THE ROLE OF ARTIFICIAL INTELLIGENCE IN CONTENT CREATION AND CHECKING ITS EFFECTIVENESS IN THE GOOGLE ADS ADVERTISING SYSTEM

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Abstract: *In Hungary, 94% of businesses have Internet access and 63% have a website. Moreover, online retail sales will reach HUF 1,203 billion in 2021. In order for companies to achieve the largest possible market share, they can use various digital marketing strategies. They are distinguished according to different methods. One of the most commonly used in practice and in science is inbound (as search engine optimization) and outbound (as advertising). Google Ads, which emerged at the turn of the millennium and defined itself as the world's first company to use machine learning technology, is a market leader. Their ad system was initially based on keywords, which have since been expanded to include more than 4,800 types of targeting criteria. These targeting options are available for a variety of ad formats. The digital solutions to the billboards of traditional marketing are banner ads, called Display on Google. These ads contain image, video, and text content and aim to interrupt the consumer's activity and redirect them to the advertiser's website. Since they are capable of increasing website traffic by up to 300%, this can be interpreted as an opportunity that is also considered favorable by businesses. It is also suitable for testing various content elements, as one of its main indicators, the click-through rate, expresses the relevance of the ad, as several researchers have noted. As the role of artificial intelligence grows, more and more companies are using it as a competitive advantage. Some of their algorithms are capable of generating text, images, videos, or other content. In this study, I leverage the power of display ads and conduct my research in the Google Ads system instead of conducting consumer surveys. I created two ads for the same target audience, with the same budget and settings. The text content for one ad was created by a marketer, the image content was created by a professional photographer, and the content elements for the other ad were provided by Artificial Intelligence. The objective of the article is to study the performance, efficiency, and impact of artificial intelligence-generated content on conversions under real market conditions. The study also includes content created by the players.*

Keywords: *Digital Marketing; Artificial Intelligence; Advertising; Google Ads; PPC*

JEL Classification: *M31; M34*

1. Introduction

The new fields that digital marketing has created have also stimulated theorists and researchers. A search for the keyword digital marketing on sciencedirect.com also shows that in 2000 there were only 519 publications, while by 2020 this number had quadrupled. According to Hungarian Central Statistic Office (KSH, 2020) data, internet traffic in Hungary is growing dynamically, by 2020 download traffic

increased by 18% and upload traffic by 29% compared to 2019, and the percentage of businesses using the internet reached 94%. Their comprehensive research also included websites and found that 63% of Hungarian businesses have a website (Hungarian Central Statistic Office, 2020). The growing number of businesses appearing online reflects changing consumer behavior. in 2021, there were 68 million transactions worth 1,203 billion forints (GKID, 2022). In order for the company to increase its market share and make an effective sale in the online space, it needs to work with a combination of different strategic marketing activities, which Bleoju et al. (2016) presented in their research.

Search engine optimization for inbound marketing is given special attention because it is not only the digital marketing channel that offers the best ROI (Shirey, 2022), but its optimal design allows the owner to direct potential customers to the website in an organic way by displaying the website in a better place than other websites. among the results of a search page (Egri and Bayrak, 2014). Without doubting the importance of search engine optimization, I question its principle because if every company considers it as the most important tool, no meaningful change in search results can be achieved. Therefore, it becomes necessary for companies to optimize other channels, such as click-based online advertising, which can be considered partly as an outbound and partly as an inbound strategy. In his paper, Kulova (2021) points out that these advertising platforms are effective for both customer acquisition and retention. In this transformation, Google plays a role as an active contributor (Mehta et al., 2007).

The closed advertising system was originally called Google Adwords, referring to the fact that ads are displayed based on keywords and search terms that consumers type into the search engine (Za and Tricahyadinata, 2017). Advertising opportunities have continued to expand, leading to enrichment of segmentation opportunities. Instead of or in addition to keywords, 4,809 types of factors can be selected to reach the target audience. This list can be viewed by anyone at Vidhoarder.com (2022). In addition to each segmentation category, they also address in their list which of Google's advertising systems can be used: Display, Video In-Stream, Video Discovery, Gmail, Search, Shopping. One of the 10 most important factors defined by Alcouffe (2013) concerns the content elements of ads. According to him, more effective communication can be achieved by creating attractive ads.

