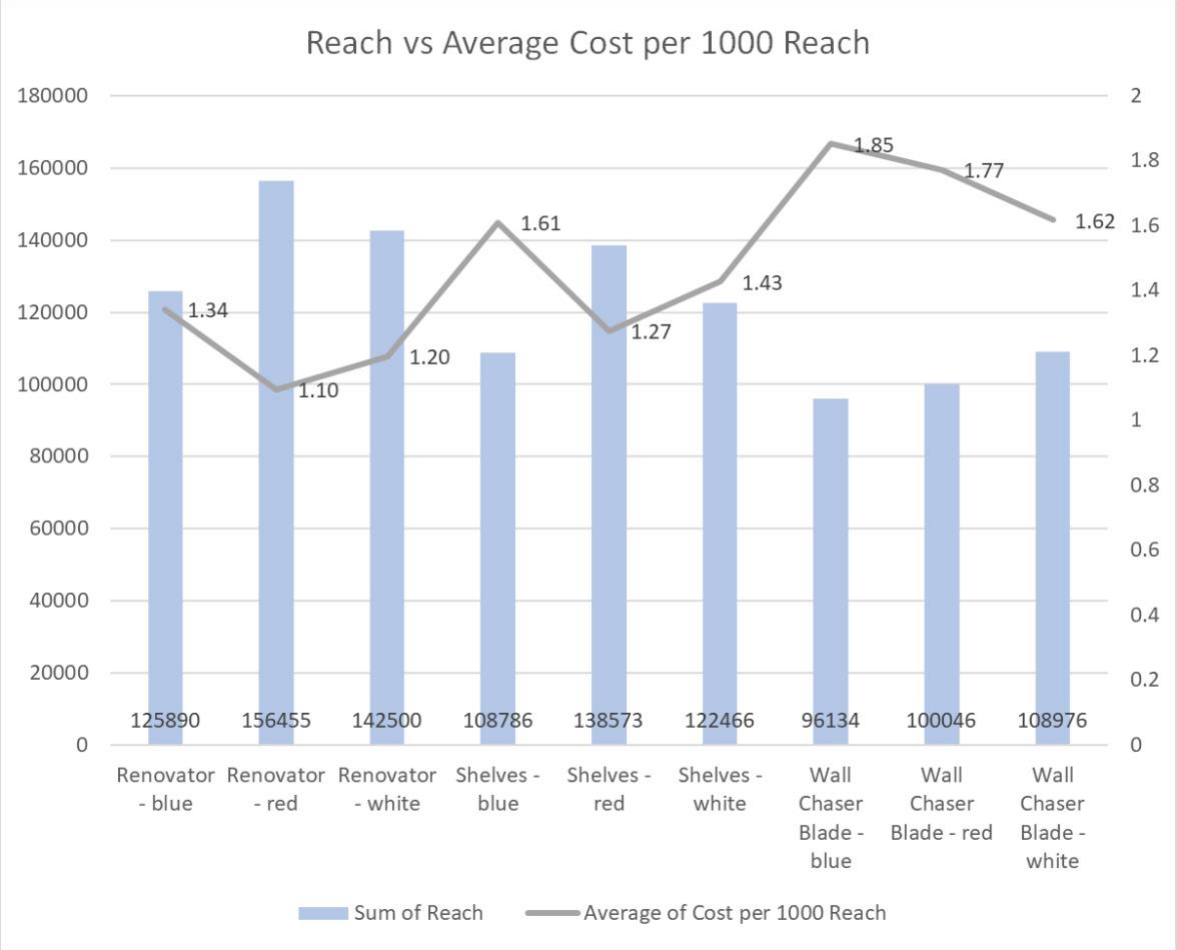

Figure 8: Chart showing Number of Reach & Average Cost per 1,000 Reach

Figure 8 illustrates that for two of the adverts with a red background, these being R_R and S_W specifically, the reach was the highest when compared to adverts with the other two background colours. As a result, the cost per 1,000 reach was the lowest for these two products. However, in one particular case, B_R was classified in the second position, and thus, the cost per 1,000 reach was marginally higher than B_W.

The data presented in the chart also shows that the advert showcasing B_W had the highest reach and lowest average cost per 1,000 reach when compared to the

adverts having the other two background colours. B_W had the highest reach compared to the same product's adverts with a blue or red background. Despite this, the reach was still lower than that in the renovator and shelving adverts, whilst the average cost was also higher. For both the reach and average cost per 1,000 reach, R_W and S_W came in second place, whilst adverts with a red background took the lead.

Tables 4, 5 and 6 hereunder depict the ANOVA test results for reach. Once more, the significance values were less than 0.05, meaning that all the null hypotheses for all three background colours had to be rejected, and the alternative hypothesis was accepted instead.

