

Professional use of AI Image Generators

A study about implications for practices of professionals using AI Image generators



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Preface

After receiving my bachelor's at the Avans University of Applied Sciences in Breda, and completing the BA Pre-Master at the Radboud University, this Master's thesis will conclude the Master's specialisation of Innovation and Entrepreneurship for me. If I would have known upfront everything I had to do to reach this point, I maybe would not have done it. In that regard, I am very happened I (still) do not know everything and I was able to complete it.

To start, I want to thank Paolo Franco for being my thesis supervisor and lecturer from the start of my Master's journey. At the start, he introduced me to interesting topics with inexhaustible enthusiasm, which I needed to fully engage in courses at the beginning of the year. When starting the thesis trajectory with him, I felt heard and received the right support through his extensive and accurate feedback in our conversations. I do not think I could have reached similar results and got so much out of doing research, without support like this. Furthermore, I would like to thank Karim Sidaoui for the added depth and knowledge through conversations and lectures, making me think critically in and outside of research.

In this way, I would like to express my gratitude to all the participants. Apart from adding data, they also added joy and connections. I also want to thank the AI Image Generator and CCT thesis circles of Radboud University, for providing feedback and suggestions, and I want to thank Ray Huang and Steven Geertse for providing data as input. In addition to this, I want to thank Steven for further input and sparring, but also for the teamwork in other projects and for making me feel at home in general at the university. At last, I would like to thank everybody close to me for their support.

I hope you enjoy the read,

Oscar Neggens

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Abstract

Artificial Intelligence Image Generators have developed a great deal when looking at the quality and the number of users since 2022. This technology enables users to generate unthinkable images in a short amount of time. By adopting this technology, businesses could improve their processes. But what the implications of professional use will be, is hard to grasp. This research aims to obtain a better understanding of the influence of using Artificial Intelligence Image Generators, used in a professional manner by looking at the changes in practice, answering the following research question:

What are the implications of professional use of AI Image Generators on current practices?

To answer this question, qualitative research was conducted by interviewing professionals when it comes to creating and generating images. The interviews were semi-structured and used Photoelicitation as a technique to create an understanding of the perspectives of these professionals using Image Generators. This perspective was analysed and compared to practices of the participants without the use of this technology. To do this, practices were categorised into Practice Theory elements. The results show how elements like materials, meanings and competences of professional consumers of Artificial Intelligence Image Generators can (re)form their practices. Four paradoxes were influenced by these elements: (1) balance AI- non-AI, (2) opaque – transparent, (3) new skills- de-skilling, (4) inspiration – final product. In addition to this, outside influence from certain stakeholders also influenced how these professionals can use this technology. Through these results, contributions were made to literature and managerial implications were given.

Keywords: Artificial Intelligence, Image Generators, Consumer Culture Theory, Practice Theory, Professional Use, Photoelicitation

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Introduction

Artificial Intelligence (AI) Image Generators allow people to express themselves creatively, by generating images from a description of natural language (DALL·E 2, n.d.). But beyond this allowance for people to express themselves, AI also holds the potential to deliver advantages (Khanzode & Sarode, 2020) for organisations when used professionally. Quick adaptation of AI can provide competitive advantages (Brock & Von Wangenheim, 2019). Maximising these aspects of AI by implementing AI Image Generators in workflows when creating images or other visuals could be crucial to stay ahead of competitors and essential for continuity of businesses.

AI has been a hyped term for the last few years (OECD AI Trends & Data Overview - OECD.AI, n.d.) but since 2022 when non-tech fanatics and more mainstream consumers got directly in touch with the generative form of AI, it started bursting again (Hu, 2023). This could be seen as a new 'ripple' where AI develops new technological capabilities. AI brings multiple advantages, for example, finishing certain complex tasks faster, more efficiently and with fewer errors than humans (Khanzode & Sarode, 2020). Entrepreneurs using AI-generated images do not have to fully create assets to use as images for their business themselves, buy custom images made from artists or use stock images. Stock images are assets supplied through services like Shutterstock. Shutterstock offers more than 400 million images (Shutterstock, n.d.) but these are not custom, resulting in more standard imagery. By using AI Image Generators, custom alternatives could be used.

Similar to most technological shifts, there are also negative consequences. Nohria and Taneja (2021) explain this phenomenon, which describes unforeseen drawbacks included with innovation. Recently, because of the rapid scaling of technology, these potential drawbacks could become worse and reach humanity faster. Making it more important to try and discover what possible negative influences could be when implementing new technology (Nohria &

Taneja, 2021). Examples of drawbacks are the high cost of generative AI because of the amount of computing power and energy that is needed to run complex models, the creation of more dependency on technology and affecting current jobs by increasing unemployment problems (Khanzode & Sarode, 2020; Saenko, 2020).

To avoid possible negative effects, the disadvantages should be known by the users and surrounding organisations. Professionals using AI to generate images are the consumers who have to make sense of this technology and its effects on their businesses, workflows and surroundings. An example of a disadvantage that consumers need to cope with accordingly is the lack of human touch (Khanzode & Sarode, 2020). According to Camp et al. (2020), the human factor is an important factor when implementing new tools. If an entrepreneur would innovate using AI to create images that customers receive, a lack of human touch could occur, possibly influencing the experience of those customers negatively.

The specific interest of this research lies within the change or disruption of current practices due to professional use of AI Image Generators (AIIG). In other words, the consequences of AIIG on the current practices of professionals who create images will be researched. In this context, current practices stand for how professionals like artists, marketers, photographers or any other job that requires the creation of imagery, create imagery without the use of AIIG. Because data is gathered to understand how, but also why workflows change due to AI, qualitative research will be conducted through interviews. By using this qualitative method, a deeper understanding of the impact of AIIG on these consumers can be created (Cypress, 2015).

