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The significance of a product's name, price, and image in digital marketing

Google shopping

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Abstract

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Abstract

The thesis examined how a product's title, price, and image affect click-thought rate conversion rate and impressions obtained through Google shopping. The first step aimed to obtain a thorough knowledge of the problem and collect more information and details about it, as well as to study and develop new abilities from a theoretical standpoint.

The thesis used quantitative method. It utilized A/B testing, more precisely, a controlled experiment. The thesis work carried out six experiment with the same product being examined with varied product titles, images, and pricing utilizing Google shopping campaigns. Each test had a specific parameter that is used to answer the research topic.

Considering the findings of the research, the drawn conclusion is that the title, image, and price all have an influence in the CTR as well as the impressions. The product title does, in fact, influence the conversion rate. while neither the product's price nor its image has any bearing on the conversion rate, or more data is necessary.

Keywords

Keywords, Google, Shopping, Report insight, Benchmark, Neurology, Search query, imagery, Title

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1 Introduction

1.1 Background

People’s attention and time are devoted to their cell phones, laptops, and iPads. People's minds are stooped down to the net and technologies that enable them to search, find, and order anything from anywhere, whether it is a bus stop, a workplace, or party. People used to hang around whenever they became bored and they were followed by billboards and banners, newspapers, and magazine ads, but now they have a comrade with them that can amuse them. Due to such changes, organizations have made the decision to shift focus from offline marketing to online to reach more potential customers. (Ames, 2021.)

Marketing is the practice of attracting and maintaining client connections (Kotler & Armstrong, 2018, 31). From the beginning, the concept of close alignment between buyers' needs as well as suppliers' offers throughout the buying cycle has remained mostly unchanged. Nonetheless, progress has always been evolutionary, and it has influenced marketing, the creation of customer value, and the achievement of a return on investment. (Keegan & Green, 2016, 20.)

Customers measure the perceived value of a product or service against the asking price when evaluating it. Marketers have traditionally spent most of their time and effort controlling the pricing side of the equation, since boosting prices may quickly increase revenues. However, maintaining a very modest set of data is generally the easiest aspect of price, and pricing analytics and methods are highly sophisticated. (Harvard business review, 2016 a.)

Consumer neuroscience gained popularity in the mid-2000s, when business school academics demonstrated that advertising, branding, and other marketing practices may have quantifiable effects on the brain. Research have been conducted, thus observed a similar brain response when the beverages were not recognized. Nevertheless, when participants were able to view the brand, their brain exhibited increased activity, indicating that brand sign impacted how the brain evaluated the beverage. After some time, a team examined the brains of test participants while they drank three wines of varying costs, their brains recorded the wines uniquely, with neural signals showing a preference for the costliest wine. All three wines were identical. Another research found that when customers see a price, their mental computation of value changes, when the price was shown before the product, the brain data varied from when it was shown after the product, implying two separate mental calculations, the worthiness of the price, and the enjoyment of the product. (Harrell, 2019.)

1.2 Thesis objectives, research questions, limitations

A variety of considerations went into tackling this research topic, including the area of interest, the funding availability, the study's potential societal impact, and any necessary safety

measures. The research aims to examine the effect the product title, price, and image has on the click-through rate, impressions, and conversion rate in Google shopping. Shopping campaigns are used for the experiments. The thesis will focus on product title, image and price as main factors that can impact the conversion rate (CR), click-through rate (CTR) and impression (IMP) in Google shopping.

When developing research guidelines, determining a research question is critical. A well-researched topic serves two purposes: first, it clarifies what the research is about, and second, it identifies the difficulties that the research intends to address. (McCombes, 2022.) The research for this thesis addresses the following topic: what effect does the product title, price, and image have on the click-through rate, impression, and conversion rate in Google shopping? The subquestion that helps answer the primary study issue is: what elements affect conversion rate, click-through rate, and impression in Google shopping campaign?

Understanding how to alter and improve Google shopping ad conversions may have a significant impact on income. Customers will see the image and title of the advertisement first. Therefore, having a high-quality product image, and a well optimized attention-grabbing title is essential. If the title's keywords are more closely related, then the ad is more likely to show up in search results for those key phrases. Conversion rates increase because of such attractive and relevant headline. (Google, Google ads help, .)

Knowing the elements that can affect click-through rate, conversion rate and impression is very important in determining what works best in Google shopping. A start-up is more likely to be interested in tracking how many new consumers are attracted to its business. Therefore, it is insightful to keep an eye on how many times the product has been clicked or seen, so the data acquired can be analysed, interpreted, and determined. Hence, tracking these factors and their impact is critical to achieving business goals.

The limitation of this research is that it will only focus on product title, image, and price. Although, there are several factors that can influence the click-through rate, conversion rate and impression. The process of getting approved in Google merchant center will not be discussed, moreover, it only concentrates on e-commerce’s businesses. The negative keywords list used in the experiment will not be discussed, nor other tools and the backend process. Because the test is being done on an online website, the results may range from one website to another based on the market a firm is operating in, niches, and so on what's trendy. Similarly, the experiments are not ongoing for a long enough amount of time to allow Google to fully experiment. This means the tests may require more data. Therefore, the research's findings and suggestions are unlikely to be applicable to all sorts of business providers.

1.3 Theoretical framework

To effectively answer the research question, the theoretical part will focus on fundamental principles and vocabulary connected to Google shopping and Google merchant center. How does it work? To establish familiarity with Google shopping and merchant center. At the outset, the theoretical components of essential principles and vocabulary related to Google shopping and Google merchant center are presented.

The theory part discusses the key performance indicators (KPI), conversion rate, click-through rate, and impression. Other KPI will also briefly be explained. The fourth chapter focuses on the elements affecting CTR CR and IMP by concentrating on product title, image, and price. This leads to a better understanding of the consequences and their significance in Google shopping campaign. The fifth chapter includes a thorough understanding of A/B testing, covers the history and context of A/B testing. Experiment under control, A/B testing methodology, statistical significance. Average rates and the Z-score. The sixth chapter will go over topic and hypothesis identification, the description of the process, procedure in action, including the experiment period. Seventh and eight chapters will discuss the results, the A/B testing experiments are also communicated. The ninth chapter will go over data analysis and findings which will contain any provided statistics, the probability value, statistical significance, Z-score, standard error proportion and standard error proportion difference. The final section includes a discussion, conclusion, and key takeaway about the effect of product title, image, and price, on click-through rate conversion rate and impression in Google shopping.

The aim is to examine the effect the product title, price, and image has on the click-through rate, impressions, and conversion rate in Google shopping. The theoretical Framework focuses on key performance indicator and A/B testing, KPI is set of quantitative measurements used to evaluate a company's overall long-term success. Because there are so many KPIs, the third chapter defines and delves deeper into the concepts.

1.4 Research methodology and data collection

At the outset of the study, it is important to select whether to utilize deductive or inductive reasoning. In this case deductive reasoning is used. It is a reasoning that starts with a broad hypothesis or premise about the subject at hand and leads to a specific conclusion. It is also known as top-down thinking or going from broad to specialized thinking (Streefkerk,2019a). Inductive research, often known as bottom-up reasoning, is the complete antithesis of deductive research. It involves broadening specific observations into broad generalizations (Streefkerk, 2019b).

The next step in the research process is to choose the best method for gathering data and the most appropriate approach. It is critical to choose a methodology that will adequately support

the research and research goals. Because this research will employ quantitative method. Therefore, quantitative research procedure is supplied. Quantitative research entails collecting data that can be tallied, measured, or graded numerically. In a nutshell, it is all about the numbers. On a fundamental level, analysing quantitative research data is a simpler procedure than analysing qualitative research outcomes. Graphs, tables, and dashboards are used to present the findings. (Qualtrics, 2022.)

The experiments will provide the primary data. This will be done to gain a more realistic understanding and then properly analyse the outcomes. Six experiments will be conducted using Google shopping campaign, with the same product being evaluated with different product titles, images, and prices. Each test with a targeted distinct parameter serving the purpose to answer the research question. However, the test is placed on separate days and at different times. A controlled experiment is carried out. The fifth chapter defines the notion.

After collecting adequate data, the analysis phase begins, which commences by reviewing the A/B testing results. to see if a winner is declared. Other information, such as which variation is currently winning, will also be considered. Based on the analyses, it will be apparent how the product title, image, and price affect click-through rate, conversion rate, and impression. What traffic should be supplied with the winning variation, or should it be adjusted based on what was learned from the experiments.

Since the goal is to examine the effect of the product title, image, and price on the chosen key performance indicators in Google shopping, which is quite a narrow topic. A/B testing is still contentious, utilizing Google shopping as a testing approach is also debatable. There is limited current literature on the subject, as well as evidence on whether it is effective. Therefore, producing data, analysing it, and reflecting on the theoretical issues that the evidence suggests may be more appropriate.

The knowledge base comes from books, reports, and online media to plan the thesis research. To recap, the data is collected via a controlled experiment. All variables should be tested using the same materials in the same environment, while each of these variables must remain constant at a time.

Data describing method will include calculating the values, standard error proportion, standard error proportion difference, Z score, uplift, and probability value. The data analysis method is to construct a hypothesis and test it statistically. Ascertain whether there is a highly significant association between a factor and the chosen KPI. Experimental measurements and observations are used to reach a conclusion. It includes a summary of the findings, as well as whether the hypothesis was supported and the significance of the study.

1.5 Thesis structure

The thesis's overall concept and purpose is introduced in the first chapter. Research objectives, data collection methods, and the thesis framework are also included. The fundamental principles and vocabulary connected to Google shopping and Google merchant center are explained in the second chapter, and the concepts of the methodology and how they relate to Google shopping. The third chapter will dive into the KPIs, CR, CTR and IMP. Other metrics will also briefly be presented. The connection between the selected KPI and the elements is presented. The purpose of this is to gain a thorough understanding of these KPIs.