Table 4: ANOVA test results pertaining to the renovators' adverts reach

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	27546144.1	2	13773072.1	6.458	.003
Within Groups	102377216	48	2132858.68		
Total	129923361	50			

Table 5: ANOVA test results pertaining to the shelving units' adverts reach

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	26153788.6	2	13076894.3	14.907	<.001
Within Groups	42105836.1	48	877204.919		
Total	68259624.7	50			

Table 6: ANOVA test results pertaining to the wall chaser blades' adverts reach

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5097364.86	2	2548682.43	4.415	.017
Within Groups	27710919.8	48	577310.828		
Total	32808284.6	50			

4.3. Engagement

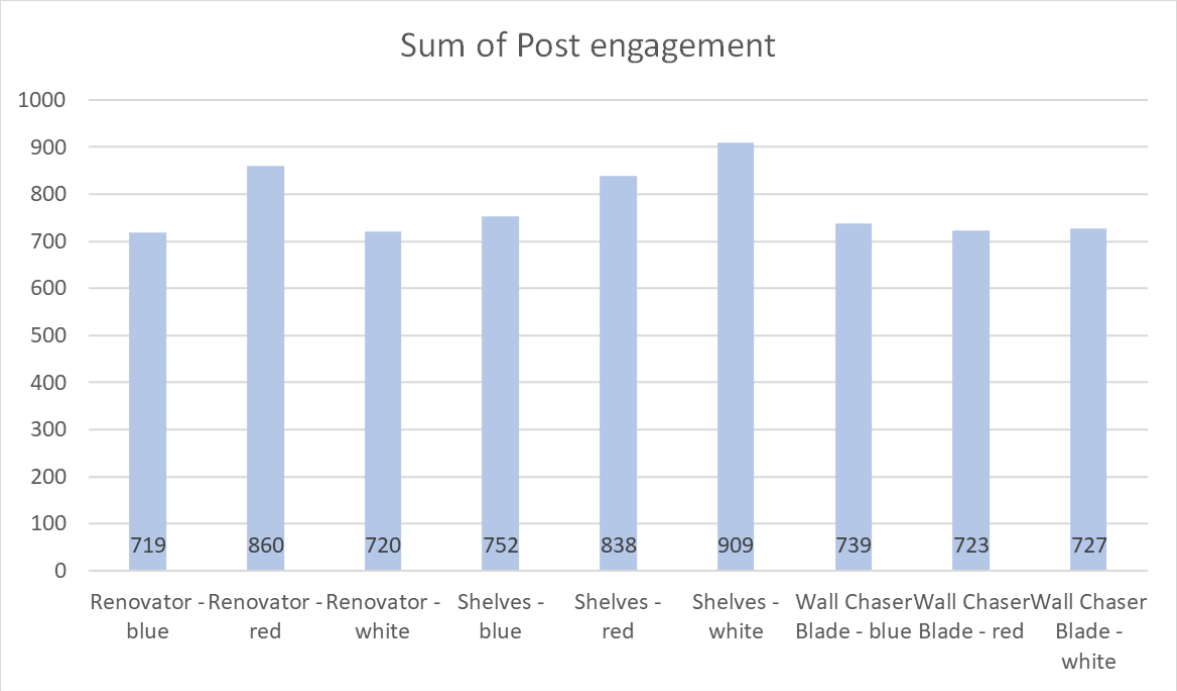

Figure 9: Chart showing the Sum of Post Engagement

The chart above, figure 9, demonstrates the sum of post engagement for each of the nine posts. If the adverts are taken collectively by background colour, the total post engagement of adverts having a blue, red, and white background adds up to 2,210, 2,421 and 2,356, respectively. This means the adverts with a red background had the highest total engagement, followed by white and blue.

If the data is taken separately, it can be seen that posts with a blue background had the highest number of post engagement for the shelves advert, S_B, but had the lowest number for both of the other two adverts. On the other hand, adverts having a red background had the highest number of post engagements for one advert, the second

highest for another advert, and the lowest for the wall chaser blade advert. One must, however, note that for the latter advert, the number of post engagements was only marginally lower than for those with a white background, which came in second place. A white background was also marginally higher than a blue background for the renovator, but it came in first place for S_W with an overwhelming 909 reactions.

The tables below, 7, 8 and 9, show the ANOVA test results relating to post engagement. In this case, the significance value for the renovators and shelves adverts was less than 0.05, but the blades advert had a significance value of 0.948. This implies that the null hypothesis must again be rejected and the alternative hypothesis accepted for the renovators and shelves. In contrast, H_o for the wall chaser blades failed to be rejected.

Table 7: ANOVA test results pertaining to the renovator adverts' post engagement

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	774.157	2	387.078	6.174	.004
Within Groups	3009.529	48	62.699		
Total	3783.686	50			

Table 8: ANOVA test results pertaining to the shelving units adverts' post engagement

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	727.176	2	363.588	4.492	.016
Within Groups	3884.824	48	80.934		
Total	4612.000	50			

Table 9: ANOVA test results pertaining to wall chaser blade adverts' post engagement

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.157	2	4.078	.054	.948
Within Groups	3637.529	48	75.782		
Total	3645.686	50			

The sum of post reactions is presented in Figure 10 below. Contrary to the graph showing post engagement, adverts with a blue background had the highest total post reactions, these being 418. Posts having a red background came in second place, with 386 post reactions, whilst those with a white background, with just 348, had the least number of post reactions.