What is AI?

To start, a clear description of what is meant by Artificial Intelligence is needed, which is described by Matthew et al. (2021). AI is a growing form of computer science, which is the study of computers and computational systems concerned with the theory, design, development and application of systems and software. AI is not a single technology but includes any soft or hardware that can perform machine learning, deep learning and language understanding or generation for example. Some forms try to make machines have human-like abilities such as learning, writing and listening. At the core AI is an algorithm, but with characteristics borrowed from human intelligence (Matthew et al., 2021).

This shows important differences with non-AI algorithms: the improved ability to ‘mimic’ human thinking, having a better understanding of human concepts and the way the ware can rewrite and adapt itself (Matthew et al., 2021; Techopedia, 2023). The Organisation for Economic Co-operation and Development (OECD) gives a definition when referring to AI, which gives a unifying description of AI systems, which can be seen in Appendix A. The OECD (n.d.) explains how input is gathered, and through models based on data, how outcomes are formulated. A combination of this and Matthew et al. (2021) explanations together is used as a base definition of what is meant by AI in this research. But as AI is an ‘umbrella’ term and has a lot of different forms that fall under this umbrella (Helo & Hao, 2021), a specific kind of AI is chosen to study in this thesis: AIIG. An explanation of this definition will be given in the next section.

AI Image Generators

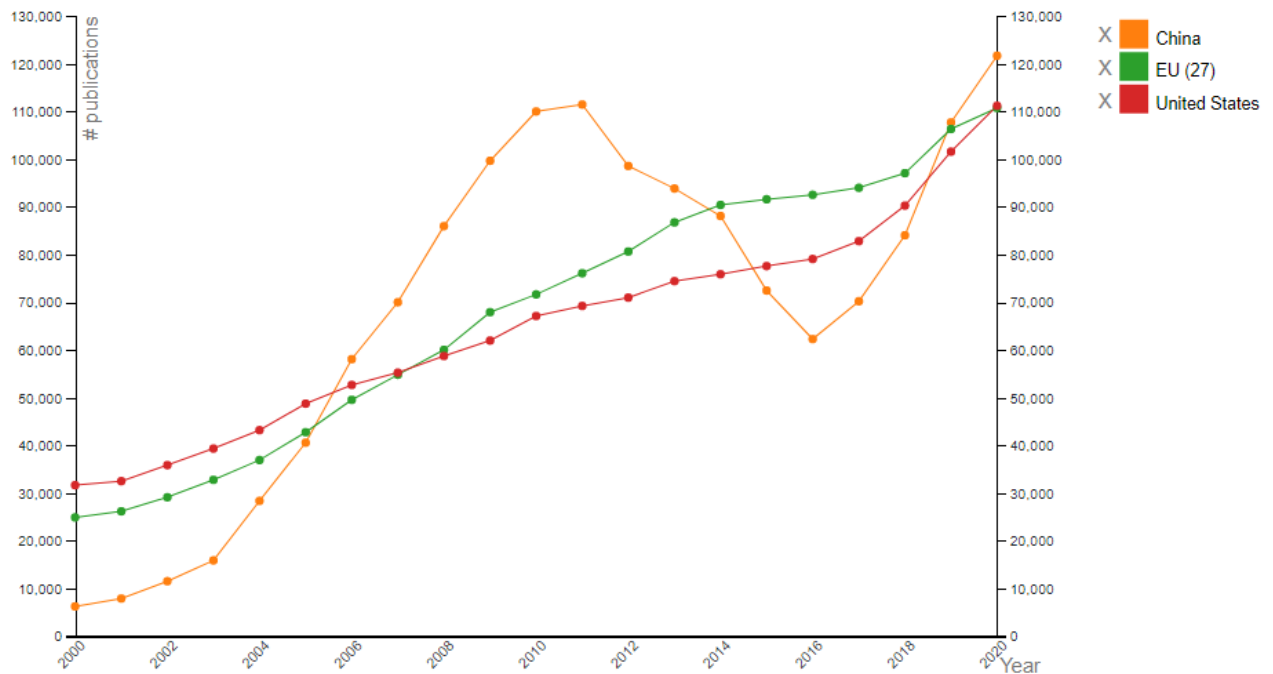
The AI that is researched in this thesis is called AI image Generators. This is a form of deep learning AI that can generate images based on text prompts using a database of billions of images with their corresponding descriptions (Vartiainen & Tedre, 2023). Using databases like this, generative AI can generate new images based on its understanding, by training and testing the model with human-annotated images (Hossain et al., 2021). Generative models generate new samples with variations by learning the distribution of this training data from these databases (Wang et al., 2020).

Deep learning models are a form of machine learning based on artificial neural networks and can process abstract features. For more context, machine learning includes a wide range of models and algorithms, which can learn to perform tasks automatically without specifically programming these (Matthew et al., 2021). A neural network is a machine learning system that is designed to imitate the function and structure of a human brain and learns by trial and error. It takes in multiple inputs and produces an output, this way it can solve complex problems (Matthew et al., 2021; Wang et al., 2020). AIIG uses these models to generate imagery based on inputs like text or even image prompts (Midjourney Image Prompts, n.d.).

Relevance of topic

The scientific relevance of AI technology is noticeable by the fact that the amount of AI research publications a year increased by more than 300% in the USA, by more than 400% in the EU and in China even with almost 2000% from 2000 to 2020 (figure 1). Worldwide publications have increased from 200.000 in 2000, to almost 900.000 in 2020 (OECD AI Trends & Data Overview - OECD.AI, n.d.).

Figure 1. Research publications in the United States, EU and China about AI released per year from 2000 to 2020 (OECD AI Trends & Data Overview - OECD.AI, n.d.).