In the fourth chapter, the focus shifts on the elements affecting CTR, CR and IMP, by concentrating on product title, image, and price, for a better understanding of the effects on them and their importance in Google shopping. The fifth chapter covers the history and context of A/B testing. Experiment under control, A/B testing methodology, statistical significance, Z-test, uplift, the standard errors, and average rates. The sixth chapter will go over topic and hypothesis identification, the description of the process, procedure in action, including the experiment period. The seventh chapter includes the data description, this contains the data after collecting it, it will show samples of the A/B testing and the results. After the seventh chapter the elements affecting click-through rate, conversion rate and impression is acknowledged from the theoretical perspective. The eight chapter will include the data processing, it will display what does the data look like, the calculation of the tests is presented. The ninth chapter covers data analysis, which contains any statistics presented, the probability value, statistical significance, standard errors, and Z score.

Finally, the last chapter will wrap up this thesis with discussion, conclusion and key take away on the knowledge of the effects of the product title, price, and image on the click-through rate, impressions, and conversion rate in Google shopping. Future research will be suggested. The final chapter contains references used in the study and any appendices.

2 Google services

2.1 Google shopping

Google shopping is a Google tool that allows users to search for, compare, and purchase real-world items from a variety of shops who have already paid to display their goods. Another name for this, is a comparison-shopping engine (CSE). In Google shopping results, the store and price of each item are presented as thumbnail images. (Decker, 2012a.)

Froogle was the name given to Google shopping when it first launched in 2002. Simply put, the service indexed product data based on specific search phrases. The service switched to a paid ads structure in 2012, requiring merchants to pay to be shown in Google shopping search results. Google shopping became a branch of Google AdWords from that moment onward, giving shops and e-commerce enterprises even another way to promote their physical products on Google. Whereas text-based Google advertising, which are displayed based on keywords, Google shopping advertisements are displayed based on product data submitted by merchants. (Decker, 2012b.)

To sign up, a Google account such as Gmail is required. Then to have the products advertised on Google shopping, it is needed to have a merchant center account, to tell Google about the company, choose where customers will check out, on the website, on Google, or at a local store, and then the products can be added. (Google, .)

Google shopping functions similarly to Google search. When users search for products, they are presented with a results page that includes sponsored listings at the top and organic results at the bottom. Google shopping ads increase brand visibility in product results, but higher-ranking organic listings can also help with product discovery. Every Google shopping listing includes a product thumbnail, title, price, product rating, and brand name. Whenever a customer’s click on a sponsored listing, they are directed to the brand's website where they can complete their purchase. A click on an organic listing takes the user to Google shopping, where they can learn more about the good or service, read reviews, and check inventory. Brands can also sell on Google shopping platform. (Google.)

2.2 Merchant center

The Google merchant center is a centralized online dashboard through which online businesses can maintain their appearance throughout all Google ecommerce products and adjust their online listings as considered necessary (Google support , 2010a).

The prime objective of the Google merchant center is to allow businesses to upload and maintain information about the product, such as images and sales prices, so that it can be displayed in applicable to Google shopping search queries. The Google merchant center also integrates with

other Google services, such as Google my business, to provide comprehensive oversight and control over Google-based marketing and online shopping. (Google support , 2010b.)

Buyers looking for products on Google will see the company's offerings in a collection format, gaining insight. Google does not make it easy for only its users but also its customers, Integration with Google AdWords, every product in the Google merchant center can be rapidly and effortlessly linked to specific AdWords ads. Remarketing techniques can also be used to reassure visitors of items they have previously viewed are not lost. (Google support , 2010c.)

2.3 Google shopping's most important benefits

Transitioning away from traditional pay per click from Google text ads to Google shopping ads, Google is constantly changing the paid advertising scenery (Google). Google shopping ads has established itself as a must-have ad format for e-commerce businesses over the last few years. Google shopping ads, which made its debut in 2002, have seemed either on Google shopping, or at the top of search results when a prospective customer conducts a regular search on Google. This platform presents a great opportunity for brands looking to increase brand awareness and conceivably outperform competitors (Support,). There in end, Google shopping ads mean a great deal of exposure and rapid growth. They are crucial for many merchants in terms of increasing brand awareness and competitive differentiation.

Every day, Google receives 8.5 billion searches. To make the most of these figures, users should demonstrate instead of informing. Instead of just characterizing the product, users want a tool that shows the prospect the product. However, when it comes to advertisements, users want a remedy that is not interruption-based, but rather intent-based. Users want these users to see one’s ads when they are vigorously looking for a solution. (Swindells, 2022.)

The product appears above the organic search results when Google shopping ads is used. Users will be employing Google's algorithm process, where it matches consumers with search engine results that best fit their search keywords. This is excellent brand visibility whether the brand is just having started out or already established. Furthermore, these ads are intent-based. As a result, users will only interact with prospects who are ready to buy. (Google, Google support, 2010.)

Online advertising enables to target those who are likely to be interested in goods and services provided, while excluding those who are not. It also gives the possibility to monitor if they clicked on the advertisements. Online advertising also helps to reach prospective consumers who use numerous devices, such as desktop computers, laptops, tablets, and mobile phones. (Google, a.)

As a function, advertising may be targeted to people with certain interests, such as those who are interested in any given product or service. Different targeting options are available in Google

Ads. Keywords, Ads are shown to clients who enter relevant search keywords or visit relevant websites while they are looking for the items or services advertised. an ad's place Search results pages and websites that are part of Google's Search and Display Networks are shown with the advertising. Regardless of one's age, geography, or native language, Customers may be targeted based on their gender, age, and region. Ads may be shown at certain times and days of the week, as well as how often they appear. Ads may show on a variety of devices, the control over which devices and when they appear can be had. Google Ads allows to regulate the expenditure. There is no threshold. It is possible to specify how much money to spend every month, day, and ad. and only pay when someone clicks on the ad. (Google, b.)

This tells that google has a better performance across different metrics, when it comes to marketing campaigns, return on investment reigns supreme. Once launched the shopping campaign, advertisers need to monitor its performance to ensure users get the desired results. marketers can track the performance of the campaign in a few key places with Google ads. As its mentioned earlier, Google shopping is a branch of Google ads, and the information given relates to that. Since the payment only occurs when the click is obtained, this might indicate that it has a high return. It might be justified as people who go to buy product in Google have a high purchase intent. 31% of shoppers used google search to help their purchase decision (Think with Google, 2022). YouTube is highly rated beneficial by over 68% customers. More than two-thirds of all YouTube users make a purchase decision because of their time spent on the platform. (Think with google, 2016.)

The Auction insights report allows users to compare one’s campaign's performance to that of competitors in Google ads, it indicates the time the marketers are running their ads at. Auction insights is a pre-built report that shows which advertisers are making a bid on the same keywords as oneself. It can be used in search and shopping campaigns. Advertisers can view this report at the account, campaign, or ad group level. (Google, 2010b.)

Based on that, The Auction insights report includes data on the performance of paid ads, allowing advertisers to compare their keyword bid performance to that of competitors in the same auctions. Be able to see how the presence of competitors affects the performance of the paid search or shopping campaigns. (Google, Google ads help, a.)

This tool is very useful, because it allows advertisers to see the performance of other advertisers’ campaigns. Including the campaign metrics. Impression share, which is the simplest but most important metric to consider. It is the percentage of times competitors' ads appeared for the same search query. Increases in competitors' impression share indicate that they are increasing the number of keywords they are bidding on or their bids. (Google, Google ads help, b). Since the rise in impression share indicate that competitors are increasing the number of keywords they are bidding on or their bids. This means the keywords may impact the chosen KPI.

This tool may help marketers to have access to which keywords earned them impressions and top positions in the search results, even if they cannot see what their competitors are spending on ads. Marketers will be able to determine whether they are spending more on these keywords than other advertisers and, if so, by what percentage. Therefore, Estimate their competitors' budget. These insights could be used to tailor the bidding strategy to outbid their competitors for those target keywords. The Auction insights report shows when the competitors are bidding more actively or less actively. Therefore, marketers can bid more aggressively during the days of the week or hours of the day when they are most active based on this information.

To sum up, the Auction insight report is the ideal tool for gaining a thorough understanding of one competitors' strategy. Google has gathered as much direct data as possible to assist in making more informed strategic decisions and identifying new opportunities to improve the paid per click campaigns and return on investment. This report's data is extremely useful in comparing the performance to that of other advertisers.

Google continues to dominate the search engine market, with a market share of 92.4% as of June 2021. Advertising accounts for most of the Google's revenue. With a market capitalization of $1,392 billion dollars in 2021, its parent company, Alphabet, was one of the largest internet companies in the world. Mail, productivity tools, enterprise products, mobile devices, and other ventures are all being gotten to add towards the company's services. As a result, Google had one of the highest revenue streams in the tech industry in 2020, with roughly 181.69 billion dollars. Google is by far the most widely used search engine on the planet. Nevertheless, in some countries, its alternatives are outperforming or vying with it. Yandex was used by more than 59% of internet users in Russia in the third quarter of 2021, while Google was used by nearly 40%. As of December 2021, Baidu was China's most popular search engine, with nearly 86% of the country's internet users using it. People in other countries, such as Japan and Mexico, prefer to use Yahoo in addition to Google. In 2021, nearly 55% of Japanese respondents said they had used Yahoo in the previous four weeks. In the same year, more than 30% of Yahoo users in Mexico said they used the service. After Google, Bing. A Microsoft-owned search engine was the second most popular search engine in the United Kingdom. Bing had a 9.61% market share in September 2021, while Google had a market share of more than 85 %. (Johnson, 2022.)

This domination means that Google ads is a good platform to use to get qualified traffic, or good-fit customers to the business, while they are looking for products and services that a retailer may offers. With Google ads, it is safe to anticipate that it may increase the number of visitors to the website, phone calls, and in-store visits. Moreover, Google shopping enables marketers to create and distribute well-timed ads to the target audience via mobile and desktop. This means the company will appear on the search engine results page (SERP) when the ideal customers search for products and services, such those a marketer is offering on Google search or Google

shopping, this way, marketers reach their target audience at the optimal time for them to see the ad. with this domination, the rate of customer acquisition is can be high. Google shopping ads has cemented its position as the platform to beat. It has numerous advantages that should help the company's e-commerce brand and sales revenue grow.

