MODUL UNIVERSITY
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The Present and Forthcoming Influence of AI Text-to-Image Platforms on Marketing Management

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Master Thesis submitted in fulfillment of the Degree

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In Management

Submitted to Dr. Daniel Dan

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Vienna, 03. 06. 2023.

Affidavit

I hereby affirm that this Master's Thesis represents my own written work and that I have used no sources and aids other than those indicated. All passages quoted from publications or paraphrased from these sources are properly cited and attributed.

The thesis was not submitted in the same or in a substantially similar version, not even partially, to another examination board and was not published elsewhere.

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Abstract

The recent introduction of generative AI platforms seems to be having a profound impact on businesses. AI text-to-image platforms, in particular, have a high chance of shaping the present and future of marketing management when it comes to finding or creating proper visuals for advertisement purposes. This thesis revolves around this topic with a concurrent nested research design which included a qualitative and quantitative part. This design allowed the author of this thesis to analyze the topic from multiple perspectives via conducting interviews with experts as well as by exploring people's perceptions and preferences when it comes to comparing AI and human generated advertisement visuals. The results show that there is significant potential in AI text-to-image platforms as they can facilitate workflow, inspire new ideas and establish the foundations for a new profession, which will also considerably shape marketing management. The results also suggest implications which can be utilized by marketers when it comes to targeting people using AI-generated visual. Due to the novel nature of the topic as well as based on the findings of the research, several recommendations for future research are outlined at the end of this document.

Acknowledgements

I would like to start by expressing my gratitude to all my family members, friends, and professors, who helped me in reaching the place where I am currently regarding my academic career. Without their support and guidance, I would never have been able to get this far.

Management is an intriguing field of study that can be looked at very simplistically, but also in a very intricate way. Coming to Vienna as a foreigner, living in a different country, and doing a master's has had its challenges. However, amidst all that, studying Management MSc at Modul University Vienna taught me an invaluable lesson regarding management, which is that management is everywhere all the time and management is the key. Whether it is a startup, a presentation, a friendship, your health, your time, sustainability, a project, or a thesis like this, if you learn the skills to be a successful manager, you also learn to use the "key" to successfully manage anything in life. Of course, apart from this, I learned many things at Modul, which is why I am proud to say that I am a Modulian.

While I was certainly influenced by all the professors that I have come across at Modul, I would like to take the opportunity to express my appreciation for two lecturers in particular. Stefan Bauer, who was the lecturer of the course: Entrepreneurship Capstone, during which he introduced me to innovative and practical tools and platforms (including Figma, Miro, and Neuroflash, among others) that can help you in managing mundane or specific tasks in an efficient way by first and foremost inspiring you. This experience evoked my interest when it comes to how technology can be used to elevate management to unforeseen heights. The other professor whom I would like to mention is Prof. Dr. Daniel Dan, who was the Emerging Tools for New Media and Information Management lecturer. This professor not only further encouraged me to be interested in technology (with an emphasis on AI), but he also shed light on how such technologies can affect industries and societies as a whole. These experiences led me to be interested in how AI technology transforms marketing management, which was later also the field I chose for my thesis.

I was fortunate to have Prof. Dr. Daniel Dan as my thesis supervisor, who has extremely insightful knowledge and notions regarding AI and its influence, and to whom I could always reach out when it comes to any questions or doubts, that I had regarding this thesis and its corresponding research. He helped me in forming a path regarding my thesis, which I can be very proud of.

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List of Abbreviations

AI – Artificial Intelligence

ML – Machine Learning

HI - Human Intelligence

SEO – Search Engine Optimization

1. Introduction

Recently AI text-to-image generator platforms became available to the public. These platforms allow their users to generate any type of image within seconds, using only words (prompts) and their imagination. Prompts like *'Coca-Cola advertisement painted in the style of Salvador Dali'* or *'Coca-Cola advertisement, Jackson Pollock style'* can lead to images showcased below in as low as 20 seconds.

Picture 1. Images created by the text-to-image generation platform Dall-E 2 using prompts such as 'Coca-Cola advertisement painted in the style of Salvador Dali' and 'Coca-Cola advertisement, Jackson Pollock style'.

As it can be seen, the technology can generate complex visual content, and because these images were created by the author of this thesis, who has limited skills when it comes to drawing or painting, be it analog or digital, the resulting images are quite fascinating. Keeping in mind these factors with the notion that such images can be generated in 20 seconds, combined with the seemingly endless

opportunities in terms of prompt combinations that can be used to generate an image, one can assume that this technology can have the potential to significantly influence any industry or field where visual content plays an important role. It might generate new professions, it might destroy existing professions, it might alter existing professions, and it might have an effect on how people perceive visual content in general.

One such field where visual content plays an exceptionally important role is marketing. Whether the topic is brand management, social media marketing, direct marketing, influencer marketing, or content marketing, marketing management is deeply intertwined with visual contents, since visuals are elemental parts of storytelling. To see how marketing management might be affected by the appearance of AI text-to-image technology, this thesis research sought to explore how the technology works and what are the perceptions of experts, when it comes to platforms that are offering AI text-to-image generation services, as well as to explore what the perceptions of the public (potential customers) are when it comes to AI generated advertisement visuals.

Thus, the topic that this thesis research revolved around covers how this new emerging technology, namely AI text-to-image programs and platforms might affect the field of marketing management. The focus was on how this technology might change the process of advertising creation and as a consequence how it might change marketing management in general. The author of this thesis believes that this study is relevant since AI algorithms already play a big role in numerous processes when it comes to marketing management. It is implemented via chatbots, advertisement personalization, and search engine optimization - just to name a few, which is why it can be expected that marketers will adopt this new technology as well. Since the AI text-to-image programs and platforms work surprisingly well (Saharia et al., 2022), they can be used by anyone, and it only takes seconds to generate multiple photos, one can assume that these AI text-to-image programs and platforms will most likely pose significant implications when it comes to the of the future of marketing as well as when it comes to any other fields where visual designs play an important role. These are the main reasons why this research is thought to be relevant to be conducted.

The main research question that guided the course of this research was:

- How might AI text-to-image programs and platforms affect the field of marketing management?

Since these programs can be easily used by anyone, marketing departments might not necessarily need to rely on graphic designers' work when it comes to designing the visuals for their advertisements.

Sub questions:

- Does that mean that graphic designers' profession and role - at least when it comes to designing the visual aspects of advertisements - become obsolete?
- Will marketers be inclined to adopt the new technology?
- Will graphic designers adopt this technology?
- What is the customers' perception of AI-generated visuals?
- Does it matter at all for customers if an advert is created by AI?

As a more detailed, well-written prompt generates better images, it requires some skill or experience with the program to generate the best possible images.

Sub question:

- Does that mean that there will be a new role like an "AI whisperer" (prompt-engineer) whose job will be to use these platforms effectively and to provide platform specific know-how?

These are questions that are worth finding answers to, and the aim of this thesis was to find those answers so that one can get an overall answer to the main research question. Therefore, based on these collected answers, the main goal of this thesis was to conduct research that produces useful and practical insights regarding AI text-to-image programs and platforms for marketers.

When it comes to topics such as how AI is being used for visual content generation, how AI is used for marketing purposes, what effect AI has on marketing and other business-related fields, and what people's perceptions of AI-generated content are, there has been considerable research conducted, as these are all topics that researchers found significant and worthwhile to explore. Following the footsteps of these researchers, this thesis also aimed at expanding the related literature and providing areas for future research.

Following this introductory chapter there are 7 further chapters in this thesis. In the second chapter the literature review is presented in which relevant research is outlined regarding topics such as the relationship between AI and marketing, generating content with AI, and in particular generating visual content with AI. The third chapter showcases the methodology that was applied during the course of this thesis research, including the adopted research philosophy, the used research instruments, the applied sampling procedures, the implemented data analysis techniques, the considered data quality issues, the limitations of the research, and the research ethics that were considered. In the fourth and fifth chapters the results of the quantitative and qualitative research are presented. The sixth chapter discusses the results of the research in light of the reviewed literature. In the seventh chapter some recommendations for future research are provided. The eighth and concluding chapter the research

and the main takeaways are summarized. The conclusion is followed by the listed bibliography and appendices.

2. Literature review

This chapter presents the literature review, and it consists of three main parts, which are followed by two smaller segments. The first showcases research and overview when it comes to Artificial Intelligence (AI) and in particular Machine Learning (ML), along with their effect on marketing. The second part outlines research in which people's perceptions of AI-generated content as well as human-generated content were compared. The final main part of the literature review shows how AI was and is being used for visual content creation, and it also presents an emerging technological novelty that is called AI text-to-image generation. These parts are followed by 2 smaller segments that present one AI text-to-image platform as well as another novelty, an AI text-to-text platform.

2.1. Artificial intelligence and marketing

To begin the literature review, in this chapter an outline is presented when it comes to AI with an emphasis on ML, showcasing the reasons for and the methodologies used regarding the implementations of these technologies in connection with business purposes with special attention allocated to the field of marketing. Apart from the said main topic, this chapter also presents previously conducted research that was concerned with the overall influence of AI on the field of marketing and the companies' internal perception of adopting AI.

2.1.1. Artificial Intelligence and Machine Learning

Ma and Sun (2020) posit that although the notion of AI has historical roots, notable research in connection with the field began in the 1950s when Alan Turing established the well-known Turing test, which basically had the goal of being able to determine whether a machine can think in the way human beings are able to. Other researchers such as Volkmar et al. (2022) point out that the history of AI can be traced back to 1956 which was the year when a workshop called the Dartmouth Summer Conference was held and during which the foundations of the field of AI were laid. In either case, even though AI has quite a long history, there is no general definition for the technology (Torra et al., 2019). Campbell et al. (2020) characterize AI as a technology that has the capability to provide the means for machines by which they can learn from actions they made previously and using such experience they are able to perform functions that are human-like. Researchers such as Vlačić et al. (2021) have a similar description for the technology as they define AI as a structured system that can imitate the patterns in which humans act or think, which also allows AI to not only be able to learn from experience but to be able to improve upon itself via updating its knowledge. Other researchers including Hossain

et al. (2022) posit that artificial intelligence can be explained as a system that is capable of interpreting external data appropriately, and as a consequence, this system is also capable of learning from the data which in turn provides the capability to use this learned information to do specific tasks and goals while flexibly adapting along the process. Huang and rust (2022) describe AI as machines that can digitally and computationally mimic as well as emulate human intelligence. Moreover, such machines also have the potential to even surpass humans in tasks that are mechanical or thinking in nature. As can be seen, there are several different descriptions regarding AI, and while there are some slight differences, the underlying themes are quite similar to one another.

When it comes to talking about the other important term in the case of this research, namely MS, researchers, such as Kopalle et al. (2022), described it as a mechanism that is basically a component of AI, and that can be used in combination with other technologies, so that machines can autonomously perceive as well as build knowledge via interactions with humans. Volkmar et al. (2022) underlined that ML are essentially computer programs that have the capability to learn from experience and that do not rely on continuously being instructed by humans. As opposed to constantly being instructed, algorithms that are built based on ML can analyze and identify patterns as well as to build their knowledge by processing data, which consequently allows ML to produce predictions. ML has become a significant technology, due to it being a popular choice in fields such as computer vision, natural language processing, speech recognition, and other fields (Campbell et al., 2020). As these technologies have been described, the next subchapter explores how AI is being used for business and marketing-related purposes.

2.1.2. AI implemented in businesses and marketing

Tools that are based on AI and that are focused in some ways on customers can provide many benefits for businesses, which is why these tools have been becoming prevalent in different fields and industries such as healthcare, retail, education, transportation, finance, and communication. AI is considered to be a technology that has good potential in changing organizational strategies as well as management processes. Hossain et al. (2022) state that by adopting AI business performance can be advanced and the challenges of the competitive environment can be lowered. As the researcher underlines, this is achieved by the facilitation of dynamic learning which also provides competitive advantages. Other researchers such as Davenport et al. (2020) highlight that AI can also be used for gathering insights from data to automate certain aspects of business, as well as to engage customers or employees. The possibility that ML provides when it comes to searching for patterns in data can also provide businesses with the potential to make more informed decisions. For the abovementioned reasons, AI has caught the attention of professionals and practitioners from fields and business departments like accounting, finance, and customer service (Ngai and Wu, 2022). Taking into consideration the potential benefits

that AI can provide, it was considered the most influential technology, in terms of business along with it being recognized as the primary workplace trend in the year 2020 (Vlačić et al., 2021).

Based on the aforementioned notions of researchers, it can be seen that AI-empowered tools are becoming sought after, thanks to the numerous areas where they provide benefits. According to many researchers, among these areas, marketing is the field that can potentially benefit the most from AI-empowered tools. While the interest from businesses and practitioners regarding AI has been clearly prevalent, academic interest was similarly increasing in the past few decades. Before delving into why researchers think that marketing is the field that could earn the most by adapting AI tools, it is important to showcase how academic interest in the topic evolved. Vlačić et al. (2021) conducted thorough research regarding the evolving role of artificial intelligence in marketing and as a part of their research, they analyzed the academic interest in AI and marketing. The researchers reviewed literature between 1987 and 2020 searching for academic journals that were written about the topic of marketing and AI or intelligent systems. They found that there was a growing interest regarding the topic which peaked recently (see Figure 1).

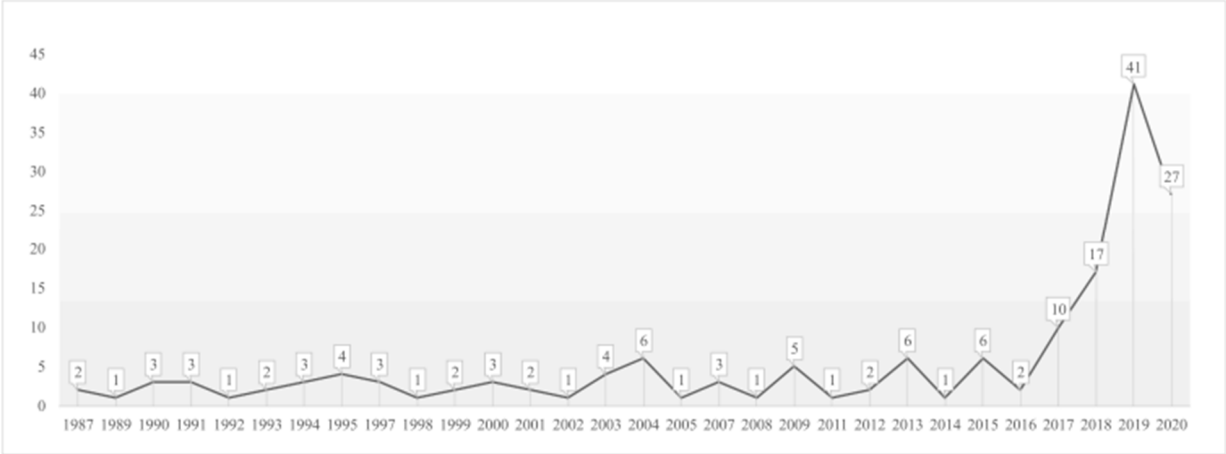


Figure 1. Publishing frequency of journals on the topic of Marketing and AI or intelligent systems. Source: Vlaˇci´c (2021)

Researchers such as Davenport et al. (2020) underline that, the marketing discipline should be taking a leading role when it comes to adapting AI since this is the field that can benefit the most from the technological advances of AI. Campbell et al. (2020) similarly highlight the importance of AI as they outline that technology should be taken into consideration by every marketing manager, due to the fact that among the technologies, AI provides the highest growth for marketing. Ngai and Wu (2022) argue that with the development of communication and information technologies, a new digital marketing environment has emerged, in which to make effective marketing decisions, businesses need to adapt methods and tools that are data-oriented so that they can generate insights via data analysis. For instance, ML can be used in order to generate insights by mining useful information from huge

amounts of data. Other researchers such as Vlačić et al. (2021) posit that due to the appearance of a new type of customer that has a rapidly changing need, the importance of insights retrieved from internet user data became significant and AI is among the tools that can be used to successfully track and understand customers' digital footprints, thereby tackling the challenges that the emergence of the new type of customers impose. AI and ML can enable marketers to tailor recommendations in real-time and to adhere to individual customer needs. It can also provide improvements in process automation, market forecasting, and - as it has been already pointed out by other researchers – in decision-making (Volkmar et al., 2022). All things considered, it can be seen that among the different business-related fields, researchers highlighted marketing as the one where ML and AI can potentially provide the most benefits via a multitude of ways and for a number of reasons, however, what most researchers agreed on is that probably the primary reason why marketing can benefit from AI and ML has to do with the growing number of internet users and the data they are generating via using the internet – which can be captured and utilized for marketing purposes. According to Statista (2023), there were more than 5 billion internet users and about 4.8 billion social media users in April of 2023 (see Figure 2).

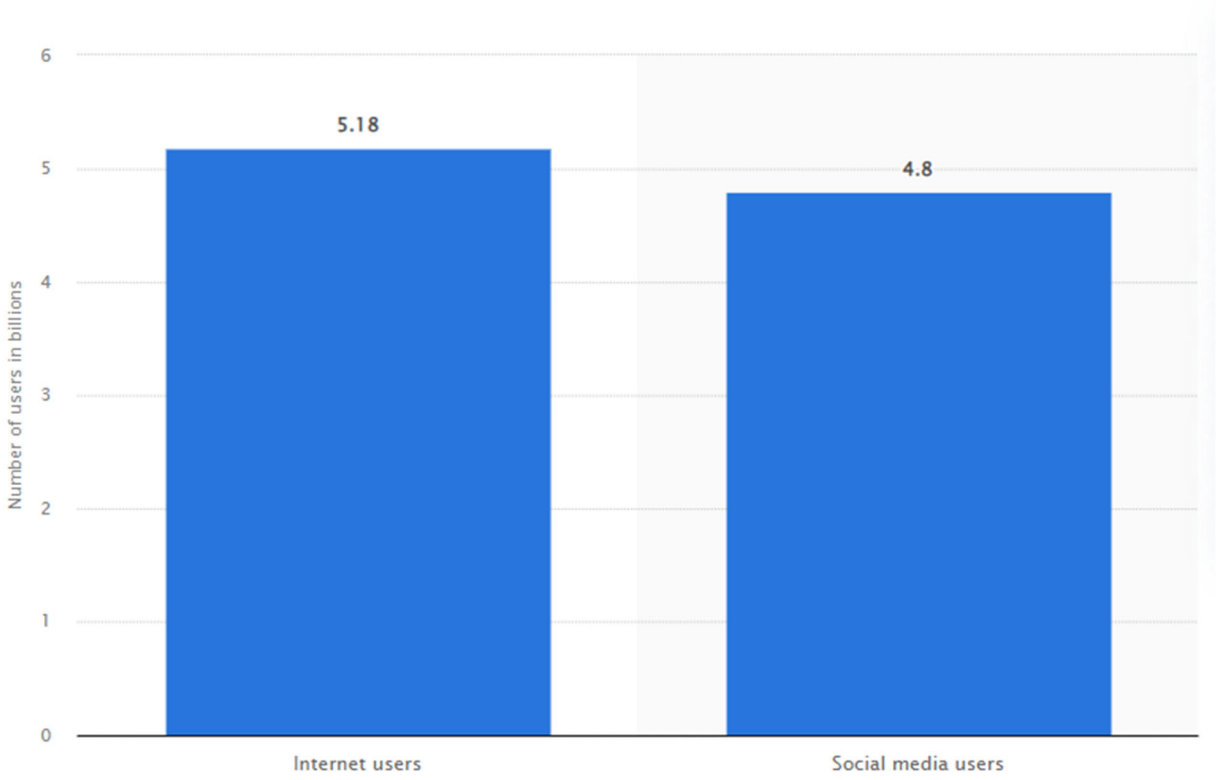


Figure 2. Number of internet and social media users worldwide as of April 2023. Source: Statista (2023)

2.1.3. How AI transforms marketing

As AI and the tools that it empowers became prevalent, many researchers started to argue that business and especially marketing is being transformed by this technology. As Hossain et al. (2022) assert, business is no longer imaginable without data, as data can be considered the "oil" for the digital economy, since using that data businesses can infer insights that they wouldn't be able to do otherwise. Marketers and marketing analytics are leading the way in this regard, and they can lead businesses forward. Data is the source of AI, and it is also the source of marketing, which might be the reason why the two fields became so intertwined. Marketing has changed due to the appearance of tools empowered by AI and specifically ML, as these tools can provide infinite opportunities for marketers (Volkmar et al., 2022). In addition, marketing has also been changed by new and efficient ways of collecting user data. Kopalle et al. (2022) state that the development of AI technologies provides a significant step when it comes to data collection, analyzation, utilization, and collection. AI transformed and is transforming many features of the field of marketing, however, some of the most significant transformations have to do with the challenges of adopting AI tools as well as with the perception of AI.

As could be seen, AI provides numerous opportunities and several potential advantages for marketing professionals, however achieving the potential that AI adoption provides can be hindered by challenges (Campbell et al., 2020). Many researchers highlighted challenges and potential obstacles that could hinder AI adoption. Vlačić et al. (2021) suggest that companies need to have the commitment from all the different levels within the company hierarchy towards embracing a given AI technology, otherwise, the implementation of the AI might become a failure. In other words, it is important to have an aligned vision towards the given AI technology, especially in terms of its expected utilization (Vlačić et al., 2021). Similarly, Volkmar et al. (2022) also underline the importance of understanding when it comes to implementing AI technologies. In their study, the researchers found that it is important that decision-makers understand the implemented AI technology at least in their managerial context, and although they do not necessarily need to obtain expert knowledge, understanding the given AI system within its context would be essential. In their study -which had consistent findings with previous studies-, they also found that managers generally have less tolerance for failure in the case of AI while being more tolerant in the case of human subjects. Another obstacle can be the lack of know-how when it comes to implementing AI technologies or tools. For instance, Davenport et al. (2020) posits that even though AI applications might have standardized and structured contexts, companies might struggle with implementing these technologies due to the lack of expertise, and hence they hire specialized companies to help them in setting up the AI applications. It has been mentioned already that due to the abundance of digital user data on the internet, such data became

the main engine for AI-powered tools that can be implemented in marketing. However, Campbell et al. (2020) state that while this is indeed true, data requirements for utilizing AI tools are quite high, and searching for as well as collecting the data might be challenging.

Perhaps the biggest obstacle regarding adapting AI technologies is an internal one. As Campbell et al. (2020) state, there is a range of industries in which employees are concerned that AI might replace them, and consequently, they are afraid of losing their jobs. Huang and Rust (2022) assert that there have been persistent and ongoing debates regarding whether AI merely augments humans or replaces them. As many researchers support the former, and many studies' findings are in line with the latter, the debate is far from being settled. As a consequence of this uncertainty regarding the impact and the role of AI when it comes to marketing, concerns have been evoked among marketers, since they cannot be sure whether a given task should be done by marketers, should be "handed over" to AI, or should be done by marketers while using AI that augments the human input (Huang and rust, 2022). To explore this topic, the mentioned researchers conducted a study about collaborative intelligence in marketing and developed a framework that provides guidance for marketers, customers, and researchers regarding how AI can augment and replace humans. According to Huang and Rust (2022), in order to use AI efficiently, marketers need to achieve effective collaborative intelligence, which is essentially about combining AI and HI (Human intelligence) in an efficient way. As the researchers outline, the nature of HI is biological whereas the nature of AI is computational, and due to these inherent different natures, the two different intelligence types have distinctive characteristics, and consequently, they also have comparative strengths. AI tends to be good at analytics and computation, basically in fields that have to do with operating with data. Conversely, HI is relatively good at fields that require contextual, feeling, and intuitive understanding as well as skills. In figure 3 below, the researchers showcase where the different AI strengths can augment HI strengths in collaborative intelligence. For instance, as can be seen, analytical thinking and mechanical intelligence of AI can augment the intuitive thinking of HI.

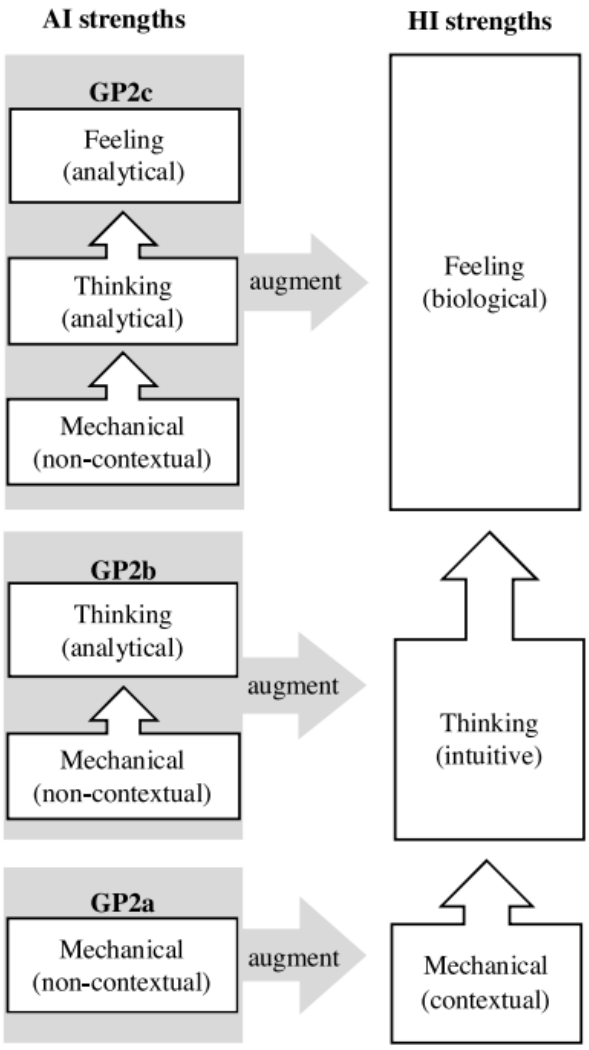
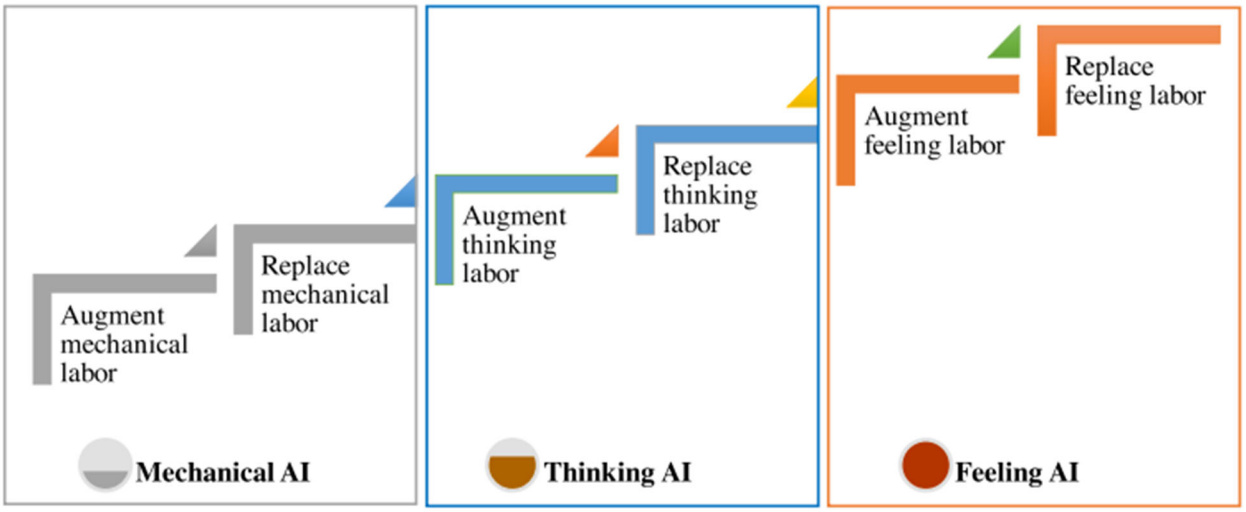


Figure 3. AI augments HI in collaborative intelligence. Source: Huang and Rust (2022).

The researchers distinguish 3 intelligence levels, namely: Mechanical, Thinking, and Feeling. According to Huang and Rust, AI first augments Human labor within an intelligence level, and as the technology evolves and becomes more effective at tackling specific jobs at a certain intelligence level, it can also autonomously outperform HI, thereby eventually replacing HI when it comes to the given degree of intellect. Figure 4 showcases the sequence of the augmentation and replacement processes for the different intelligence levels (Huang and rust, 2022). For instance, when it comes to the mechanical level, first, assembly lines were developed that could assist mechanical labor in their overall efficiency and productivity, by providing each employee the opportunity of specializing in a particular task and mastering that. So initially, technology augmented mechanical labor. After the technological preconditions became advanced enough, smart human-less factories completely replaced assembly lines that involved human workers. According to the researchers, a similar augmentation process could be observed in the Thinking and Feeling intelligence levels, and they predict that in both levels of

intelligence, the eventual technological maturation will allow the replacement of human agents (Huang and rust, 2022).

The researchers assert that marketers need to observe technological advances within a given field and they need to strategically involve AI-empowered tools based on their given capabilities as well as based on the strengths, weaknesses, and needs of the marketing department. This machine-human collaboration between marketers and AI can be described as a mechanism that always develops according to technological improvements, and marketers eventually need to advance their collaborative use of AI technology to a level, where this machine-human collaboration progresses into the eventual substitution of HI by AI (Huang and rust, 2022).



Implications for marketers illustrated					
Assembly lines help workers assemble parts together	Smart human-less factory	In-car smart systems assist human drivers	Driverless cars	Voice analytics augment customer service agents	Natural language processing systems replace human customer service agents
Implications for consumers illustrated					
Electronic upright vacuums help consumers do house cleaning chores	Robotic vacuums replace consumer labor for house cleaning	Price or product comparison websites help consumers choose the right product at the price	Product recommendation engines replace consumer efforts in finding the right product	Sentiment analysis for online reviews helps consumers decide which brand to buy	Facial expression recognition systems recommend products for consumption based on consumer moods

Figure 4. The sequence of AI first augmenting and then replacing HI. Source: Huang and Rust (2022).

2.2. Generating content with AI

This chapter of the literature review discusses a special case of utilizing AI for marketing purposes, namely, to use AI for generating content. First, the importance of creating content is presented, which is followed by the challenges of generating content. To end this subchapter, the closing paragraphs revolve around research that has been conducted regarding people's perception of AI-generated content.

2.2.1. Content generation

As has already been discussed in the previous chapter, AI can be used for several purposes in marketing. Some of these AI applications have to do with generating or creating content (which was generally solely created by humans) that is in some way consumable by potential customers. When it comes to content generation, content can include words and images and anything visual that is published via radio, TV, or magazine. More recently in terms of digital marketing, it can also mean created or uploaded content which can be anything that the potential customers see, read, learn, or experience on a website (Vinerena, 2017). As Kee and Yazdanifard (2015) highlight, in order to generate effective content, a marketer has to take into consideration many different aspects. For instance, the content must be localized (the content is created using the appropriate language and culture) and personalized (the content is relevant to the respective customer). Having the right visuals to support a particular content is also important when it comes to improving effectiveness. Additionally, effective content has to evoke emotions, as the higher the emotional impact of a given content, the higher the chance that customers will follow up on the content and engage in an activity that the particular brand wants via the content. Evoking emotions can also help in forming deep relationships with customers (Kee and Yazdanifard, 2015).