Among the listed Google Ads advertising options, display ads are the ones where both image and text presentation play a particularly important role. So, in this study, the question was in what form artificial intelligence can provide the content elements of the ad. In the first phase of the study, a literature review is conducted that seeks an answer to the question of the optimal design of the Google Ads ad and the possible applications of artificial intelligence, in addition to the communication options. Then, instead of a consumer survey, ads created in the system under active conditions are presented, one by Artificial Intelligence and the other by a marketer. The results section of the study examines the conversion differences between the ads placed with a small budget and looks for the answer to the question: can artificial intelligence communicate and achieve business goals more effectively than a marketer?

2. Literature review

It is interesting that the appearance of television almost 100 years ago caused at least as much doubt (Stephens, 2022) as the possibilities of the Internet, since many assumed that with its appearance the strategy that companies could use would be limited (Porter, 2001). However, the opposite was true, and not only tactical solutions but also strategic trends developed. A study by Ascend 2 (2019), which looked at marketing strategies, showed that the main goal for companies was still revenue (64%), but alongside this, many other conversion goals were mentioned that had nothing to do with revenue (e.g., increasing website traffic by 25%). Respondents considered content marketing to be the best tactic (58%), followed by search engine optimization (50%) and ads on search engines and social media in 4th place with 34%.

2.1. Digital marketing channels

In reviewing the work of practitioners and theoretical researchers, I have concluded that typically between 5-12 digital marketing channels are identified (Siddiqui, 2020, Lane, 2022). And the differences arise from inconsistent blending and separation of categories. Lindley's (2022) practical article divides channels into a total of 7 parts: social media marketing, search engine optimization, email marketing, video marketing, affiliate marketing, influencer marketing, and click-based advertising. Among these channels, which have emerged in the course of the development of information and communication technologies and whose aim is to influence the communication of the company's offer and the decision-making of customers (Aswani et al., 2018), in this paper I focus on PPC-based advertising. The importance of this topic is confirmed by the results of Josifovska's (2022) study on PPC statistics, according to which spending on search engine advertising will exceed $191 billion by 2024. Almost half of the companies plan to invest in this marketing channel. Hill (2019) found for various PPC platforms that display ads can increase website traffic by 300% and Google can reach 5.6 billion people. McCandless (1998) defined banner advertising in his pre-millennial article. It is the most common form of advertising on the Internet and can be placed on the side, top or even bottom of the website depending on its position. Murphy, Peltekian, and Gardner (2018) also mention a specific advertising system in their definition of display advertising: "Paid advertisements that appeared on the side of the user's internet browser while browsing the internet on various websites determined by Google Ads for their relevance and suitability" (Murphy, Peltekian and Gardner, 2018:4). The purpose of this ad is to direct consumers to a specific website thanks to its clickable form. Ahmed and Kwon (2014) emphasise that despite the existence of various online advertising channels, companies usually opt for display ads, which are studied by many researchers from different perspectives.

2.2. Digital marketing measurement

Costing for online ads can be done in several ways. Mangani (2004) was the first to examine the framework for display-based pay-per-view and search-based pay-per-click pricing methods. In terms of cost, the equivalent of click-based advertising is CPC (cost-per-click), while in the case of pay-per-view it is CPM (cost-per-

impression) (Ahmed and Kwon, 2012). Fjell (2010) has already studied the relationship between this cost and click-through rate. In my opinion, he is right because the performance indicators and metrics of these click-based ads are derived from the clicks. Consumer (user) acceptance and perspective is expressed by click-through rate (Yang and Zhai, 2022). For this reason, both researchers and practitioners are concerned with it in general (Robinson et al., 2007) or in the context of its prediction (Richardson et al., 2007). Dean (2022) used 4 million search results as the basis for his study CTR, to determine click-through rates for organic results. On average, the first non-advertised result has a click-through rate of 27.6%, while the tenth result on the same page has only a tenth of that. Valve and Metre's (2018) study looked specifically at ad click-through rates, which averaged 2% across all industries. Within these ads, Lincoln (2021) focused specifically on display ads and found that the click-through rate in this case was only 0.46%. However, there are other ways to measure performance, but this area is theoretically underdeveloped (Järvinen and Karjaluoto, 2015). They reflected on the structure of the metrics as follows, "Marketers need a comprehensive but manageable set of performance metrics, which requires that they understand the relationships among the metrics and are able to focus on the critical metrics" (Järvinen and Karjaluoto, 2015:120). Accordingly, in their research, they established several metrics that serve as the basis for measuring efficiency. Brown (1996) made eight different suggestions for effective performance measurement:

It makes more sense to use fewer indicators,
It is necessary to link the measured data to success factors,
Indicators must focus on the past, present, and future,
The development of indicators must be based on stakeholder expectations,
There is a need to assess performance at the whole process level,
Indicators can be combined for a more comprehensive assessment,
There is a need to ensure flexibility of indicators,
Indicators need to be linked to business objectives.