3 Google ads key performance indicators

3.1 Metrics

According to Parmenter (2015, 7-8), the term KPI refers to a quantifiable measure of performance over time for a specific goal. KPI provide goals for teams to strive for, milestones to measure progress, and insights to help people throughout the organization make better decisions. Key performance indicators assist every area of the business, from finance and human resources to marketing and sales, in moving forward on a strategic level. Many companies are using the wrong metrics, many of which are falsely referred to as KPIs. All performance indicators should be considered KPIs, according to his opinion. KPIs may be categorized into four broad categories. Result indicators and performance indicators both include these four metrics. The terminology result indicators refers to the reality that many metrics comprise the aggregate of more than one team's contribution. These measures are important in gazing at consolidated teamwork, but they do not help management solve a problem because it is difficult to identify which teams were accountable for the performance or non-performance. Performance indicators, on the other side, are measures that can be tied to a team or a cluster of teams working closely together for a common goal. One team is now responsible for both good and negative performance. As a result, these measures provide clarity and ownership.

KPIs may be divided into two basic categories, according to Ackerson (2009, 18-23), outcomes and drivers. Lagging indicators such as outcomes are used to evaluate the success of previous activities. There are a variety of financial KPIs that may be used, including return on equity, revenue, profit margins, and so on. They're easy to quantify but becoming better at them requires time and effort. Leading or value drivers are other terms for driver KPIs. KPIs are measured by tracking the actions that have a significant influence on them. The key performance indicators (KPIs) of drivers are difficult to monitor, but they may be easily influenced.

It is widely acknowledged that key performance indicators could provide significant competitive benefits to businesses. Different activities, such as marketing, production, finance, financial reporting, or human resources, can benefit from performance indicators. Most business owners use performance measurement as part of their business strategy to identify value-added processes and make them more efficient. Problems arise when businesses start analysing what must be measured and, at the same time, how they should give the data with various user groups (Twin, 2021.)

In the case of ecommerce, it can be difficult to accurately target ads to the right audience while maintaining a competitive position (Rampton, 2021). Many people are more concerned about how their ad is performing in comparison to their competitors, Google ads can answer that question and provide marketers with the opportunity to maximize the effectiveness of their ads. Competitive metrics, which can be found in columns in Google ads, will assist in understanding the

market advantage. notice how frequently the ads appear in comparison to vendors promoting for the same keywords or targeting. The metrics can be viewed at various levels, such as campaign, ad group, or keywords. With competitive metrics, professionals can easily, effortlessly, and practicably evaluate the campaign's quality. Determine the potential of the campaign in comparison to competing advertisers, and whether that potential has been eventually realised. If not, they clearly show the source of the problem. Furthermore, these metrics will notify if the campaign is losing impressions due to a low budget or a poor Ad Rank. Marketers can estimate the campaign's limits in addition to its potential (Google.)

3.2 Conversion rate

Conversion rate is the percentage of website visits that result in the desired action, which can be purchasing a product or signing up for a newsletter. In other words, it is the number of visitors who converted a pageview into a purchase, or the number of people who were converted from a passive visitor to an active user or customer of the website. The conversion rate is calculated using the following formula: $\mathbb{CR} = \frac{\text{numbers of conversions}}{\text{visitors}} * 100$. Conversion rate is one of the most important metrics to track because it makes it possible to assess the performance of a website in real time. As a result, it is important to consider it in the hypothesis posed in the research, the conversion rate demonstrates how effectively a brand can use its online presence to convert visitors into revenue. It essentially gauges how well a website sells a product. Which is a big deal in the world of online sales, hence why marketers and analysts are so interested in it. Improving the website's performance should eventually result in a higher conversion rate over time. The impact on revenue can be immediate and dramatic. Comparatively small or insignificant numbers can have a massive, incredibly rapid effect. (BigCommerce, 2016.)

For example, if the site receives 10,000 monthly visitors and 1,000 monthly conversions, the conversion rate is 10%. Conversion rate is commonly used to guide advertising and placement decisions on ecommerce websites and businesses. Conversion rate is an important metric to track. And thus, it is essential to examine the effect of the chosen elements on it.

3.3 Click-through rate

According to Xu, et al (2021, 1-16) CTR is an important marketing metric that reveals the relationship between the number of views and the number of clicks on an ad. In practical application, this form of measurement indicates the effectiveness of a campaign by denoting the percentage of users who click on the link after viewing it. As a matter of fact, CTR is an important metric for assessing ad performance, whether via Google ads or social media ads. The cost of the campaign and the ranking of the page in organic searches are both affected by the click-through rate. As an example, CTR will be 1% if the keyword receives 60 clicks and 6,000 impressions.

With greater competition for consumer attention and resources, it is critical to understand the marketing plan's true efficiency. This includes all the strategies and actions used to influence the user. CTR serves the explicit purpose of evaluating the quality of the keywords and, consequently, the ads. Its use aids in determining which campaigns are the most effective, by identifying which capture the viewer's attention and lead to them having to click on a link. This unit of measurement allows to better understand the true overall effectiveness of the strategies, which is essentially the best way to determine whether the strategy is being properly applied. So, it is critical to test how its affected and what influences it. As a result, it becomes much easier to take action that has a greater effect on the client. Therefore, it is simple to determine which campaigns are effective and which need to be extremely improved, enhanced, and speedily optimized.

3.4 Impression

There is indeed a simple explanation for why impressions are useful in marketing. In Google ads, an impression is recorded whenever an ad appears on a search results page or elsewhere in the Google network. One impression corresponds one appearance, this metric is used to determine whether the campaign's reach is too narrow or too broad. An impression is a fundamental Google ads metric that shows up at the top of the Google ads metrics dashboard. Users might go a step further by looking into impression share and see how their reach compares to competitors (Giarratana, 2021.)

Based on the insights, studying the number of impressions produced by the campaign is useful, but the actual worth is interpreting the Impressions to determine how the performance compares to the number of individuals the advertiser is engaging with. Therefore, it is worth testing. Ads that are performing well but also have a low Impression share indicate that budget or ad rank constraints are impeding the campaign's performance. Users can optimize their campaign to boost the effectiveness of high-quality keywords and ad groups with low im-pression share to drive more traffic to them. This critical idea came from the report insight cited earlier.

3.5 Click

Google ads counts a click as when someone clicks on the ad, such as the blue headline or phone number in a text ad. A click is recorded even if the person does not reach the website, which could be due to being temporarily down. As a result, users may notice a difference in the number of clicks on their ad and visits to their website. Clicks can help determine how appealing the ad is to those who see it. Relevant, hyper-targeted ads are more likely to be clicked. There are various metrics available in the account statistics, one of which is CTR, which is cited and defined previously. It tells how many people who see the ad end up clicking on it. This metric can help determine how appealing the ad is, as well as how closely it matches the keywords

and other targeting options. (Google, 2010a.) It is clear to understand that if the ad is appealing and lead user to click, this means there is a high correlation between the image and click. Thus, the CTR is considered.

A low ad CTR is a problem because it lowers the quality-scores and has an impact on future advertising strategy (Google, a). Low CTRs indicate that the ad is not relevant to the audience, who are not motivated to click on it and visit the landing page for more information about the deal or take the desired action. However, a high average CTR, whether for the entire campaign or for a single keyword, does not always imply success. It is one metric that, when combined with other KPI, can help determine the success of a campaign. High average CTR with low conversions, on the other hand, may indicate that the marketer was wasting money by attracting people who were less likely to convert. This could be due to too broad targeting, irrelevant ad, or a mixture of the two (Google, Google support, 2010 b.) Since the connection between CTR and CR is solid it is necessary to test it and reflect whether they are connected or not.

3.6 The quality scores

Quality Score can be a helpful tool in determining how to improve the ads, keywords, and landing pages. quality score can be thought of as a general indicator of which areas to focus on to improve ad quality rather than a score to be optimized. The quality score is displayed at the keyword level in Google AdWords and can take values ranging from 1 to 10. The quality score is calculated by taking three major factors into account: the expected click-through rate, ad relevance, and user experience with the landing page. To achieve the highest possible quality factor of 10, the entire so-called "relevance chain" must be optimized, including not only a relevant ad with the highest possible click-through-rate, but also an incredibly positive landing page experience. (Google, b.)

Based on the insight and definition given by google, quality score can be improved in many ways. One of the many factors influencing quality score is landing page experience. so, ascertaining whether the landing page content is distinguishable from other landing pages on the site, as well as third-party websites is beneficial. A higher quality score indicates that the PPC ad will be ranked higher in Google search results and will be charged less for a PPC ad click. A higher ad rank indicates that users will receive more for their money spent on Google ads. This could result in a higher position on the page without having to pay a higher cost per click.

3.7 The metrics, imagery, and product title connection

The systematic results of imagery experimentations convinced experts that the claim that humans have mental images was true. Nonetheless, this term is notoriously ambiguous, and most psychological interest has focused on only one aspect of imagery its role in information processing, rather than its phenomenology or role in emotional life (Kosslyn, 1994, 3.)

The idea of imagery highlights the necessity of studying the impact of imagery and its precursors on consumer emotional and behavioural reactions. In truth, the links that exist between these notions are infrequently examined. As a result, a research was conducted to understand the function that mental imagery evoked by a product display on an e-commerce site plays in the creation of behavioral and emotional reactions in customers. The outcomes of this research show that self-mental imagery and its antecedents have a favourable influence on e-consumers' mixed predicted emotions, buy intention, and impulsive purchase. For example, the higher these are, the more the e-consumer imagines adopting or acquiring the offered object. Furthermore, the stimuli employed in product presentation may have a major influence on customer mental images and behavioural reactions (Lao, 1994a.)

Product visualization is widely regarded as the most effective marketing tool available to e-commerce businesses. The importance of imagery in a shopping ad cannot be oversimplified; it is one of the most important aspects that will influence whether users click on the ad or one of its competitors. So, when landing on the webpage, they are more likely to make the desired action, because of the impulse purchase that is mentioned in the previous paragraph. The mentioned studies have shown that There had been a significant interaction effect on mental imagery. And so, many experts support this theory based on experiments and from a statistical perspective. (Lao, 1994 b.)

According to Google, CTR is a percentage indicating how many people who see the ad or free product listing click on it. The clickthrough rate CTR can be used to determine the effectiveness of the keywords, ads, and free listings (Google, Google merchant center.) People will see the ads based on the keywords selected. Choosing high-quality, relevant keywords for the ad campaign to ensure that only the most interested people are being reached, who are more likely to become customers. When someone searches on Google, the ad may appear based on the similarity of the keywords to the person's search terms, as well as the keyword match types usage. Keywords are also used to match the ad to Google Network sites that are relevant to the keywords and ads (Google, Google Ads help, a.)