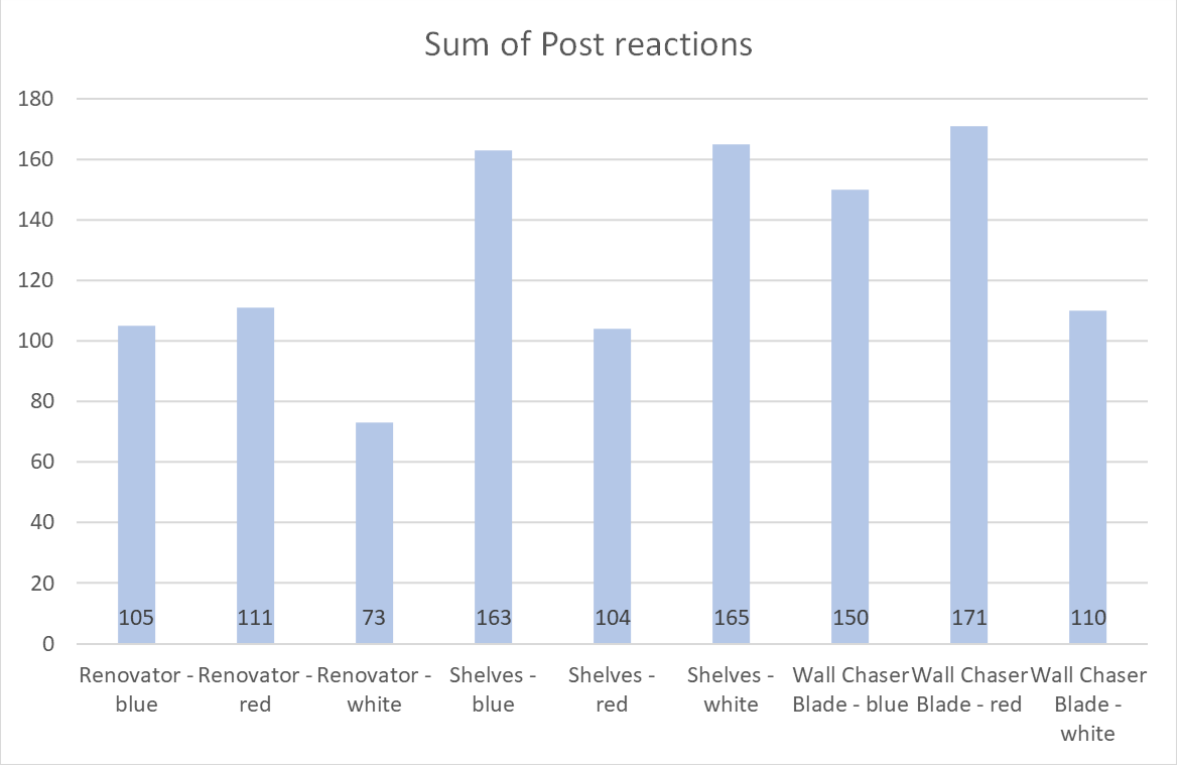

Figure 10: Chart showing the Sum of Post reactions

When the products were considered individually, those with a blue background had the second highest number of post reactions across all three products. The number of post reactions was the highest in the case of R_R and B_R. The same cannot be said for the shelves adverts as the red-coloured background advert came in last place. On the other hand, the advert for shelves with a white background came in with the highest number of post reactions for that product, but adverts with a white background had the least number of reactions for the other two products.

The ANOVA test results on post reactions are presented in Tables 10, 11 and 12 below. The significance value generated for the renovators is more significant than

0.05, leading to the failure to reject the null hypothesis. On the contrary, the significance values for the shelves and the wall chaser blades were both less than 0.05. Therefore, the null hypothesis was rejected, and the alternative hypothesis was accepted.

Table 10: ANOVA test results pertaining to the renovator adverts' post reactions

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	49.098	2	24.549	3.099	.054
Within Groups	380.235	48	7.922		
Total	429.333	50			

Table 11: ANOVA test results pertaining to the shelving units adverts' post reactions

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	141.294	2	70.647	7.446	.002
Within Groups	455.412	48	9.488		
Total	596.706	50			

Table 12: ANOVA test results pertaining to the wall chaser blade adverts' post engagement

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	112.980	2	56.490	4.492	.016
Within Groups	603.647	48	12.576		
Total	716.627	50			

4.4. Cost per Engagement over Time

The following three charts represent the cost per engagement for each product and a trendline showing the general course of the cost over time.