2.2.2. Challenges of generating content

Due to the importance of content and its generation, as well as due to the growing number of available AI tools that can be used for marketing purposes, many researchers conducted research in which they analyzed customers' perceptions of AI-generated content. Thanks to the immense computational power that can be utilized by AI, creating a range of different contents became possible via AI-empowered tools (Kim et al., 2020). One of the main reasons why this topic attracted the attention of researchers has to do with the perceived challenges of creating content. As Ananthakrishnan and Arunachalam (2022) posit, one of the challenges of creating content is making sure that the content that is generated represents the brand identity which is a set of distinctive characteristics which are associated with the brand. The researchers also highlight that one of the most crucial challenges is posed by the creativity level of a given content. Other researchers such as Köbis and Mossink (2021)

also underline the challenge of creating creative content by AI, especially in the light of the classical view, as throughout history it was unimaginable that machines could one day become creative. However, one can assume that with emerging tools such as ML, algorithms can adapt and learn, by which they might reach a point where they will be able to generate original and unforeseen outputs.

2.2.3. Perception of AI-generated content

With the challenges of generating proper content in mind, it would be beneficial to see how AI-generated content is perceived by customers. While this question revolves around a topic that is of crucial importance, academic attention to this field is rather limited so far. To bridge this gap, Köbis and Mossink (2021) conducted research in which study participants had to evaluate human-generated poems and poems that were generated by GPT-2 which is a natural language generation algorithm developed by OpenAI (Solaiman et al., 2019). Interestingly, the results showcased that participants were not able to reliably identify the poetry that were generated using GPT-2. In a similar study, Wu et al. (2020) investigated people's perceived differences when it comes to human and AI-generated paintings and poems. Based on the results of a survey that was spread among American and Chinese subjects, the authors of the study found that American participants generally preferred human-generated poems and paintings, whereas Chinese participants were much more accepting when it comes to AI-generated content. As a part of another research that aimed at exploring people's perception of AI-generated contents, Kim et al. (2020) conducted a study in which participants had to evaluate the effectiveness of AI-generated video, audio, and text compared to that of generated by humans. Their results showed that the participants didn't perceive any differences when it comes to human and AI-generated texts, in terms of their perceived quality, credibility, and readability. However, regarding audio content, the participants perceived some differences and rated AI-generated voices as lower in quality. When it comes to the video contents, the researchers found that due to technical limitations, AI-generated videos could not match the quality of human-generated videos and therefore, the perceived quality of the human-generated videos was higher according to the participants. In a similar study, Ananthakrishnan and Arunachalam (2022) conducted research in which they examined whether there is a perceived difference between human-generated and AI-aided brand content in terms of creativity, brand personality representation, and content type. Participants in the research had to evaluate the perceived differences between human-generated and AI-aided luxury car brand advertisements. The results showed that 69 percent of the participants indicated a preference for AI-aided content. So, as it can be seen, based on these studies, AI-generated content can not only be on par with human-generated content, but in certain content types, it can even outperform human-generated content. All in all, even though the research was relatively limited

regarding how AI-generated content is perceived by customers, these few studies mentioned above showcase that AI is emerging as a powerful tool when it comes to content generation.

2.3. Generating visual content with AI

This final main subchapter of the literature review starts by outlining the history of AI-generated art. Following the recent developments regarding the emerging technology of text-to-image generation are presented. Finally, an AI text-to image platform, which is called DALL-E 2 and that can be used to create novel visual content based on natural language descriptions (OpenAI, 2022) is briefly presented along with some of the technologies that made its establishment possible.

2.3.1. The development of AI-generated arts

As Grba (2022) posits, Art and AI have been connected since the 1970s, as there have been many artists such as Harold Cohen and Peter Beyls, who began tackling the idea of involving Artificial Intelligence in the creation of art. However, in the 1970s as well as in the following decade, the progress within the field was rather finite due to the limited overall interest regarding the idea of involving AI in art generation, as well as due to the lack of available AI-systems and the lack of funds that were needed to advance the field. From the beginning of the 1990s, thanks to progress in AI research, artists were given the opportunity to monitor and analyze the differences between human and machinic behavior when it comes to art generation (exploring aspects such as creativity and expression), however the first real breakthrough within the field arrived in the 2000s, as this period marked the start of artists using AI-empowered statistical techniques and algorithms such as computer vision (CV) and natural language processing (NLP) (Grba, 2022). Computer vision systems can be used to detect different parts of a given image and based on the detected parts, data-driven models can generate image descriptions (Mitchell et al., 2012). In the picture below (Picture 1) an example can be seen of an image with a generated description (Mitchell et al., 2012). Natural language processing on the other hand is mainly used to achieve information extraction, provide a dialog interface, provide translation, summarization, or question answering (Wiriyathammabhum et al., 2016).

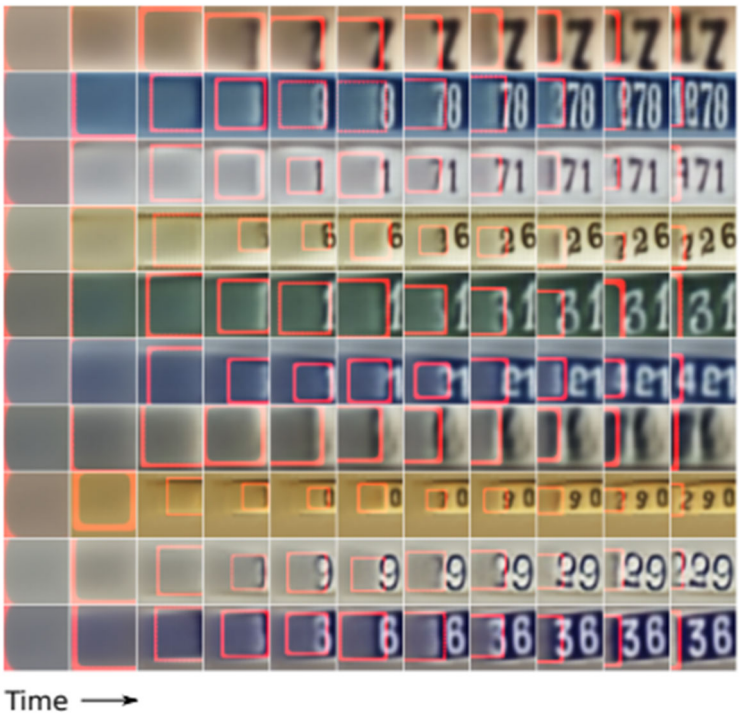
The bus by the road with a clear blue sky

Picture 2. Illustration of a generated description for an image. Source: (Mitchell et al., 2012)

Researchers such as Cetinic and James (2021) posit that one of the most important technological advancements when it comes to image generation was the appearance of Generative Adversarial Networks (GANs) because GANs provided a turning point when it comes to how machines can be used in generating new visual contents (Cetinic and James, 2021). Other researchers, such as Zhang et al. (2022), called the introduction of GANs a real breakthrough in the fields of computer vision and image synthesis. Renowned computer scientist Yann LeCun described the concept of GANs to be the coolest idea to emerge in the field of machine learning within the past few decades (Wang et al., 2017). In a Generative Adversarial Network, there are two models (a generator and a discriminator) that are essentially competing with one another. The task of the generator model is to understand the distribution of the real input images and based on this data to generate images that are as realistic as the input images, whereas the task of the discriminator model is to distinguish generated images from the input images, labeling the generated images as "fake" and the input images as "real" (Cetinic and James, 2021). The generator model cannot access the input images, it can only interact with the discriminator model, whereas the latter has access to both the input images and the generated images. The generator achieves its goal if it is can confuse the discriminator whereby the ratio of the generated images reaches at least 50% when it comes to the images that the discriminator labeled as true images (Creswell, 2018). The implementation of GANs produced several instances where the network was able to generate convincingly realistic fake images, and there have been several researchers and experts who expanded on the original GAN architecture, thereby generating novel and more advanced variations (Cetinic and James, 2021).

2.3.2. Text-to-image generation

Text-to-image generation refers to the process of generating an image based on a text description (Qiao et al., 2019). To introduce the first model that was able to successfully tackle text-to-image generation, it is important to briefly talk about the Deep Recurrent Attentive Writer (DRAW) neural network architecture, which formed the basis for said text-to-image generator model. The DRAW was created by Google researchers Gregor et al. (2015). The DRAW network mimics the angling of the eyes to focus on an object and using its framework allows the generation of complex images in an iterative way (Gregor et al., 2015). The researchers used the Street View House Numbers (SVHN) dataset (which is a real-world image dataset used for object recognition algorithms) and produced convincingly realistic SVHN images. In the picture below one can see how the model generated such SVHN images step-by-step, drawing the digits one at a time, as illustrated in Picture 2 below.



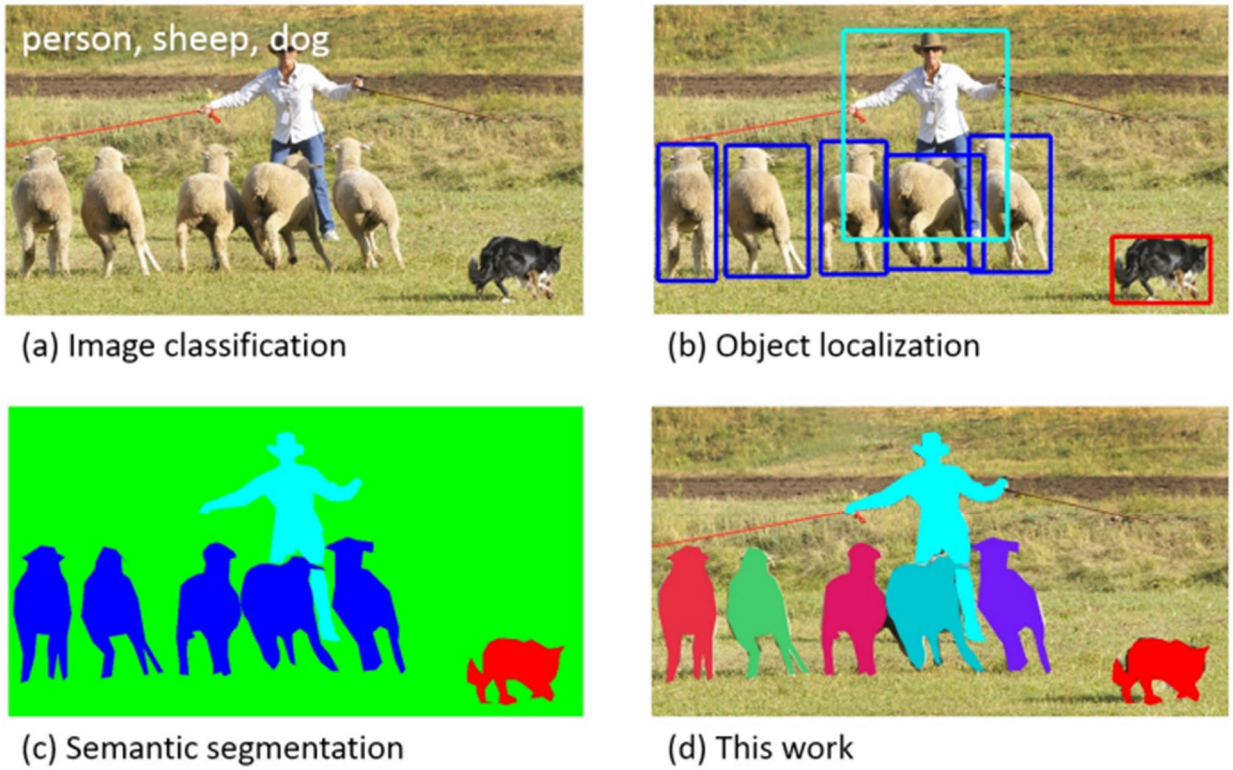
Picture 3. Sequential demonstration of how DRAW generates SVHN images. The red square shows the attention patch of the model in the given section. Source: Gregor et al. (2015)

The inverse of generating descriptions for images using AI, namely, generating images from descriptions using AI (text-to-image generation) was initiated by Mansinov et al. in 2015. These researchers argued that images on webpages and in books often appear with unstructured descriptions which could be used to create an efficient model for image generation. Their alignDRAW model was based on the DRAW network and it could draw on canvas based on the words that were in the description (unstructured natural language caption). Using the model, the researchers were able to successfully change the colors, and the backgrounds in the generated images. For instance, they were able to generate images of objects such as school buses with different colors for each generated image (see Picture 3).

Picture 4. Images generated using the descriptions below them Source: Mansinov et al. (2015)

2.3.3. Datasets

When it comes to training models for object classification regarding images, the availability of large-scale online datasets is crucial. For instance, such datasets can be digitized art galleries. In the past decades, digitalization efforts regarding art collections increased significantly. While digitization offers us the opportunity to enjoy these artworks online, due to the fact that apart from the image additional information about the artwork (e.g., complex description regarding the structure, material, and style) is also uploaded, combining the additional information with the images of the artworks can provide datasets for deep learning research and computer vision (Cetinic and She, 2021). Apart from digitized art collections, there are many other datasets that are created with the intention of advancing computer vision, especially object detection. For example, such a dataset is the Microsoft COCO dataset which provides more than 200 000 labeled images, 5 captions per image, and a unique approach to segmenting which is the segmentation of individual object instances (Cocodataset, 2022). Picture 4 below showcases the process of object segmentation in the Microsoft COCO dataset.

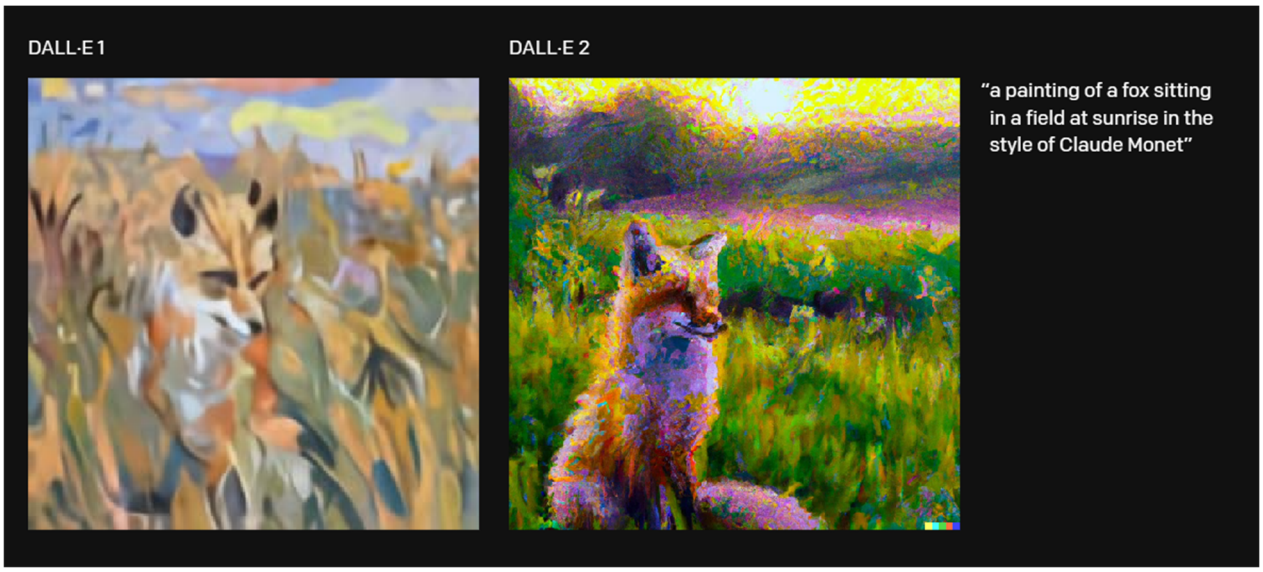


Picture 5. Object segmentation in the Microsoft COCO dataset. Source: Lin et al. (2014)

2.3.4. GPT and DALL-E

In order to advance progress when it comes to the field of Natural Language Processing and text-to-image generation, the artificial intelligence research laboratory OpenAI released a paper in 2018, in which they introduced the Generative Pre-trained transformer (GPT) which has an architecture that

consists of unsupervised pre-training stage as well as supervised fine-tuning stage (Radford et al., 2018). The GPT was later scaled up to GPT-2 which was further scaled up to GPT-3 which has 175 billion parameters (compared to the 15 billion parameters of GPT-2), making it one of the largest publicly disclosed language models (Tamkin et al., 2021). In 2021, OpenAI introduced DALL-E, which is an AI system that can be used to generate realistic images based on natural language descriptions. DALL-E is a multimodal version of GPT-3 and it is trained on both images and text (Tamkin et al., 2021). DALL-E 2 can generate images in high resolution, and it has a greater comprehension. It was trained with a neural network of images as well as the descriptions of those images, which allows DALL-E 2 to apply what it learned when it comes to generating new images. It can not only understand the visual appearance of different objects, but it can also comprehend the relationship between these objects, which allows the platform to create images of the objects based on the certain relationships described in a prompt (OpenAI, 2022). Picture 5 below shows the difference between the output of DALL-E and DALL-E 2 based on the same prompt. As one can observe, DALLE-2 indeed generates in higher resolution and a more detailed image, compared to DALL-E, based on the same prompt.



Picture 6. The different images were generated by DALL-E and DALL-E 2 using the description on the right: "a painting of a fox sitting in a field at sunrise in the style if Claude Monet" Source: Open AI, (2022)

Recently, many other text-to-image models and platforms became available, which all provide users the possibility to use their unprecedented capability of generating images in numerous styles based on natural language descriptions (Gal et al., 2022). Next to DALL-E 2, the recently developed and published platforms include Stable Diffusion (which was created in 2022 by Stability AI) and Midjourney (which was developed and released by Midjourney research lab in 2022) (Borji, 2022). While all three platforms can generate astonishingly good images, as of writing this thesis, the author found that among the 3 popular and publicly available text-to-image generator platforms, DALL-E 2 has the most

user-friendly interface, and it is also the easiest to use. Since this research is about analyzing the potential influence of AI text-to-image platforms on marketing management, DALL-E 2 was determined to be the platform that forms the basis of the research, because based on its characteristics, DALL-E 2 has the best chance of being adopted.

2.3.5. ChatGPT

While this thesis research is first and foremost focused on analyzing the potential influence of AI text-to-image platforms on marketing management, due to the appearance and the subsequent widespread use of ChatGPT, and its supposedly high influence on a range of different fields, the author of this thesis decided to incorporate ChatGPT into the research, in order to see its potential impact on the usage of text-to-image generation platforms. For this reason, ChatGPT is briefly touched upon in here the literature review. ChatGPT also uses the GPT architecture as its foundation and its prototype version was introduced in November 2022 (Haleem, Javaid, and Singh, 2022). ChatGPT's interface appears as a live discussion and the given user can start the dialogue by requesting a query, which then is answered by ChatGPT in a persuasive human-like way. The discussion can continue with follow-up queries and ChatGPT can respond if the requests by the user are suitable (Haleem, Javaid, and Singh, 2022). The platform can produce convincing English text that is on par with papers submitted in universities or high schools. Due to its extraordinary capabilities, ChatGPT rapidly became widespread and by reaching 100 million users within the first two months following its release, it became the most steeply growing consumer online app in history (Mackenzie, 2023).

2.4. Context of the research

As it has been discussed in chapter 2.1., AI provided numerous advances when it comes to progressing the field of marketing and DALL-E is yet another AI technological innovation that can contribute to the field of marketing. In chapter 2.2, one could also see that content generation is thought to be extremely challenging, therefore if quality visual content can be generated via AI technology, one can assume that it has the potential to transform the field of marketing management. Due to the new nature of text-to-image platforms such as DALL-E 2 as well as due to the fact that it can apparently generate quality visual content and finally, due to the immense potential changes that these AI-text-to-image platforms could provide to the field of marketing, it would be important to assess marketing professionals' remarks regarding this emerging technology. As could be seen in chapter 2.2.3., it is important to analyze customer perception of AI-generated content, and as DALL-E 2 can create unique visuals that are in many cases have the potential to be on par with human-generated art, it would be instrumental to see customers' perception of advertisement visuals generated using DALL-E 2 and compare the results to customers' perception regarding human generated advertisement visuals. The

purpose of this research is to combine the expert view (provided by marketing professionals) on the potential influence of this technology on the field of marketing management, with the data collected regarding people's (potential customers') perception of AI-generated advertisement visuals, thereby providing an outlook regarding the potential changes that this technology might bring to the field of marketing management. Considering the dissimilar attributes and the corresponding strengths and weaknesses of the different AI text-to-image platforms, DALL-E 2 was chosen to form the basis of this research as it has the highest chance at being adopted by professionals within the marketing field.

3. Methodology

To start this section, a summary is provided, which outlines how the multi-strategy (in this case a concurrent nested design) is tailored to this thesis. This summary is based on a template which is provided for concurrent studies by Creswell (2009).

The intent of this concurrent nested study is to explore how AI text-to-image platforms and programs might influence the field of marketing management. In the study, questionnaires (quantitative instruments) are used to measure the relationship between using AI text-to-image technology for advertisement visuals (independent variable) and customers' perception (dependent variable). At the same time, the potential internal impacts of the technology on marketing management (central phenomenon) are explored using in-depth interviews (qualitative instruments) with professionals (participants) working at marketing departments or agencies. The reason for combining both quantitative and qualitative data is to better understand the research problem by converging both quantitative (broad numeric trends) and qualitative (detailed views) data.

This section aims at delving into the details of the methodology that was applied during this thesis research, by taking the abovementioned summary, disassembling it, and outlining the reasoning for the chosen methodology, the used research instruments, the sampling method, the data analysis and the limitations that relate to this research.

3.1. Research philosophy

This chapter presents the research philosophy that was adopted throughout this research. Research philosophy can be understood as a guideline for research, which provides the proper direction for the researcher. It organizes crucial aspects of a thesis and constructs the foundation of the research process (Sefotho, 2015). Holden and Lynch (2004) state that research should be first and foremost established on the research problem and the philosophical stance, based on which methodological choices can be made. As one can see, research philosophy forms an important and primary part of the

research process. There are 4 main philosophical research approaches that can be called philosophical worldviews. These 4 worldviews are Postpositivism, constructivism, transformative, and pragmatism (Creswell, 2014). Postpositivism highlights the importance of being objective as well as the significance of reliability and validity when it comes to quantitative research. On the other hand, constructivism underlines the importance of open-ended questions when it comes to qualitative research, as this approach can help researchers in learning about people's interpretation of the world (Creswell, 2014). These perspectives are important in the case of this research as well, however taking the research goal and the subjects into account, the research philosophy applied in this research is more aligned with the pragmatic worldview. As Creswell (2014) describes this worldview, pragmatism emphasizes the criticality of the research problem and the application of pluralistic (mixed method) approaches in order to gain knowledge regarding the said research problem. The pragmatic worldview is concerned with situations and consequences. While certainly all the abovementioned philosophical worldviews influenced this research process, as this research revolves around the influence (consequence) of AI text-to-image platforms on marketing management, the pragmatic worldview was found to be the most appropriate philosophical worldview to adopt and follow throughout this research process.

3.2. Selection of methodology

Designs that involve multiple strategies are referred to as multi-strategy designs (mixed methods strategies). Mixing and combining different methods can provide the researcher with numerous advantages. To start with, it allows the researcher to find a number of answers to several sub-questions (which otherwise might not be possible when using a fixed research design). As a result, the researcher can have a wide range of answers to said sub-questions and hence a more rounded answer to the main research question. Additionally, adopting a mixed method strategy can be advantageous when the researcher's goal is to analyze a complex phenomenon or situation (Robson, 2011). One of the multi-strategy designs (mixed methods strategies) is called concurrent mixed methods. Just like mixed methods strategies in general, the concurrent mixed methods approach provides the benefit of merging qualitative and quantitative data, thereby providing the opportunity for a comprehensive analysis that can be conducted regarding the research problem. Concurrent mixed methods also provide the possibility to approach and analyze different types of questions via different methods (Creswell, 2009). When it comes to how the data are mixed in the case of mixing methods, we are talking about embedding, when the researcher primarily collects a certain type of data (for instance qualitative via interviews) in order to provide supportive information for the research s(he) collects another type of data (for instance quantitative via questionnaires) as well (Creswell, 2009). Concurrent mixed methods can have different designs and one of these designs is referred to as concurrent nested

design. In a concurrent nested design, there are two (secondary and primary) research methods, and the secondary research method is embedded within the primary research method (Robson 2011).

Due to the nature of the purpose of this thesis, the complexness of the topic it revolves around, as well as the due to the benefits that a concurrent nested design can provide, the author of this thesis decided to implement a mixed methods approach in which the form of data-mixing is embedding.

As this research utilizes a concurrent nested design, it combines a qualitative research method and a quantitative research method. In the case of this research, the quantitative part consisted of a survey (data collection method: questionnaire) and the qualitative part consisted of face-to-face semi-structured interviews. The concurrent nested design in this case meant that the expert interviewees also filled in the questionnaire before the interviews took place and they also had to reflect on some of the overall results of the survey. In the following chapter, these research instruments are presented.

3.3. Research instruments (data collection methods)

As Pawar (2004) outlines, research cannot be tackled without data. Moreover, the quality and quantity of the data are significantly responsible for the quality of the research and for the extent to which the research objectives are met. The data quality and quantity are influenced by the data collection methods. The purpose of this chapter is to present the data collection methods (research instruments) that were utilized throughout this research.

When it comes to talking about the research and measurement instruments as well as the important variables, it is convenient to start by briefly reiterating the potential new understanding, the subjects of the research as well as the type of information that is needed in the case of my research.

This thesis aims at exploring and better understanding how AI text-to-image programs and platforms might influence the process of marketing campaign creation as well as explores and analyses customers' perceptions when it comes to the AI generated advertisement visuals, thereby providing marketers with useful insights which they can use to make their processes more effective. So, the potential new understanding of the topic when it comes to this thesis is the generated insights for marketers regarding this new and emerging technology as well as regarding its influence.

In terms of the subjects of the research, the following were identified: marketing management, visual content generation, advertising, marketing campaign development, customer perception of AI-generated content, graphic designers, experts working at marketing departments, experts working at agencies, , AI image generation, AI text-to-image platforms, and customers.

When it comes to the types of information needed, the following were identified: existing literature about AI image generation; existing literature about how AI changed and is currently changing marketing management; existing literature about customers' preferences regarding AI and human-generated content; customers' preferences regarding AI and human-generated visuals; marketing experts' notions and insights on AI and its influence on marketing, on the potential of the new technology, on their current management of advertisement visual creation, and the expected influence of the new technology. The first three types of data were collected and outlined in the literature review section of the thesis. The latter two types of data were obtained via a questionnaire and interviews. These two research instruments are described in the following subchapters.

3.3.1. Survey (questionnaire)

Questionnaires provide the bone-structure for surveys, and they are basically a list of questions that are delivered to respondents, thereby collecting information regarding their opinion (Roopa and Rani, 2012). Questionnaire-based surveys provide a simple, yet straightforward approach when it comes to investigating people's attitudes, beliefs, and motives (Robson, 2011). When it comes to measuring people's opinions or attitudes via questionnaires, using a Likert-scale can be an effective and straightforward approach (Albaum, 1997). Generally, Likert-scales are implemented via 5-point or 7-point scales. A significant advantage of using a 7-point Likert-scale is that it increases the chance that the responses and the results will be more well-founded (Joshi et al., 2015). Due to the characteristics detailed above, a Likert-scale focused questionnaire was used to collect information about people's perceptions and preferences regarding AI and human-generated advertisement visuals.

3.3.2. Interviews

We are talking about qualitative interviews, when the given researcher carries out face-to-face interviews with participants, using generally open-ended questions. It is beneficial to use a discussion guide which helps in asking the necessary questions. If the participant consents, the interviews can be taped which later can be transcribed, which in turn can help the data analysis process (Creswell, 2009). In a semi-structured interview (which is a type of interview), the researcher has a checklist of questions to be asked, however, the order of the questions is determined on the basis of the flow of the particular interview, due to which unplanned questions might also be asked in order to get the interviewee elaborate on something surprising s(he) mentioned. Using face-to-face interviews, especially with open-ended questions allows the researcher to go into depth when it comes to the topic in question, and such interviews can also generate unexpected questions and answers (Robson, 2011). Another advantage of interviews is that due to synchronous communication, the answers of the interviewee can be more spontaneous (Opdenakker, 2006). Considering their features, qualitative interviews were

determined to be used to gather information from industry professionals regarding their experience with AI as well as regarding their notions on the emerging tool in question.

The author of the thesis decided to utilize the research design outlined above. In the case of this research, the concurrent nested design consisted of a qualitative part in which the data collection method was in-depth interviews with marketing experts, by which professional marketers' experience with AI implementations regarding marketing management in addition to their thoughts regarding the analyzed new technology and its potential implications for the future of marketing management can be deeply explored. Additionally, the concurrent nested design in the case of this research also consisted of quantitative research in which the data collection method was (implementing 7-point Likert- scale statements) in which several respondents were asked to evaluate and compare AI-generated as well as human-generated advertisement visuals, thereby providing data about people's perception and preference regarding AI and human-generated advertisement visuals. As a result of the two research methods, relevant data was gathered that provides information about the potential impact that AI text-to-image generator technology might have on the field of marketing management.

3.3.3. Rejected research instruments

Experimentation is a data collection method that could have also been an appropriate choice considering the goals of this research, however, creating proper natural settings that are required to do successful experiments would have been expensive if at all feasible, therefore this method was rejected. Doing case studies is a method that is also common in research when it comes to social sciences, however, case studies have a high tendency to yield results that are not necessarily independent of the researcher (Garger, 2013, cited by Krusenvik, 2016), and as one of the main goals of this research was to be as objective as possible during the research process, this method was rejected as well.

Based on the benefits of the concurrent mixed methods approach, as well as the research question and research objectives of this thesis and keeping in mind the drawbacks of the other methods that were considered, the author is convinced that implementing the previously outlined design provided the right data for achieving the aim of this research.

3.4. Sampling procedures

A concurrent nested design is applied, therefore in the case of this thesis, it means that a secondary research method (questionnaire) was used and the results of the questionnaire provided further information and foundation when it comes to the primary research method (interviews). Due to this

mixed methods approach, in the following the sampling for both methods are presented, starting with the target populations and sampling frames.

When it comes to outlining the sampling frame for the questionnaire, the elements (participants) were respondents who were reached with the questionnaire. In the questionnaire, the respondents were asked to rate AI and human-generated advertisement visuals that represent very well-known brands (such as Coca-Cola, McDonald's, Nike, Shell, United Colors of Benetton, and Amazon). Due to the universal familiarity of these brands, and since the internet users who can fill in the questionnaire were likely to be exposed to visual advertisements on the internet, one could assume that practically anyone could be able to provide relevant answers in the questionnaire. In research where the variation in population is low, convenience sampling method is considered to be appropriate and useful (Saunders, Lewis, and Thornhill, 2017). For this reason, in the case of quantitative research, convenience sampling was applied. Additionally, because convenience sampling has relatively low costs compared to other sampling methods, and since the author and research conductor being a student, severely limited his assets both money and timewise, convenience sampling method was preferred applied regarding the quantitative research. To reach as many people as possible, the survey was shared in dedicated survey-sharing groups on social media as well as on survey-sharing platforms such as Surveycircle, Surveyswap, and PollPool.

After the questionnaire was published and distributed, it stayed open for 7 weeks, during which any eligible respondent that was exposed to the survey was free to participate. So, the sampling frame consisted of English-speaking (mainly European) respondents.

Regarding the sampling frame of the interviews, the elements were the participants (interviewees). In the case of this research, the interviewees were professional marketers working in marketing departments as well as experts working at agencies. The extent (geographical boundary) in this case was Europe, more specifically Austria and Hungary, due to the sampling methods that were applied for this qualitative research. The length of the period during which the interviews were conducted depended on the actual eventual number of interviews as well as the availability of the interviewees. Eventually, this length was 2 weeks.