The ranking algorithm used by Google determines where the ad or webpage will appear on a search page. This influences how many people view, click on, and interact with the website. The click-through rate has a significant impact on the success of the online business. Hence, selecting high quality, intent based, relevant keywords, is crucial, and has a huge impact on the CTR CR. Therefore, there is a solid connection between the keywords selected and CTR CR and IMP (Google, Google Ads help, b.) The relationship between the price and the KPI is discussed in subchapter 4.4.

4 Elements

4.1 Imagery

As defined in the sub chapter 3.2, the CTR is the number of times somebody clicks on the content compared to the number of impressions received, CTR is a key indicator. CTR can be affected by so many factors, to begin with, product image is important, it is one of the most important aspects of a shopping ad that will influence whether users click on the ad or one of competitors. Many shops choose to utilize the same product image as on their website. Showing products in detail is tough. So, to make an item stand out and get customers to click on them is the key to getting the CTR increased. featuring photographs of the products in use rather than just product images, will make people click on the ad and therefore having the CTR improved. (Hexton, 2020.)

The neuroscientist John Medina, His primary areas of interest in study include the genetics of psychiatric diseases and the isolating and characterizing of genes that have a role in human brain development (Wikipedia, John Medina, 2021). He once stated.

> *Hear a piece of information and three days later you'll remember 10% of it. Add a picture and you'll remember 65% (Medina, 2008).*

According to this quotation, pictures are more effective than words. Brain interprets words as collections of very little images, and to read them, it is needed to identify characteristics of the letters. According to the quotation, the brain can retain more information when presented with a picture, as seen by the difference of 84.62% in memory rates.

Some customers base their purchasing decisions on image, and price, it is important to stand out from the competitors in some way. The image takes up most of the ad. Many customers typically choose a product based on the image, price, and title. Customers are drawn to an image first in Google shopping, and then their eye line is drawn to the text. In other words, combining images and text improves the effectiveness of a campaign. The image is also the first item buyers compare to competing products, so it is the most important part of the ad. So, shoppers can be told something important about the product, service, or brand by choosing the right image. Shoppers are drawn to images because they are simple to comprehend. (Kermisch; et al, 2019.)

Numerous books, as well as other materials argue that visual stimuli are more important than simple text or tables. with this basic premise, many experts support this theory. The previous studies presented in the subchapter 3.7 have a strong correlation, and there is enough scientific evidence to support the Picture superiority effect. So, it is indispensable to test the effect of the image on the chosen KPI.

4.2 Product Title

The title aids in the identification of the product selling. Therefore, it is one of the most noticeable aspects of the advertisement. With a correct title, the marketers have better chance of getting the right customers to click on their goods or services. Google evaluates if the listing is relevant to a certain search query based on product titles. The title attribute is not only important for Google's matching algorithm, but it is also one of the ad's most visible elements. Adjusting product titles to closely align the terms customers are looking for will assist the products appear in the most relevant searches. The title is just second in importance to Google, after the image. Consumers perceive it as one of four criteria on Google's engine results. Even if the image communicates a lot, the title must be captivating. The most important product characteristics should indeed be highlighted in the title so that consumers can conveniently scan through and decide if the product is worth engaging upon. (Google, Google merchant center help , 2022.)

As a logical consequence, retailers are aimed at understanding customer behaviour. Identifying the most important elements that influence customers' decision to purchase is essential throughout this phase. Because Google considers the characteristics of the titles as a surrogate for keywords, optimizing them, as well as other feed data, is critical to the campaign's success. Because shopping algorithms and search engine optimisation have a lot in common, including the most important phrases in the product title is critical for the optimization procedure. (Munro, 2021.)

To be effective, advertising must first capture attention, and then convince the customer before the engagement ends. However, distinct information is required for attracting attention vs convincing individuals. it is needed to amuse to attract attention. To convince, one must first inform. it may not always be possible to accomplish both if you there is limited ad time and space. Nowadays, the problem is even more difficult since people's attention spans are considerably shorter and they are avid media multi-taskers. In this scenario, ads must concentrate on accomplishing one thing quickly. There isn't enough time to do more, and then drive persuasion at a later point, in another channel, or in a follow-up ad. A successful TV commercial nowadays encourages viewers to interact with the business through a secondary medium, such as a mobile device or a computer. As a result, more advertisements attempting to get customers to do a particular activity other than purchasing are being seen, such as visiting a website. These, however, can only work if there is a compelling foundation to go. This indicates, most people scan the very first 20-30 characters. thus, the initial few sentences are critical in grabbing the attention of prospective customers. (Edelman, 2014.) Although a more descriptive product title improves the success of the ad, cramming quite so many details into the title may cause detrimental effects. The products, as it is known, are designed for humans, not just search engines that prefer keywords. The purpose of titles is to entice potential purchasers to click on them.

Therefore, it is essential to maintain coherence and understand that optimizing the Google shopping product title for both algorithms and humans. (Google, .) To summarize, Google shopping product title optimization is critical for improving the success of the shopping campaign and increasing conversions. So, it is indispensable role in boosting the CTR.

4.3 Price

A price, at its most basic, is the amount of money that a buyer pays to a seller in exchange for a service or product. When someone gives $2.00 and receives a pound of vegetables, the price is obvious: $2.00 per pound. When an actual, observable transaction occurs, the price is referred to as the traded price or the spot price. However, there are numerous other types of prices. Some of them are conceptual, such as the marginal price. Others are concerned with the timing of a potential transaction or the purchaser and seller's overall strength. However, they all have a connection to the spot price in the end. (Asmundson, 2013 a.)

Considering a scenario in which the tomato transaction takes a slightly different shape. The seller may indicate a willingness to sell the tomatoes for a specific price, which is referred to as the selling price or ask price. The buyer might very well indicate that he is willing to pay a higher price, known as the bid price. Only if the seller values the tomatoes at less than $2.00 per pound and the buyer values them at more than $2.00 per pound can such a transaction take place. To put it another way, the bid price must be at least equal to the ask price. If it isn't, either party, whether it is tomatoes or money, would be better off keeping what they already have. (Asmundson, 2013b.)

Even in Google shopping, Google wants to provide the most useful results for its users. If conceivable, the algorithm will display the lowest deal first, and having the best price gives one’s product a competitive advantage. If other retailers sell the same product for a cheaper price, however, this may not receive any attention at all. It is not about a single product or a single search. Google analyses the history of advertisements to see how competitively a retailer is priced. If not seeing any results from one’s ad campaign, it is possible that a high pricing history is to bear responsibility. Ads that encounter sharp price hikes are frequently reprimanded by Google over time, especially when they occur repeatedly. Brands must be aware of this; increasing the price can result in fewer impressions, higher bid prices, and fewer conversions. (SEM, 2017.)

Benchmarking enhances performance by discovering and implementing best-practices in operations and sales. Managers assess the performance of their goods or processes outwardly to rivals and best-in-class corporations, and internally to other operations within their own organizations that do comparable tasks. Benchmarking's intent is to uncover instances of exceptional performance and understand the processes and practices that drive that success. Companies then enhance their performance by customizing and adopting these guiding

principles into their own operations, innovating rather than mimicking. Companies utilize benchmarking to improve performance. Benchmarking finds ways to improve operational efficiency and product design. Recognize the relative cost situation. Benchmarking indicates a company's relative cost position and highlights chances for improvement. Gain a strategic edge. Benchmarking enables businesses to concentrate on competencies that are key to gaining a competitive advantage. Increase the pace of organizational learning. Benchmarking introduces fresh ideas into the organization and enables experience exchange. (Bain & Company,2018.)

Price benchmarks for shopping advertising demonstrate, on a whole, how other retailers are pricing the same things that other competitors offer at their stores. It shows a click-weighted average pricing for each product, which may assist in gaining a better understanding of the price at which other marketers are effectively garnering clicks for a certain product. The reporting of price benchmarks could be helpful when making judgments regarding bidding, diagnostics and pricing.(Google Ads, .)

The rise of e-commerce, direct-to-consumer digital native suppliers, comparison sites such as Google shopping, and algorithmic price-matching techniques shifts power to customers, in part through enhancing pricing transparency. They allow a single, tiny, and possibly desperate rival to swiftly change traditional market pricing levels. (Bain & Company, 2019.) This implies that it provides good evidence for evaluating the pricing and its impact on the selected KPI.

Following the fourth chapter, the components influencing CTR, CR, and impression in Google shopping are addressed. The fifth chapter is devoted to the concept of A/B testing. And the crucial components to be aware of. The thesis process is introduced in the sixth chapter. The seventh section onwards discusses the major study question. The presentation begins with an introduction to A/B testing cases and the influence of each variable on the selected KPI.

5 A/B testing

5.1 The history and background of A/B testing

A/B testing, also known as bucket testing or split-run testing, is a way of doing user research. A/B tests are randomly selected experiments with two versions, A and B. They use statistical hypothesis testing, sometimes known as "two-sample hypothesis testing" in the field of statistics. A/B testing compares two variations of the same variable, often by comparing a subject's response to variant A versus variant B and finding which one of the two versions is more efficacious. (Wikipedia,a.)

Setting a date for the introduction of a new approach is challenging in most fields. In 1835, the first randomised double-blind trial to evaluate the efficacy of a homeopathic medicine was conducted. Experiment with marketing campaigns began in the early twentieth century and has been compared to modern A/B testing. (Wikipedia,b.)

With the rapid expansion of the internet, new methods of sampling populations have become accessible. In the year 2000, Google developers conducted their initial A/B test to identify the optimal number of results to display on their search engine results page. Other companies start on this afterwards. (Wikipedia,c.)

5.2 Controlled experiment

Businesses can only be profitable if they truly understand their consumers' needs and produce products or services that provide value to meet those needs. At Microsoft, roughly one-third of ideas have the desired good impact, one-third have no influence, and one-third cause harm. Corollary, to decide where to spend, companies must correctly assess how their customers react to changes in software products and accurately interpret whether they are beneficial or unfavourable. A/B testing, or more broadly, online controlled experiments, is one method for accomplishing this. (Fabijan, 2018a.)