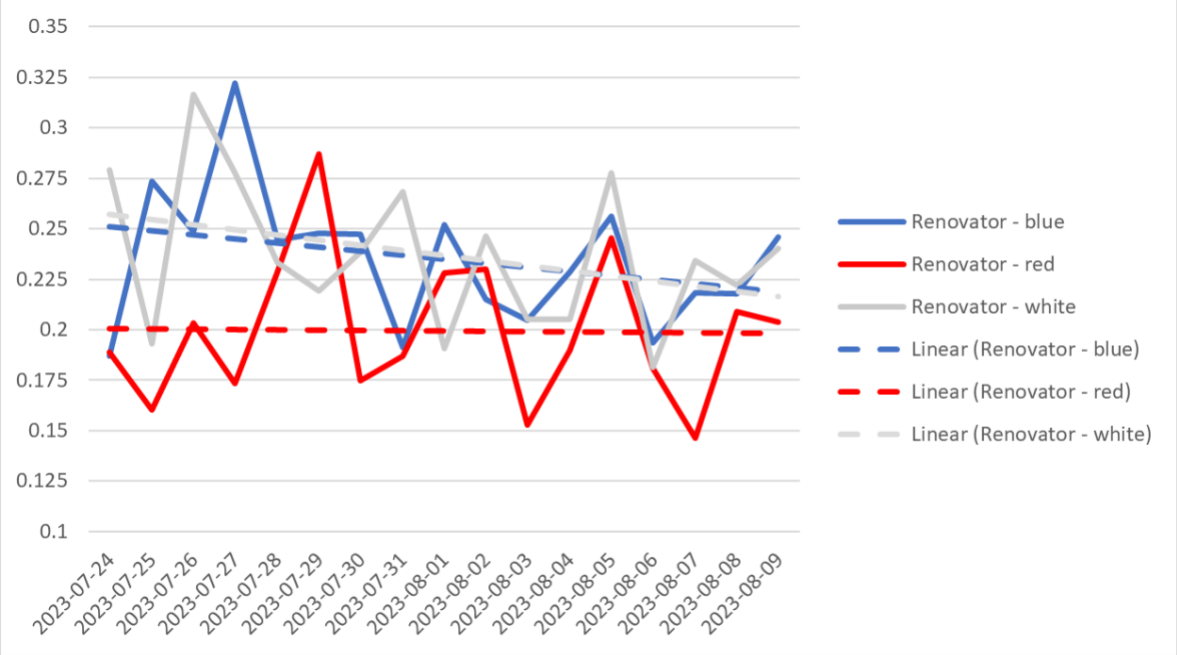

Figure 11: Chart showing the Cost per Post engagement over time for the renovator adverts

Figure 11 above shows the cost per post engagement over time for the renovator adverts. It is visible that the cost is decreasing for all three different background colours, but R_B and R_W are falling faster than R_R. Moreover, R_R was the cheapest for most of the dates.

The ANOVA test results for the renovators, as shown in Table 13 below, imply a significance value of 0.005, which is less than 0.05. As a result, the null hypothesis had to be rejected, leading to the alternative hypothesis being accepted.

Table 13: ANOVA test results pertaining to renovator adverts cost per engagement

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.015	2	.008	5.940	.005
Within Groups	.062	48	.001		
Total	.077	50			

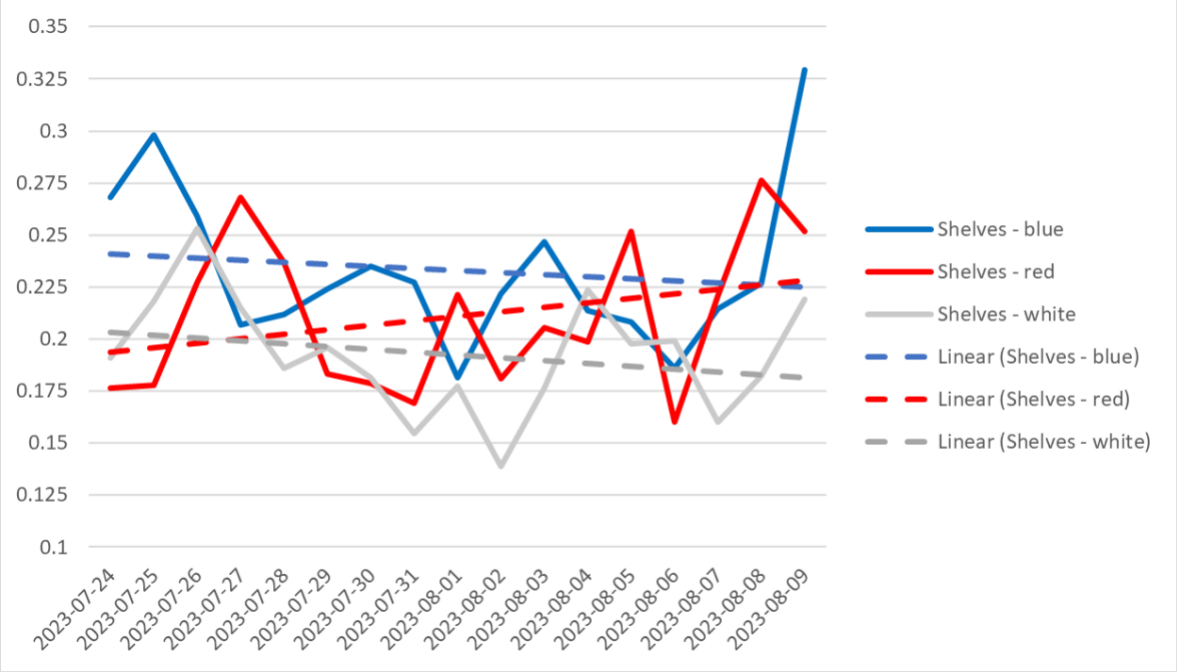

Figure 12: Chart showing the Cost per Post engagement over time for the shelving units adverts

In Figure 12 above, the cost per engagement for the adverts S_B and S_W is decreasing, whilst the cost per engagement for S_R is increasing. Additionally, the S_W had the lowest cost for most dates.