In terms of the sampling method for the interviews, a combination of convenience sampling and snowball sampling was applied. Snowball sampling is a sampling method during which the researcher first identifies some individuals that are part of the target population and after the interviews were conducted with these interviewees, the researcher asks them to name other members they know from the target population (Robson and McCartan, 2016). In the case of this research, the sampling starts

with convenience sampling as the author reached out to experts who he had known or whose contacts were provided by his circle of acquaintances. After doing the interviews with these experts, the snowballing aspect gained relevance in the sampling as these interviewees were used as informants to identify further potential interviewees who are part of the target group and who were willing to participate in the research.

3.5. Data analysis

Since the majority of the questionnaire consisted of 7-point Likert scale statements, the answers of the questionnaire already bore numbers, which could be used as codes which in turn helped in facilitating the analysis of the results of the questionnaire. In terms of the analysis of the results of the questionnaire, descriptive analysis was applied with an emphasis on working with the means of the different Likert scale scores, as these means could show the central tendency of the scores, which in turn also showed us the central tendency of the respondents' opinion regarding a given statement. Descriptive statistics and the usage of mean - for determining and showcasing central tendency - are statistical methods that are recommended for analyzing Likert response items (Boone and Boone, 2012)

For the interviews a discussion guide was used which contained the predefined questions, however as the plan was to conduct semi-structured interviews, as has already been mentioned, the flow of it determined the order of the questions to be asked as well as whether additional questions were needed to be asked. The interviews were recorded (in agreement with the interviewees) following which they were transcribed. Clarke and Braum's framework for thematic analysis was applied in the transcript of the interviews. The goal of the thematic analysis is to produce codes and corresponding themes. The codes are essentially the smallest elements of the analyzed data, and they can be described as building units that express some interesting information regarding the researched phenomenon. After generating the codes, they can then be grouped together according to the underlying central ideas they share. As a result, the researcher can identify, organize, and interpret the collected data based on the research objectives (Clarke and Braun, 2016). The exact steps of the thematic analysis of the interviews are presented in chapter 5.

3.6. Data quality issues and limitations

Since this research had a mixed-method design, it is important to address potential data quality issues regarding both the qualitative and the quantitative research. This chapter presents these potential data quality issues.

When it comes to research, one of the most important aspects regarding data quality is called data reliability. As Brink (1993) explains, reliability has to do with the repeatability of the research, namely, whether the research can lead to the same findings if it is repeated. When for example a given qualitative research in any way lacks standardization, it can raise issues regarding reliability (Saunders, Lewis, and Thornhill 2007). Since the qualitative research regarding this thesis consists of semi-structured interviews, the issue regarding reliability is relevant in the case of this research. It is important to point out that the nature of the subject(s) of this research as well as the field the research aimed to delve into are dynamic and complex. Because the results of such research tell us about a reality that was observable in that specific time when the research was conducted when the researcher is faced with a situation where factors related to the research itself are subject to change, the use of research methods that are not standardized is not necessarily intended to be repeatable (Marshall and Rossman, 1999, cited by Saunders, Lewis, and Thornhill 2007). As the mentioned researchers highlight, due to the previously outlined phenomenon, making sure that such research is replicable might not be a feasible or realistic endeavor (Saunders, Lewis, and Thornhill 2007). Replicability of the research and its results could be similarly problematic in the case of the quantitative research presented throughout this document, due to the changing nature of the research subject(s) as well as due to the convenience sampling method that was used, since if the research was repeated the respondents might have a different point of view in accordance with the perception of the research subject(s) in the given time, whereas it could also not be guaranteed that the same people could be reached with the convenience sampling method.

Nevertheless, there are steps that can be taken to improve reliability. To accomplish this, the given researcher needs to make sure that s(he) creates and maintains habits and responses when using a certain qualitative research method, as well as when it comes to scoring and rating the results of the method (Brink, 1993).

Another important aspect of data quality is referred to as data validity. Data validity has to do with whether the data that has been measured represents accurately the participant's (respondent's) ideas. For example, if the interviews are not recorded via audio, and only the plain text of the conversation is documented, important information such as pitch and tone are omitted, thereby affecting validity (Maxwell, 1992, cited by Thomson, 2011). To mitigate such potential problems with validity and to record the interviewees' responses as accurately as possible in this research, the interviewees were asked if the interviews could be taped and whenever they allowed it, they were. Validity also refers to the magnitude to which the measuring instrument is measuring what it is intended to measure in the given research (Anastasi and Urbina, 1997, cited by Sürücü and Maslakçı, 2020). Likert scales empower

researchers by the possibility of gathering quantitative data about respondents' subjective attributes when the research is sufficiently specific (South et al., 2022). Since the quantitative part of this research has a very specific focus, in order to enhance validity regarding the quantitative research, a Likert scale questionnaire was chosen. As was previously outlined in this document, when one is comparing 5-point and 7-point Likert scales, 7-point Likert scales provide a wider range of options, thereby increasing the potential that the objective reality of the respondents is recorded (Joshi et al., 2015). Due to this reason, in order to improve the validity of the measurement instrument as well as the results it collects, a 7-point Likert scale was used in the quantitative research.

An additional issue regarding the data quality in questionnaires is that they have the potential drawback that respondents might not report according to their actual beliefs, and they might not take the questionnaire and its purpose seriously (Robson and McCartan, 2016).To improve the quality of the data by eliminating responses coming from participants that do not take seriously the questions and just skip through them without reading or thoroughly thinking about them, two attention-checking questions were included within the questionnaire. These attention-checking questions were disguised to appear as the other questions, thereby making sure that they blended in well with the other questions so that only participants who were paying attention during the research noticed them and answered correctly.

There are 3 more potential issues that were important to be acknowledged regarding possible data quality issues and their potential limiting factor when it comes to this research. Firstly, interviews have the drawback that the researcher's presence might cause the interviewees to give biased responses. Another issue with interviews is that not everybody is perceptive or articulate in the same way (Creswell, 2009). When it comes to the questionnaires, misunderstandings, and ambiguities regarding the questions of the questionnaire might not be noticed during the research (Robson and McCartan, 2016).

The author of this thesis acknowledged the abovementioned potential data quality issues regarding both the quantitative and qualitative research methods as well as regarding the data analysis and made every necessary step at his disposal to make sure these data quality issues and their effects were reduced as much as possible.

3.7. Limitations of the research

As Price and Murnan (2004) state, limitations of the research are described as the bias that is systematic and that was not controlled by the researcher or that the researcher could not control. As in the case of any research, this research also has several limitations. In chapter 3.5. potential data

quality issues and their limiting effect were addressed. In this chapter, further limitations are presented that were considered and acknowledged when it comes to this research.

While convenience sampling can suggest that there is a certain randomness in your sampling, there can be a number of unspecifiable biases and influences in the process of who gets selected (Robson and McCartan, 2016). Another potential issue regarding convenience sampling is that the resulting sample can be far from being representative of the target population. When it comes to the other sampling method that is used in this research, namely snowball sampling, an issue can be that interviewees will not be able to name a sufficient number of further potential interviewees or that the new interviewees might not be available during the research period.

To close with, I would like to address a limitation that might be caused by me, the researcher. It often happens that the researcher is mainly focusing on information that is easy to obtain rather than considering information that is more difficult to obtain. Another limitation that often comes into play among researchers is that the information which comes early in the research can leave a disproportionately huge impression compared to information that only comes later during the research. Finally, researchers tend to ignore information that is not in line with their own notions and mainly take into account data that supports their theories (Robson and McCartan 2016).

The author of the thesis acknowledged that the abovementioned factors and their limitations might threaten the reliability of its findings and made everything possible in order to mitigate the potential limiting power of these factors.

3.8. Research ethics

This chapter revolves around research ethics as well as the ethical issues that were considered throughout this research. The relevance of research ethics comes into light when the particular study involves human subjects (Dooly, Moore, and Vallejo, 2017). One of the main roles of research ethics is to prepare how the well-being of the participants in the research can be protected (Wassenaar and Mamotte, 2012). Research ethics can also be related to research topic clarity, data collecting, processing, storage, and analysis, as well as moral soundness of the presentations of the research findings (Saunders, Lewis, and Thornhill, 2017). The aforementioned researchers defined five general ethical matters related to research, which can provide guidance for business and management students. Building on these ethical matters described by Saunders, Lewis, and Thornhill (2007), in the following, the ethical guideline adapted for this thesis is presented:

- Prioritization of the privacy of actual and potential participants is of crucial importance;

- Participation in the research must be only and completely voluntary, with the possibility of their partial or complete withdrawal from the research process completely granted;
- Obtaining consent is paramount, doing so without the deception of the participants;
- Maintained anonymity as well as the confidentiality of the participants the data they provided must be granted;
- Participants' potential negative relations and reactions (such as stress, pain, harm, discomfort, and embarrassment) regarding the research process must be taken into consideration, which warrants a sensitive approach that prioritizes the participants' well-being.

The above-listed ethical guideline was adapted and applied throughout the research process and throughout writing this thesis. This guideline was in particular important, when it comes to approaching research participants in the case of both the survey as well as the interviews. In both cases, the participants were entitled to get the results of this research when it is finished. When it comes to the survey, the participants were presented with a welcome page in which they were informed of the following issues regarding their participation:

- They consent to have the data you provide collected and stored;
- They have the right to withdraw from this research at any time;
- Their anonymity is guaranteed;
- Their collected data is used to gather relevant insight for this thesis research and consequently, to produce valuable recommendations for marketing professionals;
- After they have completed the questionnaire, all their data will be stored securely and will not be shared with anyone else.

Similarly, in the case of the interview, before each interview took place the interviewees were informed of the following matters regarding their participation:

- The purpose of this interview is to provide information about their experience and thoughts;
- The information provided in this interview will only be used for the purposes of the academic research it is part of;
- By participating in the interview, they consent to have the data they provide collected and stored. The anonymity of my participation is guaranteed;
- They confirm that the decision to take part in this research is voluntary;
- If recording is possible, they also acknowledge that their permission to record the interview is voluntary;

- They may withdraw from the interview and research at any time, and any information they provide during this interview can be withdrawn from the research upon their request.

4. Results of the quantitative research

Before the results are presented, the exact structure and the elements of the questionnaire are outlined, so that a complete understanding can be obtained about the quantitative results and the way they came to be. The questionnaire was created using the LimeSurvey questionnaire tool. LimeSurvey provides a platform where researchers can construct their surveys in an intuitive way as well as export the results quickly in a number of different formats (LimeSurvey, 2023). The purpose of the survey was to assess people's preferences and perceptions regarding AI and human-generated visuals. The survey had 3 main parts.

The first part consisted of 10 different visuals that the participants had to evaluate one-by-one via 11 7-point Likert-scale statements (1=completely disagree, 2= disagree, 3= more or less disagree, 4= undecided, 5= more or less agree, 6= agree, 7=completely agree), such as "I think the advertisement is visually appealing.". The first main part of the questionnaire can be divided into 2 sections. The first section contained 4 images out of which 2 images were previously existing human-created Coca-Cola™ and McDonald's™ advertisement visuals, while the other 2 images were AI-generated recreations of these 2 images. The second section consisted of 6 AI-generated images that were advertisement visuals for Coca-Cola™, McDonald's™, Nike™, Shell™, United Colors of Benetton™, and Amazon™. The 8 newly generated visuals were all created using the text-to-image generation platform DALL-E 2. While numerous images were generated for many different brands for the purpose of the research, only those were selected that could most effectively fulfill the requirements of the given section based on the best judgement of the researcher. The requirement in the first section was to generate images that could best resemble the original idea of the 2 pre-existing advertisement visuals. The first requirement regarding generated images in the second section was to choose brands as subjects that are very well-known and that likely have a well-recognizable visual brand identity. The second requirement was to generate images that effectively resemble the given brand's visual identity in such a way, that customers would be likely to perceive them as genuine advertisements which could have been made by the given brand itself. The newly generated visuals were all created using the text-to-image generation platform DALL-E 2. While this platform was very good at creating impressive-looking visuals, typically it was not very effective at creating the currently used standardized logo of the given brand as well as it was not successful at generating texts. Therefore, appropriate logos as well as suitable texts for the given advertisement visuals were later inserted into the images, where it was needed. These later added elements were such that were used previously by the brands. For example,

when it comes to Picture 6 below, the visual was generated via DALL-E 2 using the prompt: “an astronaut wearing a yellow and red mcdonalds space suit standing on the surface of the moon holding a mcdonalds bag in his hand, photo shot with Hasselblad”, whereas the headline: “Every order gets its own trip.” As well as the McDelivery™ logo were subsequently added to the image.

Picture 7. The visuals of the image were generated by DALL-E via the following prompt: “an astronaut wearing a yellow and red McDonalds space suit standing on the surface of the moon holding a McDonalds bag in his hand, photo shot with Hasselblad” Source of the headline and the McDonald’s logo: Ads of the World (2018)

While this thesis research was ongoing regarding AI text-to-image technology as well as its influence, ChatGPT was announced in November 2022, and it quickly became dubbed as a revolutionary technology that has an impact in several different fields (Kalla and Smith, 2023). As this technology is not only powered also by AI, but it has a very similar platform and interface (AI text-to-text compared to AI text-to-image), and since digital marketing is said to be one of the fields that ChatGPT can affect (George and George, 2023), the decision was made to incorporate ChatGPT into the research in order to see whether AI text-to-image technology can be used in combination with AI text-to-text technology

and if so, what type of impact can the latter have on the former. In order to incorporate AI text-to-text into the research, in the case of 4 out of the 8 AI-generated images the prompts that were used were generated using ChatGPT. ChatGPT is unaware of information after 2021, therefore it is also unaware of AI text-to-image platforms and the way they can be used. For this reason, the platform was prompted to provide descriptions of advertisements for the particular brands, which descriptions were then cut down in order to be able to be used in DALL-E 2, as it limits input to 400 characters. The original PDF-converted questionnaire is shown in Appendix A, whereas the 2 original and 8 AI-generated images are listed in Appendix B with the prompts used for the AI images presented in their respective captions, which also include the source for additional logos or taglines, in case they were used.

The second part of the questionnaire reveals that 8 of the 10 visuals were generated via DALL-E 2. The goal of this part was to see people's general thoughts and reactions regarding this revelation as well as their thoughts and feelings regarding AI-generated visuals in general. This part consisted of 7 7-point Likert-scale statements such as "I would prefer to always know the origin (human or AI-generated) of the visuals of advertisements." Along with an open-ended question that provided the possibility for the respondents to add any additional further ideas or comments regarding the topic and the research, as well as a question regarding whether the respondents knew about AI text-to-image platforms before filling in this survey.

The third and final part of the questionnaire asked respondents to share some demographic details about themselves. It was important to collect demographic information in order to be able to later analyze if there are any differences regarding the preferences among the different demographic groups. This part consisted of 5 demography-related questions such as "What is your highest education level?".

4.1. Demographic characteristics of the survey respondents

During the 7 weeks that the survey was open, it gathered altogether more than 200 responses, however out of the 130 full responses, only 104 were considered valid, as these 104 respondents paid attention to correctly answering the attention checker questions. The demographic characteristics of these 104 people are presented in this chapter whereby the distribution of the respondents based on age, nationality, gender, educational and income characteristics of respondents are outlined based on the questions that were asked in the survey for these aforementioned demographic characteristics respectively. After the 7 weeks that the survey was open for the public, it was also distributed to 5

experts with whom the interviews were conducted, however since these experts were handled together as a different group, the demographics of these experts are not included in this chapter.

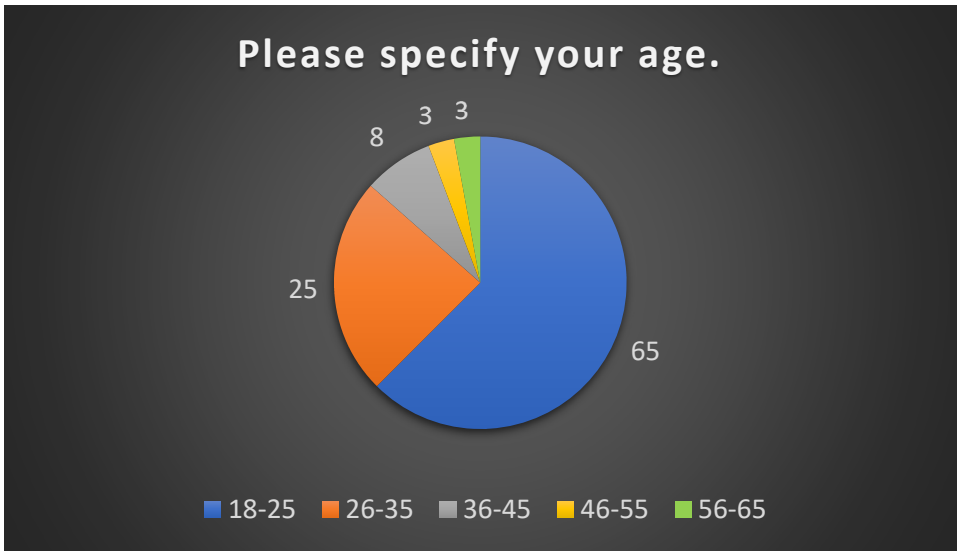


Figure 5. Age distribution of the survey respondents.

As figure 5 showcases the age distribution of the respondents based on the corresponding question *'Please specify your age.'*, it can be seen that the majority of the respondents were in the age group of *18-25* with 65 respondents, whereas the second biggest age group was the *26-35* with 25 respondents. This age group was followed by the age group of *36-45* with 8 respondents, and the two smallest were the *46-55* and the *56-65* age groups with 3-3 respondents respectively.

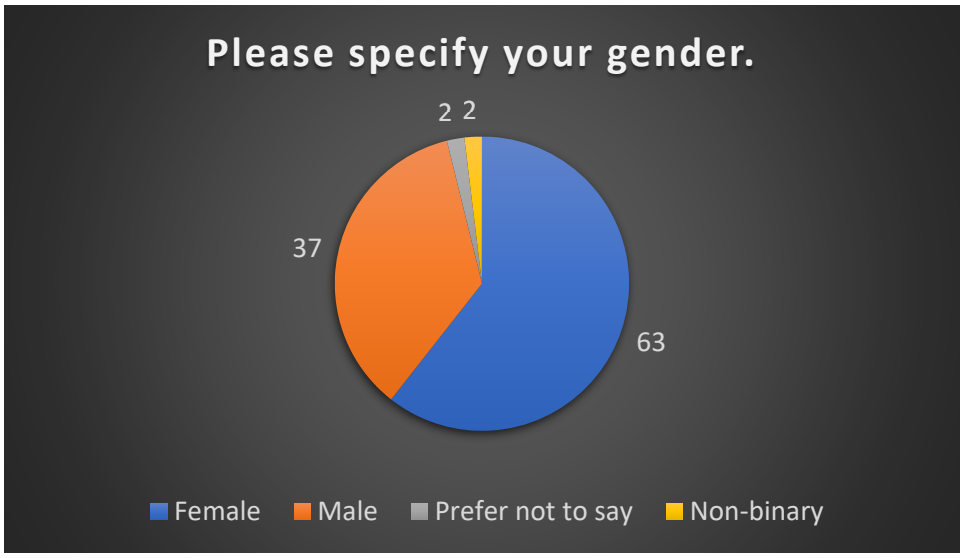


Figure 6. Gender distribution of the survey respondents.

When it comes to the gender distribution of the respondents, as it can be seen in figure 6, which is based on the results collected for the question '*Please specify your gender.'*, the majority of

respondents were *female* with 63 respondents, and the other relatively big group was the *male*, with 37 respondents. The other two groups, namely *Prefer not to say* and *Non-binary*, both covered 2-2 respondents respectively.

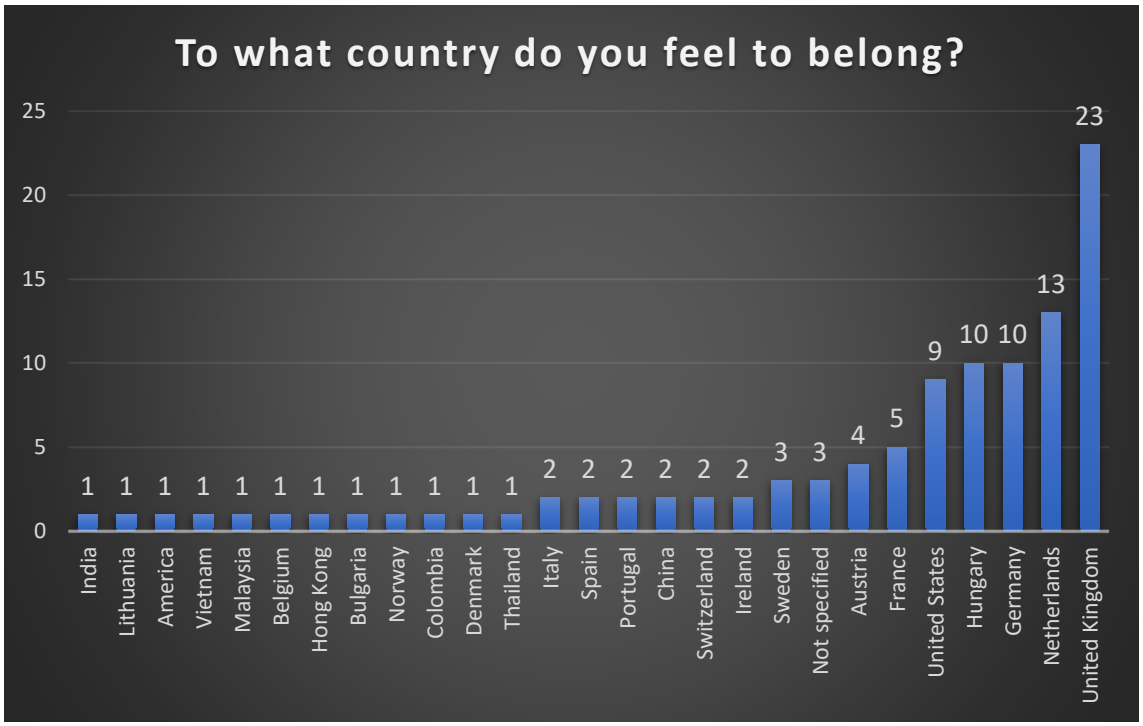


Figure 7. Home country distribution of the survey respondents.

Figure 7 presents the distribution of the responses to the question '*To what country do you feel to belong?'*. As is shown, compared to the other countries, most respondents belonged to the United Kingdom with 23 respondents, followed by countries such as the Netherlands, Germany, Hungary, and the United States with a relatively high number of respondents between 9-13. The rest of the countries featured in this research were represented by 1 to 5 respondents, with most countries being represented by 1 respondent.

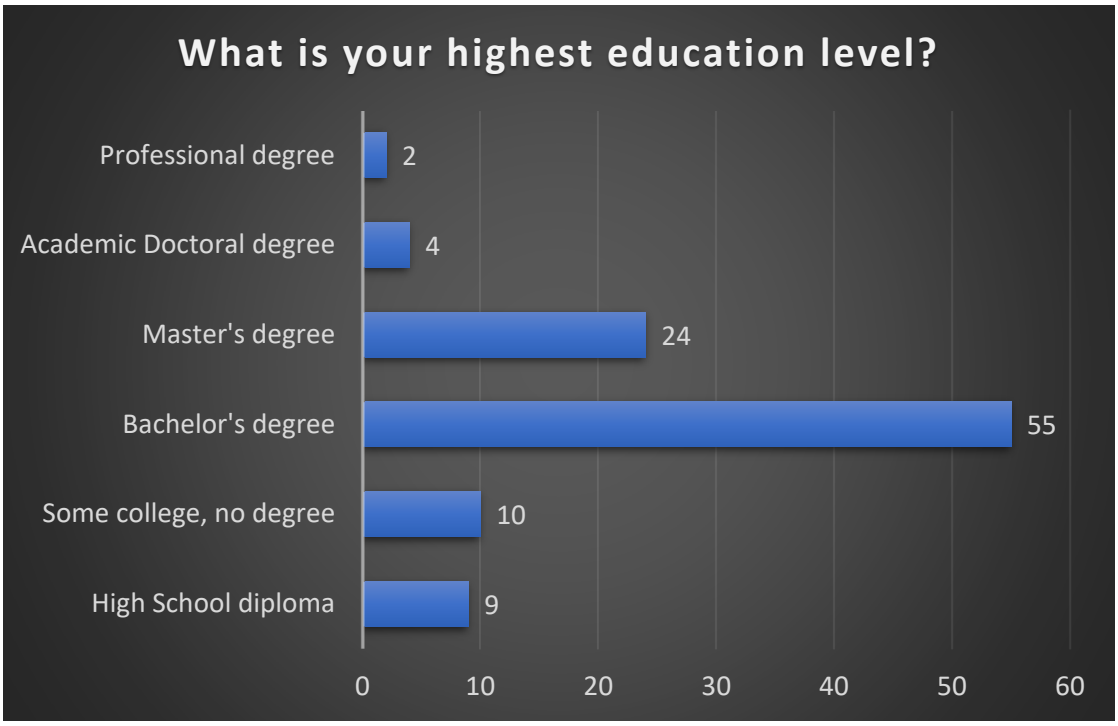


Figure 8. Educational distribution of the survey respondents.

Figure 8 illustrates the distribution of the respondents based on their highest education level according to the responses collected under the question '*What is your highest education level?*'. As one can see, the vast majority of the respondents had a *bachelor's degree* as their highest education level with 55 respondents. The second biggest group was that of the respondents who had a *master's degree* as their highest education level, accounting for 24 respondents. The third and fourth biggest groups included those respondents who had *some college no degree* as well as *high school* as their highest level of education collecting 10 and 9 responses respectively. The two smallest groups based on highest education level were *Academic Doctoral degree* and *Professional degree* with 4 and 2 responses respectively.

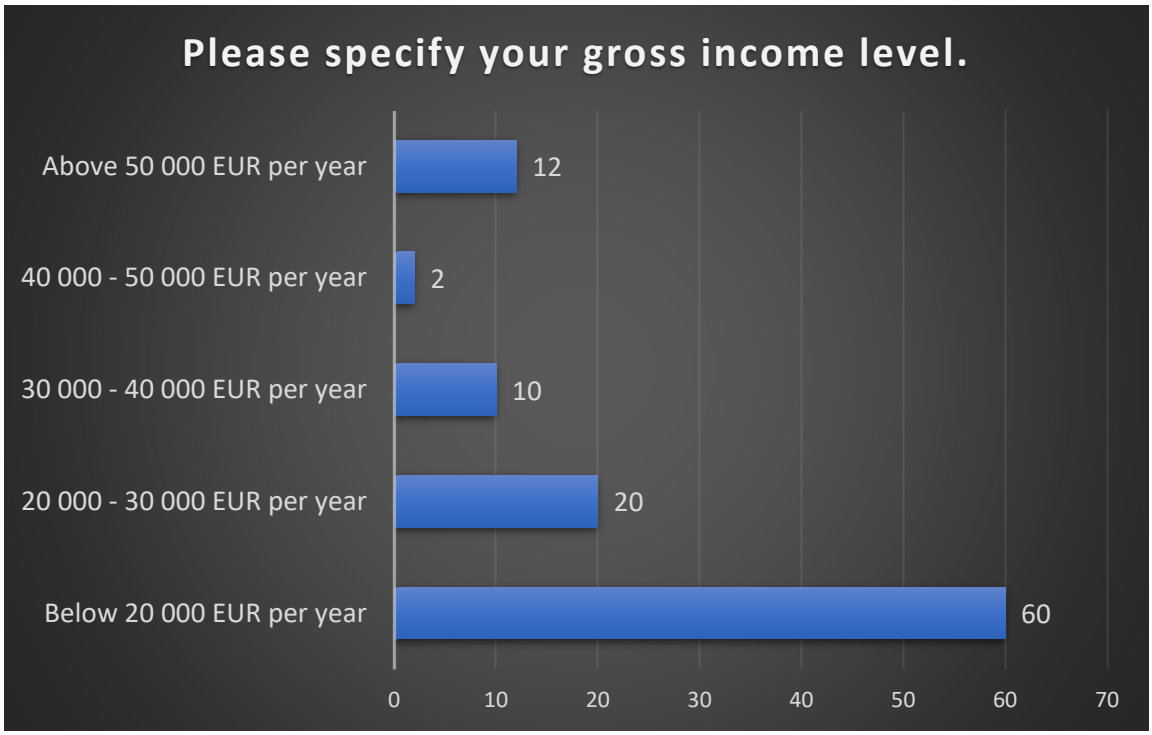


Figure 9. Income distribution of the survey respondents.

When it comes to the yearly gross income distribution of the respondents, as it is presented in Figure 9, to the question *'Please specify your gross income level.'* most respondents (60) answered with *below 20 000 EUR per year*. The second biggest group in terms of the number of respondents was the *20 000 - 30 000 EUR per year* group which included 20 respondents. The third and fourth biggest groups were the *above 50 000 EUR per year* and the *30 000 - 40 000 EUR per year*, with 12 and 10 respondents respectively. The smallest group was the *40 000 - 50 000 EUR per year* group with 2 respondents.

4.2. Comparison of the general and expert responses

In order to be able to conveniently present the results of the comparisons, the Likert scale statements were shortened in the figures, with their meaning maintained. The following table shows the original statements in the left column and their corresponding shortened versions that were used in the coming presented figures:

Original statements	**Statements used in the figures**
The advertisement is visually appealing.	The ad is visually appealing.
The advertisement is visually modern.	The ad is visually modern.
The advertisement is visually memorable.	The ad is visually memorable.
The advertisement is imaginative.	The ad is imaginative.
The advertisement is visually interesting.	The ad is visually interesting.
The advertisement is visually exciting.	The ad is visually exciting.

The advertisement is visually creative.	The ad is visually creative.
The advertisement is well-composed.	The ad is well-composed.
The advertisement is visually similar to other advertisements.	The ad is visually similar to other ads.
The advertisement visually represents the brand well.	The ad visually represents the brand well.
A professional graphic designer created the visual.	A professional graphic designer created it.
Knowing the origin of the image, I would rate the images overall better.	I would rate the images overall better knowing their origin.
I find it fascinating that AI can generate such images.	I find it fascinating that AI can generate such images.
I find it worrying that AI can generate such images.	I find it worrying that AI can generate such images.
I would prefer to not see AI generated advertisements.	I would prefer to not see AI generated ads.
I can tell that these images were created by a AI and not by a human.	I can tell that these images were not created by a human.
For me it is important whether AI or human generated the visuals of an advertisement.	For me it is important whether AI or human generated the visuals of an ad.
I would prefer to always know the origin (human or AI generated) of the visuals of advertisements.	I would prefer to always know the origin of the visuals of an ad.

Table 1. Original Likert scale statements and their shortened version.

The Likert statement mean scores are showcased in the figures based on their original value, however when they are discussed in text, they were rounded to one decimal place due to make them easier understandable. Another reason for that was that in some cases due to the sample size of the groups, the resulting scores were only “reaching” one decimal place, and in order to have unified results that are comparable other results were rounded to one decimal place as well. In this subchapter, the results of the comparison of the “public” (the survey respondents excluding the experts, counting to 104 respondents) and expert (5 expert respondents) survey responses are presented. First, the two cases of AI and human (in the figures referred to as HI) generated images are compared, which is followed by the presentation of the remaining results regarding the rest of the AI-generated images. In the last section of this subchapter, the general opinions of the two groups are compared when it comes to the phenomenon of AI text-to-image generation. The expert respondents are those who participated in the interviews, plus one who took part in the survey but could not take part in the interview as well.