This growth shows the increasing interest in this field, which has been in development since 1956 when the first AI research project was initiated (Anyoha, 2020). But since this 21st age, development increased quickly, even when excluding the latest jump with generative AI like Chat-GPT and Dall-E. ChatGPT launched in November 2022 and reached 100 million active users in January. Making it the fastest-growing consumer application in history (Hu, 2023).

Combining the increase in AI publications over the years with the sudden increase in the use of generative AI shows the possible influence of AI. More relevant for this thesis, is the

instalment base of 1,5 million active users of DALL-E at its launch in September last year (OpenAI, 2022). When comparing the user data of DALL-E with more traditional software used to make images last year, there is still a majority using Adobe. Adobe Creative Cloud was estimated to have 30 million paid users at the end of 2022 (ProDesignTools, 2022).

The data of the development and increased use of AI show that, even after this growth in the last two decades, interest surrounding AI still had room to grow more and research about this is relevant scientifically and socially. An important difference with this research opposed to most publications before 2022, is the fact that the consumer base has increased a lot. Because of this increase in active users on AI platforms, the influence there already was indirectly by AI on society before, will increase with access to platforms like ChatGPT and Dall-E. Since 2022, people with internet access can directly use generative AI themselves (OpenAI, 2022), while before AI was more focused on computer-to-computer tasks in background processes (Ramaswamy, 2018).

Users of traditional software to create images, like Adobe, could incorporate or switch to generative AI in their workflows. If they were to incorporate generative AI like AIIG, changes to workflows could follow. The use of AIIG by professionals could change how they work with software like Adobe, by adding AIIG to workflows in certain stages like brainstorming, creating concepts or final products. If they were to completely switch to AIIG, this could even disrupt the practices of how professionals create images altogether.

When professionals become consumers of AIIG, clients, managers and other stakeholders can be affected by this use. How those stakeholders accept the use of AIIG, could influence how and if professional consumers implement this technology. These are elements currently missing in the adoption theories that are addressed in this thesis. An example of stakeholders that influence potential consumers of AIIG, is shown by White (2023). Certain game development studios are banning the use of AI art in the creation of products. While

another studio already used AI art in their game (White, 2023). This shows different acceptance and impact of stakeholders on the (potential) professional users.

By implementing AIIG and changing practices according to the acceptance of stakeholders, professional consumers can try to achieve the maximisation of the positives of this technology for their business processes, while coping with possible negatives. The right adaptation of AI can be crucial to optimize and/or improve current business processes and can create a competitive advantage (Brock & Von Wangenheim, 2019). How and why certain concepts influence acceptance and use of technology is currently not clear and will be contributed to the UTAUT theories (Venkatesh et al., 2003, 2012). This will be done by adding an understanding of influences to UTAUT (Venkatesh et al., 2003) from outside organisations. In addition to this, by researching why concepts like experience and habits of consumers impact the acceptance and use of AIIG, a contribution to the extended UTAUT (Venkatesh et al., 2012) will be made.

Research goals and question

To be able to gain from the jump in generative AI technology, theories that can predict how this technology will be used and accepted are needed. But because of the difference between characteristics of previous technology and the possible new influences of AI, current models need to be pushed forward to be able to contribute after this shift. An understanding of how consumers use AIIG and how this will change current practices will be contributed to current models. This will be done by using the Consumer Culture Theory (CCT) research tradition. With this qualitative tradition, the focus of the research will be put on the consumers of AIIG and the culture surrounding this market (Arnould & Thompson, 2005) by conducting interviews. This approach allows to create a deeper understanding of hedonics and emotions, through indulging in the culture of the consumer, compared to quantitative methods such as

surveys with scales, used in UTAUT (Venkatesh et al., 2012).

To research these practices, Practice Theory is used as an enabling lens in this thesis. The research will distinguish materials, meanings and competences that might change by the use of AIIG, and this way the effects this has on current practices without the use of AIIG will be unpacked (Shove et al., 2012). In this context, practices can be described as the routines of professionals, performed daily, like the use of software to create images (Phipps & Ozanne, 2017). The contributions of this thesis and the approaches to reach these are explained further in the next chapter, theoretical background.

Above-mentioned aspects and questions surrounding AIIG will be researched in this thesis. This is relevant for Innovation & Entrepreneurship (I&E) as this can reveal important insights to entrepreneurs through the right adaptation of generative AI. Adapting practices that enable to maximise the positives of AIIG can be important for (starting) organisations to improve/optimize business processes and workflows, so they can use this technology to their advantage (Brock & Von Wangenheim, 2019; Khanzode & Sarode, 2020). It is also important for I&E to know how to cope with disadvantages of using AIIG, compared to current practices without the use of AIIG. Therefore, this thesis will provide an answer to the following research question:

What are the implications of professional use of AI Image Generators on current practices?

Outline thesis

The outline of this thesis is as follows. The relevant theories are addressed and connected with the topic of AIIG, including contributions of the research that are aimed to be achieved. This is done by explaining the contribution to current acceptance and use of technology through researching the consumer culture surrounding AIIG in a professional setting. Then the research tradition of choice is discussed: Consumer Culture Theory. Along with this, the enabling lens is unpacked, which is used to better grasp the topic of the thesis. The research is conducted through the enabling lens of practice theory, used as a tool to understand context through multiple dimensions of practices of the consumer in relation to AIIG (Dolbec et al., 2021). Other topics presented in relation to Practice Theory are disruption of practices (Phipps & Ozanne, 2017) and understanding the influences on social practices (Shove et al., 2012, as cited in, Hyysalo, 2016)

Next up are the methodological choices for the qualitative method and technique are discussed. This contains the choice (why) and the way (how) semi-structured interviews are designed, using Photoelicitation (Heisley and Levy, 1991) as a technique. Furthermore, ethics will be addressed with an explanation of how ethical considerations are implemented by following the Five principles for research ethics of Smith (2003). After this, results from the collected data are shown, followed by the implications of these results and recommendations for further research. Second to last, limitations of the research are given and the thesis ends with a conclusion.