A controlled experiment is a scientific procedure which has been used in the pharmaceutical industry for many years to examine the efficacy of new medications. In a typical controlled experiment, participants are arbitrarily assigned to one of two conditions: the control or the treatment. The distinctions between the two states are codified as independent variables. (Fabijan, 2018b.)

After the experiment is completed, the distinctions between the experiment versions are measured using statistical tests, such as the t-test. Because the experiment groups are assigned at random, the only factors that could show the disparity between them are either a causal influence or random chance. If it is possible to adequately rule out chance it can be concluded that

it happened because of proof of causality. In this case, statistical significance serves to eliminate chance. (Fabijan, 2018c.)

Previous paragraphs demonstrate that, test design is an art that incorporates a lot of science. When done correctly, testing may provide insights that confidently open new options. Poorly constructed tests, on the other hand, will result in decreased confidence in the insights or even incorrect conclusions.

5.3 Methodology of A/B testing

Two experiences in an A/B test are created: "A," the control, is usually the current system and is referred to as the "champion," and "B," the treatment, is a change that attempts to improve something and is referred to as the "challenger." The experiences are assigned to users at random, and key metrics are computed and compared. Multivariable A/B/C/D tests and univariable A/B/C/D tests, on the other hand, assess multiple treatments or changes to multiple variables at the same time. A new feature, a change to the user interface such as a new layout, a back-end change such as an improvement to an algorithm that, say, suggests books at Amazon, or a separate business model could all be examples of changes made online such as an offer of free shipping. Companies can use online A/B tests to learn how to optimize any aspect of their operations, whether it is sales, repeat usage, click-through rates, or the amount of time users spend on a site. The question to be asked is essentially, will introducing a specific change improve any key metrics? (Kohavi & Thomke, 2017.)

5.4 Z-test

A Z-test is any statistical test whose test statistic distribution under the null hypothesis may be approximated by a normal distribution. Z-tests are used to determine the mean of a distribution. The Z-test has a single critical value for each significance level in the confidence interval for example, 1.96 for 5% two tailed, making it more practical than the Student's t-test, whose critical values are determined by the sample size through the corresponding degrees of freedom. The Z test and the Student's t-test are similar, they both aid in determining the relevance of a collection of data. (Hayes, 2021a.) In light of the fact that t test is less cumbersome than its counterpart, the two-tailed talied test will be used in this thesis. Using a two-sided critical area, it is possible to determine whether the sample falls within or exceeds a predetermined range of values.

Z-scores tell if a certain score is normal for a given data set or unusual. It can be used to adjust scores from different data sets to provide more accurate ratings that can be compared to one another (Hayes, 2021b). This signifies that this test is suitable since it evaluates a given data set and decide whether it is normal or random chance. Each test will be compared to another in this study. With respect to research question. It will compare test A to test a, where the title is

the main emphasis in both. This will likewise be done for the remaining tests. ''The formula is presented below:

$\mathbb{z} = \hat{P}2^2 - \hat{P}1^2/\mathbb{SED}$ (math,).

When utilizing a 95% confidence level, the essential z-score values are -1.96 and +1.96 standard deviations. A 95% confidence level is linked with an uncorrected p-value of 0.05. If the z-score is between -1.96 and +1.96, the uncorrected p-value will be more than 0.05, and the null hypothesis cannot be rejected since the pattern shown is most likely the consequence of random spatial processes. If the z-score is beyond that range, for example, -2.5 or +5.4 standard deviations, the observed spatial pattern is likely too uncommon to be due to random chance, and the p-value will be tiny to reflect this. In this instance, the null hypothesis may be rejected and the investigation into what is creating the statistically significant spatial pattern in the data can begin. (gis, 2000.)

5.5 Statistical significance

Statistical significance helps measure whether a result is likely due to chance or to some factor of interest. When a result is significant, it merely implies it is possible to be confident that it is true, not because of a luck or unluck in selecting the sample (Gallo, 2016).

The p value, also known as the probability value, indicates the statistical significance of a result. Most studies regard a p value of 0.05 or less to be statistically significant, however this threshold might be adjusted higher or lower. Study predictions are classified into two parts: null and alternative hypotheses. A null hypothesis H_0 predicts that there will be no actual effect, no association between variables, or no difference between units. Whereas a different hypothesis H_1 expresses the primary forecast of a true effect, a relationship between variables, or a difference between groups (Bhandari, Statistical Significance, 2021). Since the limit could be changed to be higher or lower. This thesis will use 90% as a cut-off point.

5.6 Uplift

Control group is often termed as the uplift of a marketing campaign. This enables a marketing team to isolate the impact of a marketing activity and assess the efficacy or ineffectiveness of that specific marketing effort. Authentic marketing teams will only claim credit for their campaign's gradual impact (Diegel,a).

Many marketers, however, regard lift rather than uplift as the difference in response rate between treatment and control, hence uplift modelling may be described as enhancing lift using predictive modelling. It is calculated as follow:

$\frac{final-initial}{initial} * 100$ (Diegel,b).

5.7 The standard error of the proportion

The standard error of the proportion (S.E) or percentage is the variation of the sample proportion with respect to the population proportion. Specifically, the standard error is an estimate of a statistic's standard deviation. As a measure of dispersion, it has characteristics with the standard deviation. It is used to determine the precision and efficacy of the sample. Since it determines the precision and efficacy of the sample, it is more appropriate to use the standard error of the proportion. "SE is calculated using the following formula (gerstman,):

$$\mathbb{SE} = \sqrt{[\hat{P}(1 - \hat{P}) \ / \ \pi)]}$$

Where

$$\hat{\mathrm{P}} = \frac{\chi}{\pi}$$

n is the total number of individuals in the sample,

x is the count of individuals in the sample with a certain characteristic"

The null hypothesis states that no difference exists between the two proportions (p̂1= p̂2). Whereas alternative hypothesis is p̂1≠ p̂2. The population proportions are equal if the null hypothesis is true. When calculating the standard error for the difference between two proportions (SED). "The standard error for hypothesis testing of proportional differences is calculated as:

$$\mathbb{SED} = (\mathbb{SE}1^{\,2} + \mathbb{SE}2^{2})^{1/2}$$ (datascience, .)

5.8 Average rates

With the purpose of gaining a deeper understanding of the findings of the hypothesis testing and how those results link to what the theory says about them. This indicates that it would be more appropriate to analyze the findings using the average conversion rate as the benchmark. This helps in the assessment of the findings in a critical way.

As the number of people shopping online continues to rise, everyone who has an online business needs to be aware of several important concerns related to online commerce. This involves answering questions such, "what is an acceptable conversion rate for online shopping?" and "what is an acceptable standard for an e-commerce conversion rate to strive towards?" The most recent information indicates that the average conversion rate for all e-commerce enterprises was 1.53% in February 2022. This represents a decrease of 0.17% from the previous month and 0.32 percentage points from a year earlier. (Oberlo, 2022.)

Finding out what the typical advertiser in the sector spends on advertising might give a clearer sense of the budget that should be spent on in Google shopping. Average Google Shopping CTR will yield to a good analysis in the next chapter. Google shopping ads have an average clickthrough rate of 0.86%, whereas Bing shopping ads have a clickthrough rate of 1.2%. (Dennis, 2022.)

To verify the veracity of the result, it is more insightful a to look at several sets of findings related to the issue. To gain more accurate and informative data. Bing shopping ads have a clickthrough rate that is 1.2%, which is much higher than the average clickthrough rate of 0.86% for Google shopping ads. The average shopping conversion rate (CVR) for Google ads and Bing ads is 1.91% and 1.74%, respectively, across all sectors. (Irvine, 2021). Since it can be observed that there are two distinct dates given in each of the studies, a wide variety of questions may now be asked as a result, and skepticism regarding the findings, however these figures will be considered when analyzing the data.

6 Research process

6.1 Research and hypothesis development

Following the identification of the research problem, the hypothesis must be developed. It is employed in the resolution of a logical relationship between variables. So, the A/B testing came in very handy to study the impact of such elements on the chosen key performance indicators. It is not an issue if the hypothesis turns out to be inaccurate after the experimentation, because it is just regarded an informed guess. When constructing the hypothesis, this paper considered that it should be founded on the research topic being solved.

At first, a research problem is hazy. To have a detailed image of the entire research, it is necessary to read several publications or search the internet for prior efforts. As a result, it may spark an idea that will be the subject of the research. The selection of the key performance indicators was done earlier than reading prior work. This research examined relevant literature, science books, periodicals, journals, newspapers, and reliable sources on the internet, such as McKinney & company, Bain & company to read up about the problem. Which assisted in acknowledging the factors selected can affect differently the chosen key performance indicators.

6.2 The process in practice

The research began by reviewing past research subjects on the same subject and developing a theoretical component, which assisted in the development of the research. Helped in acknowledging the connection between such element and each key performance indicator.

The research began in February 2022. And few tests were running at that time. The research phenomenon was created and examined utilizing external theory. In April, the preliminary preparations for the thesis were completed, and work on the thesis framework began. 75% of the thesis framework was completed in April, as was the thesis plan seminar. In late May, 25% was completed. During the first days of May, the research of the practical work has begun. The remainder of the testing began in this instance. Six tests in all, including previous and new tests. They almost took three months. Each test lasted eight days.

6.3 Data collection

The procedure of collecting, modelling, and evaluating data to obtain insights that support the research, was well-executed in this paper. It used text analysis. This website was able to transform unstructured data, such as emails, as well as live chat which the website offers, into quantitative insights thanks to text analytics. it helped enhance customer contentment by discovering what consumers liked and disliked about the goods, finding product flaws, and doing market research, all of which boosted customer satisfaction.

To test the title, keywords research was conducted, and SEMrush was utilized to check what competitors were doing and get inspired, to understand why certain keywords were successful. To understand how the image would affect the performance, another list of keywords was prepared for the image section, because the previous one was utilized to observe the focus on title. An additional analysis model was used to check how the competitors' images appeared in Google shopping when other keywords were typed, thus it was obvious which image should be used since the competitors had used comparable images and the same product. This analysis model updated the title once more. Following market research, another solution that solves the same issue but has distinct characteristics was discovered. This product was utilized in all tests and was used before the first test. This was discovered not merely by observing what competitors do. But also, based on what other customers were asking about in the live chat, it seemed to be a beneficial insight from the clients to target them with the same product that had an extra function.