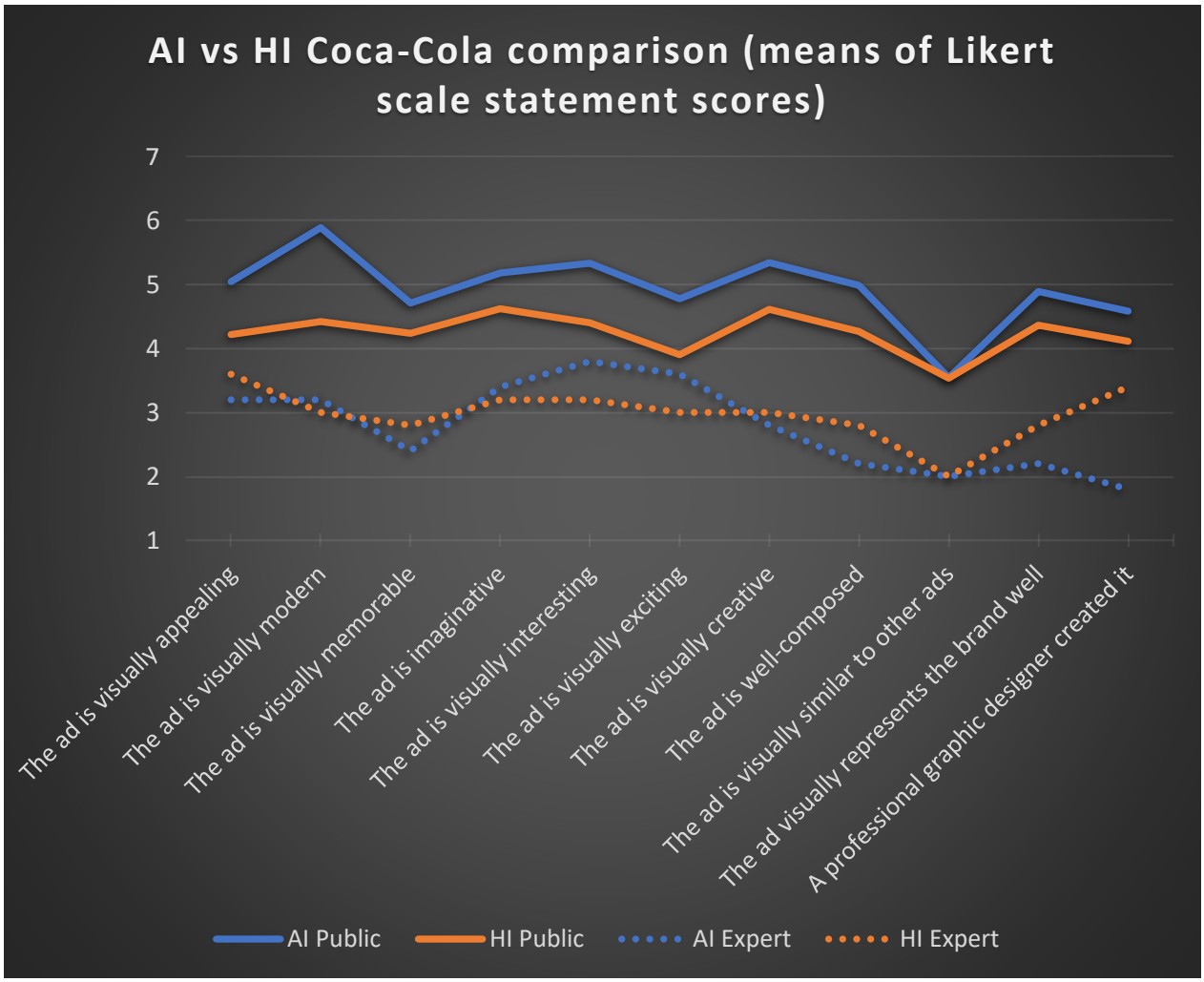


Figure 10. AI vs HI Coca-Cola comparison (means of Likert scale statement scores).

Figure 10 above showcases the different Likert score means for the expert and public groups when it comes to the human-generated and AI-generated recreation visual advertisements. The *HI Public* legend and the corresponding orange line represent the mean scores of the public responses regarding the Likert statements obtained on the human-generated original version, and The *AI Public* legend and the corresponding blue line represent the mean scores of the public responses regarding the Likert statements collected in connection with the AI-generated recreation. Similarly, the *HI Expert* legend and its corresponding line and its dotted orange line represent the experts' Likert scale mean scores when it comes to the human-generated original advertisement visual, whereas the *AI Expert* legend and its corresponding dotted blue line represent the mean Likert scale scores for the different statements regarding the AI-generated recreation.

As is illustrated, in general, the public preferred the AI-generated recreation version to the human-generated with having notably higher means in connection with each statement, where the higher score can be associated with a more positive result when it comes to the analyzed image. Even in those

cases where the means were closer for the AI and human-generated images such as in the case of the '*The ad visually represents the brand well'* statement, the AI version scored considerably higher (4.89) compared to the human version (4.37). When it comes to the results of the experts, it can be seen that in cases of both the AI and human images, the mean scores were significantly lower compared to that of the public results. Interestingly, in the case of the expert results, there is no clear overall preference for any of the two images over the other as in some cases (appeal, memorability, composition, brand representativeness, and professional appeal) the human version got higher scores, and in others (imaginativeness, interestingness, and excitement) the AI version performed better, whereas when it comes to the remaining Likert statements the two images performed very similarly. Surprisingly, in both groups the mean scores of the statement of *'The ad is visually similar to other ads'* were the closest within the groups whilst the significant difference between the expert and public groups when it comes to this statement was apparent here as well.

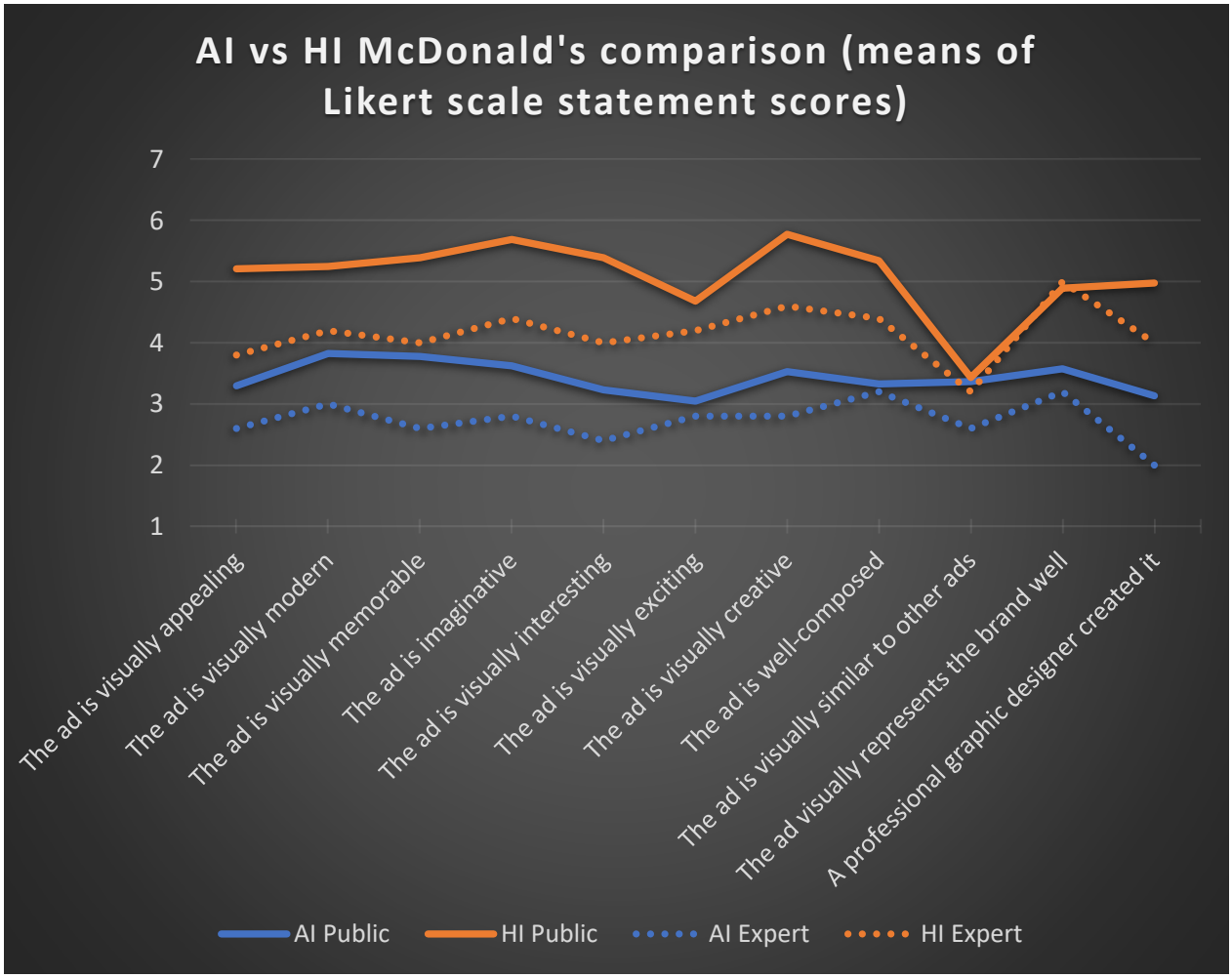


Figure 11. AI vs HI McDonald's comparison (means of Likert scale statement scores).

When it comes to the comparison of the public and expert rating in terms of the second AI vs human comparison, namely the human-generated original McDonald's advertisement visual as well as the AI

recreation of the same visual, figure 11 above illustrates the results. The legends and the corresponding lines indicate the same subjects as in the case of the previous figure (figure 10). As the figure showcases, in the case of the comparison of these two visuals, the results were quite different compared to the previous two visuals. The public respondents rated the human-generated advertisement visual significantly higher based on the different statements and corresponding Likert scale mean scores, compared to that of the AI-generated advertisement visual. Please find appendix B (1,2) for the two visuals. The only statement that generated very similar results in the case of both advertisement visuals was the statement: *'The ad is visually similar to other ads'*. In the case of the expert respondents, it can be observed, that in this comparison as well, the experts generally rated both images lower compared to the public respondents, however, interestingly in the case of this comparison, there was consensus between the experts and the public respondents when it comes to notably preferring the human-generated image to the AI generated image.

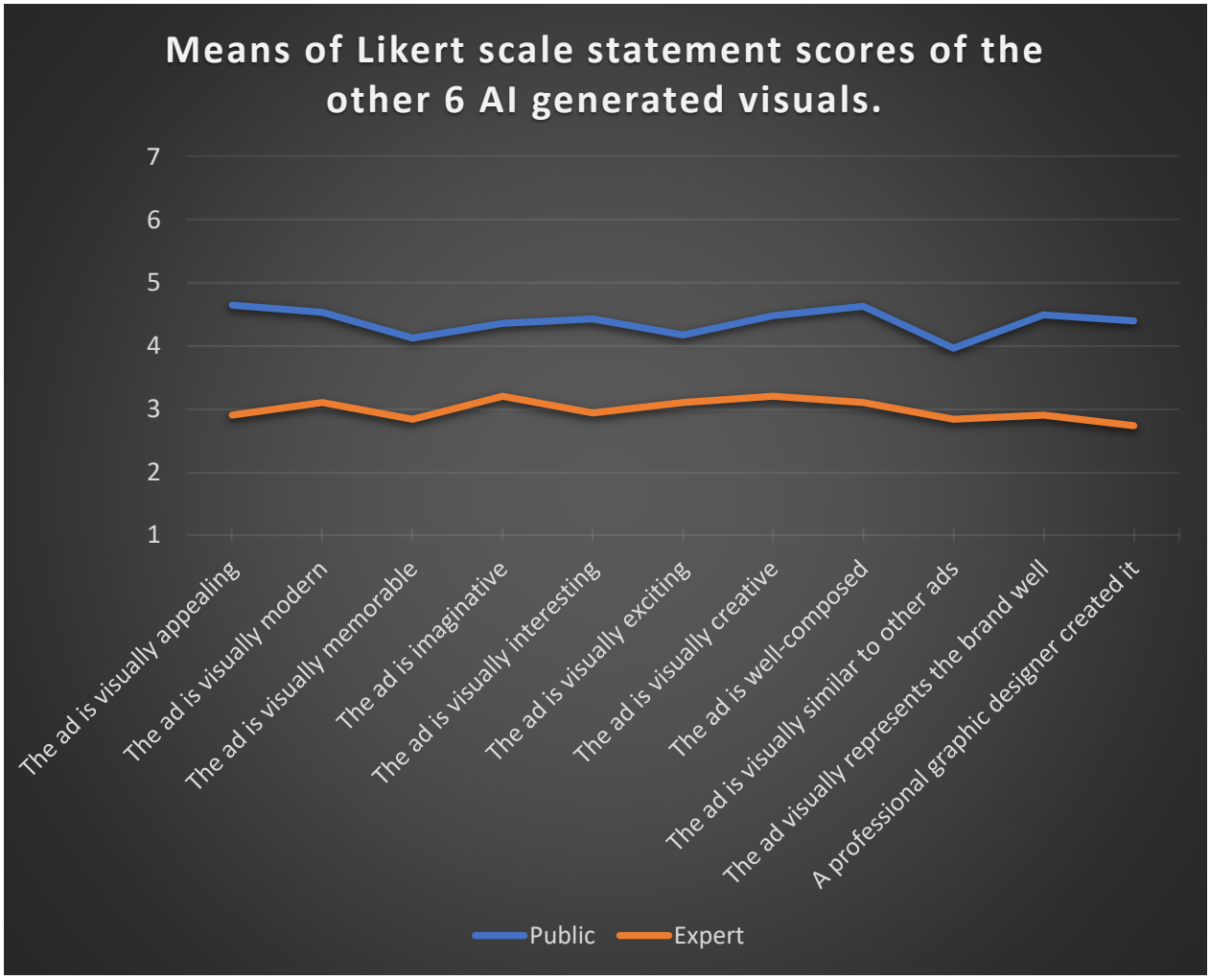


Figure 12. Means of Likert scale statement scores of the other 6 AI generated visuals.

Figure 12 above illustrates the mean Likert statement scores of the *Public* and the *Expert* groups, when it comes to the remaining 6 AI-generated visuals. As it can be seen on the figure, the public respondents rated the images overall notably higher based on the Likert statement mean scores, compared to the experts with having at least a 1.0 difference between the two means, and in cases such as the *'The ad is visually appealing'* statement a difference as high as 1.8 between the public (4.7) and the expert (2.9) means.

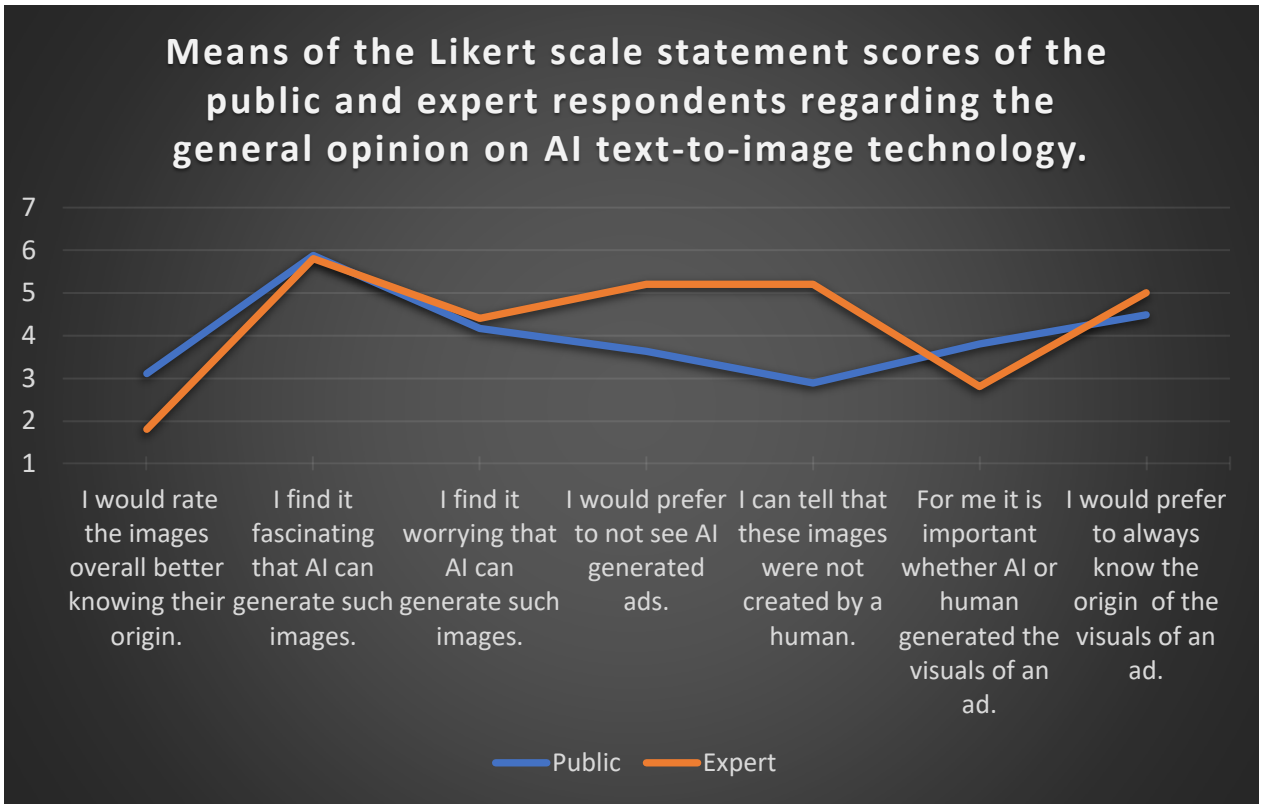


Figure 13. Means of the Likert scale statement scores of the public and expert respondents regarding the general opinion on AI text-to-image technology.

The figure above (figure 13) showcases the Likert scale statement mean scores for the *Public* and the *Expert* respondents when it comes to the statements that reflected their general opinion regarding AI text-to-image technology. As it can be seen both groups would rather not rate the images overall better if they knew their origin (AI) with the Public group scoring 3.1, whereas the expert group scoring 1.8 when it comes to the corresponding statement. Both groups clearly found it fascinating the capability of AI to create such images, with both groups scoring on average approximately 5.8. Both groups scored a little higher than the 4 -midpoint when it comes to finding it worrying that AI can generate such images with the Public group scoring 4.2 and the expert group scoring 4.4. Therefore, interestingly, both groups find this capability of AI notably more to be fascinating than to be worrying. The expert group on average would prefer rather not to see AI-generated visuals scoring 5.2, whereas

the public group is rather undecided, with slightly leaning towards disagreement regarding the statement with scoring 3.6. The Expert group rather agreed with being able to see in hindsight that the images were generated by AI, with a mean score of 5.2, whereas the public group rather disagreed with being able to tell that the images were AI-generated, with scoring 2.9 regarding the corresponding statement. When it comes to the importance of whether AI or human generated the images, the experts' score indicates that for them it is rather not important with scoring 2.8 on average regarding the corresponding statement, whereas the public group's score indicated an undecided stance regarding the matter with scoring 3.8. The scores regarding the last statement in the figure indicate that experts would rather prefer to always know the origin of the visuals of an ad, with a mean score of 5, while the public also agrees but to a lesser extent with scoring 4.5 regarding the corresponding statement.

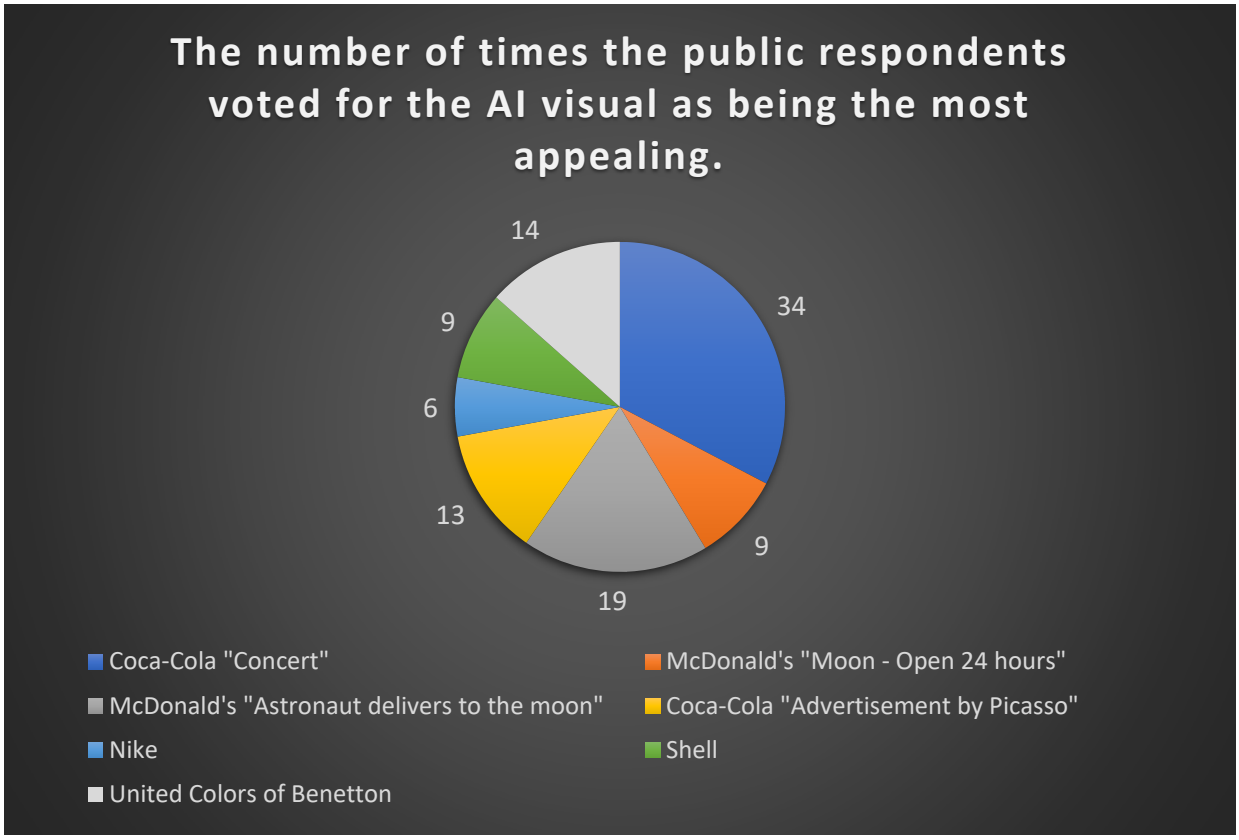


Figure 14. The number of times the public respondents voted for the AI visual as being the most appealing.

Figure 14 above shows how many of the respondents vote for a certain AI-generated advertisement visual to be the most appealing among the visuals. As can be seen, most respondents found *'Coca-Cola "Concert"'* to be the most appealing with 34 votes, which was followed after a big gap by *'McDonald's "Astronaut delivers to the moon"'* with 19 votes. The least votes (6) were collected by *'Nike'.* Figure 15 below shows the results for the same question in the case of the experts.

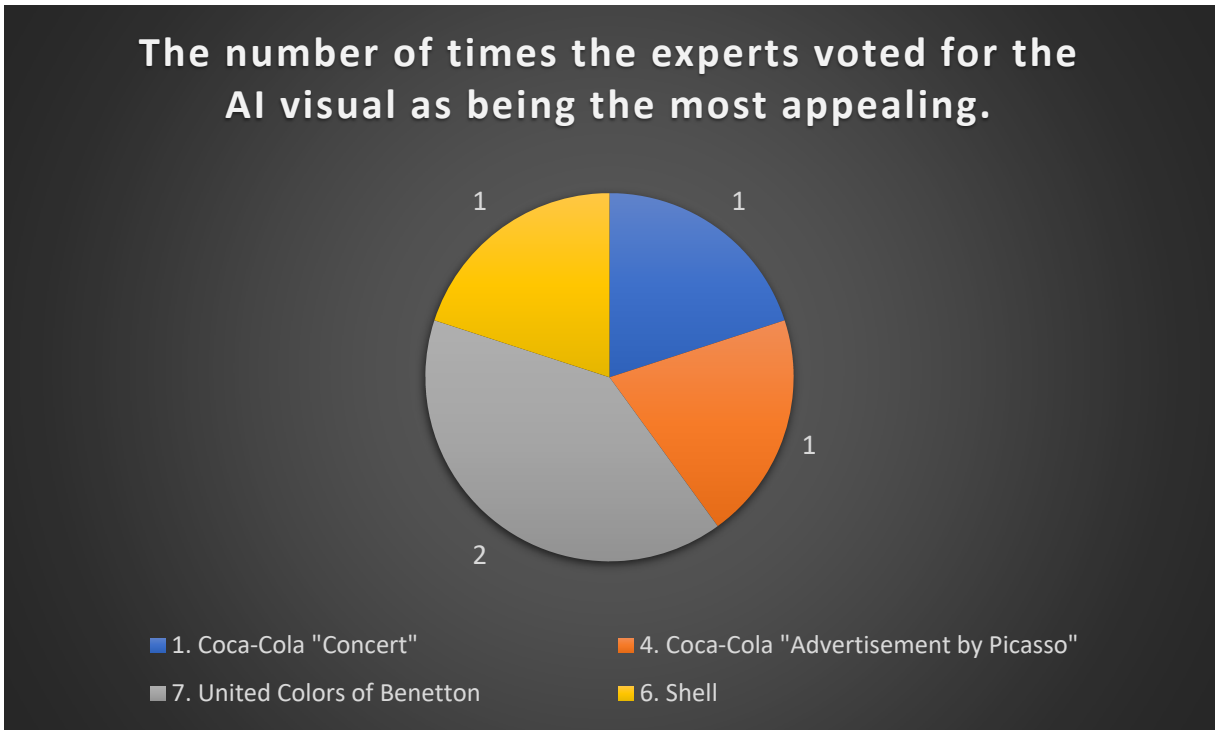


Figure 15. The number of times the experts voted for the AI visual as being the most appealing.

As it can be observed, *'United Colors of Benetton'* was picked by two experts, whereas *'Shell',*

'Coca-Cola "Concert"', and 'Coca-Cola "Advertisement by Picasso"' were chosen once each. Interestingly, the 8. AI-generated image *'Amazon'* was not picked by either the public respondents nor expert respondents.

4.3. Age comparison

In this subchapter, the comparison of the results of the mean Likert scale statement scores is presented when it comes to the AI-generated images, according to the different age groups, namely: 18-25, 26-35, 36-45, and 46-65 age groups. The latter age group was combined from the 46-55 and 56-65 age groups due to the relatively small number of responses coming from the two age groups (3-3 respectively).

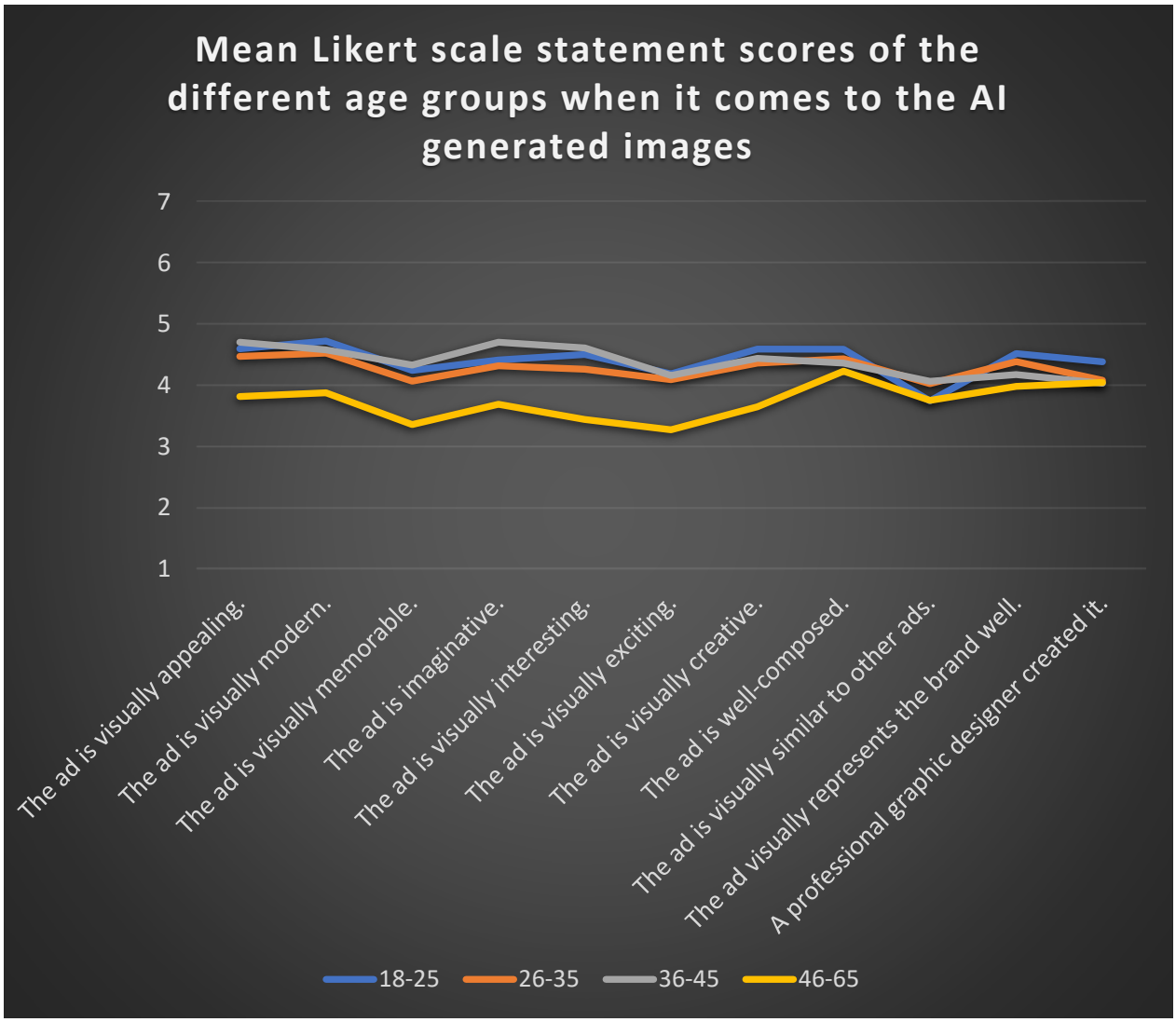


Figure 16. Mean Likert scale statement scores of the different age groups when it comes to the AI-generated images.

As can be observed in figure 16 above, the three younger age groups (18-25, 26-35, and 36-45) generally rated the AI images notably higher compared to the older, the 46-65 group, as in most cases the 3 younger age groups' mean scores were slightly higher than the 4-point threshold, whereas the 46-65 group's mean scores were slightly lower than the 4-point "undecided" threshold in most cases. In the case of whether the ads were well composed, the groups were in relative consensus with all scoring between 4.2 and 4.6 thereby all slightly agreeing to the statement *'The ad is well composed'*, with having the youngest age group score the highest and the oldest age group score the lowest. When it comes to the statement 'the ad is visually similar to other ads, the age-groups had relatively similar mean scores around the undecided 4- point threshold with mean scores ranging between 3.8 and 4.1. The statement *'The ad visually represents the brand well'* generated similarly unified results among the groups as all groups had a mean score between 4 and 4.5 with having the youngest age group score the highest and the oldest age group score the lowest. When it comes to the last statement *'A*

professional graphic designer created it', the groups had an undecided mean score of 4, except for the youngest age group which had a mean score of 4.4.