Theoretical background

In this chapter, the theoretical foundation used to conduct this research will be discussed. The theories, tradition and the enabling lens that are applicable as a baseline for this research will be introduced. Furthermore, differences with earlier technological shifts and an explanation of how this and other aspects contribute to these theories, by conducting this research, will be given.

UTAUT

In this research, the Unified Theories of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003, 2012) are extended. The reason to contribute to these theories is because the acceptance and the use of technology lie exactly in line with the proposed research goals and question. But this research uses a different approach and focuses on other aspects, enabling it to add to these theories.

The UTAUT (Venkatesh et al., 2003) was created in an attempt to develop a single model for technology use and acceptance by empirically reviewing eight models on this topic (the Theory of Reasoned Action (TRA), a combined TBP/TAM, the Model of PC Utilization, Innovation Diffusion Theory (IDT), Social Cognitive Theory (SCT), Technology Acceptance Model (TAM), the Motivational Model, and the Theory of Planned Behaviour (TPB)). By combining the similarities of these models, UTAUT was created and outperformed the reviewed models (Venkatesh et al. 2003). This theory contains four key constructs when it comes to acceptance and use of technology: 1) performance expectancy, 2) effort expectancy, 3) social influence, and 4) facilitating conditions. Along with these main effects, four moderators were also incorporated into the UTAUT model: 1) gender, 2) age, 3) experience and 4) voluntariness of use. This model is aimed to give insight into the factors that influence the intention of using new technology, within an organisation (Venkatesh et al. 2003).

But when talking about the acceptance and use of AIIG, it could concern stakeholders beyond just within the organisation, while UTAUT is more focused on factors within organizations (Venkatesh et al., 2003). Because of this focus, on acceptance and use of AIIG, this theory needs to be pushed forward to include more external acceptance and possible influence on use. To do so, the Consumer Culture Theory tradition is used to add this perspective. CCT focuses on consumer culture and addresses the dynamic relationships between consumer actions (Arnould & Thompson, 2005), not limited within organisations. By using this approach, insights about how these users use and accept AIIG will be revealed. This way, how professional consumers implement this technology in their work practices, including influences from outside organisations, can contribute to the UTAUT framework (Venkatesh et al., 2003).

The extended UTAUT of Venkatesh et al. (2012) builds upon the first model, adding the constructs of hedonics, motivation and habits and is more focused on the consumer market. These constructs focus on individual acceptance and use of technology (Venkatesh et al., 2012), creating an individual consumer market focus. By using CCT, a more cultural focus will be added with more room for outside and cultural shared influences and actual experience (Arnould et al., 2019), pushing the UTAUT extension forward as well. To add to this contribution, the next section will explain how this technological shift differentiates from previous ones. This is another reason this thesis will contribute to the UTAUT theories in general.

Difference between previous technological shifts and AI

AI has been around since 1956 according to Anyoha (2020), and certain advantages and disadvantages are already known (Khazode & Sarode, 2020). But as mentioned before, there are some clear differences with this shift in technology because of the cutting-edge generative

AI. For example, the fact that consumers get in touch with this technology themselves more directly. Earlier usage of AI was more focused on processes in the background, which were not visible to most of society. Ramaswamy (2018) described five years ago that most advantages for businesses using AI started in the back office. But more recently, since the release of Dall-E and ChatGPT, the latter being the fastest-growing consumer application (Hu, 2023), this has changed.

Instead of focussing on concepts of adoption within organisations, and hedonics/experiences that apply to individuals like in UTAUT theories (Venkatesh et al., 2003, 2012), CCT allows to explain why and how surroundings accept the use of technology. With generative AI technology, the outcomes of AI could be argued to be more visible and accessible to society, making this part of acceptance require more attention and depth. Clients, managers, customers or other stakeholders will be confronted more directly with the use of this technology, while the technology itself can still hard to fully grasp. Because of these characteristics of this technology, stakeholders' reactions to AIIG could form how it is accepted and used. This emphasizes the proposed difference between shifts and questions if the UTAUT (Venkatesh et al., 2012) model stays accurate in combination with (generative) AI.

Another important difference with previous technological changes lies in the fact that AI can learn tasks without explicitly programming these, mimic cognitive function and perform activities that typically would be performed by humans (Matthew et al., 2021). With these abilities, this current technological shift is different from earlier shifts. Letheren et al. (2020) give a clear example of this difference, that we as a society have not dealt with before:

“The intelligent, humanised component present in AI and robotics makes these technologies uniquely complex, forcing us to confront what it means to be human. After all, when televisions were invented, nobody wondered whether they should be given autonomy or not.” (Letheren et al., 2020, p.217).

New technology that has substantial differences with technology used to create acceptance models. Contribution to these models, by supporting newer phenomena, is needed for them to be suitable with AI. So, because of the differences between technological shifts mentioned above, it is important to see what practices change by using generative AI. When the implications of AIIG are clear through this research, this could update these current use and acceptance models.

Another difference of this technology compared with other technologies is the fact that research shows that only 50% of people trust companies that use AI as much as they trust other companies (“5 Charts That Show What People Around the World Think About AI”, 2022). With the public launch of generative AI this trust or acceptance in general, gets even more important because the accessibility to AI has increased (OpenAI, 2022). Even when people do not access the technology themselves (as in being the direct customers), more people, companies, institutions etcetera, can be confronted with it. Due to this confrontation, consequences of AI could increase and change, making the need to adjust adoption theories accordingly even bigger.