The shelves adverts' significance value obtained for the ANOVA test was 0.960, as illustrated in Figure 14. The implication for this was to fail to reject H_0.

Table 14: ANOVA test results pertaining to shelving units adverts cost per engagement

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.014	2	.007	5.848	.005
Within Groups	.057	48	.001		
Total	.071	50			

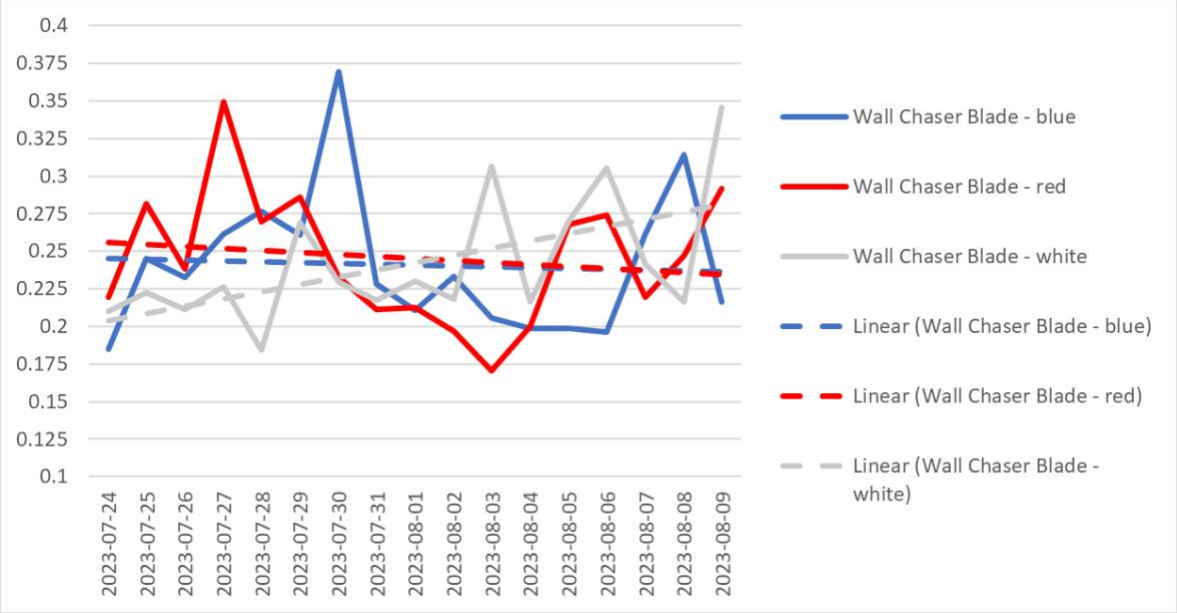

Figure 13: Chart showing the Cost per Post engagement over time for the wall chaser blade adverts

The wall chaser blade adverts are presented in Figure 13. The cost per engagement fell for posts B_R and B_B. Conversely, it increased for B_W. Moreover, the latter was, for the large part, the cheapest for the first half of the dates but more expensive for the second half.

Figure 15 underneath depicts the ANOVA test results regarding the wall chaser blade adverts. These show a significance value of 0.005. Therefore, the null hypothesis was rejected, and the alternative hypothesis was accepted.

Table 15: ANOVA test results pertaining to wall chaser blade adverts cost per engagement

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.000	2	.000	.041	.960
Within Groups	.097	48	.002		
Total	.097	50			

4.5. Conclusion

The results presented in this chapter show the effects of different background colours on reach, impressions, engagement and cost per engagement over time. The results suggest that none of the three colours performed the best in all categories, but certain background colours achieved better results in some areas when compared to others. This will be discussed in further detail in the subsequent chapter.

Chapter 5: Discussion

5.1. Introduction

This part of the report will critically analyse the results of all three research questions. The discussion will also delve into the limitations and mitigating actions.

5.2. Impressions and Reach

Research Question 1: How does background colour affect impressions and reach?

From this case study, whenever there was a blue background, the number of impressions and reach was lower than when a red or white background was used. This contrasts with what Sable and Akcay (2010) said, who claimed that, in general, the majority of people from eight countries preferred blue, whilst the others put blue as their second-best option. It is good to note that Malta was not one of the countries in their study. Therefore, their audience might have had different colour preferences than those in this case study, possibly due to cultural differences.

Another possible reason why adverts with a blue background were not viewed as much as the others is that black text was on a blue background. This is because the advert illustration might not have been projected in the most legible way. Hall and Hanna (2004) said that readability is adversely impacted when there is only a slight contrast.

The results demonstrate that two out of three adverts had the highest number of impressions and reach when a red background was used, whilst for the other advert had the second highest number of impressions and reach. This is in line with what Hajdú (2021) said, that the colour red supposedly draws more attention from viewers. From a general observation, it can be noted that only a small number of web applications use red as their primary colour. Facebook uses the colours blue and white as its main scheme of colours, both on their website and mobile application. Therefore, those adverts having a blue or white background might have blended in and not attracted the viewers' attention. Moreover, McManus, Jones and Cottrell (1981) found that there is usually a preference for very bright colours.