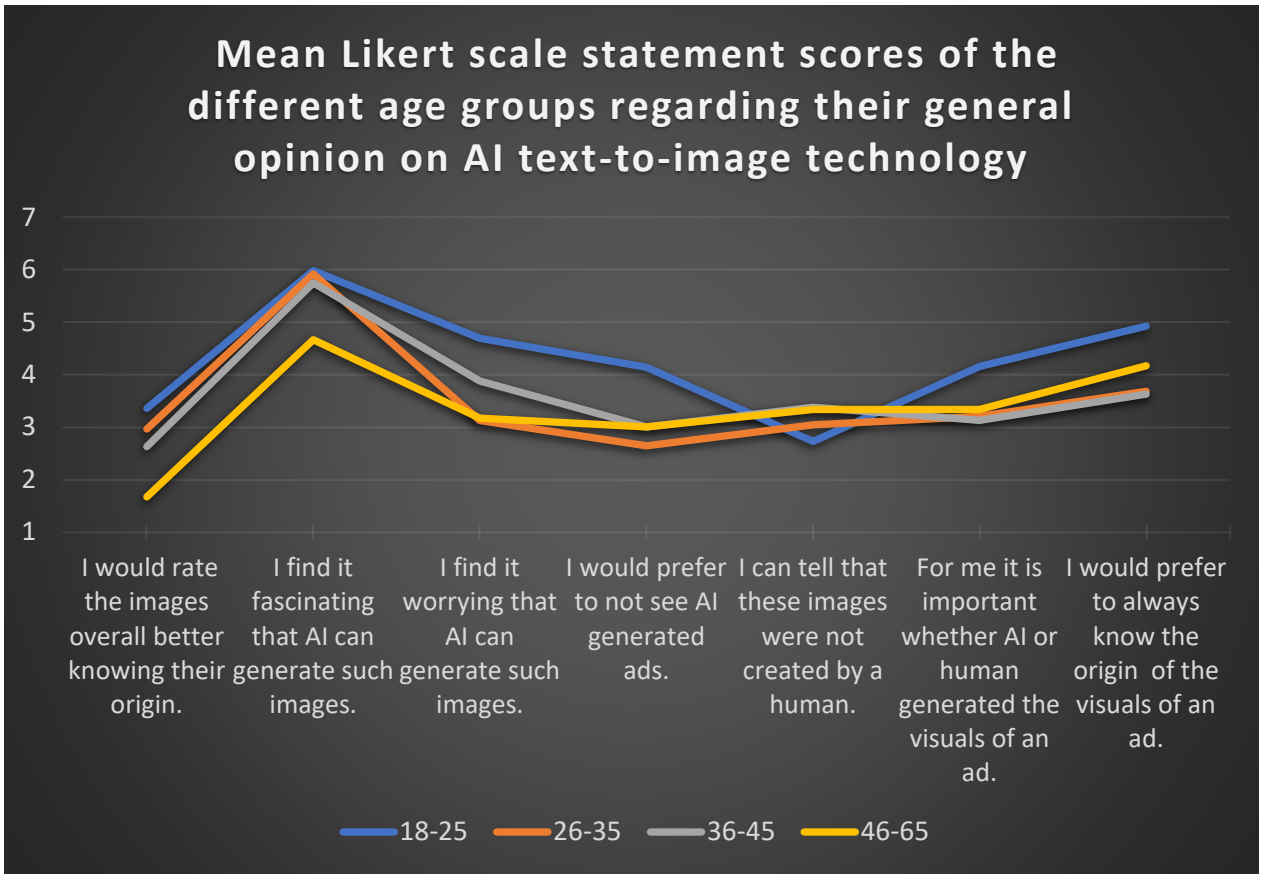


Figure 17. Mean Likert scale statement scores of the different age groups regarding their general opinion on AI text-to-image technology.

Figure 17 above shows the means of the Likert scale statement scores of the different age groups regarding their general opinion on AI text-to-image technology. As the figure showcases, while all age groups rather disagreed with the first statement *'I would rate the images overall better knowing their origin.'* With the youngest age group (18-25) having the highest mean (3.4) and the oldest age group (46-65) having the lowest mean (1.6). When it comes to the second statement *'I find it fascinating that AI can generate such images.'* The results showed that the 3 younger age groups agreed with the statement with mean scores between 5.8 and 6 which latter was that of the youngest age group, whereas the oldest group while on average still rather agreed with the statement, but to a lesser extent with having a mean score of 4.7. When it comes to finding the capability of AI worrying, interestingly the second youngest age group (26-35) and the oldest group (46-65) produced very similar results with 3.1 and 3.2 respectively. The second oldest group (36-45) had a mean score of 3.9 which showcased a rather undecided stance regarding the matter, whereas the youngest age group found the capability of the AI the most worrying with slightly agreeing to the corresponding statement by a mean score of

4.7. Regarding the statement 'I would prefer to not see AI-generated ads.' The youngest age group had the highest mean score of 4.1 which shows an undecided attitude towards the question whereas the other three age groups showed a more accepting attitude with having mean Likert scale score between 2.6 and 3. All groups more or less disagreed with the statement *'I can tell that these images were not created by a human.'* with mean scores between 2.7 (by the youngest age group) and 3.3 (by the oldest age group). Notably, all age groups more or less disagreed with the statement *'For me it is important whether AI or human generated the visuals of an ad.'* With scores between 3.1 and 3.3 except for the youngest age group which had an undecided mean score of 4.2. When it comes to the last statement *'I would prefer to always know the origin of the visuals of an ad.'* The scene is quite similar with the youngest age group rather agreeing to the statement with a mean score of 4.9 while the other age groups had a mean score of 3.6 and 4.2 representing a disagreeing as well as a rather undecided stance towards the statement.

4.4. Gender comparison

This subchapter presents the comparison of the results of the mean Likert scale statement scores of the AI-generated images divided based on the different genders. These genders include respondents who via the corresponding question indicated that they are *female*, *male*, *non-binary,* or *prefer not to say*. Since the latter two groups only included 2-2 respondents respectively, these groups were combined into a new group *'other'* for the analysis of the results. In some cases the figures below indicate notable differences between the '*other'* group and the *female* as well as *male* groups, however, it is important to mention that while these different results can certainly point in a certain direction which can be useful in terms of exploring the technology and its effect on different demographic groups, the *'other'* group only had 4 respondents having a significantly lower rate of reliability compared to the two other groups.

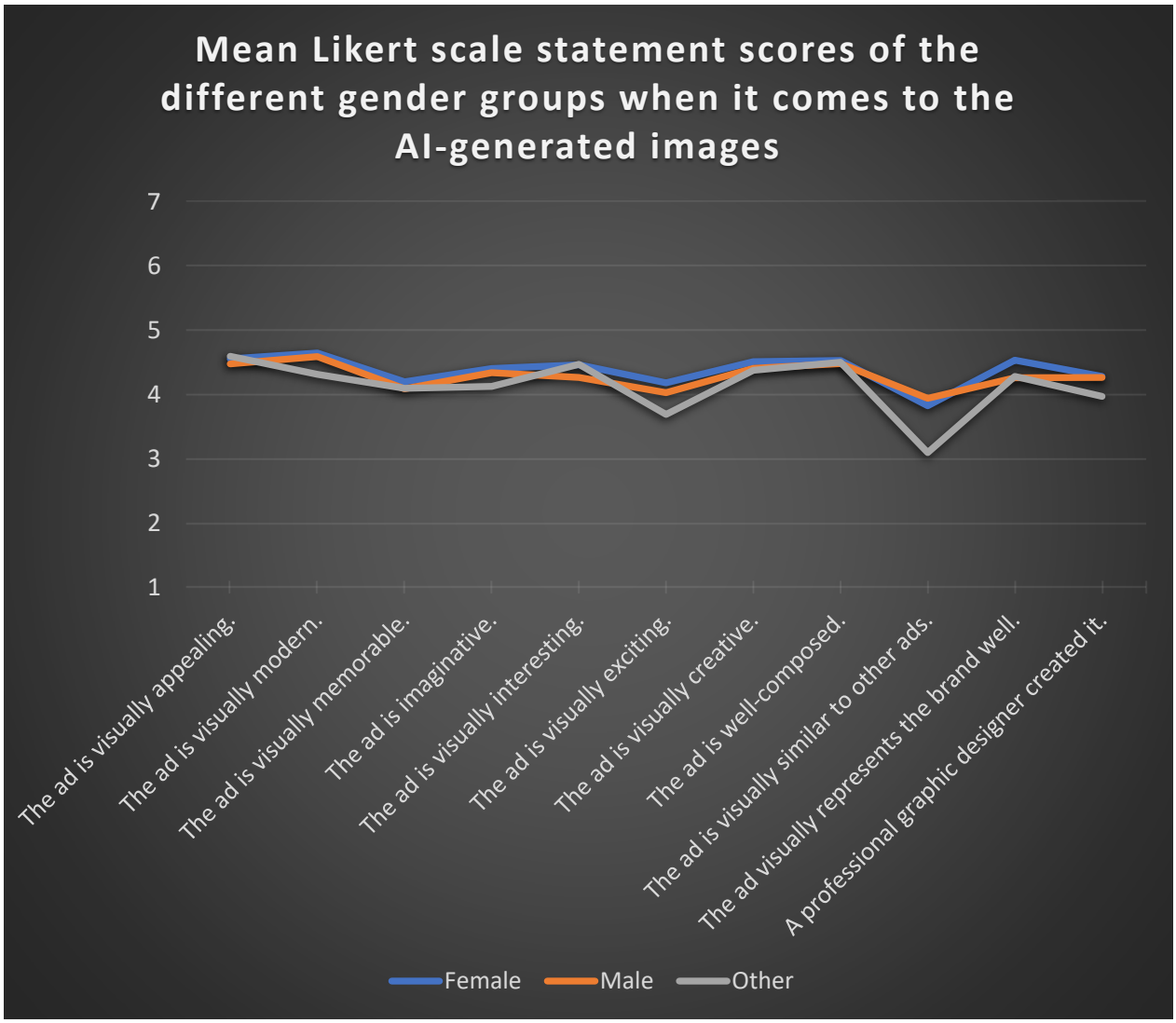


Figure 18. Mean Likert scale statement scores of the different gender groups when it comes to the AI-generated images.

Figure 18 above illustrates the comparison of the Mean Likert scale statement scores of the different gender groups when it comes to the AI-generated images. As it can be observed, in general, the female and male groups showcased a very similar undecided or slightly agreeing opinion when it comes to the different positive statements regarding the AI-generated advertisement visuals, with the female groups averaging an ever so slightly higher mean scores in most cases, which means that these groups were rather undecided when it comes to the rating of these images with a slight tendency to providing a positive rating. In most cases, the other group has a similar mean score to the two aforementioned groups, except in the case of the statement *'The ad is visually exciting'* where the female and the groups had mean scores of 4 and 4.2 respectively, whereas the other group had 3.7. While the difference is not big, the other group's result points in the other direction of the spectrum (disagreement). The other statement where the difference was notable, was regarding the statement

'*The ad is visually similar to other ads*' where the male groups had a mean score of 3.9, the female group had a mean score of 3.8 and the other group had a mean score of 3.1.

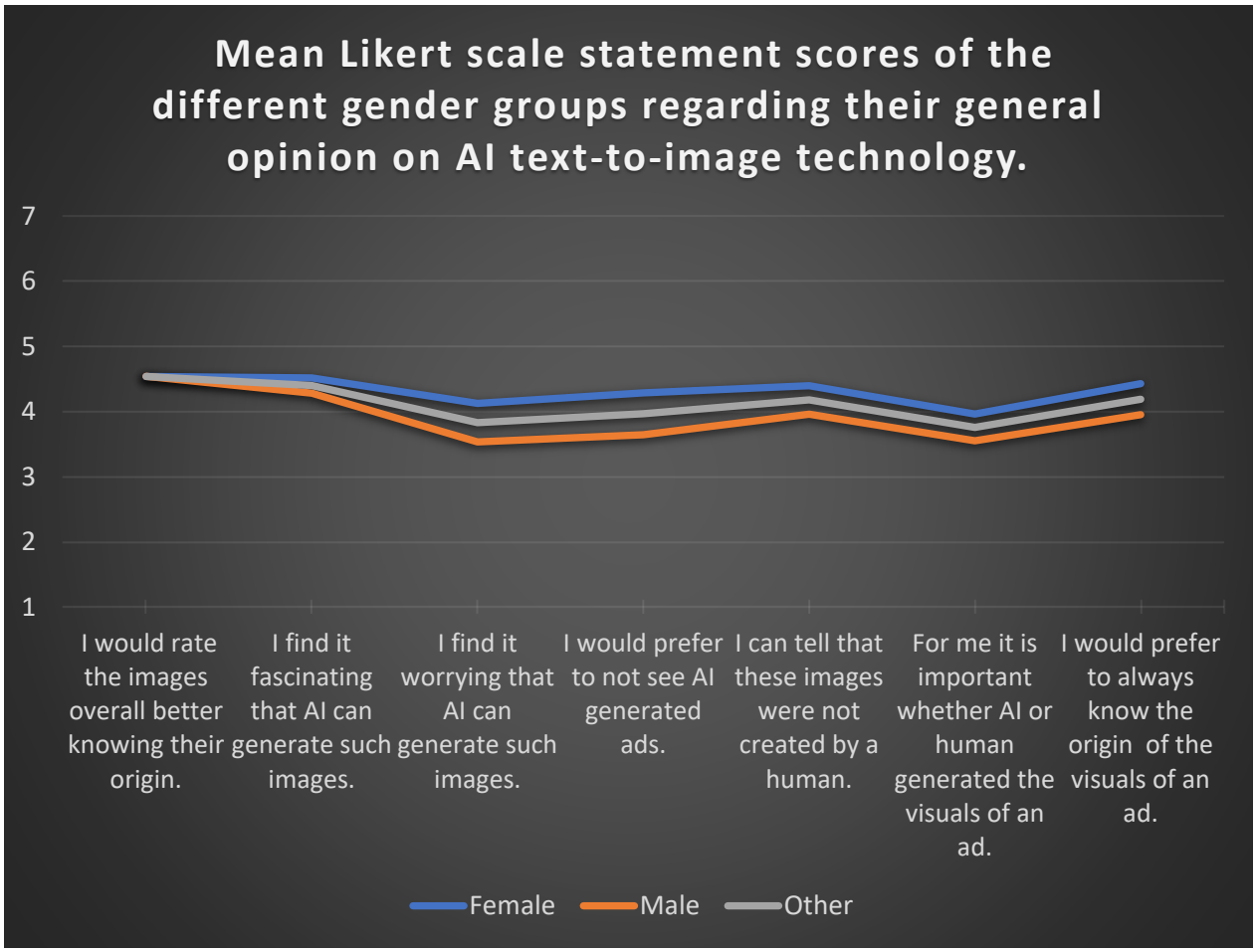


Figure 19. Mean Likert scale statement scores of the different gender groups regarding their general opinion on AI text-to-image technology.

Figure 19 above shows the mean Likert scale statement scores of the 3 gender groups regarding their general opinion on AI text-to-image technology. As it can be seen the groups were in consensus regarding the first statement '*I would rate the images overall better knowing their origin.'*, all slightly agreeing with mean scores of 4.5. Regarding the statement *'I find it fascinating that AI can generate such images.'* the groups averaged scores between 4.3 and 4.5 with the male group having the former and the female group having the latter mean score. When it comes to finding the capability of the AI worrying, the female group was undecided with a 4.1 mean score whereas the other and male groups were slightly disagreeing with the statement with mean scores of 3.8 and 3.5 respectively. The Female group would prefer not to see AI-generated ads (4.3), the male group leaned towards the other direction with a mean score of 3.6, whereas the other group had an undecided stance (4.0). The female group slightly leaned towards more or less agreeing with the statement '*I can tell that these images were not created by a human.'* with a mean score of 4.4 whereas the other and the male groups agreed

to the statement slightly less and less with mean scores of 4.2 and 4.0. The origin of the ad visual is neither important nor not important with a mean score of 4 regarding the corresponding statement, whereas the other and male groups had a slightly disagreeing stance with 3.8 and 3.6. Regarding the importance of always knowing the origin of the visual, the groups had mean scores between 4 and 4.2 with the female group scoring the highest and the male group scoring the lowest. As one can see in the figure, the groups followed a similar pattern, but in the actual results, there were some notable differences.

4.5. Educational comparison

This subchapter is concerned with presenting the differences between the mean Likert scale scores of the statements regarding the different advertisement visuals when it comes to the different educational groups. These groups were based on the highest educational level obtained by the respondent and included: *high school diploma, some college no degree, bachelor's degree, master's degree, professional degree, and academic doctoral degree.* The professional degree and academic doctoral degree groups were combined due to the small number of responses obtained in the groups as well as due to the similarly high standard of the educational level they both represent.

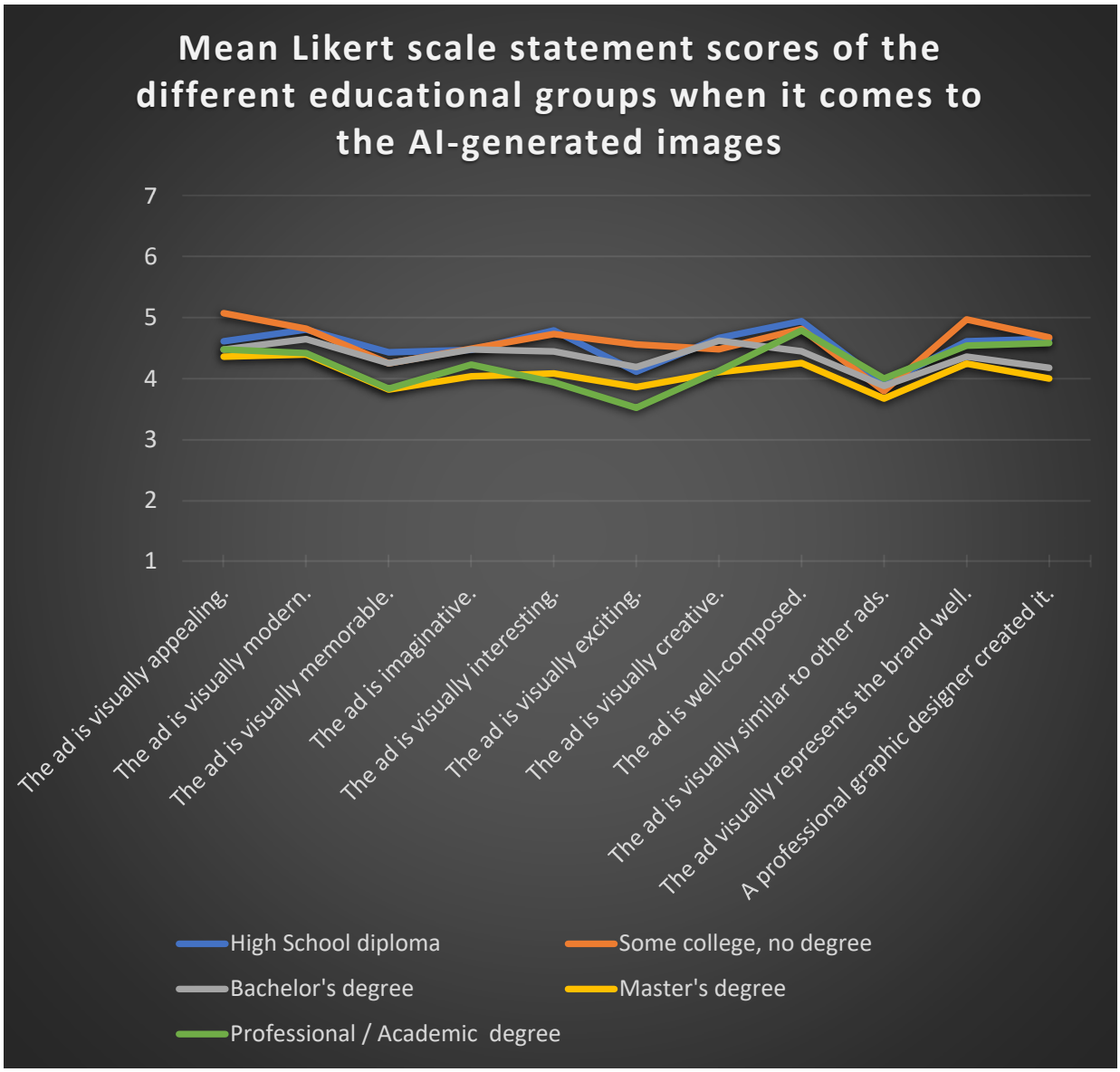


Figure 20. Mean Likert scale statement scores of the different educational groups when it comes to the AI-generated images.

The figure above showcases the mean Likert scale statement scores of the different educational groups when it comes to the AI-generated images. As can be seen in the figure, when it comes to the statements where the higher score showcases a more positive result, in general, higher educated groups Professional, academic doctoral, and master's degrees) had a higher mean score than lower educated groups (high school diploma, some college without a degree), whereas the "middle" educational level bachelor's degree group was generally in the middle with a tendency to be somewhat closer to the less educated groups when it comes to the mean Likert scale scores. In general, the lower educational level groups more or less agreed with the statements that asked about the qualities of the images, whereas the higher educated groups were in most cases closer to the undecided stance. All groups were in relative consensus regarding 'the ad is visually similar to other ads' with mean scores

ranging from 3.7 to 3.9. in the case of the last two statements, the previously mentioned “narrative” regarding the difference between the lesser and more educated groups falls apart as in both cases the least (high school diploma) and most educated groups (professional and academic doctoral degrees) had very close means, 4.6, 4.5 and 4.7, 4.6, respectively.

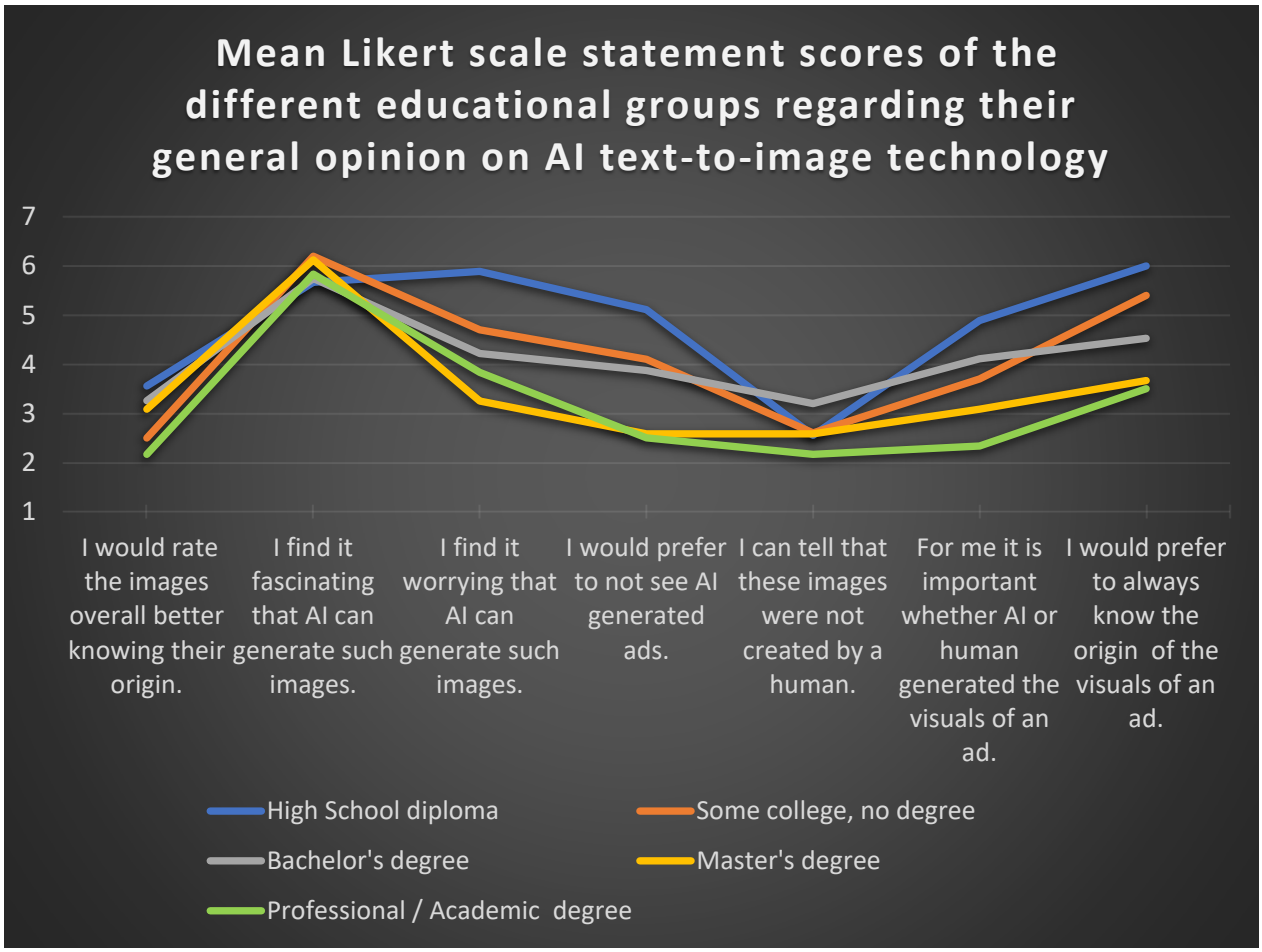


Figure 21. Mean Likert scale statement scores of the different educational groups regarding their general opinion on AI text-to-image technology.

Figure 21 above showcases the mean Likert scale statement scores of the different educational groups regarding their general opinion on AI text-to-image technology. Similarly to the previous figure, this figure shows that in most cases the lower educated groups had notably different mean scores when it comes to the different Likert scale statements, to that of the higher educated groups. For example, lower educated groups (high school diploma, some college, no degree) find the image-generating capability of AI quite worrying with mean scores of 5.9 and 4.8, whereas, in the case of the higher educated (professional, academic doctoral degree) groups, the mean scores (3.25 and 3.8) indicate an opinion that goes in the opposite direction regarding the statement. Similar tendencies can be observed in the case of preference not to see such AI-generated ads, in the case of the importance of the origin of the advertisement visual, and in the case of preference to always know the origin of the

visual of an ad with the lower educated people exhibiting a stance of relative agreement regarding these issues whereas the higher educated respondents rather disagreed to these statements. All educational groups were in relative consensus in finding the image-generating capability of AI fascinating with mean scores ranging from 5.7 to 6.2.

4.6. Income comparison

In the last subchapter in terms of comparing different demographic groups, the different income groups are compared based on their respective mean Likert scale scores when it comes to the AI-generated images. The different yearly gross income groups were the following: *below 20 000 EUR, 20 000 - 30 000 EUR, 30 000 - 40 000 EUR, 40 000 EUR – 50 000 EUR, and above 50 000 EUR*. Since the group 40 000 – 50 000 EUR had only 2 respondents, which was significantly lower than the other groups, this group was left out of the comparison as its results would have been rather incomparable with the other groups' results.

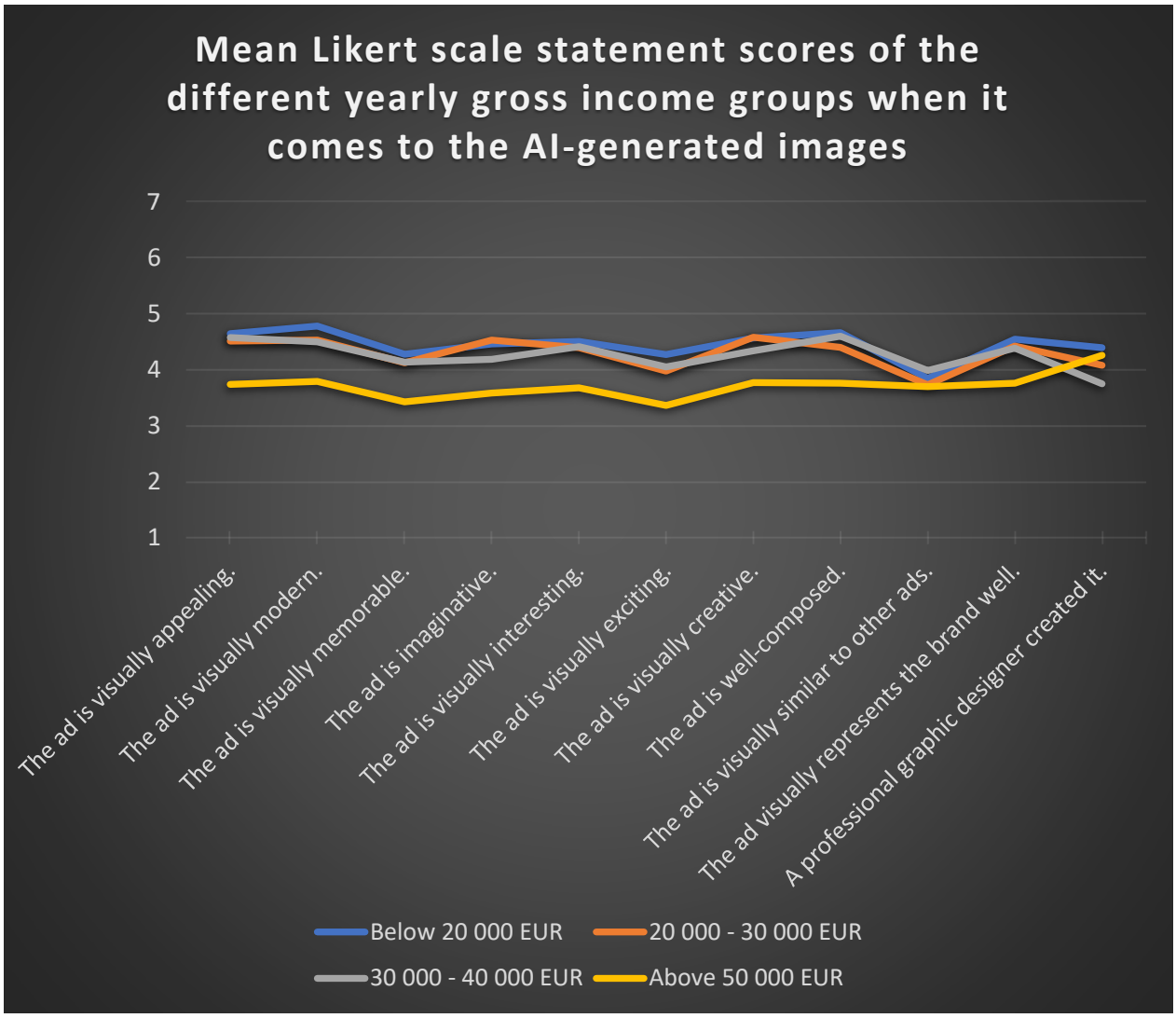


Figure 22. Mean Likert scale statement scores of the different yearly gross income groups when it comes to the AI-generated images.

Figure 22 above shows the mean Likert scale statement scores of the different yearly gross income groups when it comes to the AI-generated images. As can be seen, the groups between below 20 000 EUR and 30 000 – 40 000 EUR all had rather similar results when it comes to the different statements, with mean scores that in most cases ranged within a 0.3 range from one another. It can also be observed that in most cases these aforementioned groups were slightly agreeing or having a rather undecided stance when it comes to the positive statements about the AI-generated advertisement visuals. On the other hand, interestingly, the group with the highest income (above 50 000 EUR) had a notably different perception of the AI-generated advertisement visuals as their mean Likert scale scores were almost in every case 0.6-0.8 below the other groups. This group had a rather disagreeing stance regarding the positive statements about the AI-generated advertisement visuals. In other words, this group liked notably less the AI-generated advertisement visuals. The results showed a different narrative in the cases of the two statements. For the statement *'The ad is visually similar to*

other ads', the groups had a very similar mean score ranging between 3.7 and 4.0. When it comes to the last statement *'A professional graphic designer created it'* the highest earner group and the two lowest earner groups had very similar scores ranging between 4.1 and 4.4, landing ever so slightly to agreeing with the statement, whilst the 30 000 – 40 000 EUR group slightly leaned towards disagreeing with a mean Likert score of 3.8.