The difference between technological shifts creates the need and urgency for understanding what the influence on practices will be, due to the use of AIIG. When it is clear what will happen in the future, outcomes can create knowledge. This knowledge could allow the pros of this high-potential technology (Allen, 2020) to be maximized while being aware of the cons that can arise when using AIIG. This knowledge could influence the use of AI positively, making this research important for the development of AI itself as well. To achieve this, cultural meanings should be included in the research on the use and acceptance of AIIG. This could become clear by researching if and how these elements influence the current practices of professional users.

To do this, the CCT approach will be used. By using this research tradition, this thesis

can contribute to existing research done on AI. More conventional research tradition, as used in theories like TAM (Davis et al., 1989) and UTAUT (Venkatesh et al., 2012) there is more focus on individual parameters like ease of use and the usefulness within TAM and price value and individual differences in UTAUT. How CCT can add to UTAUT, is explained in the next section.

Consumer Culture Theory

Consumer Culture Theory is an alternative theoretical approach to research, part of the marketing discipline, which makes it possible to address the link between consumer actions, the marketplace and their cultural meaning. This is done with an emphasis on the productive aspect of consumption, where CCT explores how consumers transform this meaning themselves (Arnould & Thompson, 2005; Franco, 2022). CCT allows researchers to look at actual experiences of consumers and social relationships (Arnould et al. 2019). In this case, CCT focuses on what changes are made in practices by the professional consumers of AIIG. By looking further than just individual parameters, this research can dissect how consumers together have an influence on the market and how they (re)form practices.

By researching the changes this technology can have on the culture of consumers, CCT will contribute to this research as it shows how consumption and markets influence customer experience and social relations. CCT, opposed to research traditions used for models that were mentioned, brings a perspective of culture where moral considerations, emotion and non-realised practices can be unpacked, by achieving an understanding of the culture that drives these changes (Franco, 2022).

This way CCT can address weaknesses in the UTAUT theories (Venkatesh et al., 2003, 2012), by adding outside perspective and enriching the data gathered through scales in survey studies. This is done by diving deep into the consumption of AIIG through interviews and

finding out about experiences when adopting this technology as a professional consumer and letting interviewees explain their results delivered to different stakeholders. With this approach, there is room to research materials, meanings and competences that are created or discarded to understand how consumers and the culture surrounding AI-generated images develops. These elements will be explained further through the enabling lens of practice theory.

Practice Theory

Practice theory is an enabling theory, which allows researchers to enable certain ways of understanding context, for example, markets and consumption (Dolbec et al., 2021). This theory is used to understand the elements surrounding the use of AIIG. This will be done by researching the socially shared and routinized patterns of behaviours surrounding the use of technology (Dolbec et al., 2021) and by creating a story of how a certain culture uses AIIG and how this changes their practices. To know if practices have changed, current practices have to be defined. Like mentioned before, current practices imply the creation of images by professionals without the use of AIIG. There are multiple definitions of practices within Practice Theory, most of them are closely related to the following:

“a routinized type of behaviour which consists of several elements, interconnected to one another: forms of bodily activities, forms of mental activities, ‘things’ and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge” (Reckwitz 2002, p. 249).

This gives a general description of what is meant by practices in this thesis. Practice Theory itself is divided into three categories, consisting of different elements, which are needed to perform practices. These can be described as materials like a computer, meanings like socializing and competences like knowledge (Shove et al., 2012). Elements entering or leaving these categories can result in practices changing or even being disrupted (Hansson et al., 2022).

Shove et al. (2012, as cited in, Hyysalo, 2016) explore the concept of social practices

in everyday life and how these change. The authors argue that practices are not static, but constantly changing due to multiple factors, like technological innovation and environmental concerns. This concept provides fundamentals for how social phenomena can be understood as practices and how they exist, maintain and adapt (Shove et al., 2012, as cited in, Hyysalo, 2016). For example, when photo cameras were invented, this changed the way people could create images.

Furthermore, Phipps & Ozanne (2017) describe the importance of re-establishing security through practice alignment when a routine is disrupted. Security, in the context of practices, means that people have trust that their practices and routines are predictable. Disruptions of this security can be caused by technological development or external threats. Misalignment because of these causes could have a negative influence on those practices (Phipps & Ozanne 2017). So when practices are disrupted and changed due to technology like AIIG, it is important to align these practices with the people performing those practices, These perspectives apply to this thesis as a baseline and show how practices often are embedded socially, change consistently and this way can cause disruption.

The results of the data from the interviews should explain the influential elements that fall under the materials, meanings and competences used by professional consumers of AIIG. When elements change, enter or leave because of the use of AIIG, this can (re)form practices. When the change is significant when compared to practices without the use of AIIG, this could even disrupt practices. By analysing data further, the link between specific elements and changes in practices should emerge. With this information, adequate implications of the use of AIIG should be formed, contributing to theory, consumers, managers, organisations (I&E), and future research.

Methodology

This chapter includes the choices for and the explanation of methods that were used during the research. It describes how the research was conducted. This will be done by explaining why and how data was collected through interviews using Photoelicitation (Heisley and Levy, 1991) as interview technique, how data was analysed, which sampling strategy was used to select participants and how ethical considerations were made and implemented.

Data collection

The method chosen to collect data in this research is by conducting interviews. This method allows a flexible but focused way of collecting data and can be seen as effective and trustworthy (Arsel, 2017). Interviews can provide rich data from the perspective of an interviewee, allowing to find out the ways people share common understandings and showing motives behind their decisions. All the interviews were recorded and transcribed. Altogether this is seen as a suitable method for gathering information (Hannabuss, 1996). With this method, aspects that are missing in the extended UTAUT, like the motives behind habits and motivation surrounding the use and acceptance of technology, can be examined.