In the case of a white background, B_W obtained the highest impressions and reach, whilst the adverts for the other two items had the second highest impressions and reach after red. Even though this resulted in the lowest average cost per 1,000 impressions and reach, the average cost was higher than for adverts for the other two items. A possibility of this is that the item being sold is less popular than the other two items. In fact, according to the company's records, the sales made for the shelves and renovators tend to be higher than for the wall chaser blades. Therefore, this product's total number of impressions and reach is relatively low despite having the same budget. The fact that, on average, adverts with a white background got worse results than adverts with a red background and better results than adverts with a blue background confirms what Lichtlé (2007) said, that the relationship between colour and emotion is not very straightforward.

The ANOVA test results about both the impressions and reach for all the three products used in this case study all rejected the null hypothesis and accepted the alternative hypothesis. This means there was a statistically significant difference in the means of the impressions and reach among the chosen colours. Therefore, for Facebook adverts, different background colours do make a difference in the number of impressions and reach generated.

5.3. Post Engagement

Research Question 2: How does background colour affect post engagement?

With reference to the graphs presented in the Results chapter, one can observe that adverts having a blue background had the least number of total post engagement. This was found to be in contrast with the findings of Rizomyliotis, Konstantoulaki and Kostopoulos (2018), who state that blue backgrounds are more engaging than red backgrounds. Moreover, the total number of post reactions for the adverts with a blue background was the highest. The high number of post reactions might be because, as Eysenck (1941) and Guilford and Smith (1959) said, blue is the preferred colour. Adverts with a blue background could have been more visually appealing, hence, the reason for reacting more often.

Given that people could have reacted simply because they like the colour blue, these adverts might not have compelled people to participate further, such as sharing or commenting, since they believe the material speaks for itself or lack something to

say. In addition, Johnson (1974) states that typical characteristics of people who react to blue are that they are emotionally aloof and restrained, and they find it difficult to express themselves openly. They are typically thought of as being inward.

It was found that adverts with a red background had the highest number of post engagement overall but the second highest number of post reactions. The rationale behind having more engagements is probably because there were more impressions and reach in the first place. This is because red easily catches the human eye. The fact that the total number of reactions for adverts with a red background came in second place could be that, although more people have seen the adverts, it does not mean that they like them more. In fact, a study by Bellizzi, J.A. and Hite, R.E. (1992) confirmed that red is perceived to have adverse and tense effects. This could be why the number of post reactions placed second, as even though a reaction could be negative (such as a sad or angry reaction), most people tend to react only when they perceive a post to be positive.

As previously shown, with reference to those adverts having a white background, the total number of post engagements placed second, whilst the number of post reactions came in the last position. The engagement ranking for the white adverts is somewhat in line with the results of the impressions and reach. Having said that, the engagement results for the number of reactions are mixed. Shelves adverts with a white background had the highest number of post reactions. This is not the same as the adverts for the renovators and wall chaser blades, which had the least reactions.

The shelves adverts comprise a detailed image of the item and the product measurements. This could have cluttered the adverts compared to those of the other two products.

Moreover, black text on a blue or red background gives a lower contrast when compared to black text on a white background. This made the advert with a white background clearer and more legible; thus, people reacted more positively to it. Ahmadi, Zakerhaghighi and, Pourjohari, Amir Hosein (2020) consistently argue that high contrast positively affects readability.

Regarding the post engagement, two of the ANOVA test results rejected the null hypothesis and accepted the alternative hypothesis, specifically the renovators and shelves. This shows that the post engagement means for the three colours were not the same in the population. On the other hand, the ANOVA test for the wall chaser blades failed to reject the null hypothesis. This means that there was no statistically significant evidence to show that there was a difference between the means of the three colours. The implication is that background colour did make a difference in post engagement for the renovators and the shelves. However, there was not enough evidence to show that this is consistent for the wall chaser blades, although it still could be the case.

The post reactions' ANOVA test results demonstrated that for the renovator adverts, the null hypothesis failed to be rejected. In other words, insufficient statistically

significant evidence was present to show that different background colours impact the post reactions. On the contrary, the test results for the shelves and wall chaser blades rejected the null hypothesis; thus, the alternative hypothesis was accepted. This means there was enough statistically significant evidence to show a difference in the means pertaining to the post reactions. Therefore, there was significant evidence that background colour did make a difference for the shelves and wall chaser blades. Still, there was insufficient evidence to prove that the same applied to the renovators.

5.4. Cost per Engagement versus Duration of the Advert

Research Question 3: How does the cost per engagement vary with the duration of the advert?

Regarding the cost per engagement, the results from this case study were uneven. Given that the adverts' audience lives in Malta and the fact that Malta's population is limited, the number of engagements should eventually start decreasing. Therefore, if a fixed daily budget is used, then the cost per engagement should increase over time.

From the results, it is visible that for the renovator, R_R had the lowest cost per engagement over the whole duration of the advert. The trendline suggests a gradual decrease in the cost of this advert. For the adverts R_B and R_W, it is evident that these had a high cost per engagement in the initial stages but were rapidly decreasing and

converging towards the cost of the adverts with a red background. The fact that all three adverts' cost per engagement decreased implies that users engaged more as time went by. On a positive note, there were no signs of advertisement fatigue for this product for the whole duration of the study.