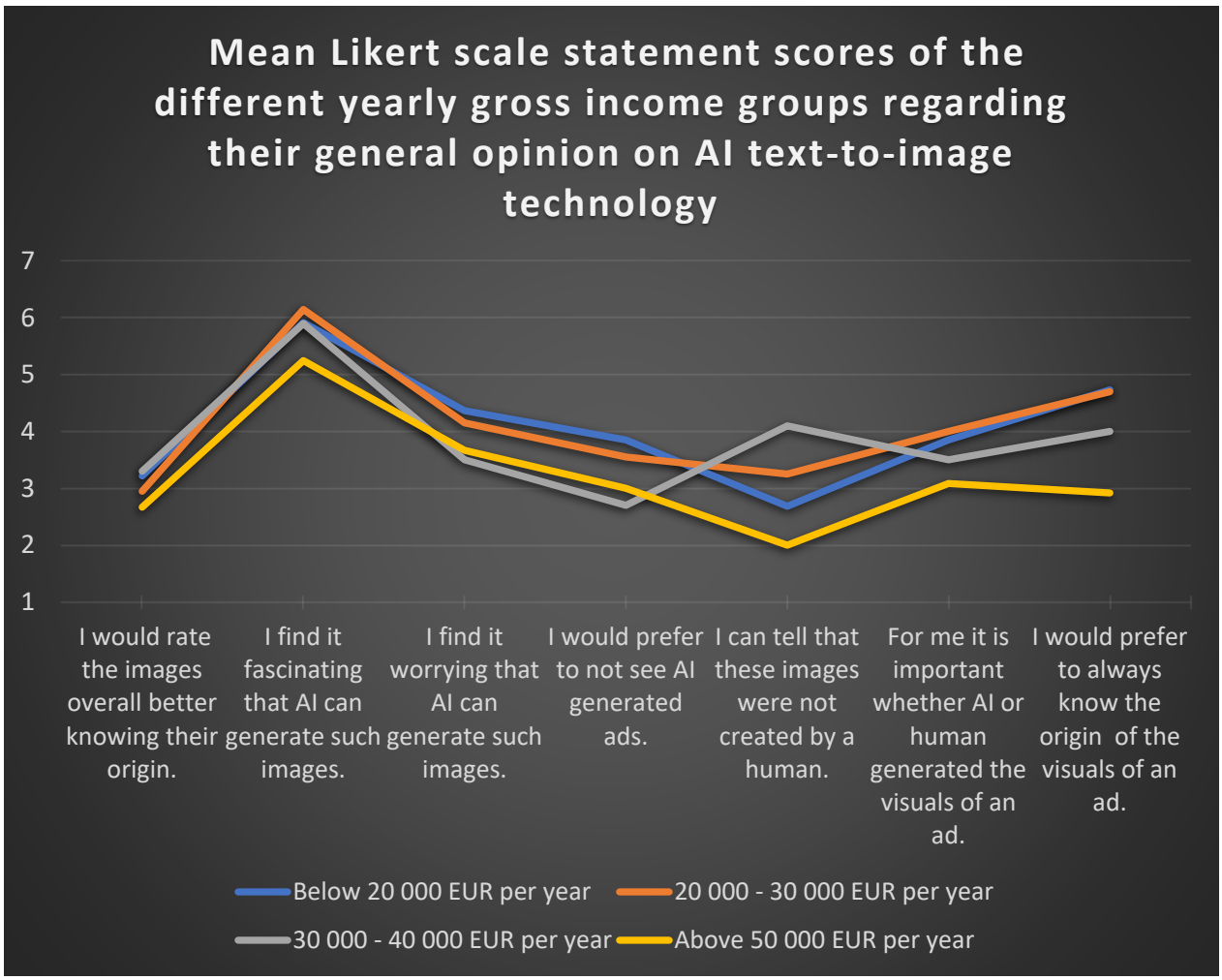


Figure 23. Mean Likert scale statement scores of the different yearly gross income groups regarding their general opinion on AI text-to-image technology.

Similarly to the previous figure, it is observable in figure 23 that the three lower income groups seem to be in relative consensus regarding the statements, whereas the highest income group has a notably different opinion when it comes to the different Likert scale statements. Albeit here the 30 000 - 40 000 group is in a few cases "detaches" from the two lower earner groups and is in relative consensus with the highest earner group (statements: *'I find it worrying that AI can generate such images.'* and *'I would prefer to not see AI generated ads.'*. Nevertheless, the results show that people with lower income found the image-generating capability of AI more fascinating compared to the highest-earner group, they also found it more worrying, would prefer not to see AI-generated ads, could tell more

that the images were not human-generated and regarding both statements regarding the image origin agreed more to the statements, compared to the highest earner group.

4.7. Human and ChatGPT comparison

As has already been mentioned, for the last four images, the prompts were generated using ChatGPT in order to see how well these images perform compared to the human-created prompts, which were used for the first four AI-generated images. This subchapter presents the results regarding the comparison of the two types of AI-generated images based on the mean Likert scale scores regarding the images.

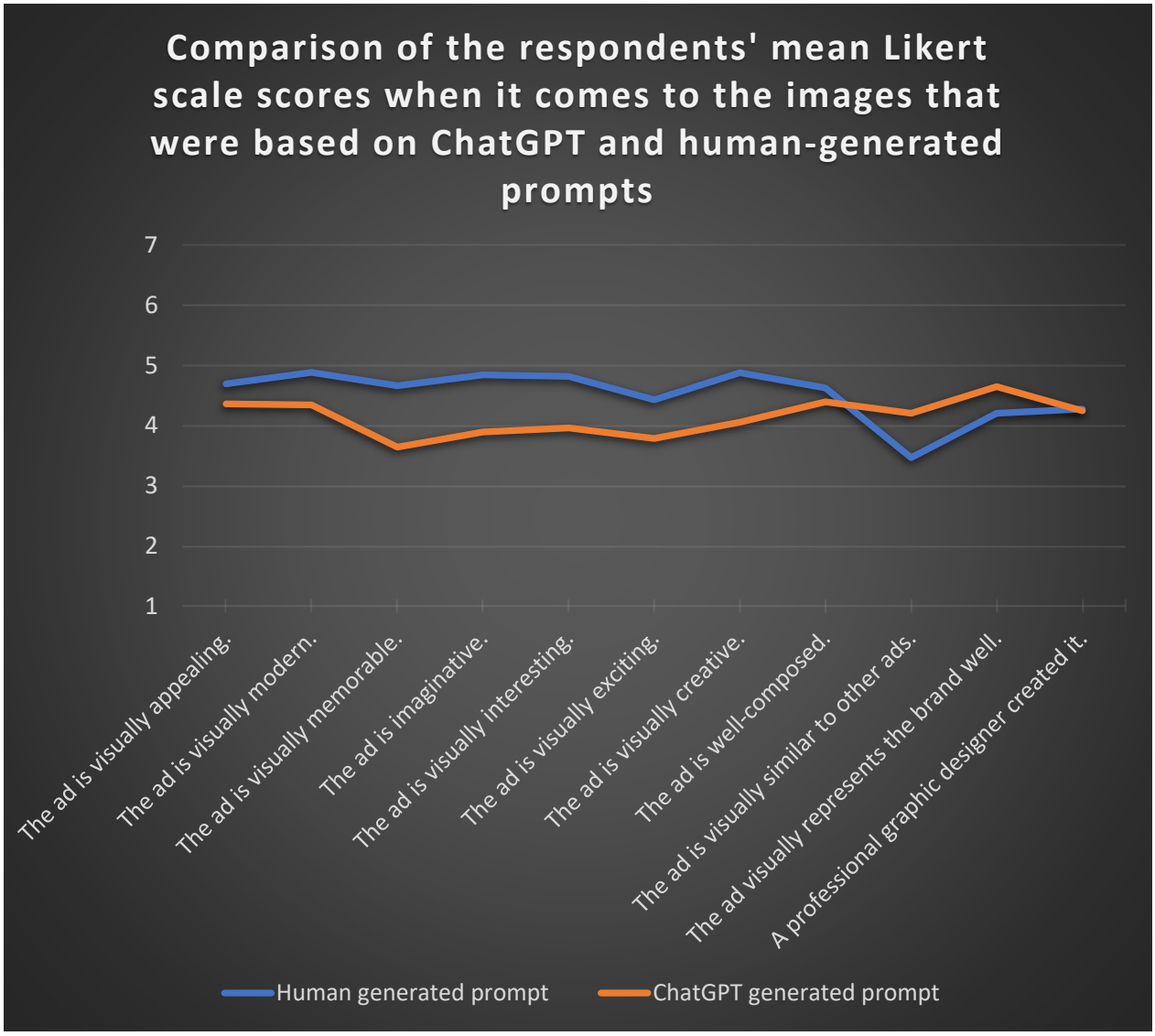


Figure 24. Comparison of the respondents' mean Likert scale scores when it comes to the images that were based on ChatGPT and human-generated prompts.

The figure above shows the comparison of the respondents' mean Likert scale scores when it comes to the images that were based on ChatGPT as well as human-generated prompts. As can be seen, the

human-generated prompts had notably better results in almost every case based on the Likert scale score means regarding the different statements. The AI-generated images that were based on the human-generated prompts were generally in the 4.4-4.9 range, whereas the images that were based on prompts which were created by the use of ChaptGPT were generally in the 3.6-4.4 range, showcasing a clear difference between the two types of images. This difference was the other way around for the 2 statements. The first of those statements was *'The ad is visually similar to other ads',* where the ChatGPT prompt-based images had the higher score (4.2), compared to the human prompt-based images (3.5), albeit in the case of this statement the higher score does not necessarily mean better quality for the images. In the case of the other such statement *'The ad visually represents the brand well',* however, the ChatGPT prompt-based images had a mean score of 4.6 compared to the 4.2 mean scores of the human-prompt-based images, indicating that the ChatGPT prompt-based images represented the brands slightly better than the human-prompt based images. When it comes to the last statement *'A professional graphic designer created it'* for the two types of image groups, the mean scores were quite similar 4.3 (Human) and 4.2 (ChatGPT).

5. Results of the qualitative research

Before showcasing the results (theme map, of the qualitative research it is important to describe exactly how the interviews were structured as well as how the data collected via the interviews were organized and analyzed.

The interviews were conducted with 4 marketing professionals who have extensive experience in their field, and who were all familiar with the latest AI-empowered tools that could affect marketing management. These experts are involved in some ways in the creation or oversight of the creation of marketing-purposed visuals. The interviews were conducted online via Teams video-calls.

The interviews consisted of 4 main parts. The first part revolved around questions that were concerned with the relationship between AI and marketing in general. The second was concerned with the topic of visual content generation and the potential influence of AI and included questions related to said topic. The third part of the interviews had to do with the topic of AI text-to-image platforms and their potential influence on marketing management. In the fourth and final part, the interviewees were asked to reflect on some of the results of the survey, which they also filled in previously. While the discussion guide already contained predefined questions, since the format of the interviews was semi-structured, in some cases unexpected answers lead to new follow-up questions (for the discussion guide see appendix C).

For conducting the thematic analysis, the MAXQDA software was used, which is a program that can be used for analyzing data retrieved from qualitative as well as mixed methods, and was designed and created by researchers (MAXQDA, 2023). The steps of thematic analysis of the interviews were determined based on the recommendations for such analysis by Clarke and Braun (2016) as well as the different phases outlined for the conduction of thematic analysis by the same aforementioned researchers Braun and Clarke (2006):

The first step was to listen to the interviews again and to get familiar with the interview transcripts. These transcripts were read multiple times, to make sure that an initial pattern of the information is developed before codes were generated.

The second step was to start coding the transcripts. The coding is a process of finding smaller segments (codes) of the transcripts that seem intriguing or significant based on the research objectives and the analyzed phenomenon. These codes were important as they helped in organizing the collected information that was contained in the transcripts. The type of method for coding and the subsequent development of themes was a combination of a theory-driven and data-driven approach, as based on the research objectives there were specific topics according to which the codes where searched, however, there were also codes that were created via the guidance of the data. This systematic search for codes was re-done several times, to make sure that potentially important codes are not skipped and left out from the data extract.

After multiple rounds of coding this aforementioned data organization via the codes lead to the development of themes. In this third step of the thematic analysis, the collected extracted codes were systematically read and put into different groups characterized by the underlying themes. During this step, it was also important to recognize and establish connections between the different themes.

In the fourth step, the previously mentioned list of themes was reviewed and refined. This meant that the generated themes were revisited and reassessed, thereby deleting themes that were not supported by a sufficient amount of data as well as combining themes that initially seemed independent but turned out to be pointing towards the same direction and covering the same theme. It was important to check whether the codes for the given theme were coherent, as well as to apply re-coding where it was apparent that there were codes that were previously missed.

The fifth step involved naming and describing each theme, checking whether the sub-themes made sense as well as making sure that there were no significant overlaps between the themes. In this step, the most important part was to finalize the organization of the themes and codes. At the end of this step, the final version of the themes and subthemes were generated. On figure 25 below on the left side, the theme system is presented which includes the 7 main themes and the corresponding 24

subthemes. While in some cases there were no subthemes, as the main theme was concise and there was no need for further division, in other cases several subthemes were developed. On the right side, it can be seen how many times were a certain theme or subtheme touched upon in the different interviews respectively. In order to establish a theme or subtheme, the given topic that the theme revolved around had to be touched upon at least once in two separate interviews. In some cases, the subthemes completely covered the main theme, and, in these cases, there is no count of mention shown in the table next to the main theme, as the times when the main theme was mentioned in the given interview, these mentions could be accounted for by the subthemes.

Figure 25. Theme system and the themes corresponding appearance and frequency thereof when it comes to the 4 interviews.

Figure 26 below showcases the connections between the different themes and subthemes. Those main themes that were completely covered by the subthemes were not included in this theme map. In order to establish a relationship between two or more themes, these themes had to intersect with one another within the same segment of an interview, at least once. The higher the frequency of such intersections, the stronger the relationship between two themes or subthemes, which is showcased by the width of the line between two themes or subthemes. For example, it can be seen that there is

a strong connection between the main theme ‘Prompt-Engineering’ and the subtheme ‘Time intensive’ which is a part of the main theme ‘Challenges with using AI text-to-image platforms’. As can be seen on the theme map, the different main themes and subthemes were quite intertwined.

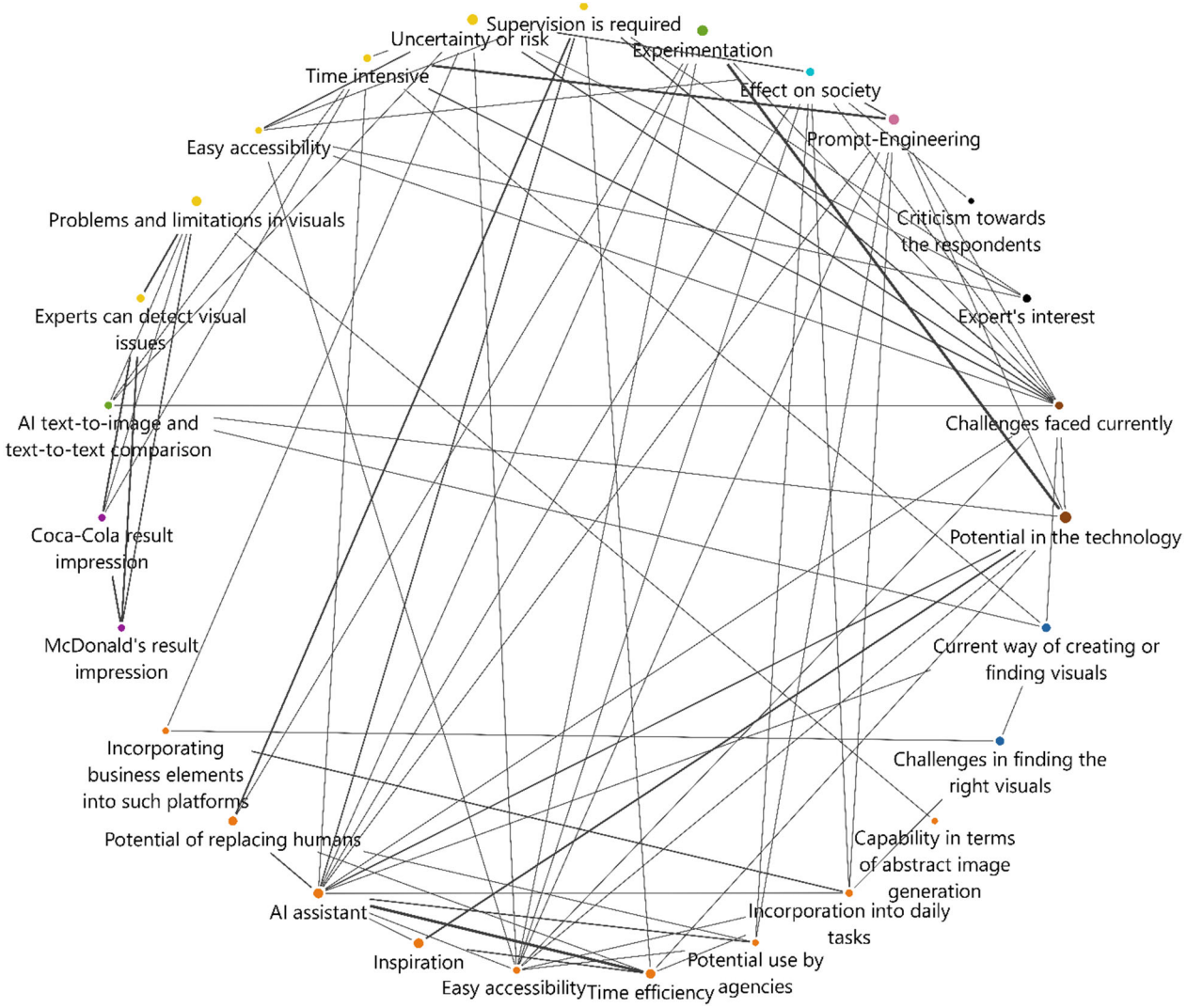


Figure 26. Theme map that shows the interconnectedness of the themes.

The sixth and final step when it comes to the thematic analysis is to produce the report of the thematic analysis, which in this case consists of the list of the themes sub-themes, the corresponding codes as well as for each theme or subtheme an interview citation that resembles the given theme or subtheme. In the following below, this thematic analysis report is presented. In those cases where the subthemes completely covered the main themes, the main themes were not included to avoid redundancy. When a theme (subtheme) is part of a main theme, it is shown by noting the main themes after the subthemes in parenthesis.

Theme 1: Incorporation into daily tasks (Potential influence of AI text-to-image on Marketing)

Codes that revolved around the theme and emerged during the interviews:

- There is great potential if larger companies - that people are already familiar with - integrate generative AI tools into their software – which people use daily.
- It could become part of everyday work for different professions, each applying those AI tools and skills that are beneficial to their own job.
- Daily use cases could benefit very much when these AI tools are integrated.

Interviewee quotation that resembles the theme:

'We are using tools like for example, Microsoft 365 suit or Adobe, and Photoshop, I think if these companies really start leveraging those AI tools and putting it in, in their workflows, It could get much more useful for the actual work we are doing, like easily creating an image. A good example would be, for example, if you are not an experienced Photoshop user, and they're really integrating a proper AI, maybe the cutting out of an image, maybe a person from a background will be much easier.'

(Expert 4)

Theme 2: Incorporation of business elements into such platforms (Potential influence of AI text-to-image on Marketing)

Codes that revolved around the theme and emerged during the interviews:

- Applying these tools could only work with the integration of tools that are relevant to our own business case.
- Application of these platforms would be more likely if the image elements of our business could be incorporated and used on the platform.
- Could be worthwhile if elements and instructions of the design manual could be uploaded to the platform.

Interviewee quotation that resembles the theme:

'In our case it is also specified in the design manual to the millimeter, exactly where everything should be in the given advertisement and material. I don't know if it it's possible to implement it into the way of how such an interface works. I would have a very positive experience if they put an AI-generated image in front of me, which I would think was designed by a graphic designer, and it turns out that it was done by AI, I think that would be positive.'(Expert 1)

Theme 3: Potential use by agencies (Potential influence of AI text-to-image on Marketing)

Codes that revolved around the theme and emerged during the interviews:

- It can be expected that agencies will adopt these tools.
- If the agencies review the operations of these tools and platforms, they could incorporate them in the future.
- These tools and platforms can help agencies in their daily tasks.

Interviewee quotation that resembles the theme:

'I'm more on the side of the people who think that it will become part of everyday work for some other professions, like graphic designers, like editors, copywriters, what have you, that they will need to adapt to those skills that are needed in order to operate those AI tools so that it's beneficial to their own job, to their everyday job and work. '

(Expert 4)

Theme 4: Potential of replacing humans (Potential influence of AI text-to-image on Marketing)

Codes that revolved around the theme and emerged during the interviews:

- It could be a good substitute for maybe in the future, but at the moment it needs a lot of review on the way it works.
- The work AI does should be reviewed by humans but the risk of not reviewing could be offset by having the work done less expensively by AI.
- Everybody is experimenting with technology, but it is not seriously replacing any human work.
- There was fear regarding this potential replacement, but the current trend does not support this fear.
- These tools can do some things very well, but based on what we have at the moment, it cannot be expected that they will wipe out professions.

Interviewee quotation that resembles the theme:

'The fear has been that it will replace human resources. Um, but currently what we can see in this trend is that it's not replacing human resources, but it, makes, uh, human resources more efficient. Because it can help with daily tasks. This doesn't matter if it's an agency or if, it's on a customer side or large company like ours. '

(Expert 3)

Theme 5: Capability in terms of abstract image generation (Potential influence of AI text-to-image on Marketing)

Codes that revolved around the theme and emerged during the interviews:

- Some of the AI-generated abstract images were surprisingly good in the survey.
- When it comes to abstract images, it is more difficult to identify any errors that the AI might make.
- In terms of unrealistic, abstract images, the AI output can be compared to the human output.
- If it is about non-figurative things that do not contain human representation, these platforms can work for creative concepts.

Interviewee quotation that resembles the theme:

'The CocaCola abstract was also deceiving, because I totally thought it was done by an artist like a "modern Andy Warhol" or something.'

(Expert 1)

Theme 6: Easy accessibility (Potential influence of AI text-to-image on Marketing)

Codes that revolved around the theme and emerged during the interviews:

- You do not need a new/special device in order to use these AI tools.
- The learning curve is not so steep.
- Available for everybody with ease of access which is why everybody is experimenting with it.

Interviewee quotation that resembles the theme:

'You don't have to buy VR glasses or other gadgets, you have your phone, your laptop, you can try it out on, figure out what it's good for, what it's not good for, I'm the same way, if I think of something I could use it for, or I have a task at work where I think it might make it a little bit easier, I'll try it. '

(Expert 2)

Theme 7: AI assistant (Potential influence of AI text-to-image on Marketing)

Codes that revolved around the theme and emerged during the interviews:

- These AI platforms can be treated as assistants, it works under our hands, and we supervise their output. From this perspective, these platforms can have a positive impact on our profession.
- You let these platforms do their job, but then it is important to check them and modify them.
- These platforms can assist you in your daily tasks.

- These platforms can assist you with generating new ideas.

Interviewee quotation that resembles the theme:

'This platform's output is like a junior's work, you let it do its job, but then it has to be checked or rewritten, so it's not that it's a tool that can do independent work, but that it can help life a little, so that's what many people are trying to see how much it can help and what it can be used for.'

(Expert 2)

Theme 8: Time efficiency (Potential influence of AI text-to-image on Marketing)

Codes that revolved around the theme and emerged during the interviews:

- These platforms can make us more efficient and they can take us in the right direction.
- You can save a tremendous amount of time by facilitating processes that otherwise would take much longer.
- You can inspire creative, artistic individuals much faster via these tools.
- These platforms can give you a quick jump start in some processes, and as a consequence, you have more time for fine-tuning the given process.
- The biggest impact is on the efficiency side, these platforms can save you a tremendous amount of time.

Interviewee quotation that resembles the theme:

'(…) I note, yes, if there is a campaign where you need a very specific image to be photographed, and to organize a photo shoot, say 2-3 weeks, and then to get a usable image, it takes at least 1 week, so 1 month to have 1 image, compared to 5 seconds to have 1 image, I'm not saying it's the same, but similar. Obviously, there is potential and possibility (…)'

(Expert 2)

Theme 9: Inspiration (Potential influence of AI text-to-image on Marketing)

Codes that revolved around the theme and emerged during the interviews:

- These platforms can help you in creating creative concepts.
- These platforms can be used to inspire artists and thereby facilitate their work.
- Using these platforms, you would not need to start from 0, which is otherwise the most difficult thing.
- Playing around with these platforms helps in gathering new inspiration.
- These platforms can help you by generating new ideas.

Interviewee quotation that resembles the theme:

'And also, what I tell people very often is, you know, it reduces the fear of the blank sheet of the author, you know? Um, Yeah, because you can start somewhere, you know, and you have like a writing partner that helps you in generating ideas, um, and just gives you a jumpstart.'

(Expert 4)

Theme 10: Easy accessibility (Challenge with using AI text-to-image platforms)

Codes that revolved around the theme and emerged during the interviews:

- Due to the ease of accessibility, more people can generate content, which leads to an overabundance of content.
- The sheer quantity of the content makes it even more important and harder for content creators to distinguish themselves and stand out from the rest.
- Due to the ease of access to these platforms, people can potentially use these platforms to misinform or mislead people.

Interviewee quotation that resembles the theme:

'That's the biggest challenge when it comes to content creation, is the, I hope that's the right term in English mediocracy, you know? Um, that things become very, um, content stays very much on the surface. Um, becomes replaceable, exchangeable with each other. Um, it becomes just like a big mess of blah, more or less, right? Because the outputs are pretty much the same. (…) Which is a direct result of all these AI tools is that we are getting flooded with more and more content, regardless of the quality (…)'

(Expert 4)

Theme 11: Supervision is required (Challenge with using AI text-to-image platforms)

Codes that revolved around the theme and emerged during the interviews:

- These platforms need a person to review the output from a professional point of view and override if needed.
- Humans are needed to provide the necessary information input for these platforms to work.
- Sometimes there are things that are important for creating content and these platforms simply cannot be aware of these things, which is why human overview and input is needed.

Interviewee quotation that resembles the theme:

'I watched a lot of videos how these generative AI is really work because they still de depend on the information we provided. So, I mean, it doesn't mean that this AI artificial intelligence makes up the, the content. '

(Expert 3)

Theme 12: Experts can detect visual issues (Challenge with using AI text-to-image platforms)

Codes that revolved around the theme and emerged during the interviews:

- For the untrained eye, AI-generated images might seem good, but if you are working with visuals, and you look at the details you can notice some issues.
- In communication, every detail should fit perfectly, so it is hard to use AI-generated images when they have errors even if they are just minor.
- It can be very quickly determined if the images are AI generated, because you can see some reoccurring issues.

Interviewee quotation that resembles the theme:

'For example, in the McDonald's ad comparison, it took me about 1 second to determine which AI and which wasn't and that's me in the business. The AI broke down with only 1 detail and that was the sesame seeds on the bun. It's funny because if you've ever seen a McDonald's ad with a sesame seed bun on it, that way you know what it looks like and you know and could recall it from a dream. And AI can't do that.'

(Expert 2)

Theme 13: Problems and limitations in visuals (Challenge with using AI text-to-image platforms)

Codes that revolved around the theme and emerged during the interviews:

- AI is not yet there when it comes to convincing proper human representation (Frequent errors with faces, bodies, and limbs).
- It struggles to recreate "real" things that we all know very well from our life.
- Errors in the image can often be very high, depending on of course what type of image you ask for.
- It cannot properly produce text, which would be quite an important option to have.

Interviewee quotation that resembles the theme:

'The other challenge that I see, especially with DALLE-2, and I haven't used it for a couple of weeks now, so it could be that it's becoming much better now, um, is what it does with faces. You know, just like, you know that they have a nose right under the eye or something like that, or whatever it comes to. It's just, it's not human anymore. So that's, that's another challenge that I see.'

(Expert 4)

Theme 14: Time intensive (Challenge with using AI text-to-image platforms)

Codes that revolved around the theme and emerged during the interviews:

- It can take very long (multiple rounds) to be able to get the output you desired.
- Might take as much time to generate the right image as it would with traditional methods.
- You need to be precise, and clear and you need to be able to play around more with it in order to be able to get good results.
- When you generate an image with these platforms, you need to sit down and instruct the robot multiple times. You have to write and rewrite and rewrite, which can be time-consuming.

Interviewee quotation that resembles the theme:

'Because I have also myself, but also heard from many cases that it took so many rounds to give the right input that it would be compared to doing it yourself would be the same time you, uh, would, uh, needed to use to complete a task. I mean, not every time, obviously. Uh, and we are also learning on, on, on how to use it, uh, better. Um, but still it depends a lot on how much work you put into it. '

(Expert 3)

Theme 15: Uncertainty or risk (Challenge with using AI text-to-image platforms)

Codes that revolved around the theme and emerged during the interviews:

- It is very much not clear what is currently the situation with the ownership and rights regarding these images.
- With the current processes that are in place for image search or creation there, is no uncertainty regarding how where, and if we should use them, as opposed to AI-generated images.
- Employees could expose confidential information while using such platforms which could pose threats to the company.
- There are data privacy questions regarding the platform that are not yet answered.

- If AI content becomes prevalent, customers might hesitate to trust certain content, due to the overabundance of new content and false information.

Interviewee quotation that resembles the theme:

'When you work with images, or ask an agency for a layout, then it's in your mind that, okay, there will be some kind of royalty on this, or even if there is no royalty, you have to think about what I want to use it for and where, and how I will use the image, and I'm not saying that this is the zero question in connection with an image, but that this is a very early question, and when it comes to an image created by artificial intelligence, I do not know what the exact regulations are, whether you can use it freely, or is there a royalty. On what basis, for how long? so it raises more questions at point zero (…).'

(Expert 2)

Theme 16: Effect on society

Codes that revolved around the theme and emerged during the interviews:

- These AI platforms bring a sort of experimentation with society itself.
- These AI platforms raise just as many questions as they answer.
- In the wrong hands, these platforms can be dangerous, there were already instances where AI-generated images deceived people on the internet by projecting false information in visual form.
- These platforms can enhance the workflows of many professions.

Interviewee quotation that resembles the theme:

'it's also a very interesting "human experiment", what it can be used for, what effect it will have on society. It really raises at least as many questions as it answers or as many things as it can help with, so it's an experimentation, I feel. '

(Expert 2)

Theme 17: Prompt Engineering

Codes that revolved around the theme and emerged during the interviews:

- Since better prompts generate better outputs, there will be a demand for the profession.
- Only those could become prompt engineers, who know the ins and outs of these platforms.
- There is already a need for such professionals.
- Prompt engineering is like hacking in the sense that these engineers are hacking the system with the proper prompts to get certain outcomes.

- There are already people who are experimenting with creating a collection of terms that lead you to the best possible result.
- This profession is like SEO as you are looking for the best terms, and just like in the case of SEO it can become an industry on its own.

Interviewee quotation that resembles the theme:

'I'm seeing a lot of those conversations at the moment where you have the view of the people who are saying, we need some prompt engineers. '

(Expert 4)

Theme 18: Current challenges (ChatGPT)

Codes that revolved around the theme and emerged during the interviews:

- You need to thoroughly fact-check the output because it can generate some absolute nonsense.
- Professional writers need to start using the technology in order to stay in the game.
- The ease of access leads to a flood of generic mediocre content.
- The access of the platform to live data is often limited.
- People who are using CHATGPT to write already think they are already professional writers.
- There is definite ambiguity when it comes to data privacy on the platform.