Data for this qualitative research was collected in two separate rounds, through semi-structured interviews as non-structured interviews can be seen as unfruitful according to Arsel (2017). In the first round participants with different experience levels of AIIG were interviewed. The goal was to quickly find out the interesting characteristics of changing practices due to the use of AIIG. This was required because the subject is new, so not a lot is known about the use of this AI by consumers. The guide of the first round of interviews was more on the 'open' side because less knowledge was known upfront (Verhoeven, 2011). An interview protocol was prepared, consisting of a non-recorded introduction and explanation of the research, followed by a verbal consent form (Appendix B) and the guide (Appendix C) with

the questions, both recorded after consent was given (Arsel, 2017).

The semi-structure allows irrelevant questions to be skipped and follow-up questions to be asked when needed, depending on the experience of the participant. The questions concerning previous experience tried to seek out more depth through understanding stand-out situations, instead of general findings, which is according to Rubin and Rubin (2012) the focus of qualitative researchers. The first round of interviews was conducted more locally through existing networks to be able to start collecting data early. These interviews took mainly place in real life/face-to-face, which allows for adding non-verbal communication and makes it easier to encourage non-talkative participants to interact (Lobe et al., 2022).

After this round of data collection, more specific participants were selected, based on the outcomes of the first round of interviews. The aim was to select information-rich candidates in this second round. Shaheen et al. (2019) describe this way of selecting participants as purposeful sampling. Selecting participants in this round was focused on two aspects. Participants should have professional experience with AIIG but also experience with creating images without using AIIG. This way practices can be compared and changes become clear. Before interviewing, back and forward chats were held to confirm if the participants are in line with the aim described above. Due to the sampling strategy, these interviews did not take place locally, because finding the best fit for the candidates was leading. A list of the participants in this research can be found in table 1.

Table 1. Participant table interviews

Intervie wee	Job/occupation	Date	Nationalit y	Interview duration	Live/platf orm used	Interviewer/ researcher
George	Marketeer/content designer	16-02-23	Dutch	44m21s	Live	Oscar
Tim	Web designer/entrepreneur	21-02-23	Dutch	45m33s	Live	Oscar
Walter	Web designer/marketeer/entrepreneur	24-02-23	Dutch	34m30s	Zoom	Oscar

Calvin	Freelance designer	09-05-23	French	44m19s	Zoom	Oscar
Sophie	Designer/ concept creator	10-05-23	American	41m46s	Zoom	Oscar
Christina	Trend analyst/ writer/ public speaker	11-05-23	Dutch	34m31s	Zoom	Oscar
Petra	Freelance designer/ former photographer	18-05-23	Israeli	49m06s	Zoom	Oscar
Dorine	Graphic designer	09-05-23	German	54m59s	Phone	Ray
Mick	Arts director	26-05-23	Dutch	34m46s	Zoom	Steven
Brad	Graphic designer /art director	02-06-23	Dutch	33m09s	Live	Steven
Mila	Communication employee	07-06-23	Dutch	33m03s	Live	Steven

The interview guide for the second round was semi-structured again, but the questions were more specific because more about the topic was known after the first round (Verhoeven, 2011). Due to feasibility, the interviews were conducted online/through video conferencing. According to Lobe et al. (2022), more structured interviews work better in an online context. This was another reason to make the interview guide more structured.

The in-depth interviews made probing possible to a certain degree, during the on average 40+ minutes interviews (excluding before and after talks). Interviews were conducted until a full understanding of the perspectives of interviewees on the topic of AIIG was formed. According to Legard et al., (2003, p. 152, as cited in Saunders et al., 2018) this can be a sign that data saturation is reached. Reaching this understanding was done through probing by repeating information to make sure that what the interviewee tried to say was understood well (Legard et al., 2003, p. 152, as cited in Saunders et al., 2018) and by using Photoelicitation, so even non-conscious signals were gathered.

In addition to this, interviews of other researchers from the Radboud AIIG thesis circle were also analysed. These interviews were conducted with participants that also have experience creating images with and without AIIG professionally (except one). Using this data

made it also possible to check if findings made sense from different perspectives of professionals using AIIG. No relevant new concepts were found in this data but existing concepts were confirmed and extended. This showed the understanding of the perspective that professional consumers of AIIG was clear and saturation was reached according to Legard et al., (2003, p. 152, as cited in Saunders et al., 2018). Furthermore, the use of interviews from other researchers decreased the bias when data was collected through interviews.

Photoelicitation

To understand how consumers of AIIG use this technology, they were asked about their experience during the interviews. To get more details and increase the richness of the data, a technique developed by Heisley and Levy (1991) was used. This technique is called Photoelicitation and is based on autodiving, which is a technique that can be used when conducting an interview. The term autodiving means that the interviewee ‘drives’ the interview themselves (auto) by reflecting on their own experience, which makes the data more meaningful for others (Gould goet al. 1974, p. xxv, as cited in Heisley & Levy, 1991). Originally in Photoelicitation images of participants were used, making participants talk about pictures taken from them, and were asked: “Tell me whatever you think when you look at {these photographs}” (Heisley & Levy, 1991, p.263).

In this thesis, Photoelicitation was used in similar ways but new additions will also push the technique forward. Instead of pictures taken, AI-generated images by the interviewee were used. They were asked to tell what they think about the images, but also how it was made, for whom and with what goal (see appendix C for examples of questions asked), if this was not mentioned by the interviewee themselves. This approach of Photoelicitation leaves behind the autodiving when in return more data can be gathered. Images (although generated) are still used in this adaptation, similar to the original technique of Heisley and Levy (1991).