The ANOVA test results show that there was statistically significant evidence of a difference in the mean cost per engagement over time among the three colours for the renovators because the null hypothesis was rejected, and the alternative hypothesis was accepted instead. This means that background colour did make a difference in the cost per engagement over time for the renovators.

If we had to consider the shelves advertisements, both S_B and S_W had a decreasing cost per engagement over time; however, the S_W was considerably cheaper. This means that whilst the number of engagements over time increased for both adverts, this was, on average, higher than for S_B. Conversely, the adverts with a red background started as the cheapest but surpassed the other two adverts in terms of cost per engagement until the end of the case study.

In the case of the shelves, the ANOVA test results imply that the null hypothesis failed to be rejected. This means that there was not enough statistically significant evidence to show a difference in the means of the cost per engagement over time. Therefore, although background colour could have made a difference in the cost per engagement over time, more proof is needed.

With regard to the adverts about the wall chaser blades, both B_B and B_R had a decreasing cost per engagement, although it is good to note that the decrease was relatively slow. On the other hand, for B_W, the cost per engagement was the cheapest initially but rose rapidly to become the most expensive per engagement until the end of the study.

The ANOVA test results for the cost per engagement over time among the three colours for the wall chaser blades imply that the null hypothesis had to be rejected and the alternative hypothesis accepted. Therefore, there was a difference in the means of the three groups, and the background colour did make a difference in the cost per engagement over time.

Based on the above, it can be remarked that an online advert with a more extended period could potentially provide more accurate results, which would help to assess and understand better the correlation between the cost per engagement vis-à-vis duration.

5.5. Overall ANOVA Interpretation

It was shown that most of the ANOVA tests conducted resulted in having to reject the null hypothesis. This means we had enough statistical evidence for most metrics to show that colour affects online advertisements' performance and engagement. This aligns with the previous literature stating that people’s colour preferences vary. In addition, people’s perception is also determined by the contrast difference between the text and the background colour (Huang, Ou and Yuan, 2016).

5.6. Delimitations and Limitations

Despite all the steps taken to make sure that this research is as accurate as possible, there were still some factors that needed to be improved. Some of them were imposed by the researcher, known as delimitations. Delimitations are defined as the boundaries the researcher sets to help narrow down the study, thus making it more manageable and pertinent to the research objective (AJE, 2022).

One of the delimitations was that only three items were used for this case study. Therefore, each of the items had a substantial weighting in the results. If, say, one of the products performed better than the others simply because they are more popular with people or because they are selling at a competitive price, then the results might be skewed. Additionally, there could have been a selection bias, which happens when the products used for a test are not appropriately randomised, leading to an unrepresentative sample. It would be beneficial for any future research following the lines of this study to include a broader range of products. Thus, any possible outliers can be easily pointed out, and proper randomisation is achieved.

Another delimitation was that only three colours were used for the backgrounds. Whilst it was possible to prove that the background colour makes a difference in advertising, it was not found whether any other colour or shade of the same colour could have had potentially better results.

Moreover, the case study gave a snapshot of a specific company at a particular period. The results obtained could have been time-bound and specific to that business. In other words, the results could be different if the case study had to be replicated at another time or in another company.

The previous delimitation leads us to the limitations. A significant limitation is that since the research focused on a case study, it was difficult to determine the exact causation relative to the relationships established. This would have been easier to establish if the research used a more controlled environment.

It has also been observed that information on the shelves' adverts caused the images to look cluttered. This could have led the viewers to skim through some of the advert's technical information without reading everything. Moreover, some information might have been illegible for people who saw the adverts on a small phone.

Another limitation is that these adverts were published during the last week of July and the first week of August, two of the hottest weeks in Malta for that summer. A disproportionately large number of locals could have been abroad on holidays rather than browsing on Facebook. Future researchers could run the same adverts multiple times during the year to help eliminate any seasonal fluctuations.

In addition, there were several limitations in relation to the use of ANOVA for the testing of statistical significance. It was assumed that the data used in the calculations was normally distributed, meaning the values were presumed to be evenly distributed below and above the average. Besides, whilst the one-way ANOVA can indicate whether any of the groups is/are different from the others, one of its limitations is that it does not indicate which of the groups is/are different.

5.7. Conclusion

This chapter analysed the results obtained and drew conclusions to the research questions. This has been done by comparing the studies of various research documented in the literature review with the results gathered from Facebook as part of this case study. In addition, the obstacles have been highlighted to aid future researchers in the design of their studies.

Chapter 6: Conclusion

6.1. Introduction

This research demonstrates how entrepreneurs can use strategies that help them maximise the efficiency of their online advertisements and, therefore, facilitate the upscaling of their business. There is no one-size-fits-all approach, but some organisations might find that specific strategies fit their needs better. The focus of this dissertation was on a Maltese online tools business.