Interviewee quotation that resembles the theme:

'Um, fact checking is necessary still manually in many cases. You cannot trust, uh, you cannot trust the outcome of, the tool a hundred percent or blindly, you know?'

(Expert 4)

Theme 19: Potential in the technology (ChatGPT)

Codes that revolved around the theme and emerged during the interviews:

- This platform could be used to accelerate legal issues and do certain processes faster than a lawyer.
- It helps you by finding you answers quickly.
- You can use it to rewrite your thoughts in distinct styles.
- It is useful for repetitive text generation, like for presentations.,
- It can help you with generating novel ideas.
- The use of ChatGPT will become normality, just like the use of smartphones did.

- It helps you to create not only more content but sometimes also better content.
- It is already used on a daily basis in agencies.
- Saving time is a given, when you integrate this platform into your workflow.
- Using ChatGPT for certain tasks can truly be a game-changer in many fields.

Interviewee quotation that resembles the theme:

'But now ChatGPT has come out and with his help, out of sheer curiosity, we wrote Facebook posts and looked on Facebook to see if the rate of interactions and engagements changed and it seemed that it didn't. Nobody noticed that we didn't write this, ChatGPT did. We wrote this in lifestyle theme, "spring", "world theatre day" and things like that, there were maybe 4 in total. He wrote the spring one really well, because we didn't have to change it, but in the other one he wrote non-sense stuff, so it wasn't that we could copy paste it to Facebook, as we had to check it, but it's very clever, it can do Hungarian, English with emoji, without emoji, hashtags, so we tested it just out of curiosity.'

(Expert 1)

Theme 20: Coca-Cola result impression (Reflecting on the survey)

Codes that revolved around the theme and emerged during the interviews:

- The two visuals were quite similar to one another.
- The human-generated was better because it was more regular, and regularity is preferred.
- The results regarding the comparison are not surprising, since this technology has reached a level where it can deceive professionals.
- They looked in a way that one could assume that both were AI-generated.
- The positive results in favor of the AI versions are surprising because in general, the visuals were not great based on a critical former graphic designer point of view.

Interviewee quotation that resembles the theme:

'It (the results) doesn't surprise me, because I can tell you that this technology has reached a level where it can fool people like me who deal with visual content on a daily basis, so it's not surprising at all on a layman's level'

(Expert 2)

Theme 21: McDonald's result impression (Reflecting on the survey)

Codes that revolved around the theme and emerged during the interviews:

- The compared McDonald's advertisement visuals looked like they are from the same campaign.

- Both advertisement visuals looked real.
- When it comes to the AI version you could see that it was not real compared to the human version.

Interviewee quotation that resembles the theme:

'I zoomed in on it anyway and it was totally believable to me, I thought it was all 2 existing ads, and it could have been more than one part, it could have been a carousel, it could have been a full ad, it could have been a half ad, etc. I was completely deceived.'

(Expert 1)

Theme 22: Experimentation (AI generative platforms in general)

Codes that revolved around the theme and emerged during the interviews:

- These platforms' potential would warrant experimentation, but it is not yet mature enough.
- Everybody is trying to figure out where and which platform could be used.
- There are AI platforms for text-to-text, text-to-image, and audio-to-text. These platforms are being experimented with and integrated.
- There are already webinars and events where these AI generative tools and experimentation serve as the focal points of the discussion.
- The ease of access makes it convenient to use these platforms, which makes experimentation easier.

Interviewee quotation that resembles the theme:

'Um, as preparation for a webinar that we have given around that topic for a couple of weeks now… Um, so I played around with it just to show people what it is actually that you can do, you know, in, in the generation and so on.'

(Expert 4)

Theme 23: AI text-to-image and text-to-text comparison (AI generative platforms in general)

Codes that revolved around the theme and emerged during the interviews:

- AI text-to-text is more in demand than AI text-to-image.
- Text-to-text is more important since creating text-based content is more difficult.
- Visual content consumption is exponentially much greater than text-based because creating visual content became extremely easy with smartphones.

- It is more difficult to identify whether a certain text is made by AI than it is to identify whether a certain image was made by AI.

Interviewee quotation that resembles the theme:

'I have to say that on the advertising agency side, I don't see AI-based imaging being as prevalent as text, because text is easier and faster, because there are very well-established tools in imaging, I mean, that if you need an image, there are stock image databases where it really just depends on how well you can enter keywords and how well the search algorithm of the database works, so it's not as difficult to find an image as it is to find a picture. To find an image, you just type a few words into Google and you've got a bunch of images, of course you have to work with that afterwards, but, basically, that's the starting point, that it's not that I have to sit down in a complicated way, get my little pencil out and then I have to think and draw… and also people have their smartphones in their hands and they can take pictures of everything.'

(Expert 2)

Theme 24: Current way of creating or finding visuals

Codes that revolved around the theme and emerged during the interviews:

- The creative work directly happens at creative agencies by creating the visuals for a given marketing campaign.
- The creative work indirectly happens at advertising agencies by clearly defining the expectations for a given marketing campaign.
- The expectations for a marketing visual are defined in a brief, based on which the creative agencies submit proposals.
- There are already well-established effective working tools for visual search or generation.
- Written content is created first and the creation of the visual comes only after.

(Expert 1)

Interviewee quotation that resembles the theme:

'(…) the creative part is on the creative agency, but a lot depends on what kind of brief they get from us, and then they develop their proposals based on the briefs, some of which are better, some of which are worse, and then we select them, we negotiate them well, or maybe we ask for more proposals, because they did not bring what we imagined, and that's really it. So, for us, the agency briefing process is the more important step in this.'

Theme 25: Challenges in finding the right visuals (Current way of creating or finding visuals)

Codes that revolved around the theme and emerged during the interviews:

- It is difficult to get proposals that completely satisfy all the written expectations in the brief.
- It can take multiple turns back and forth with the brief and the proposals until a proper proposal is created and is accepted.
- There is also a subjective human part in both the generation of a visual as well as in the judgement of the visual.
- Depending on the purpose and use case of the certain visual it can need numerous approvals.
- There are a number of image-related design elements that must look a certain way and cannot be altered.
- The visuals need to evoke emotions.

Interviewee quotation that resembles the theme:

'The main thing is that you have to meet all the expectations of these concept proposals, because in our case the concept is usually an image and a headline, so very generally, there are extra cases, like TV campaigns. And it is difficult to meet all the criteria, to satisfy the business objective and to satisfy the lawyers, and it is very necessary for us to review and take account of these criteria and then to come up with a proposal for the business and the lawyers which we think will pass the bar. So, it's not enough to satisfy everyone, that we like it and that we think it's good.'

(Expert 1)

Theme 26: Expert's interest (Preference to know visuals' origin)

Codes that revolved around the theme and emerged during the interviews:

- Professionally it would be worthwhile to know whether a visual is AI or human-generated.
- For the sense of science, it would be important to know the origin of a visual.
- It can never be 100% AI-generated, therefore it is actually not necessarily a relevant question.
- From a business perspective, it is not important to share the origin of the visual, since what matters is whether it works or not.

Interviewee quotation that resembles the theme:

'To be honest, uh, for example, a company really uses AI to create, their content and, and their visuals. I would say no (in that case providing information about the visual's origin is not important) because in

the end, if, the content, if the output works for the company, why should I tell that the reader or the customer who, whoever I mean, then I could start questioning every, every image or every video I see.'

(Expert 1)

Theme 27: Criticism towards the respondents (Preference to know visuals' origin)

Codes that revolved around the theme and emerged during the interviews:

- People who said they are interested in the origin and would always prefer to know are those people who are afraid of AI taking away their jobs.
- People are only saying they would prefer to know the origin of a visual because they want to come across as people who cannot be deceived.

Interviewee quotation that resembles the theme:

'You're assuming that the person asking the question wants to hear this and as an individual he obviously doesn't - but only someone who is interested in making others believe that he can't be fooled - will obviously say that of course it's very important to him and he wants to know who made the image, because it's very easy to say that, and coming from the deepfake and fake news topics, this has a social impact (behind them) so people (although only a minority) increasingly want to make others and themselves believe that they are informed, they don't take what they get for granted and these types of people obviously say of course I want to know, but in everyday life when you spend 3 seconds looking at this (this kind of visual content), nobody cares, nobody starts thinking about it.'

(Expert 2)

6. Discussion and Implications

6.1. Human versus AI-generated visuals

As has been outlined previously in the literature review, there has already been some research conducted where AI-generated content was compared to human-generated content, and these contents were rated by participants of the studies. In some cases, AI-generated content could be on par with or even outperform the human-generated content. In a research conducted by Wu et al. (2020) Chinese participants liked some aspects of the AI-generated content more than those of the human-generated content. In a study conducted by Kim et al. (2020), as well as in a similar study conducted by Köbis and Mossink (2021), the researchers found that in certain areas (mainly text generation) AI is capable of generating so convincing content that participants were not able to tell that said contents were AI-generated. The results of this research point in a similar direction to that of the previously mentioned researchers, and it serves as a valuable addition to the previously mentioned

researchers' work, since in the case of this research a new field of AI-generated content, namely visuals for advertisement were explored and compared. An important result of this research is that the public survey respondents on average rather agreed with the statement *'A professional graphic designer created the visual.'* Another important result was in this regard the first AI-human comparison (figure 10) since it showcased that an AI-generated visual can outperform a human-generated visual when it comes to people's perception regarding several factors. This result suggests that provided the right prompt, AI can not only generate text-based content that can be on par with human-generated text-based content (as it was previously confirmed by the previously mentioned researchers), but AI can also be on par with, or even outperform humans when it comes to generating advertisement visuals. However, the results of the second comparison as well as the results of the interview thematic analysis somewhat modulate this finding. As could be observed in the case of the second comparison (figure 11) AI can also generate an advertisement visual that is rated notably worse in several factors compared to a human-generated advertisement visual. This considerable difference when it comes to the results of the two AI-human comparisons can be explained by a phenomenon outlined by the expert interviewees, according to which AI is very capable of generating images that are more abstract, and less realistic. In other words, AI is very good at generating images that portray something that does not have a real counterpart. For example, an '*abstract 3D rendered image that shows the silhouette of an athlete in a dynamic dreamy environment*' could be successfully generated via AI because it is something that one does not have a real reference for. But when one tries to generate something to which there is a pre-existing reference, something that is very familiar and very real, for example, close-up images of people, the generated image is likely to be sub-par. In the case of the two comparisons, this narrative can also be identified. The Coca-Cola images were more abstract showcasing people at a concert in the shape of Coca-Cola bubbles, whereas in the case of the McDonald's comparison, the focal point of the images were hamburger buns, which are things that are "real" and can be easily recognized, things that are very familiar. One potential and likely reason for this phenomenon came up during the interviews according to which, when you look at a realistic image that showcases people, hamburgers, or any objects that people are very familiar with, it is much easier to identify errors even if they are minor, since people are accustomed to these objects and they can straightforwardly recognize if something is out of place, whereas if you look at an abstract visual, you do not have these references by which errors could be pinpointed, or even if you have such references, you do not have them at such a high quantity. All things considered, the aforementioned results suggest that AI is capable of generating abstract images that are just as good or better perceived than human-generated abstract images. When it comes to images that are rather realistic, however, the given user should most likely not consider the AI alternative to generate the final image, or in case s(he) does, post-editing on the image might be necessary to eliminate recognizable errors or issues.

6.2. Creating content

According to the results of the thematic analysis of the interviews, AI text-to-image platforms can help in facilitating workflows in marketing management and the interviewees indicated that these platforms are like having an AI assistant which - under your supervision - can help you in facilitating your daily tasks by saving you time and helping in creativity by inspiring and generating new ideas. This latter aspect is a very significant finding, as when it comes to generating content, the issue of creativity poses one of the biggest challenges. According to Köbis and Mossink (2021), historically it was inconceivable that machines could become creative, which is why the challenge of creating creative content via AI was persistent. For this reason, learning about the experiences of the interviewees is an extremely important steppingstone, since if AI text-to-image platforms can help in creativity, one of the crucial challenges of generating content, it has the chance to truly shape marketing management now and in the future. From the perspective of the perception of potential customers, the survey also supports this finding, as on average the public survey respondents found the AI visuals rather imaginative and visually creative (figure 12), and in certain cases, the public perception of these factors was even more favorable such as it could be seen on (figure 10). Another important factor when it comes to content generation is the ability to evoke emotions (Kee and Yazdanifard, 2015). While in most cases the results in this regard (being memorable, exciting, appealing, or interesting) were rather mediocre when it comes to the public respondents (figure 12), in some cases the results were notably more favorable in this regard (figure 10). This result suggests once again that provided the right prompt (input), AI can generate images (output) that are likely to evoke emotions in an effective way.

As Hossain et al. (2022) stated, AI adoption can provide the means for businesses in order to be able to elevate their business performance as well as to lower the challenges that the competitive environment causes by facilitating dynamic learning, which as a consequence provides competitive advantages. When it comes to adopting AI text-to-image platforms, the results of this research support this assumption, albeit there is a constraining factor. When it comes to creating visual content, the adoption of AI text-to-image platforms can facilitate dynamic learning, can enhance business performance by inspiring the generation of new ideas as well as by facilitating daily tasks, and as a consequence, the given business can have a competitive advantage, however, given that the AI text-to-image technology has so much to offer already and that the technology is developing at a very fast rate, it is likely that the adoption of the technology will become prevalent, in which case the extent of the aforementioned competitive advantage will be lowered.

6.3. Uncertainty

While the thematic analysis of the interviews revealed that due to the easy access to generative AI platforms, everybody is experimenting with them in some ways, when it comes to AI text-to-image platforms in many cases there are some uncertainties. These uncertainties include not being sure how the platform works (background processes), not being sure whether the data shared on the platforms are safe there, and not being sure about the current and future situation regarding ownership rights when it comes to AI-generated images. As was previously outlined, Volkmar et al. (2022) found in their study that it is important to understand an AI technology at least in their managerial context in order to be able to successfully adapt and integrate said technology. Based on the thematic analysis of interviews, these uncertainties need to be addressed and overcome in order to be able to fully adopt or integrate AI text-to-image platforms. Marketing managers need to make sure that they understand the platform and the technology in order to mitigate the uncertainty and successfully integrate the technology. However, an obstacle can be a lack of commitment (to overcome the uncertainties and get to know the platform better) from some of the marketers. As Vlačić et al. (2021) suggested, a lack of commitment can hinder a company from embracing a particular AI technology. These uncertainties and supposed lack of commitment could be observed in the survey results as well. Interestingly, experts would prefer not to see AI-generated images, even though they found the capability of the platform fascinating, and for them, it is not very important whether an advertisement visual is created by AI or not (figure 13). One can assume that these seemingly contradicting attitudes can stem from the uncertainty and lack of commitment towards such platforms since while the experts are fascinated by the capabilities of the platforms, they would rather not see AI-generated advertisement visuals, which indirectly could also mean that they would rather not generate such advertisement visuals.

The thematic analysis of the interviews suggests that such uncertainties could be mitigated, and commitment could be generated if the AI text-to-image capabilities of these platforms were integrated into softwares and platforms (such as Microsoft 365, Adobe Photoshop, or Canva) that marketers and graphic designers are already familiar with, thereby directly incorporating the AI text-to-image capabilities into the workflows of these professionals. This way the technology could be used in platforms where the professionals do not have any concerns regarding data privacy, and they could also use these tools in a work environment they are already familiar with. Experts in the interviews highlighted the challenge of bearing in mind the unique design of their brand elements when it comes to creating visual content. Hence, commitment towards the adoption of AI text-to-image platforms could possibly also be enhanced by providing the possibility for visual content creators to upload their company's brand image elements, which would be then automatically incorporated when they are generating advertisement visuals on the platform.

6.4. Replacement or enhancement

While the results of this research showed that AI platforms can be used to generate an image that is perceived better by people compared to a human-generated image, the results also make it clear that a significant amount of human input and supervision is needed in order to generate such images. The expert interviewees expressed that these platforms not only need a proper input (prompts) to generate potentially desirable images, but the generated output also needed to be reviewed from a professional point of view. This suggests that currently graphic designers and marketers who are responsible for creating advertisement visuals should not be concerned by the possibility of being replaced by AI, a fear that is shared among many industries, as was previously outlined by researchers Campbell et al. (2020). Because these professionals do not only know and "feel" the brands they represent, but they also have expertise regarding aesthetics, current trends, composition, etc., which can be utilized via AI generative platforms, but without such expertise, the AI platform would not be able to work properly.

There was a consensus among the expert interviewees regarding the notion that these platforms are essentially like assistants, they work under your hand, they can inspire, and they can facilitate your workflow, but they need to be supervised and users have to constantly provide and potentially alter their inputs to get good results. Therefore, when it comes to the framework developed by Huang and Rust (2022) (figure 4) which shows the sequence of how AI influences human resources, the results of this research suggest that AI text-to-image platforms are currently at the level of augmenting feeling labor. While the aforementioned researchers posit that augmentation will lead to an eventual replacement of the labor, the experts suggested that the current state of these AI generation platforms and the corresponding trends do not indicate that such a replacement would happen. Of course, it does not mean that another iteration of the technology that also aims at generating visuals would not have the potential to do so in the future.

While augmentation of the labor is ongoing and workforce replacement is not likely, there is another plausible way by which graphic designers' and marketers' jobs and as a consequence marketing management will be affected, which is the establishment of a new profession. The thematic analysis showed that while these AI text-to-image platforms (especially DALL-E 2) are easy to access and not difficult to use, the use itself and the development of the know-how when it comes to finding the right words and prompts by which the expected and desired outputs are generated can take a quite long period of time, depending on what type of image the given user is trying to generate. While a given prompt might seem logical to be used for the user, the platform has its own "language" which is the language that needs to be used in order to generate adequate outputs. Therefore, in order to successfully generate images on the platforms, one needs to learn this language. According to the

thematic analysis of the interviews, probably this is the reason why experts find it very likely that a new profession, prompt-engineering, will emerge. Prompt engineers would be professional prompt writers who - due to their accumulated experience and knowledge regarding AI text-to-image platforms - would know what prompts to use in order to get certain visuals, as well as how to alter a given prompt to get the desired outcome. Just like in the case of search engine optimization (SEO), it is very likely that prompt-engineering can create an industry on its own. As Huang and Rust (2022) underlined, to adopt AI efficiently, it is essential that marketers achieve collaborative intelligence, which means finding a combination of AI and human intelligence that yields the most optimal results. In the case of AI text-to-image platforms, prompt engineers are very likely to be the key to reaching collaborative intelligence, as they could be the professionals who have the proper human intelligence (experience) regarding the technology, using which they can exploit the most AI intelligence can offer. So, if prompt-engineering truly materializes, it will definitely have a direct effect on marketers and graphic designers, since if AI text-to-image will be implemented by marketers whether it is used for inspiration, workflow facilitation or end visual production, in order to generate the best possible images and to reach collaborative intelligence, prompt-engineers will be needed. Whether it is an internal colleague of an advertising or graphic designer agency, or it is part of an agency that only specializes in prompt-engineering, the appearance of these professionals and their connection to the advertising industry will have a direct impact on marketing management.

6.5. Demographic characteristics and targeting

This subchapter discusses the different results when it comes to the demographic characteristics of the respondents, as well as it outlines the implications of these results when it comes to targeting advertisements that incorporate AI-generated images.

6.6. Age

It could be seen that in general, older respondents (46-65) reacted more negatively when it comes to the AI-generated images compared to the younger respondents (18-45) who reacted slightly positively to the AI-generated images, based on the ratings they provided for them via the Likert scale statements (figure 16). These results suggest that when it comes to using AI-generated images for targeting, marketers can expect better results from younger people. This implies that when they are promoting a product or service that is targeted at younger customers, AI-generated images could definitely be taken into consideration, as they can receive positive reactions from these potential customers. On the other hand, when the product or service is targeted at older customers, the visuals for the advertisements should rather not be created using AI platforms as these customers are likely to react negatively to such visuals.

6.7. Gender

On figure 18 it could be observed that there was just a minor difference between the female and male respondents' assessment when it comes to the AI-generated images. However, based on the different gender groups' general opinion regarding the platforms in figure 19, we could see that female respondents found the image-generating capability of AI notably more worrying compared to the male respondents, as well as female respondents indicated a noteworthily higher preference towards not seeing AI generated advertisements compared to male respondents. These results indicate that while the visuals of these images seem to be similarly assessed by the genders, due to the rather negative attitude towards the technology exhibited by the female respondents, it is likely that advertisements that contain AI-generated images would have a better impression on men, which means that when it comes to targeting advertisements, marketers should take into consideration that AI-generated images might underperform for advertisements that are targeted at women. However, this might be true only as long as the targeted women know about the origin (AI or human generated) of the images.

6.8. Education

The results (figure 20) suggested that lower-educated people (having a high school diploma or some college without a degree) liked the AI-generated images notably more compared to higher-educated people (having a master's degree, professional degree, or academic doctoral degree). However, interestingly in figure 21, we could observe that according to the results, the least educated people found the capability of AI to generate images the most worrying, as well as they indicated the strongest preference for not seeing AI-generated advertisements. These are yet again results, that can suggest useful implications for marketing professionals when it comes to using AI-generated visuals as well as when it comes to targeting. These results suggest that if marketers use AI-generated images, they are likely to have better results with less educated customers, compared to more educated customers. It also means that when companies want to target high school graduates and they are deciding among potential visuals for the given advertisement, the option of using AI to generate visuals should definitely be taken into consideration. However, these favorable results from less educated people can only be expected as long as the targeted customers do not know about the origin of the particular images, since based on the results, it can be expected that if they learn that the visuals were AI generated their attitude towards the given image worsens thereby having indirectly a negative effect on the advertised product or service as well.

6.9. Income

When it comes to the income comparison of the results of the respondents, it could be seen that the respondents whose yearly gross income ranges from below 20 000 EUR to 40 000 EUR provided very

similar ratings for the 8 AI-generated images, as opposed to the respondents who have a gross yearly income of above 50 000 EUR, who rated the AI-generated images notably worse (figure 23). This indicates that when marketers are targeting customers who have a higher yearly gross income than 50 000 EUR, should take into consideration that AI-generated images have a moderate chance of generating a good response from these targeted customers. It could also be seen that respondents with lower income provided a relatively positive assessment regarding the AI-generated visuals when it comes to the different factors. However, they were also the respondents with the highest preference for not seeing AI-generated advertisements, as well as they found the image generation capability of AI the most worrying among the different income groups. These results suggest that when it comes to targeting a certain product or service, marketers can expect that if they use AI-generated visuals for their advertisements, they receive a relatively good perception from potential customers with lower income as long as these customers do not know about the AI origin of the images.

6.10. ChatGPT (AI text-to-text)

As could be seen from the thematic analysis report of the interviews, ChatGPT is a platform that similarly to AI text-to-image platforms, attracted the attention of marketing professionals, albeit to a higher magnitude. While just like with AI text-to-image platforms, the capability of generating new ideas also came up regarding ChatGPT during the interviews, the current main advantage that was highlighted by the experts was the provision of enhanced efficiency, first and foremost by saving time for the users. Even though currently the need for fact-checking is required and there is uncertainty regarding the platform when it comes to data privacy, it has already been or is being incorporated in some ways into the workflow of the interviewees. The thematic analysis of the interviewees suggests that marketers are incorporating such AI text-to-text platforms into their workflows at a faster rate compared to the AI text-to-image platforms for the following main reasons: text-based content is more in demand, it is more difficult to create, and text-to-text platforms are performing better in the sense that it is more difficult to recognize an AI-generated text than it is to recognize an AI-generated image. All in all, the interviews' thematic analysis showcased that there is notable potential for AI text-to-text platforms, and it can be expected that such platforms will be prevalent among marketers. The survey results provide an interesting addition to these findings. In an attempt to explore how and if ChatGPT (AI text-to-text) and DALL-E 2 (AI text-to-image) can be used together as well as to see how well ChatGPT can imagine the description of certain types of advertisement visuals (prompt generation) compared to human (researcher), in the case of 4 of the 8 AI generated visuals were created based on prompts that were produced using ChatGPT (Appendix B, 7-10).

It could be inferred from the results (figure 24) that AI-generated images that were based on prompts that were written by the researcher received better ratings from the respondents compared to AI-

generated images that were based on prompts that were generated via using ChatGPT. However, in some cases the ChatGPT-generated images performed better, for example, they were better at visually representing the brands, and although the difference was in many cases noteworthy between the human-generated and the ChatGPT generated, the results of the ChatGPT-prompt generated images were only in 5 cases (of the statements) notably unfavorably perceived according to the Likert scale.

These results combined with the interviews suggest that there is a good potential for incorporating ChatGPT into the workflow or process of generating images with AI. The result that showed that the AI-generated images which were created based on AI-generated prompts were better at representing brands especially shows potential in combining the force of the two technologies because it indicates that AI can not only generate advertisement visuals that represent the visual brand image of a certain brand, but it also understands what unique aspects are important to include when it comes to generating such advertisement visuals for a particular brand.

7. Recommendations for further research

Since this research was conducted, social media was bombarded with images showcasing relatively realistic-looking AI-generated images of people, which images were generated by other AI text-to-image platforms such as Midjourney (Hsu and Myers, 2023) or Stable Diffusion (Burgess, 2023). 89These advancements suggest that some of the limitations of DALL-E 2 might be possible to overcome by incorporating other platforms as well. This definitely shows the need for research that compares all AI text-to-image platforms when it comes to their ability to create different types of visuals for advertisements, and to learn about their strengths and weaknesses, thereby helping marketers and graphic designers by the insights of which platforms could and should be used according to the different purposes.

Such realistic-looking images can easily deceive people and just like in the case of the staged moon landing, these images can be used to support misinformation as well as fake news. As the interviewees put it, this AI text-to-image technology not only brings the opportunity for experimentation for marketers, but it also brings experimentation on society as a whole. When the images are automatically visually labeled on such AI text-to-image platforms as “AI-generated”, this issue regarding misinformation could be solved, however, when it is in the best interest of the image generator to deceive people with their image, s(he) might erases such label. One of the interviewees highlighted that if AI-generated images work well in marketing, then it would not be important to disclose information about whether it is AI-generated or human-generated, which would be even more likely if the target audience would be such that is especially sensitive to knowing the origin of an image used in an advertisement. So, as we can see there conflicting interests here, as well as there are very

important questions and potential effects that concern society as a whole, which is why it would be very worthwhile to conduct research that focuses on AI-generated images' potential influence on society, as well as on the importance of "AI-generated" labels that are incorporated into AI text-to-image platforms in an inerasable way.

As it could be seen, older generations were less impressed with the AI text-to-image technology, be it negative or positive, while younger respondents (especially the youngest age group, 18-25) showed more interest and concern regarding the technology. This latter age group notably indicated a higher preference towards not to see AI-generated ads compared to the older age groups, even though the youngest age group reacted relatively positively to the AI-generated images, and they were also the age group that found the image generation capability of AI the most fascinating, seemingly creating a contradiction. On the one hand, due to its young age, this is an age group that has a very important role and power when it comes to marketing. On the other hand, this research showed that AI text-to-image platforms and AI-generated images have a high potential in having an important influence on marketing. Taking these two factors into consideration, it would be worthwhile to conduct research that explores younger people's attitudes toward AI-generated images, which could potentially unravel the seeming contradiction which was previously presented among the results of this research. This seemingly contradicting attitude towards AI text-to-image generation technology could be observed regarding the educational and income comparisons as well, which shows that there might be an underlying cause, which is a topic that would be worth delving into.

It was previously already mentioned while the results of the research were presented, but it is important to mention again that when it comes to the gender comparison of the results, the '*non-binary*' and '*prefer not to say*' groups had quite different opinion compared to the female and male gender groups, however the sample size for these groups was very small. For this reason, it would be worthwhile to conduct further research regarding the perception of AI-generated visuals, when it comes to the different genders, to see whether non-binary people indeed have different perceptions of AI-generated images, as in that case there could be important implications for marketers.

According to the results of this research, both AI text-to-image and AI text-to-text platforms can and have the potential to enhance marketing management even more. It could be worthwhile to further analyze how the two platforms can be used together forming an AI "arsenal" to facilitate marketers' work. The results also showed that in the case of AI text-to-image platforms, prompt-engineering is very likely to become an actual profession, and if it becomes true for AI text-to-text as well, a whole new industry might be established based on prompt-engineering. Therefore, further research

regarding this upcoming profession and its potential influence on marketing and other fields would be very beneficial.

8. Conclusion

To conclude this research and the document it is worthwhile to have a look at the main research question:

- How might AI text-to-image programs and platforms affect the field of marketing management?

It is important to address it with a perspective that takes the sub-questions into consideration. The emergence and ongoing development of AI text-to-image technology and platforms does not mean that graphic designers' profession and role regarding advertisement visual creation become obsolete. Rather, this technology offers every graphic designer the opportunity to adopt a new technology that can facilitate work and spark creativity with which the given graphic designer's output can be greatly improved. Their work can be elevated, but not replaced, since the technology still needs an "architect" who knows what s(he) wants to see on the canvas and who has the visual and artistic expertise to know how an image for a given purpose should be composed. Therefore, graphic designers will not be replaced by this technology, however, due to the potential advantages this technology already possesses, and bearing in mind that this technology is still in its infancy, as it became widely available only half a year ago and is constantly being developed and improved, it is very likely that graphic designers will adopt AI text-to-image technology and they will incorporate this technology into their set of tools. The case is very similar when it comes to marketers, as whenever they need to come up with a new advertisement composition, or marketing campaign with specific visuals, in the form of AI text-to-image they have a technology that they can use to not only get inspiration, but also to test visual ideas very quickly, so that they can send the brief of the best advertisement visual to their internal or external graphic designers as soon as possible. Therefore, it is also quite likely that marketers are going to be adopting this technology.

The biggest impact of the technology on marketing management however will most likely be the appearance of the profession: prompt-engineering, because if marketers or graphic designers will want to adopt AI text-to-image as efficiently as possible, they will need to either employ a prompt engineer who works for their given marketing department, or they will need to hire an external prompt engineer. The appearance of this profession is likely to be unavoidable because while AI text-to-image and AI text-to-text platforms can be used by anyone to inspire new ideas or generate useable output, these platforms yield the best results for users when optimized prompts are used, and to be able to

construct such optimized prompts substantial amount of experimentation and platform-relevant know-how is needed. Just like in the case of search engine optimization, companies can be established solely based on collecting and applying best practices when it comes to optimizing prompt generation for generative AI platforms. Figure 27 below shows the summary of the aforementioned effects when it comes to how AI text-to-image is likely to be directly affecting marketing management when it comes to generating advertisement visuals.