The pricing was the primary focus of the other tests that were carried out. To remain competitive, the product prices were compared with the product prices offered by other vendors that sold the same items, this was done using the Google merchant center price competitiveness report. Therefore, the currently available benchmark price was used. It has provided a quick perspective of how the price of the product compares to that of the competitors in the market. It has improved the item's position, allowed for better price selections to be made.

The methods used to conduct the research is considered actual experimentation. To ensure the validity and correctness of the results, the methodology should be properly planned before the actual experimentation. The research into the practical work has begun. In this situation, six tests are required in total to run the experiments, which took roughly three months. Each test lasted eight days, start taking place around February.

The tools used are mainly Google tools, such as Google ads dashboard, Google sheet, and Google analytics. However, SEMrush was used for keywords research, Numbers was used to check the values, CTR CR, impression share and other metrics. The calculations were mostly handled manually, although after calculating the Z score, the P-value was validated online. to determine the minimum level of significance at which the null hypothesis is false.

Excel and Google sheet were both used to read data exported from all campaigns in Google ads. In general, it contains keywords. It demonstrated how clients discovered the website and how they used it. Ideas for improving the website have been derived from this information. Together, Google analytics and Google ads provided insight into what visitors do on the site once clicking the ad. This data is utilized to improve the customer experience on the website, which can lead to higher conversion rates. It will also be utilized for retargeting purposes. The bounce rate and other metrics were also checked. The experiments are presented below:

- The title is the focus of the test (A). The image and price remain unchanged
- The image is the focus of the test (B). The title and price remain unchanged
- The price is the focus of the test (C). The image and title remain unchanged
- The title is the focus of the test (a). The image and price remain unchanged
- The image is the focus of the test (b). The title and price remain unchanged
- The price is the focus of the test (c). The image and title remain unchanged

Each campaign was created with the purpose of providing the same fair options to all tests. In practice, each test had a daily budget of $20 and a cost per click of $0.45. The tests were carried out in the United States via Google shopping, the currency used in the campaign and this thesis is US Dollar. and one product was evaluated at different times. The data was collected and therefore is ready to be submitted and analysed in the following chapters. From which a conclusion is drawn. The main goal of these tests is to see if the null hypothesis states that no difference exists between the two proportions $\hat{p}1 = \hat{p}2$. Then The population proportions are equal. Whereas alternative hypothesis is $\hat{p}1 \neq \hat{p}2$. Correspondingly, for all tests, it will compare the proportions of the selected KPI.

7 Data description

The findings of the study are presented in tabular form in Table 1, which contains an overview of those results. It gives both the number of clicks and the number of impressions for each test that has been implemented. Total market impressions, as well as conversions, click-through rate, and conversions rate. The following paragraphs go into further detail on the information that was presented in the table.

The first test (A), in which the title was the focus. Image and price remained unchanged. Google advertisements table, which represents the number of conversions, CR, IMP, impression share, clicks, and CTR. The 6 conversion indicates that there were 6 purchases. Conversion is about what isn't happening and why. The test received 6 conversions, which is a reasonable number of orders totalling 299,94 dollars. CTR of 0.96% indicates the number of people who saw the ad and clicked on it. 0.96% signifies that only 287 people clicked on the ad, indicating that 29513 people saw the ad but did not click. The test received 29800 in this test. The number of people reached is 29800, with a 45% of impression share. So, the total market impression is 66222.22. This figure fluctuates depending on the bid, competition, relevance of the keywords. And other elements. The conversion is the purchase in this test and all the following. According to the campaign and results, the conversion rate is 2.09%. This indicates that 2.09% of visitors purchased. So, six people respectively. This also demonstrates that 2.09% of website visitors agreed that the product met their needs and expectations in a visual online macro perspective.

Next, the test (a), in which the focus was on the title, while the image and price remained constant. Google advertising table indicates the number of conversions, conversion rate, impressions, impression shares, clicks, and click-through rate. The fact that there was just one conversion means that there was only one purchase. Totalling 49.99$.

The proportion of the population who viewed the ad and clicked on it is represented by a CTR of 0.74%. According to the statistic, there were just 267 clients who clicked on the advertisement, which indicates that 35733 people saw the advertisement but did not click. The test recorded the highest number of impressions 36000. This value is strongly influenced by the bid, competitiveness, keyword relevancy, and other factors. With 35% of impression share. Indicates that the total market impression is 102857.143. It tells also that 65% of people who might be interested were not reached. The conversion rate is 0.38%, according to the campaign and results. This means that 0.38% of visitors made a purchase. As there's only one order. This also shows that 0.38% of website users agreed that the product suited their needs and expectations in terms of visual graphics. It is extremely low in comparison to the preceding test.

The test shown after is (B), in which the image was the central focus. The title and price remained unaltered. Google advertising table displaying conversions, conversion rate, impressions, impression share, clicks and click-through rate. The 5 conversion shows that 5 purchases

occurred. Totalling 249.95. The number of persons who viewed the advertisement and clicked on it is represented by a click-through rate of 1.28%. This indicates that 328 people clicked on it, and that 25272 people saw the advertisement but did not click on it. The overall reach score for the test came to be 25600. The bid, how competitive the market is, how relevant the keywords are, and a variety of other factors all have a significant impact on this statistic. The reached people are 25600. With 25% impression share. According to Google report insight, the total market impression is 102400. The conversion rate for the campaign is 1.52%, as stated in the report. This equates to 1.52% of total visitors making a purchase. It is possible that customers felt that the goods satisfied both their requirements and their expectations.

The table also depicts the test (b), with low quality Image, in which the image was the key element. The title and pricing were not changed. Conversions, conversion rate, impressions, and click-through rate are shown in a Google advertising table. The one conversion indicates that one purchase occurred. A click-through rate of 0.85% indicates the percentage of people who saw the advertisement and then clicked on it. According to the statistic, there were just 168 people who clicked on the advertisement, which indicates that 19632 people saw the advertisement but did not click. The test received 19800 impression. 19800 represents 23% of the market. The overall market is 86086.95. This value depends greatly on the bid, competition, relevance of the keywords. And so on. As shown in the campaign the conversion rate is 0.60%. This means that 0.60% of visitors managed to buy. Clients may have considered the product met their wants and needs.

The test (C), the price is 60$. in which the price was the most essential thing. The title and image remained unchanged. The table exhibits conversions, conversion rate, impressions, and click-through rate. There was only one conversion. The proportion of persons that saw the advertisement and clicked on it is represented by the CTR, which in this case is 0.77%. This suggests that 173 individuals clicked on it, while another 22327 consumers viewed the advertising but did not click on it. The number of people who have been reached is 22500. On the other hand, the price, how competitive the market is, how relevant the keywords are, and several other variables all have a big influence on this figure. This value represents 22% of the market. This indicates that the market is 102272.727. According to the campaign, the conversion rate is 0.58%. This relates to only 0.58% from the proportion of visitors ordered. Clients might have thought the product catered to their wants and needs.

The test (c). The price was 39.99$ and it was the most essential thing. The title and image remained unchanged. table exhibits conversions, CR, IMP, and CTR. There were 4 conversion in total, totalling 159. 96$.The proportion of people who viewed the advertising and subsequently clicked on it is shown by the click-through rate, and a click-through rate of 1.22% shows that this is the case. Only 212 people clicked on the advertising, this means that 17188 people saw it but did not click on it. This can be inferred from the data, which states that there were 212 people

who did click. The total number of reached customers surpassed 17000, this figure has a strong correlation with the bid, competitiveness, keyword relevancy, and other factors. 33% was the impression share. It indicates that the total market is 52727.27. The conversion rate is 1.89%, according to the campaign. This equates to 1.89% of all visitors who converted. Customers may have believed that the product best suited their wants and needs.

TEST NAME	CLICKS	IMPRESSIONS	CONVERSION	TOTAL MARKET IMPRESSIONS	CLICK-THROUGH RATE	CONVERSION RATE	IMRESSION SHARE.
A	287	29800	6	66222.22	0.96%	2.09%	45%
a	267	36000	1	102857.143	0.74%.	0.38%,	35%
B	328	25600	5	102400	1.28%	1.52%	25%
b	168	19800	1	86086.95	0.85%	0.60%.	23%
C	173	22 500	1	102272.727	0.77%	0.58%	22%
c	212	17400	4	52727.27	1.22%	1.89%	33%

Table 1. Summary of the collected data

8 Data processing phase

Formulas that have been covered in the preceding subchapters 5.4 and 5.7 have been used to derive the data shown in Table 2. Table 2 illustrates both the proportional standard errors and the difference between the two proportions. Both the Z-score and the P-value are important. x, which represents the overall number of successes, and n, which represents the combined sum of all successes and failures. The standard error difference is shown to provide an illustration of the error that occurred in each test and KPI. This makes it easier to calculate the error difference between two proportions, often known as the standard error proportion for difference. It determines the difference in the errors made. This contributes to the process of establishing the Z score. This is the number that, in conjunction with the p value, is used in the process of determining the status of the hypothesis.

TESTS	X	N	p̂1	p̂2	SE1	SE2	SED	Z -score	P-value
A & a	287 267	29800 36000	0.0096	0.00045	0.0005	0.0004	0.0007	-3.0572	0.0022
A & a	6 1	287 267	0.0209	0.0037	0.0084	0.0037	0.0092	-1.8581	0.0632
A & a	29800 36000	66222.22 102857.143	0.45	0.35	0.0019	0.0014	0.0024	-40.999	0.0000
B & b	328 168	25600 19800	0.012	0.0084	0.0007	0.0006	0.0009	-4.5144	0.0000
B & b	5 1	328 168	0.0152	0.0059	0.0067	0.0059	0.0089	-1.0325	0.3018
B & b	25600 19800	102400 86086.95	0.25	0.23	0.0013	0.0014	0.0019	-10.1413	0.0000
C & c	173 212	25600 17400	0.0067	0.012	0.0005	0.0008	0.0010	4.4274	0.0000
C & c	1 4	173 212	0.0057	0.018	0.0057	0.0093	0.0109	1.192	0.2332
C & c	25600 17400	102272.72 52727.27	0.22	0.33	0.0012	0.0020	0.0024	45.3973	0.0000

Table 2. Calculated findings summarized

The proportional standard errors, as well as the difference between them, are shown in table 3. It embodies the confidence interval that is derived from the standard errors. It is possible to estimate the population's size by comparing both the first and second standard errors and the difference between their confidence ranges. Using the first standard error and the second standard error and the difference of the standard errors' confidence intervals, assist in determining how far the population extends. This suggests that the actual difference among the entirety of the audience that may be clicking, purchasing, or being reached is somewhere in the range of the percentages indicated in the data. The confidence interval and percentage, both of which are shown by each test, may be seen herein.