6.2. Summary of Results

The objective of the first research question was to understand how background colour affects impressions and reach. In this case, it was discovered that adverts with a red background led to the highest number of impressions and reach. This is because red is a bold colour that attracts the human eye easily. In addition, adverts with a red background created a contrasting effect with Facebook's blue and white theme colours, thus helping attain better results than the other colours. As opposed to red, adverts having a blue background were the least popular among Facebook users, possibly due to the low contrast between the background and text colour, which impacted the legibility of the advert. Moreover, in the case of the wall chaser blades, the white background advert had the highest number of impressions and reach, although the number was still lower than for the adverts of other products.

The second research question determined the relationship between background colour and post engagement. This study found that adverts with a red-coloured background generated the most post engagements, whilst those with a blue background got the highest number of post reactions. In light of the initial research question, red backgrounds interact well with users. Red is known to attract people's attention and increase the intention to buy. On the other hand, those adverts with a blue background might be more preferred by users because blue is the favourite colour of most people. Using a white-coloured background seemed to generate the highest number of post reactions when the advert had lots of information. This is because it remains the most legible of the three colours due to the high contrast with black text.

The third research question related to how the cost per engagement varies with the duration of the advert. When testing for this on all three items, having a blue-coloured background worked best, as the cost per engagement decreased as time went by. In this case, adverts with a blue background showed no signs of advertisement fatigue until the end of the test. In the case of adverts having a white or red background, only two of the items had a decreasing cost per engagement. This means that, over time, more money was being spent on each marginal unit of engagement generated than when the adverts initially started to run.

6.3. Recommendations for Future Work

Researchers working on similar work in the future can use the following suggestions to achieve more reliable results. The number of products used could be higher so that the results don't get skewed if there are any outliers. In addition to this, the products could be selected at random from a pool of eligible products. This eliminates any possible selection bias from the researcher.

In addition, a more comprehensive range of colours could be chosen to try and study the effects of other background colours on the performance and engagement of advertisements. This could also include having different shades of blue, red and white.

One must remember that the background colour is not the only factor that plays a significant role in an advertisement. Future researchers could play with various fonts and font colours to create more contrasting posts, such as white text on a red background.

The case study could also be repeated several times to test whether the relationships established remain true at other times. Similarly, the case study could include more than one business or sector. This would help show whether the same associations are valid for the business studied or other businesses in general.

In the future, the adverts could be tested for their cognitive load before being posted. In other words, the adverts could be tested for the amount of information they provide, such that all of the adverts are manageable, as probably happened in the case of the adverts pertaining to the shelving units.

In addition to the one-way ANOVA method used to statistically prove whether there is a significant difference between the means of the groups, post hoc tests, such as the Bonferroni method or Tukey test, could be used to determine which groups differ from the other groups.

6.4. Industry Recommendations

Given an equal budget, it was shown that not all adverts perform the same. Therefore, it is recommended that entrepreneurs monitor their advertisement performance to adapt their campaigns accordingly. This is an effective way of improving their return on investment.

Moreover, in this day and age, it is of utmost importance to keep up with the rapid technological advancements if one aims to outsmart the competition.

6.5. Conclusion

Using the results gathered from this case study, it is proven that the choice of background colour does make a difference in the effectiveness of an advert. Despite this, it is impossible to say that one of the three analysed colours was suitable for all

objectives. As such, this research finds it best if entrepreneurs choose a background colour depending on their strategy.

Glossary

Click-through rate is the ratio between the number of times an advertisement is presented to a user and the number of times the user clicks on it. It indicates the likelihood that a user will click an advertisement. (Wang, 2020)

Wavelength "is the distance between corresponding points of two consecutive waves and is often expressed in units of metres—for instance, nanometres (1 nm = 10^{-9} metres)". (Nassau, 2019)

Luminance is the "density of luminous intensity with respect to projected area in a specified direction at a specified point on a real or imaginary surface". (CIE, 2023)

Impressions represent the number of times your post appears on a user's screen. (Facebook, 2023c)

The average cost per 1,000 impressions is calculated as the total money spent on advertisements divided by the total number of impressions multiplied by one thousand. Therefore, the higher the number of impressions for a given cost, the lower the average cost per 1,000 impressions and vice versa.

Reach, on the other hand, is the number of individuals who saw any content from your post. Facebook says that this is an estimate. Moreover, the reach is a subset

of the impressions and refers to the number of people who see the content. It cannot be higher than the number of times the content is displayed on the screen. (Facebook, 2023c)

The average cost per 1,000 reach is calculated as the total cost of the adverts divided by the number of reach and multiplied by one thousand. Given a particular cost, the higher the reach, the lower the average cost per 1,000 reach and the other way round.

Post engagement on Facebook refers to the total amount of activities users do in response to your adverts. It contributes in ways that go beyond what has traditionally been considered important, such as improving customer satisfaction and helping to explain and forecast how consumer behaviour will turn out (Hollebeek, 2013). Post engagement typically comprises post shares, post reactions, post saves, post comments, page likes, post interactions, 3-second video plays, photo views and link clicks (Facebook, 2023a).

Post reactions on Facebook are when people express various responses to an advertisement's content by clicking the "reactions" button. There are seven reactions, namely “Like, Love, Care, Haha, Wow, Sad or Angry.” (Facebook, 2023b) Post reactions are one of the elements of post engagement.

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