The use of this technique is applicable in this research because the technology is made to generate images which can be used as the object. By using this technique, the reactions that are given provide new insights into the effects of using AIIG on routines, results, problems and other aspects of professional consumers. Even when these experiences were non-conscious, by using this technique, the interviewer can receive data about this during the interviews.

In the first round of data collection, when an interviewee did not yet use AIIG themselves professionally, the researcher selected AI-generated images and asked the interviewee to tell what they thought about those images. The selected images were a mix of custom-generated images to fit their organisation and job (figure 2 and 3), and images generated by experienced AIIG users to show the possibilities of this technology. Additional questions were asked to the interviewee to gather more data, like what use could images generated by AI have for them/their organisation, and how long it would take them to make a similar image, without using AIIG.



Figures 2 and 3. Images generated for an interview with a non-AIIG user, working as a marketer for a festival and event organizing business. Made with Dall-E

In the second round, interviewees often had their own generated material which was used for Photoelicitation. This is more in line with the original technique as performed by Heisley and Levy (1991). But again, questions were asked if the autodriving alone did not suffice in giving enough data. The technique was altered in a way that contributes most to this research subject while pushing this technique forward. By using this interview technique, (non-conscious) data about how participants use (practices) and think of (acceptance) AI-generated images were collected and able to be analysed.

Data analyses

The qualitative data gathered from interviews, including interviews from other researchers part of the AIIG thesis circle at Radboud, has been analysed through the process of qualitative content analyses. Bleijenbergh (2013) labels this as a process where text is interpreted from an empirical perspective by labelling fragments of the data in multiple phases with codes to give certain meanings. These codes connect the empirical observations with abstract theories or general conclusions (Bleijenbergh, 2013).

The multiple phases of giving meaning to data through codes starts with open coding. Here, fragments of the text are coded by words that are retrieved from that specific fragment. After this axial codes are given to the fragments, which connect the different open codes based on the themes within, reducing the number of different codes. At last, selective coding compares fragments with each other to compare and discover relations and connections (Bleijenbergh, 2013). By making sense of the data in this way, themes can emerge (Cypress, 2015) and theory can be built by finding patterns that give insight into the research goals and question (Bleijenbergh, 2013).

Quality of CCT research

When looking at requirements to conduct research and convince audiences while performing interpretive consumer research using the CCT tradition, Hogg and Maclaren (2008) describe three important criteria. These are authenticity, plausibility and criticality, which are considered in this research to increase validity and reliability when using this research tradition.

Authenticity is needed to convince the reader that interpretation is drawn from data and the researcher understood the consumers' culture (Hogg and Maclaren 2008). This will be done by adding techniques like Photoelicitation, where participants draw the researcher in by explaining their experience with AIIG. This gives an in-depth insight into the process and results of these consumers. Trying to achieve this authenticity, fits well with the researchers' paradigm; constructivism. This paradigm sees realities as multiple mental constructions, based on aspects like social context, depending on the person or group holding that specific construction (Guba et al., 1994). Getting to understand different perspectives, in this case of consumers, is important in the constructivism paradigm. Because understanding the consumers' perspective creates insight into their 'truth'. In this paradigm, these insights can be discovered through relativism in local or specific constructed realities, according to Guba et al. (1994). So, creating an authentic understanding in both the researchers' paradigm of constructivism, as well as in CCT, is crucial and creates a fit between those two.

Plausibility has to do with accounting for as much information as possible, to create an interpretation that fits well (Hogg and Maclaren 2008). By combining data from multiple researchers on the topic of AIIG, the pool of data wherefrom can be interpreted increases. This gives enlarged insights into different perspectives to create an explanation and fit from the data. At last, the research needs to activate the criticality of readers, by provoking the recognition or making readers imagine new possibilities. This was done by gathering striking experiences of consumers, instead of focusing on the obvious which would give fewer insights into the culture

of these consumers (Rubin & Rubin, 2012). Which questions were used to achieve this, can be seen in the interview guide (Appendix C).

Ethical considerations

Ethics are an important part of the research done within Radboud University and of this thesis. Radboud follows the code of conduct of the American Psychological Association (APA). APA follows the Five principles for research ethics (Smith, 2003). To be able to implement ethics throughout the research, ethical considerations linked to these principles have been taken into account in all parts of this research.

A verbal consent form (appendix B) is read out loud and the approval by the interviewee is recorded, after permission to record was given. It is made clear in the form that the recording is used to transcribe the interview and that the transcription can be provided if a participant wants to check this. This form also contains information about the freedom to withdraw from the research at any time without reason, the way anonymity is guaranteed and that the received information will only be used for research purposes and anonymized. The latter will be done by de-identifying participants with pseudonyms (Heaton, 2021). This way, findings can be presented in an accessible manner, without sharing any sensitive data and keeping participants anonymous. The pseudonyms were used in the participant table and in the forthcoming sections while the real names are known by the researcher.

Furthermore, it is mentioned that there is no advantage or punishment in entering or withdrawing the research. Being transparent about the goals and the process of this research is important, so when participants get involved, the researcher will mention in what way the findings of this research may be applied. All these points are shared with the participants before the interviews are conducted, and are in line with principles 3 and 4 by Smith (2003).