In his article, Bonini (2018) examines the metrics found and applicable in the Google Ads system, which not only meet Brown's (1996) definitions but also serve as the basis for important conclusions from the perspective of this study. These include impression, which reflects the total number of impressions achieved in each time period, and clicks, which allow conclusions to be drawn about the relevance of the ad when the click-through rate is calculated from the previous two data. In addition, the bounce rate, the time spent on the page and the number of engaged users can also be studied, but these data are not presented in this study. In contrast to the conversion rate, which represents the achievement of the goal set by the company, the request for a quote for the service. In Hungary, Gál (2015, 2016) has published several books about the Google Ads system, which help companies to optimize their ads and had a great influence on my research direction. Science does not deal specifically with the creation of ads for several reasons. One of the most important is that it is a very rapidly changing field, so publications become outdated too quickly. Therefore, I will not address ad setting in this study. Google Ads has published informational material (Google.com, 2022) for successfully setting ads.

2.3. Artificial Intelligence in marketing

According to Google.com (2022), display ads can reach 90% of Internet users through websites, videos, and apps. And the message is delivered based on the definition of different criteria. Gale's (2022) thoughts on Google Ads display ads: "When you think of Google Ads targeting, you probably think of keywords. What you probably do not immediately think of is audiences: Ads for people based on who they are, not what they are looking for." (Gales, S.J., www.wordstream.com). Artificial intelligence is already playing an active role in this process. There are several machine learning techniques, such as supervised machine learning, which can be used in the separation of pre-labelled data (spam mail filtering), or unsupervised learning, which can be used in clustering and segmentation (Adoni, 2018). In the article by Data-flair (2019), it can be read that Google calls itself the first company to use machine learning techniques. This is complemented by the article by Google Debelopers (2022), which states that the applications of supervised machine learning techniques are more diverse than unsupervised machine learning. Even after extensive research, no information can be found that clearly indicates which method is used to collect consumer data and effectively implement segmentation and targeting in the Google Ads system.

In any case, AI has a significant impact on daily life and is estimated to be worth over $136 billion by 2022. This value is expected to increase 13-fold in the next 8 years (Howarth, 2021). Key statistics from Jovanovic (2022) include data on companies: 37% of companies use artificial intelligence. Moreover, nine out of ten leading companies are investing in this capability. On his website, Marr (2021) gives several examples of how companies are using artificial intelligence and for what activities. Some for self-driving cars (Alphabet), others for digital assistants (Amazon, Apple, Google). However, from the perspective of this study, the method used by the Alibaba company is important because it automatically creates product descriptions - that is, it is used to generate content. The technology was characterized on Alibabatech.com (2018), and its benefits were defined in three points. Discovers consumer preferences, generates selling points, and personalizes the process. In my research, I am looking for an answer to the question of how the content created by the automata behaves in the Google Ads system.

3. Research method

The literature review confirmed that among the applicable channels of digital marketing, click-based ads, which include display ads, are an effective solution to reach consumers. Instead of surveying consumers, the study evaluates the role of artificial intelligence in content creation, its performance, and its impact on conversions through this advertising channel.

3.1. Content elements of the research

To conduct the study, an appropriate website (simplified.com) and a marketing expert created an appropriate amount of content that included the keywords wedding photo and wedding video, and the name of the base company in Hungarian. In both cases, the created texts contained 5 headlines with a maximum length of 30 characters each. Also, 1 long title line with 90 characters and 4

descriptions with a maximum length of 90 characters each. Table No. 1 contains sample texts (translated from Hungarian into English).

Table 1: Texts, created by marketing expert and AI

	Marketing expert	Artificial Intelligence
Title example	Wedding photos and videos for the price of '22	Professional photo and video
Title example	Your wedding is an eternal memory	A beautiful, lasting memory
Title example	Trust us with your wedding photography	Several years of experience with weddings
Title example	Trust us with your wedding video	We preserve your memories for a lifetime
Long Title	For love, there is only one remedy: marriage. And we will capture your big days.	Our experienced team captures your wedding in stunning detail, from start to finish.
Description example	Fulfil your dream, and we will make it a lifelong memory!	Request a quote today or contact us for a free consultation: We will answer all your questions
Description example	Remember with our wedding photos and relive your big day with our video!	We offer a wide range of photography and videography services to capture your big day
Description example	Request a quote for wedding photography and video at 2022 prices today!	Our goal is to give you an everlasting memory with stunning images and videos!

Source: Own editing

Besides headlines and descriptions, the most important element of display ads is the visual design.