TESTS	SE1	SE2	SED	Confidence interval of the first standard error %	Confidence interval of the Second standard error%	confidence interval for the difference between the standard errors%
A & a	0.0005	0.0004	0.0007	[0.84, 1.07]	[0.64, 0.83]	[0.07, 0.36]
A & a	0.0084	0.0037	0.0092	[0.4, 3.7]	[0.37, 1.11]	[0.12, 0.0356]
A & a	0.0019	0.0014	0.0024	[44.22, 45.38]	[34.70, 35.29]	[9.51, 10.48]
B & b	0.0007	0.0006	0.0009	[1.13, 1.42]	[0.71, 0.98]	[0.23, 0.62]
B & b	0.0067	0.0059	0.0089	[0.1, 2.8]	[-0.5, 1.7]	[0.13, 3.72]
B & b	0.0013	0.0014	0.0019	[24.72, 25.27]	[22.71, 23.28]	[1.85, 2.14]
C & c	0.0005	0.0008	0.0010	[0.56, 0.79]	[1.05, 1.38]	[0.3, 0.7]
C & c	0.0057	0.0093	0.0109	[0.42, 2.7]	[0.021, 3.7]	[0.88, 3.50]
C & c	0.0012	0.0020	0.0024	[21.7, 22.2]	[32.59, 33.40]	[10.51, 11.48]

Table 3. Calculated interval findings summarized

9 Data analysis

0.96% of those who saw the advertisement clicked on it. The standard error proportion's function is to take it into various samples and assess whether they click on the ad. Because 0.96% clicked on the ad, another sample distribution for proportions may be produced. Following the calculation. The test A standard error is 0.0005. This figure yields the following confidence interval: [0.84%, 1.07%]. This effectively indicates that 287 clicks were obtained from test A data out of 29800 impressions. It may be reliably predicted that between 0.8468% and 1.0732% of the numerous Google users will click on the ad. That is the confident conclusion, and the confidence level is 90%. In the other test, the ad was clicked on by 0.74% of those who saw it. The standard error for the test a is 0.000452. This figure produces the confidence interval: [0.64%, 0.83%]. This practically means that out of 36000 impressions, 267 clicks were approved from test a data. It is reasonable to expect that between 0.64% and 0.83% of Google users will click on the ad. That is the confident conclusion, and the level of confidence is 90%. However, it cannot be deducted yet which test is better than the other, or which test has a significant impact on the CTR. So, the comparison, is the CTR of the first Test A Greater than Test a? It is about the comparison of [0.64%, 0.8304%) and [0.84%, 1.07%]. Because It cannot be determined conclusively from this standpoint. that the CTR of test A is higher than the CTR of test a.

It is highly improbable that it is completely mistaken in this direction for the test A measure. And, wrong much more in the reversed direction for a test measure. It is conceivable that it is wildly wrong in both measures, but it is very doubtful that it is wrong so much this way for one. And so, in the other. the crucial factor is to think about how wrong it might be, not about the CTR of test A or the CTR of test a, but about the difference between them, which is the most significant key. This likewise relates to the following tests. However, the KPI's role shifts.

SED is 0.0007. SED allows to take two groups or two samples and estimate the difference between those groups and see if the application of that difference to the entire population can be done. So, the confidence interval for the difference is: [0.07%, 0.36%]. In practice, this implies that the genuine difference among the entire population that may click is somewhere in the range of [0.07%, 0.36%]. So, with 90% of confidence level, indeed the CTR in test A is higher than test a.

Z-score= -3.0572, resulting in a p value of 0.0022. So, the rejection zone is -1.645, while the area to the right of the curve is 1.645. The null hypothesis cannot be rejected if any score falls inside Z. And if any score less than -1.645 or more than 1.645. The null hypothesis can be rejected. Since -3.0572 falls withing the rejection region. The alternative hypothesis is true, and the level of confidence is 90%. This means the reported CTR of variant a was 0.74%, which was 22.99% lower than the CTR of variation A, which was 0.96%. So based on the statistics given, 90% this result is the result of the changes made, not random chance. Since this was done on

measuring CTRs rather than CRs or other metrics, it implies that the title change was the key element influencing this outcome rather than a random coincidence. This also refers to the market's average CTR, which is 0.86%, and test A had an excellent result, higher than the average level, whereas test a yielded a lower-than-average result. This indicates that the title resulted in a better outcome.

Table 2 provides an overview of Standard errors. Including the standard error for difference between two proportions. SED allows to compare the differences between two groups or samples and determine whether the difference can be applied to the overall population being studied. An in-depth description of each test concerning the confidence intervals can be found in the table 3. It shows the ranges where the population stretches. To make it easier to compare data, the table 4 displays the results of various tests. It illustrates the z-scores, and the rejection zones, as well as the decision for each test. To keep the information interesting. The findings interpretation is based on the results of other tests that have the same purpose. A different conclusion has been drawn from the results of other experiments. therefore, the paragraph that follows will cover a particular test and its interpretation.

The test focused on the images. 1.52% of those who clicked on the ad purchased the item. Following the calculations. The standard error for test B is 0.006765. This figure delivers the confidence interval: [0.1%, 2.8%). This clearly indicates that the data from test B resulted in 5 conversions out of 328 clicks. It is fair to believe that between 0.1% and 2.8% of people who click on the ad will make a purchase. That is the confident conclusion, and the level of confidence is 90%. 0.60% who clicked on the ad bought the product. After the calculation. The test b standard error is 0.005935. This figure yields the following confidence interval: [-0.5%, 1.7%]. This plainly shows that test b data resulted in a conversion out of 267 clicks. It is realistic to anticipate that between -0.5% and 1,7% of those who will click on the ad will make a purchase. That is the confident conclusion, and the level of confidence is 90%. Nevertheless, it is not yet feasible to say if test B is favorable than the other or whether test b has significant impact on the CR. So, is the CR of Test B bigger than that of Test a? As a result, the comparison is between [0.1%, 2.8%] and [-0.5%, 1.7%]. Because, from this broad view, it is difficult to infer that the CR of test B is larger than the CR of test b.

0.008999 represents. So, the confidence interval for the difference is: [0.13%, 3.72%]. In essence, this means that the true difference among the whole population under consideration is somewhere between. [0.13%, 3.72%]. So, at a 90% confidence level, the outcome is insufficient to proclaim a clear winner.

Z-score= -1.0325, resulting in a p value of 1,8491. Because -1.0325 falls to the left of the rejection area. The hypothesis is null. With a level of confidence of 90%. This demonstrates that the reported CR of Variant b conversion rate 0.60% was 60.95% lower than Variant B conversion rate 1.52%, at the 90% level, it is possible to conclude that variant b would perform worse than

Variant B. Consequently, this outcome is 90% the consequence of a chance, not of a change. Random chance seems to have been the key determinant in this outcome, not a change in circumstances. Or further data is required. This is also reflected in the average performance of other e-commerce websites, which shows a CTR of 1.91%. Both tests did not meet the market average. even though there were 5 purchases, but they were relatively low in comparison to the market average, whereas the other test was significantly lower, indicating that the image did not exert enough pressure on customers to make a purchase.

45% reflets the entire number of people who were reached. And had the ad appeared anywhere along their route. The ad has the potential to reach more audience, this suggests 55% of the market was not reached. After the computation. The test A standard error is 0.001933. This figure yields the following confidence interval: [44.22%, 45.38%]. This clearly demonstrates that test A data resulted in 29800 impressions out of a total of 66222.22 impressions. It is reasonable to expect that between 44.22% and 45.38% of people who can be served will view the advertisement. That is the confident conclusion, and the level of confidence is 90%.

35% represents the total number of persons served. And the advertisement had shown anywhere along their path. This means that the advertisement has the potential to reach a wider audience. 65% of the market was not reached. The test a standard error is 0.001487. This figure gives the following confidence interval: [34.70%, 35.29%]. This clearly shows that the test a data generated 36000 impressions out of a total of 102857.143 impressions. It is safe to anticipate that somewhere between [34.70%, 35.29%] of people who can be served will view the advertisement. That is the confident conclusion, and the level of confidence is 90%.

SED is 0.002439. So, the confidence interval for the difference is [9.51%, 10.48%]. In essence, this means that the true difference among the whole population under consideration is somewhere between [9.51%, 9.51%]. So, at a 90% confidence level, the impression share in test A is higher than in test a.

Z-score= -40.999, resulting in a p value of 0.0000. The null hypothesis is rejectable. Because -40.999 is in rejection area. The alternative hypothesis is correct, with a level of confidence of 90%. This demonstrates that the reported impression share of variant a was 35%, which was 22.22% lower than the reported impression shares of variant A, which was 45%. Consequently, this outcome is 90% the consequence of the modifications made, not random chance. Because this was done on impression share rather than CTRs or other KPI, it implies that the title change was the primary factor in determining this result rather than a random chance. The test A impression share suggests that the ad was shown roughly 50% of the auctions that were available to the ad. This means that the keywords used in title had a huge impact on this. And this value can be targeted to be improved. The more impression shares the ad receives, the greater impressions the ad may receive, and this indicates that there is a strong link between them. As a result, if the impression share is influenced, the impression is indeed directly impacted.