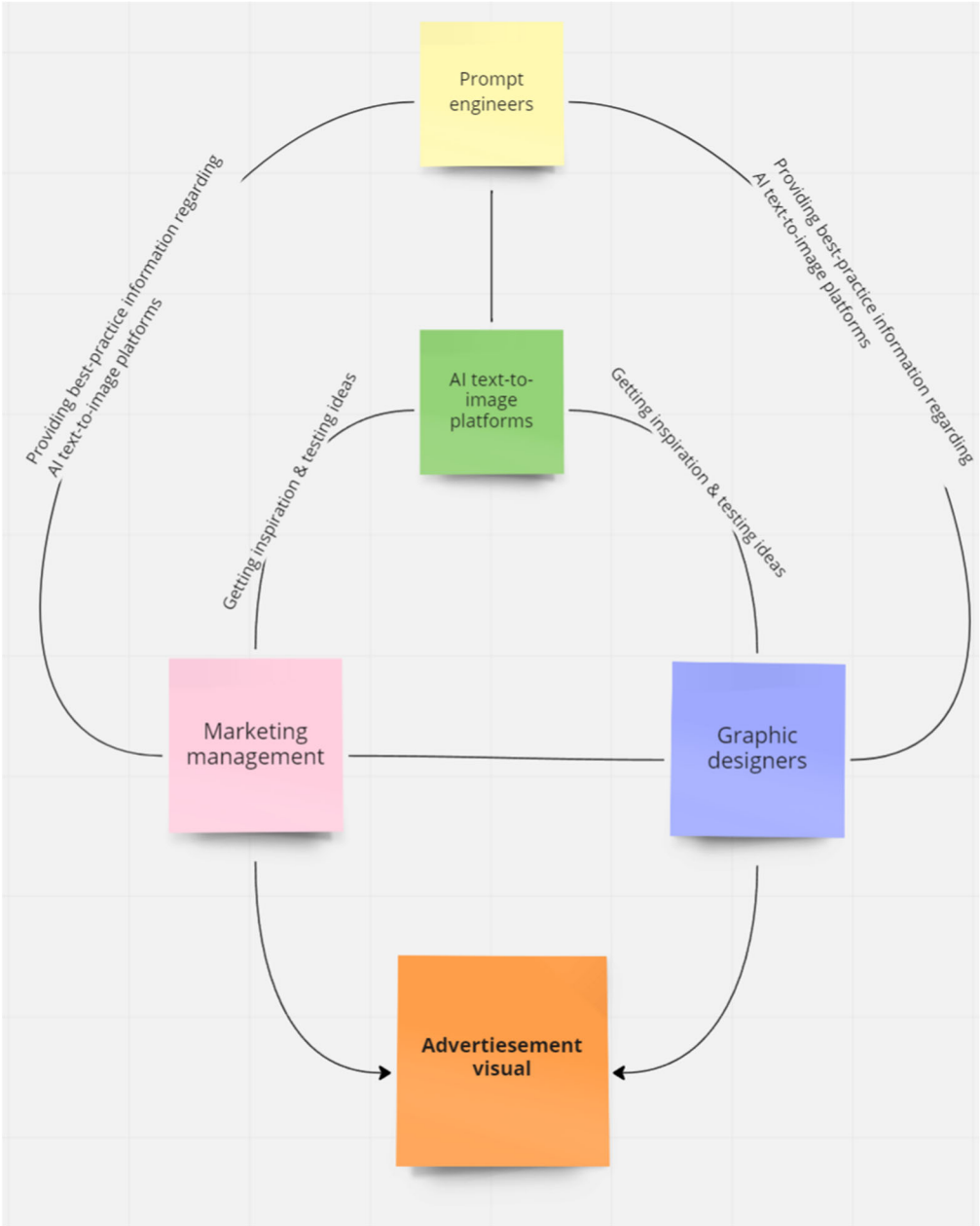


Figure 27. The different ways marketing management is directly affected by AI text-to-image generation when it comes to generating an advertisement visual.

Another important aspect when it comes to analyzing how this platform influences marketing management is the potential customers' perceptions of AI-generated images. It could be seen from

the results that an AI text-to-image platform is capable of generating advertisement visuals that can be on par or even better when it comes to people's perception of the visual quality of the image. However, it could be also seen that there are mixed feelings when it comes to the fact that such images can be created by AI, and whether AI-generated images should be used for advertisements. Especially younger people seem to be raising objections against AI-generated visuals. It is going to be the given company's decision whether they will disclose the information regarding the origin of the given advertisement visual and they will need to take into consideration the aforementioned concerns of customers, however as the experts outlined during the interviews, if an AI-generated image works well for a given advertisement, they will certainly use such an image, and while the results of the survey suggest that customers thrive to be aware of whether a visual is AI-generated or not, however in reality when they are scrolling through the feed of Facebook, or looking at a given webpage and they see an advertisement, it is very unlikely that during that 1-3 seconds while they are looking at the advertisement, they are also checking the information of whether the image is AI-generated or not. Therefore, it can be expected that if AI text-to-image platform-generated images yield good results for marketers, such images will be used even if the supposed perception of the target audience is rather negative regarding such images. On the other hand, if the disclosure of the origin of an AI-generated visual is for some reason unavoidable and the target audience actually checks that information and behaves selectively, objecting AI-generated images, the results of this research suggest for what demographic characteristics can AI-generated images be used for targeting in order to get potentially good results.

The results also showed that there is considerable potential in combining different generative AI platforms which suggests that marketing - which is a field that is already quite intertwined with AI technology – and AI could become even more interlinked.

While the results of this thesis research provide a glimpse into the world of AI text-to-image technology and the effects thereof regarding marketing management, there are certainly a number of different territories that warrant further research, especially considering that this technology is still in its infancy and is constantly being developed at a rapid pace. Such platforms have the potential to bring a new era to marketing by providing unforeseen creativity and efficiency regarding visual image generation. One can be certain that these technologies are bringing a time that is filled with excitement for marketers, researchers, and customers alike.

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Appendices

Appendix A: Questionnaire

The PDF-converted format is presented in order to showcase how the survey looked originally

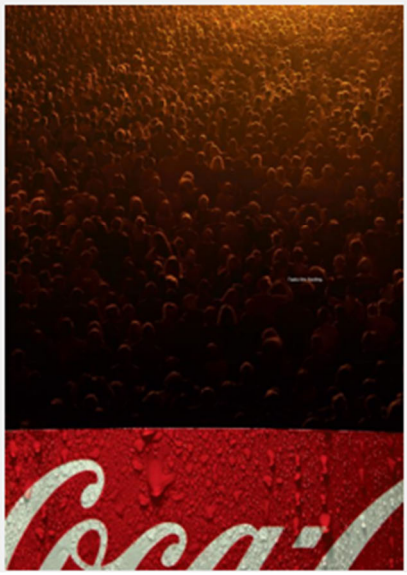
Dear Participant! My name is Máté Tamás Kántor and I am a Management MSc student at Modul University Vienna. In my thesis project, I am exploring and analysing the impact of a new emerging technology, when it comes to how marketing advertisement visuals are managed. This questionnaire forms a significant part of my research. It would be of great help, if you filled out this questionnaire.

By continuing further in this survey, you consent to having the data you provide collected and stored. You have the right to withdraw from this research at any time. The anonymity of every participant is guaranteed. The collected data is usedS to gather relevant insight for this thesis research and consequently, to produce valuable recommendations for marketing professionals. After you have completed the questionnaire, all the data will be stored securely and will not be shared with anyone else. In case you want to receive the results of this research, please provide your e-mail address at the end of the questionnaire. Thank you for being here!

A2.

On a scale of 1-7 please rate how much you agree with the following statements regarding the displayed advertisement visual. * 1=completely disagree, 2= disagree, 3= more or less disagree, 4= undecided, 5= more or less agree, 6= agree, 7=completely agree *I think...

	1 (completely disagree)	2	3	4 (undecided)	5	6	7 (completely agree)
... the advertisement is visually appealing.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually modern.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually memorable.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is imaginative.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually interesting.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually exciting.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually creative.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is well-composed.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually similar to other advertisements.	☐	☐	☐	☐	☐	☐	☐
... the advertisement visually represents the Coca-Cola brand well.	☐	☐	☐	☐	☐	☐	☐
... the advertisement was created by a graphic designer who is a professional with significant experience in the field.	☐	☐	☐	☐	☐	☐	☐



A3.

On a scale of 1-7 please rate how much you agree with the following statements regarding the displayed advertisement visual. * 1=completely disagree, 2= disagree, 3= more or less disagree, 4= undecided, 5= more or less agree, 6= agree, 7=completely agree *I think...

	1 (completely disagree)	2	3	4 (undecided)	5	6	7 (completely agree)
... the advertisement is visually appealing.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually modern.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually memorable.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is imaginative.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually interesting.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually exciting.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually creative.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is well-composed.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually similar to other advertisements.	☐	☐	☐	☐	☐	☐	☐
... the advertisement visually represents the McDonald's brand well.	☐	☐	☐	☐	☐	☐	☐
... the advertisement was created by a graphic designer who is a professional with significant experience in the field.	☐	☐	☐	☐	☐	☐	☐

A4.

On a scale of 1-7 please rate how much you agree with the following statements regarding the displayed advertisement visual. * 1=completely disagree, 2= disagree, 3= more or less disagree, 4= undecided, 5= more or less agree, 6= agree, 7=completely agree *I think...

	1 (completely disagree)	2	3	4 (undecided)	5	6	7 (completely agree)
... the advertisement is visually appealing.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually modern.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually memorable.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is imaginative.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually interesting.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually exciting.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually creative.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is well-composed.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually similar to other advertisements.	☐	☐	☐	☐	☐	☐	☐
... the advertisement visually represents the McDonald's brand well.	☐	☐	☐	☐	☐	☐	☐
This is an attention check, please respond with "2"	☐	☐	☐	☐	☐	☐	☐
... the advertisement was created by a graphic designer who is a professional with significant experience in the field.	☐	☐	☐	☐	☐	☐	☐

A5.

On a scale of 1-7 please rate how much you agree with the following statements regarding the displayed advertisement visual. * 1=completely disagree, 2= disagree, 3= more or less disagree, 4= undecided, 5= more or less agree, 6= agree, 7=completely agree *I think...

	1 (completely disagree)	2	3	4 (undecided)	5	6	7 (completely agree)
... the advertisement is visually appealing.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually modern.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually memorable.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is imaginative.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually interesting.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually exciting.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually creative.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is well-composed.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually similar to other advertisements.	☐	☐	☐	☐	☐	☐	☐
... the advertisement visually represents the McDonald's brand well.	☐	☐	☐	☐	☐	☐	☐
... the advertisement was created by a graphic designer who is a professional with significant experience in the field.	☐	☐	☐	☐	☐	☐	☐

A6.

On a scale of 1-7 please rate how much you agree with the following statements regarding the displayed advertisement visual. * 1=completely disagree, 2= disagree, 3= more or less disagree, 4= undecided, 5= more or less agree, 6= agree, 7=completely agree *I think...

	1 (completely disagree)	2	3	4 (undecided)	5	6	7 (completely agree)
... the advertisement is visually appealing.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually modern.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually memorable.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is imaginative.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually interesting.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually exciting.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually creative.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is well-composed.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually similar to other advertisements.	☐	☐	☐	☐	☐	☐	☐
... the advertisement visually represents the Coca-Cola brand well.	☐	☐	☐	☐	☐	☐	☐
... the advertisement was created by a graphic designer who is a professional with significant experience in the field.	☐	☐	☐	☐	☐	☐	☐

A7.

On a scale of 1-7 please rate how much you agree with the following statements regarding the displayed advertisement visual. * 1=completely disagree, 2= disagree, 3= more or less disagree, 4= undecided, 5= more or less agree, 6= agree, 7=completely agree *I think...

	1 (completely disagree)	2	3	4 (undecided)	5	6	7 (completely agree)
... the advertisement is visually appealing.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually modern.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually memorable.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is imaginative.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually interesting.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually exciting.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually creative.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is well-composed.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually similar to other advertisements.	☐	☐	☐	☐	☐	☐	☐
... the advertisement visually represents the Nike brand well.	☐	☐	☐	☐	☐	☐	☐
... the advertisement was created by a graphic designer who is a professional with significant experience in the field.	☐	☐	☐	☐	☐	☐	☐

A8.

On a scale of 1-7 please rate how much you agree with the following statements regarding the displayed advertisement visual. * 1=completely disagree, 2= disagree, 3= more or less disagree, 4= undecided, 5= more or less agree, 6= agree, 7=completely agree *I think...

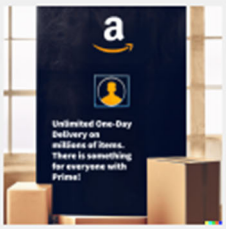
	1 (completely disagree)	2	3	4 (undecided)	5	6	7 (completely agree)
... the advertisement is visually appealing.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually modern.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually memorable.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is imaginative.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually interesting.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually exciting.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually creative.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is well-composed.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually similar to other advertisements.	☐	☐	☐	☐	☐	☐	☐
... the advertisement visually represents the Shell brand well.	☐	☐	☐	☐	☐	☐	☐
... the advertisement was created by a graphic designer who is a professional with significant experience in the field	☐	☐	☐	☐	☐	☐	☐

A9.

On a scale of 1-7 please rate how much you agree with the following statements regarding the displayed advertisement visual. * 1=completely disagree, 2= disagree, 3= more or less disagree, 4= undecided, 5= more or less agree, 6= agree, 7=completely agree *I think...

	1 (completely disagree)	2	3	4 (undecided)	5	6	7 (completely agree)
... the advertisement is visually appealing.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually modern.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually memorable.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is imaginative.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually interesting.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually exciting.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually creative.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is well-composed.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually similar to other advertisements.	☐	☐	☐	☐	☐	☐	☐
... the advertisement visually represents the United Colors of Benetton brand well.	☐	☐	☐	☐	☐	☐	☐
... the advertisement was created by a graphic designer who is a professional with significant experience in the field.	☐	☐	☐	☐	☐	☐	☐

A10.



On a scale of 1-7 please rate how much you agree with the following statements regarding the displayed advertisement visual. * 1=completely disagree, 2= disagree, 3= more or less disagree, 4= undecided, 5= more or less agree, 6= agree, 7=completely agree *I think...

	1 (completely disagree)	2	3	4 (undecided)	5	6	7 (completely agree)
... the advertisement is visually appealing.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually modern.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually memorable.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is imaginative.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually interesting.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually exciting.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually creative.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is well-composed.	☐	☐	☐	☐	☐	☐	☐
... the advertisement is visually similar to other advertisements.	☐	☐	☐	☐	☐	☐	☐
... the advertisement visually represents the Amazon brand well.	☐	☐	☐	☐	☐	☐	☐
... the advertisement was created by a graphic designer who is a professional with significant experience in the field.	☐	☐	☐	☐	☐	☐	☐

Section B: Advertisement visual comparison part

Some of the visuals of the print advertisements that you have just evaluated were made using DALLE-2, which is a platform that implements an emerging technology that is called AI text-to-image generation. DALLE-2 generates images based on text inputs like -

'an astronaut wearing a yellow and red mcdonalds space suit standing on the surface of the moon holding a mcdonalds bag in his hand, photo shot with Hasselblad'

- and generates visual outputs that represent your text input. In case you would like to learn more about DALLE-2 and its fascinating capabilities, feel free to visit their website: https://openai.com/dall-e-2/

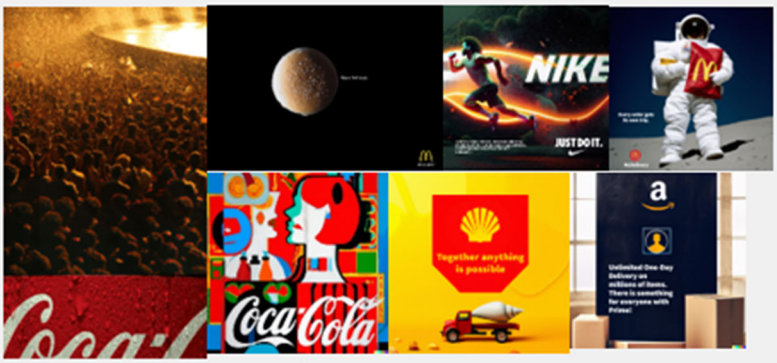
B1. Did you hear about AI text-to-image platforms before?

Yes ☐

No ☐

B2.

The visuals (excluding most of the texts and logos) of these advertisements were created using the abovementioned AI empowered DALL-E 2. On a scale of 1-7 please rate that how much do you agree with the following statements. * 1=completely disagree, 2= disagree, 3= more or less disagree, 4= undecided, 5= more or less agree, 6= agree, 7=completely agree *



	1 (completely disagree)	2	3	4 (undecided)	5	6	7 (completely agree)
Knowing the origin of the image, I would rate the images overall better.	☐	☐	☐	☐	☐	☐	☐
I find it fascinating that AI can generate such images.	☐	☐	☐	☐	☐	☐	☐
I find it worrying that AI can generate such images.	☐	☐	☐	☐	☐	☐	☐
This is an attention check, please respond with "6"	☐	☐	☐	☐	☐	☐	☐
I would prefer to not see AI generated advertisements.	☐	☐	☐	☐	☐	☐	☐
I can tell that these images were created by a AI and not by a human.	☐	☐	☐	☐	☐	☐	☐
For me it is important whether AI or human generated the visuals of an advertisement.	☐	☐	☐	☐	☐	☐	☐
I would prefer to always know the origin (human or AI generated) of the visuals of advertisements.	☐	☐	☐	☐	☐	☐	☐

B3. **From the AI generated visuals listed above, which is the most appealing to you?**

- [ ] 1. Coca-Cola "Concert"
- [ ] 2. McDonald's "Moon - Open 24 hours"
- [ ] 3. McDonald's "Astronaut delivers to the moon"
- [ ] 4. Coca-Cola "Advertisement designed by Picasso"
- [ ] 5. Nike
- [ ] 6. Shell
- [ ] 7. United Colors of Benetton
- [ ] 8. Amazon

B4. **If you have any additional idea, notion, opinion or suggestion when it comes to AI text-to-image generation platforms and their performance in generating visuals for advertisements, please write it here.**

Section C: Demographics

Questions about demographics.

C1. **Please specify your age.**

- [ ] 18-25
- [ ] 26-35
- [ ] 36-45
- [ ] 46-55
- [ ] 56-65
- [ ] 66-75
- [ ] More than 75

C2. Please specify your gender.

- ☐ Female
- ☐ Male
- ☐ Non-binary
- ☐ Prefer not to say

C3. To what country do you feel to belong?

- ☐ Austria
- ☐ Hungary
- ☐ Other

Other

C4. What is your highest education level?

**Some college, no degree applies to you in the case you started an academic program, but did not finish it.*

**Academic Doctoral degrees (such as a PhD) are focused on advancing knowledge in a particular field, while Professional degrees are concerned with preparing graduates for specific careers in a particular field such as medicine (MD), law (JD), business administration (MBA), or engineering (MEng).*

- ☐ Primary School
- ☐ High School diploma
- ☐ Some college, no degree
- ☐ Bachelor's degree
- ☐ Master's degree
- ☐ Professional degree
- ☐ Academic Doctoral degree

C5. Please specify your gross income level.

- ☐ Below 20 000 EUR per year
- ☐ 20 000 - 30 000 EUR per year
- ☐ 30 000 - 40 000 EUR per year
- ☐ 40 000 - 50 000 EUR per year
- ☐ Above 50 000 EUR per year

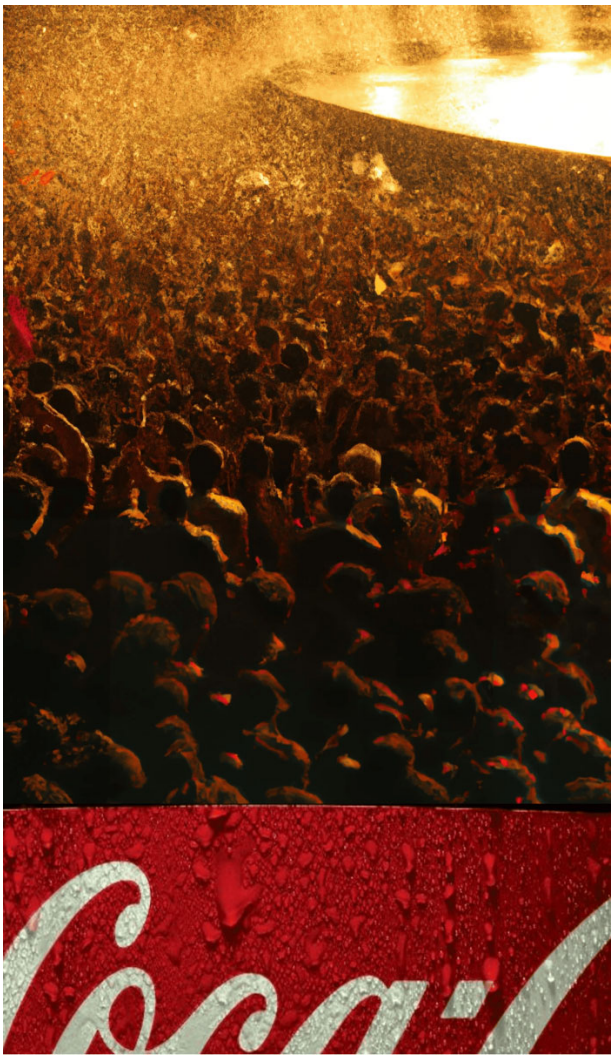
C6. **In case you want to receive the results of this research, please provide your e-mail address here.**

Thank you very much for participating, I really do appreciate your help.

Appendix B: images used in the questionnaire

In order of appearance in the questionnaire

1. Coca-Cola "Concert" recreation



Picture 10. The visuals of the image were generated by DALL-E via the following prompt: "a concert crowd that resemble the appearance of bubbles of a coca-cola bottle shot from above, hit by the light from only one direction in the colors of brownish liquid coke" Source of the Coca-Cola Can: Memac Ogilvy (2023)

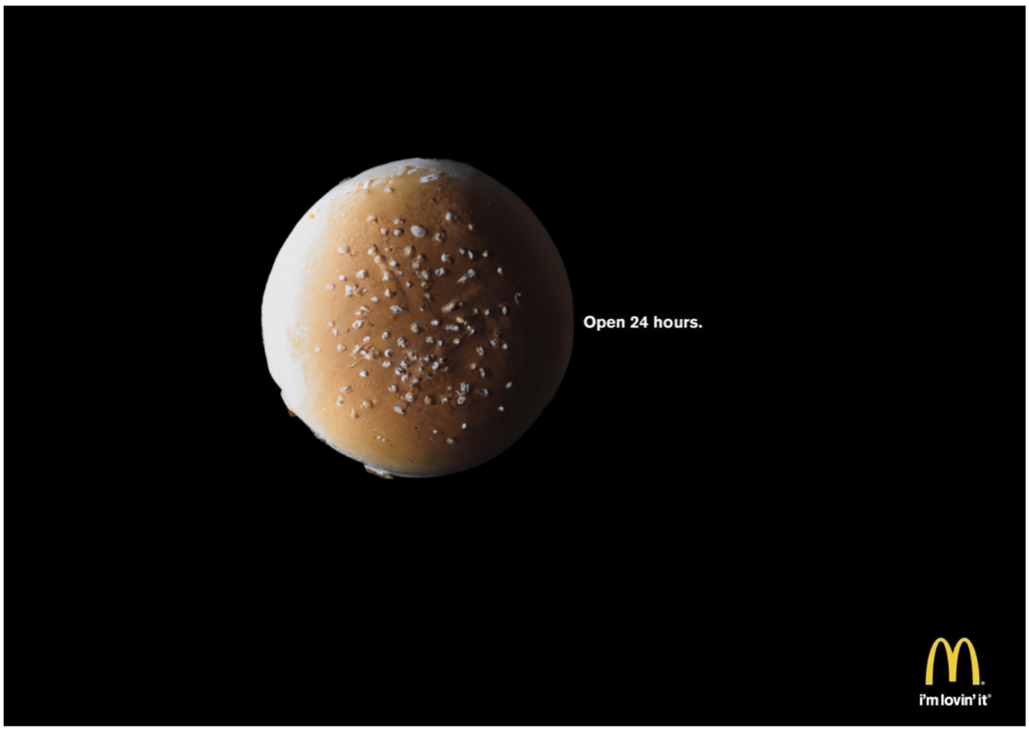
2. Coca-Cola “Concert” original

Picture 11 Coca-Cola Bubbles. Source: Memac Ogilvy (2023)

3. McDonald's "Moon -Open 24 hours" original

Picture 12. McDonald's open 24 hours. Source: Ads of the World (2010)

4. McDonald’s “Moon -Open 24 hours” recreation



Picture 13. The visuals of the image were generated by DALL-E via the following prompt: “a mdcdonalds hamburger bun covered with white sesame seeds shot from above partially black partially bright like a crescent moon, completely black background, the outline of the hamburger bun glows just like moon's at Lunar eclipse” Source of the headline and the McDonald’s logo: Ads of the World (2010)

5. McDonald's "Astronaut delivers to the moon" original

Picture 14. The visuals of the image were generated by DALL-E via the following prompt: "an astronaut wearing a yellow and red mcdonalds space suit standing on the surface of the moon holding a mcdonalds bag in his hand, photo shot with Hasselblad" Source of the headline and the McDonald's logo: Ads of the World (2018)

6. Coca-Cola “Advertisement designed by Picasso”

Picture 15. The visuals of the image were generated by DALL-E via the following prompt: “vibrant digital advertisement of coca-cola that is made in the style of picasso”

7. Nike “Dynamic Runner”

Picture 16. The visuals of the image were generated by DALL-E via the following prompt: “The Nike print advertisement visual showcases the iconic Nike swoosh logo. The visual is set against a backdrop of a dynamic and energetic scene where athletes are in motion. The color scheme is bold and striking, evoking a sense of power and confidence. The overall look and feel of the visual is designed to inspire and motivate, emphasizing the Nike brand as a symbol of determination and grit.” This prompt was generated by ChatGPT. Source of the “Just do it.” NIKE logo: Logodix, (2023).

8. Shell “Truck”

Picture 17. The visuals of the image were generated by DALL-E via the following prompt: “A Shell advertisement visual that features the recognizable red Shell logo set against a striking background color, such as the company's signature red. The visual also involves images of Shell petrol stations, delivery trucks, and people fueling up, conveying reliability and convenience. The advertisement aims to promote the Shell brand's reputation for innovation and customer satisfaction.” This prompt was generated by ChatGPT. Source of the Logo: LogoLook (2022), source of the headline: Shell in India (2023)

9. United Colors of Benetton “United Colors of Benetton”

Picture 18. The visuals of the image were generated by DALL-E via the following prompt: “The abstract United colors of Benetton print advertisement features a vibrant and diverse collage of colors, shapes, and patterns. The ad represents the brand's commitment to celebrating diversity and inclusivity, as well as its bold and innovative spirit. The ad does not showcase any specific product but rather aims to establish a connection between the brand and its audience through its unique.” This prompt was generated by ChatGPT. Source of United Colors of Benetton Logo in the lower right corner of the image: Under Consideration (2011), source of the colorful United Colors of Benetton symbol in the middle: Benetton (2023).

10. Amazon “Professional delivery”

Picture 19. The visuals of the image were generated by DALL-E via the following prompt: “The Amazon print advertisement features bold graphics and the company's logo. The ad emphasizes Amazon's commitment to customer satisfaction and reliability, showcasing its wide range of products and services. It highlights fast shipping and delivery, easy-to-use mobile apps, and a user-friendly website. The visual conveys that Amazon is a trusted and convenient brand.” This prompt was generated by ChatGPT. Source for the logo: Logo Poppin (2023)

Appendix C: Discussion guide (English)

AI and Marketing – general questions

- Did you implement / Are you implementing any AI tools for marketing management purposes?
- In what area do you think AI offers the most for marketing? Why?
- How do you think AI enabled tools are changing the field of marketing?

(visual) Content generation and AI

- Could you explain the process of creating / finding the right visual content for a given advertisement?
- Could you explain generally who is creating the final visuals for a given advertisement? (Internal colleague or external agency)
- What are the main challenges of creating / finding proper visual contents?
- Do you have any experience in generating content using AI tools? If yes, could you elaborate?

Text-to-image platforms and marketing management

- Were you familiar with AI text-to-image generator platforms (like DALL-E 2) before you filled in the survey?
- Would you adapt this tool – or would you want agencies you work with to adapt this tool?
- How do you think this technology is going to affect marketing management?
- How do you think this technology is going to affect visual content creation?
- Could you imagine that there would be professional prompt engineers?

In case they are not familiar with the concept of prompt engineering, I explain: Prompt engineering is the concept of talking to an AI system like DALL-E 2 and getting the response (resulting visual image) that is desired.

Survey results - opinion

The interview closes with showing a handful of results of the survey and asking the interviewees to reflect on these results.

- As you can see, more people preferred the AI generated recreation of Coca-Cola "Concert" visual compared to the original human generated Coca-Cola "Concert" visual. *(Here I will show the interviewee the exact results regarding the two visuals.)* What thoughts - if any - do you have regarding this result? Are you surprised?
- Overall, the survey respondents reacted quite positively to the AI generated visuals. Even after they were revealed to be AI generated visuals. What thoughts - if any - do you have regarding this result? Are you surprised?
- Most people would prefer to always know the origins of an advertisement visual. Do you also think that it would be important to somehow showcase the origin of advertisement visual?

➢ Is there anything else regarding the topic that you would want to elaborate on?

Appendix D: Discussion guide (Hungarian)

AI és marketing - általános kérdések

- Bevezettek már / terveznek bevezetni bármilyen mesterséges intelligencia eszközt marketingmenedzsment célok nyomán?
- Ön szerint melyik területen kínálja a legtöbbet a mesterséges intelligencia a marketing

számára? Miért?
- Ön szerint hogyan változtatják meg az AI-alapú eszközök a marketing területét?

(vizuális) Tartalomgenerálás és mesterséges intelligencia

- Elmagyarázná, hogyan kell / hogyan lehet egy adott hirdetéshez a megfelelővizuális tartalmat létrehozni / megtalálni?
- El tudná magyarázni, hogy általában ki készíti a végleges látványterveket egy adott hirdetéshez? (Belső munkatárs vagy külső ügynökség)
- Mik a fő kihívások a megfelelő vizuális tartalmak létrehozásában / megtalálásában?
- Van tapasztalata a tartalomgenerálásban mesterséges intelligencia eszközökkel? Ha igen, kifejtené bővebben?

Text-to-image platformok és marketing menedzsment

- A kérdőív kitöltése előtt ismerte az AI text-to-image platformokat (mint például a DALL- E 2)?
- Alkalmazná ezt az eszközt - vagy szeretné, ha az ügynökségek, amelyekkel együtt dolgozik, alkalmaznák ezt az eszközt?
- Ön szerint hogyan fogja ez a technológia befolyásolni a marketingmenedzsmentet?
- Ön szerint hogyan fogja ez a technológia befolyásolni a vizuális tartalomkészítést?
- El tudnád képzelni, hogy lennének profi prompt engineerek?

Ha még nem hallották a prompt engineering fogalmát, elmagyarázom: A prompt engineering az a mesterséges intelligencia koncepciója, amelynek lényege, hogy beszélünk egy olyan mesterséges intelligencia rendszerhez, mint a DALL-E 2, addig, amíg meg nem kapjuk a kívánt választ (pl. a várakozásoknak megfelelő vizuális képet).

Felmérés eredményei – vélemény

Az interjú a felmérés (kérdőív) néhány eredményének bemutatásával zárul, és arra kérem a megkérdezetteket, hogy reflektáljanak ezekre az eredményekre.

- Az eredmények alapján többen kedvelték a Coca-Cola "Concert" mesterséges intelligenciával generált újraalkotást, mint az eredeti, ember által készített Coca-Cola "Concert" képet. Milyen gondolatai vannak ezzel az eredménnyel kapcsolatban? Meglepődött?

- Összességében a felmérésben résztvevők igen pozitívan reagáltak az AI által generált képekre. Még azután is, hogy kiderült, hogy azok mesterséges intelligencia által generált látványtervek. Milyen gondolatai vannak ezzel az eredménnyel kapcsolatban? Meglepődött?

- A legtöbb ember lehetőleg mindig szeretné tudni, hogy honnan származik egy reklámkép. Ön is úgy gondolja, hogy fontos lenne valahogyan jelezni egy reklám vizuális elemeinek az eredetét?

➢ Van még valami a témával kapcsolatban, amit szeretne kifejteni?