Figure 1 Pictures, created by a Photographer and AI
Source: Own editing

The left side of the image collection at Figure No. 1 was created by a professional photographer, while the right side was created using a special artificial intelligence page.

The image generation function of artificial intelligence already provides several setting options. The length and verbosity of the specified expression affects the level of detail in the final image. Many websites offer settings that affect the style of the final image. The first image on the right is marked as natural and the second image on the right is marked as futuristic. The third image on the right, which is different from the usual illustration where you see an AI-generated flower instead of humans, turned out not to be the type of image normally shown in advertising when consulting with the photographer and marketer. Although the images do not show this, the AI-generated faces are still indistinguishable, they are abstract, and this was also shown in the advertising system during the test.

3.2 Conducting the research
Since the purpose of the research is to evaluate the role of artificial intelligence in content creation, its effectiveness, and its impact on achieving business goals, two ads were created in the Google Ads system. These ads are display ads created by a marketing specialist. The base business sells video and photography services for weddings, and the specific ads were created in this context, with the goal of requesting a quote for the service. The ads followed the following system:

The content elements of the ads reached an excellent level, based on the Google Ads system (they contained the right amount and quality of text and images). For excerpts, see "3.1 Content Elements of the Research"

The ads were shown only to women aged 25-44 living in Hungary (consistent geographic and demographic targeting was used)

The ads included only "life events, getting married soon" as an additional option to narrow down the target audience.

The ads ran for 10 days within a period (affected time: 09/09/2022-19/09/2022)

The ads ran on a consistent - low - budget.

The additional settings of the displays have been adjusted as far as possible so that only differences in content provide information.

4. Results

If we assume that the precision settings made in the Google Ads system were able to display the ads at the same time, under the same conditions, and to the same audience, then there is no variable other than the difference in the text and image content of the ad. So, the results for the two ads show the performance of the content. Table No. 2 contains the main indicators that were also listed in "2. The literature review". Marketing expert in the left column, Artificial Intelligence in the right column.

Table 2 Texts, created by marketing expert and AI

	Marketing expert	Artificial Intelligence
Clicks	103	95
Impressions	112000	113000
Click Trough Rate	0.09%	0.08%
Avarage CPC	49.43 HUF	53.61 HUF
Total costs	5090 HUF	5090 HUF
Number of conversions	2	1
Estimated conversion value*	798000 HUF	399000 HUF
Estimated ROI*	15597%	7739%

Source: Own editing

*A peculiarity of the wedding photography and videography market is that the time between sending and accepting an offer that meets the needs of consumers is relatively long. The value of the submitted price offers is listed in the "Estimated conversion value" line. These offers have not yet been accepted, but when they are accepted, the values in the line "Estimated ROI" are converted to real values.

4.1. Examination of the results

The ad written by the marketing expert received more clicks, a total of 103, and the Artificial Intelligence achieved 95 clicks. The impression rate was also almost the same between the two ads. As a result, the CTR also differed only slightly, with a value of 0.09% for the marketing expert, and 0.08% for the AI. The cost per clicks also reflected these data, in the case of AI, a click cost almost HUF 4 more. The number of conversions was 2 in the case of the marketing expert, while 1 in the case of the AI. The value of the offer issued by the company for 1 conversion was HUF 399,000 on average, which also assumed the same value in these cases. The estimated value was highlighted accordingly, which becomes a real value after consumer acceptance, like the ROI value.

5. Conclusions

The ads created had a much lower click-through rate than average (Lincoln, 2021): only 0.08 and 0.09% compared to 0.42%. However, the cost per click is much lower than the market average (Bobchenok, 2022): 49-54 HUF instead of the average 274 HUF. On average, the conversion rate is between 2-5% (Kim, 2022). The marketer's ad achieved a rate of 1.94%, while AI's ad achieved only 0.94%.

In my opinion, the prepared text content meets the general requirements as it appeals to both emotions and realistic motives. It is not possible to draw general conclusions from the low budget, but in such a specialized market, the small differences are likely due to differences in image content.

The study has several limitations, which are listed below:

The segmentation of ads was based on local, demographic, and life event criteria; further fine-tuning of these criteria could yield better results,

The amount spent on the ads was at the author's expense, so the results represent a small number due to budget constraints,

Survey results may be different at different times, for different age groups, and in different locations.

Despite these limitations, however, we can conclude that AI's role as a content creator exceeds my expectations and is little different in effectiveness from content created by a marketer. The fact that the amount spent on advertising significantly exceeds the expected revenue means that it also has a positive impact on achieving business goals.

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