TESTS	Z -score	Rejection zones	Decision
A & a	-3.0572	Z < -1.645 or if Z > 1.645	H1
A & a	-1.8581	Z < -1.645 or if Z > 1.645	H1
A & a	-40.999	Z < -1.645 or if Z > 1.645	H1
B & b	-4.5144	Z < -1.645 or if Z > 1.645	H1
B & b	-1.0325	Z < -1.645 or if Z > 1.645	H0
B & b	-10.1413	Z < -1.645 or if Z > 1.645	H1
C & c	4.4274	Z < -1.645 or if Z > 1.645	H1
C & c	1.192	Z < -1.645 or if Z > 1.645	H0
C & c	45.3973	Z < -1.645 or if Z > 1.645	H1

Table 4. Summary of the decisions

10 Summary and discussion

10.1 Conclusions and recommendations

The research aims to examine the effect the product title, price, and image has on the click-through rate, impressions, and conversion rate in Google shopping. The research question for this thesis is: What impact do the product title, price, and picture have on Google shopping's click-through, impression, and conversion rates? After conducting the experiments, these results are evident, and so the aim of the research can be determined. With respect to the research question, many conclusions have been formed since the study did not concentrate on a single issue, resulting in a diverse set of findings.

To determine if the title change would have an impact on the chosen KPI, the first two experiments were carried out. Thus, led to the conclusion that the title change did, in fact, affect the CTR. This recommends that one of the most effective and simple ways to increase CTR is to enhance the quality of the headline material being used in the title. The goal of the test A was to capture the user's attention while also conveying information about the product and the keywords to which it pertains. Whereas the other title was only related to the product and did not include any specifics or marketing tactics. As a result, the test A did prevail over the test a, which was a part of the test that indicated that the null hypothesis was rejected.

The title was also examined to see whether it had any effect on the conversion rate. After the tests, it was determined that the modification to the title did have an impact on the percentage of sales made, the customers' attention is immediately drawn to the title, which plays a significant role in determining whether they will click on the content. This suggests, to grab the attention of the consumers, it must be clear, short, and interesting at the same time. hence, they get converted. This was the intended outcome of the test in the first place. Variation a had a conversion rate of 0.37%, which was 82.88% lower than variation A's conversion rate of 2.09%.

The next emphasis was to see whether the title change will influence the impression. In contrast to the previous KPIs, which each comprised of two metrics and were proportions, the impression just consists of a single metric that can be measured and evaluated. After the examination of impression from every possible perspective, it was discovered that the impression share is proportional to the overall number of impressions. This was the conclusion obtained after doing the study.

The observed difference of variation a was 22.22% lower than that of A. This outcome is a direct result of the modifications made and not the result of random chance. This tells that the title change does affect the impression. This conclusion was reached because of the impression share indicating that title change was more significant than unpredictability. This concept may

be used to describe the connection between impression share and impression. Increased impression share rate is advantageous.

The relative uplift in click-through rate of the second test shows a 33.78% drop. The presence of high-quality images to advertisements has markedly expanded the click-through rate. It is possible to incorporate the fact that images of high-quality image encourage consumers to click on the product more, which ultimately leads in an increase in the CTR. Images generate greater attention than content that just contains poor quality graphics.

The second point of attention was to determine whether having a nice image had any effect on the conversion rate. Even though there was a -60.95% drop, having a poor-quality picture had no influence on conversion. This can be explained by the CTR; a high-quality image entices people to click more, that also means more clicks and users will land on the website. Nevertheless, having a low-quality image does not positively affect the CTR, which may result in less customer acquisition. However, if the customers are interested in the product sold and is unique, a low-quality image will not affect the sales. Therefore, it can be stated that a low-quality picture has no effect on the CR, and the conversions that occur are the result of random chance. There is no discernible difference in performance between B and b, or additional data is required.

The third objective was to look at this from an impression standpoint. After the tests, it was established that the observed impression shares for version B, which was 25.00%, was 8.69% greater than the rate for variation b. The picture is the first thing people notice. A high-quality product image distinguishes oneself from the competitors. Consequently, it leads to increased impression shares. The previous A/B testing followed the same technique, this one will, too, but from a pricing aspect.

The first emphasis was to examine the CTR. Variation c was 58.46% greater than variation C. with 90% confidence that this outcome is a result of the modifications made and not a result of random chance. This suggests that having a cheap price will eventually boost the CTR, resulting in more clicks to the website. It should be noted that a cheap price is an excellent formula for increasing CTR.

Second focus was to check the CR, the pricing was also investigated to determine whether it had any impact. After the tests, it was established that the price change did influence the proportion of sales made, but this does not necessarily imply that test c outperforms test C. Customers' attention is first pulled to the price, which has a huge impact on whether they would click on the content. It must be rational and attractive. A high price has no beneficial effect on CTR, which may result in fewer client acquisitions. A high price, on the other hand, will not harm sales if clients are interested in the product offered and it is distinctive. Therefore, a high price has no influence on the CR, and the conversions that occurred are the result of coincidence. There is no visible performance difference between C and c, or more data is necessary.

The next spotlight was to evaluate if the price adjustment will affect the impression. The observed difference in variation C was 31.84% less than that in variation c. This conclusion is a direct consequence of the adjustments implemented, rather than a result of random chance. This strongly suggests that the price change influences the impression. The impression share indicated that price change was more relevant than uncertainty, leading to this conclusion. This idea may be used to explain the relationship between impression share and impression. An increased impression share rate is extremely helpful.

10.2 Validity and reliability

The outcomes of this thesis would reproduce consistent findings if the tests were rerun, done properly, and using the appropriate process of the A/B testing hypothesis. Those are the conditions under which the findings would be consistent. However, sales strategies are tough to learn, and when it comes to CTR, it is likely that the results of future research will be similar to those discovered in this one. It is possible that they anticipate receiving outcomes that are comparable.

It is probable that the results of the two tests using the CR may vary, hence it has been proposed that further data may be necessary. According to this study, the experimental results were crucial in reaching the major aim and deciding on the key research challenge, which supports the study's reliability and validity. Because it employed methods that have been proven to be useful in testing hypotheses, such as standard errors and other methods. A 90% confidence level means that these results can be applied to a far broader population than previously thought conceivable.

10.3 Recommendation for more research

A greater amount of vitality has been generated because the study's findings lend some credence to the theories. Notes started being incorporated into future research right from the commencement of the project. The number of unanswered questions that arose throughout this procedure is seemingly infinite. And the one that has grabbed the curiosity will investigate how the Buy on Google checkout experience may influence the conversion rate on two websites, that are distinct from one another but are otherwise comparable. The primary distinction lies inside Buy on Google. Nonetheless, both websites will make use of Google shopping.

The theory portion, which elaborated on a large deal of material pertaining to the report's insight, will serve as the foundation for the learning of other abilities. Because using hypotheses make marketing choices less hazardous. Additional hypothesis testing will be undertaken.

10.4 Synopsis of the research

The objective of the study was to examine the impact of the product's title, price, and image on the click-through rate, impressions, and conversion rate in Google shopping. Experiments utilized shopping campaign. The emphasis of the thesis was on product title, picture, and price as the primary determinants of CR, CTR, and IMP in Google shopping.

The theoretical section of this thesis provided a comprehensive grasp of Google shopping, Merchant center, Google advertisements KPI, the significance of image, price, and product title, as well as A/B testing. The theoretical section focuses on the aspects to investigate and extend the field's knowledge, as well as determining if the structure of the research topic and the selected components are significant to the selected KPI. This aided in establishing a solid knowledge basis, following which A/B testing was conducted. Six tests were required to investigate the idea efficiently and fairly.

The data collection for the research implementation was done using A/B testing experiments, which were taking place in the United States. The first data set contained the basic details about clicks, impressions, conversion rate, and the number of conversions; however, because the data set was so sizable, it was not fully included in the data description part.

Afterwards, the data was put through statistical analysis to determine whether the selected components and KPIs had a positive or negative influence, respectively. Both standard errors were used to calculate the z score, and a statistical significance threshold of 90% was established at the outset to determine whether the test should be disregarded. Standard errors include standard error of proportion and standard error difference. Both standard errors were utilized. While most of the tests suggested that there is, in fact, an influence of the selected components on the specified KPI. Whereas the findings of two tests, were inconsistent. and came to a different conclusion.

Because of the study's lack of focus on a particular topic, a wide range of conclusions have been drawn. The CTR was affected by the title change. This demonstrates that improving the quality of the headline information used in the title is one of the most effective and straightforward strategies to raise CTR. Furthermore, it was found that the title change had an influence on the percentage of sales made, since consumers' attention is instantly attracted to the title, which plays a big part in deciding whether they click on the content. Customer attention can only be gained if the message is intelligible, short, and entertaining at the same time. The title change has an impact. Considering the impression share, showing that title change was more relevant than unpredictability. The relationship between the impression share and the impression may be described as; it is advantageous to have a higher rate of impression share.

With the application of high-quality image to ads, the number of clicks has grown by a lot. It is possible to include the fact that high-quality images make people more likely to click on the

product, which leads to a higher CTR in the end. Images get more attention than content that only has low-quality graphics. A poor-quality image had no effect on conversion. A low-quality image will have no effect on sales. Therefore, a low-quality image has no influence on the CR, and any conversions that occurred are the result of random chance. There is no clear performance difference between B and b, or more data is necessary. In the other hand, it is advantageous to have a high-quality image for the impression. The image is the first thing people notice. A high-quality product image distinguishes oneself from the competitors. Consequently, it leads to increased impression shares.

A low price will gradually increase the CTR, resulting in more website clicks. It should be highlighted that a low price is a great way to boost CTR. A high price has little influence on CTR, which may lead to fewer customer acquisitions. A high price, on the other hand, will not affect profits if customers are interested in the product and is unique. Therefore, a high price has no effect on the CR, and the conversions that happened are just coincidental. There is no discernible performance difference between the two tests, or additional data is needed. Finally, Price change affects impression. According to impression share, price change is more important than uncertainty. This concept explains impression share and impression. Increasing impression share is essential.

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Appendix 1. campaign set up

Method of testing:

New campaign: Standard

Budget :20$

Bid: 0.45$

Bidding type: Manual CPC

Period: 8 days

Priority: Medium

Negative keywords list to be added

Appendix 2. Negative keywords list

+Amazon

+Cheap

+Contact

+Coupon

+Discount

+Fraud

+Free

+How

+to

+Legit

+Order

+tracking

+Phone

+number

+Reviews

+Scam

+Support

+Torrent

+Walmart

+What

+is

+ebay

+facebook

+faq

+film