Findings

This chapter reports the findings from the interviews. These findings are organized by a conceptual model derived from the data which shows relations between influential concepts that explain how practices can change due to professional use of AIIG. Input for this model is subtracted by analysing the data gathered in the interviews in combination with the theoretical background. This conceptual model will shape and guide the findings chapter. The combination of the theoretical background with the data gathered, makes it possible to answer the research question through the conceptual model: *What are the implications of professional use of AI Image Generators on current practices?*

Current practices

Open access to AIIG made the number of users surge since the release of DALL-E and other AIIG platforms to the public in 2022 (OpenAI, 2022). Because of this change in scope and composition of consumers, elements linked to the practices of these professional consumers can be affected. To show possible changes in practices, the thesis is guided by Practice Theory, showing the effects of using AIIG. Different materials, meanings and competences can lead to changes in practices. When the change in practices are severe, they could also cause disruption which can affect people formerly involved in those practices (Phipps & Ozanne, 2017). By analysing possible changes in practices concerning these professional consumers, implications of the use of AIIG can be described.

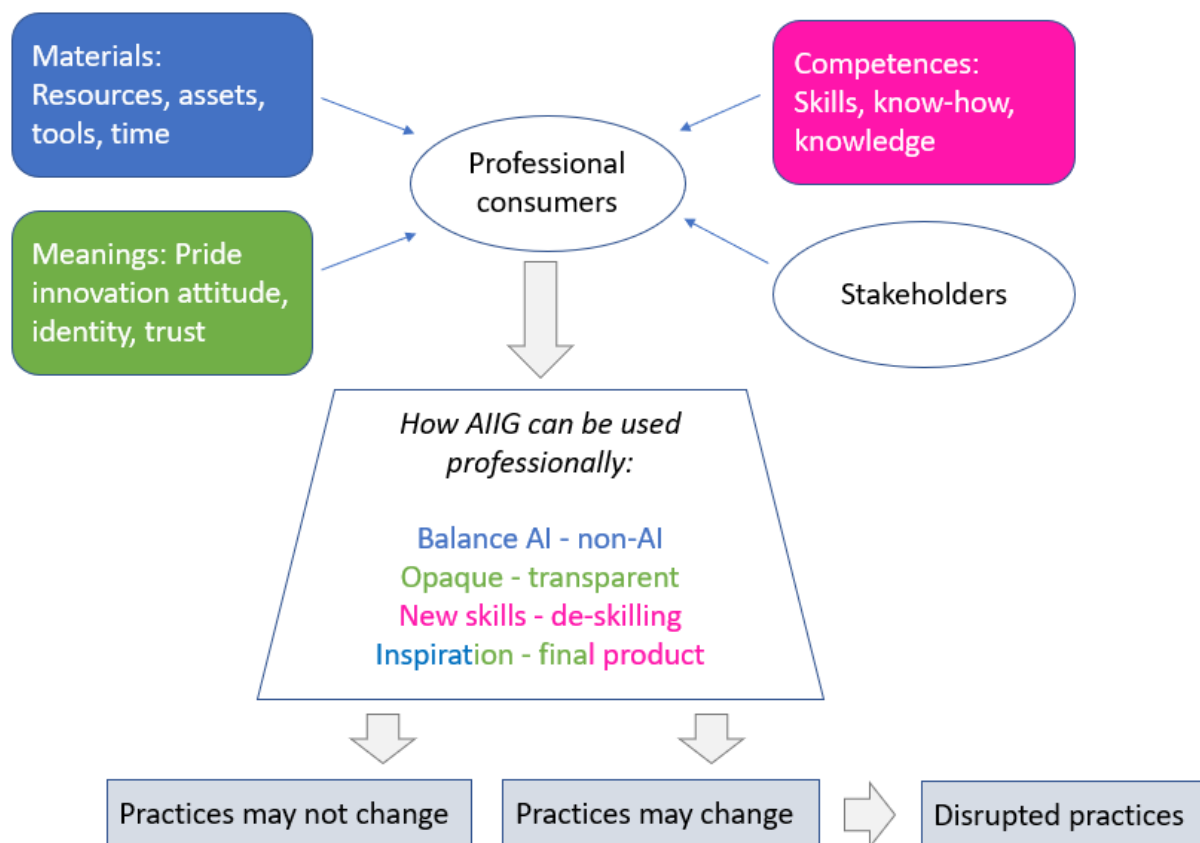
To be able to describe implications due to practice (re)formation, current practices surrounding the creation of images without the use of AIIG are explained. In general, creativity is formed in the brain by combining different inputs (Eagleman, 2019). Platforms like Dribbble and Behance are used by interviewees Tim and Calvin to get inspired. Google is also used for this by George, Tim and Calvin, and Pinterest was also mentioned. When creating images,

George and Petra make sketches, Dorine, among others, mentioned using software from Adobe, Photoshop specifically by George, Christina, Petra and Mick while Calvin uses free substitutes to Photoshop. Although, it has to be noted that according to Christina, in Photoshop “*tools were already using AI*”. This is still a difference when comparing with AIIG, where complete images are generated instead of certain tools to adjust images. Furthermore, Sophie, George and Petra use photography in combination with these software packages to create images. Petra explicitly explained how she needs to work with people, to be able to create photographs of them.

Conceptual framework

At the top in the middle of the framework (figure 4), the model contains the professional consumers of AIIG, which are the users of this technology. These consumers are influenced by multiple elements that are necessary to perform their practices when creating images, which can be grouped into the following categories: materials, meanings and competences (Shove et al., 2012). Each colored box resembles one of those categories, containing multiple elements. According to practice theory, elements entering or leaving can result in practices changing or even being disrupted (Hansson et al., 2022).

Figure 4. Conceptual Framework: Change of practices due to professional use of AIIG



The colour of the boxes of the practice theory categories corresponds with the colour of the paradoxes lower in the model. This shows a relation is found in the data between those categorized elements and the paradoxes. The bottom paradox has three colours, meaning it has a relationship with all three of the categories. These paradoxes are concepts that could (re)form

practices when compared to practices without the use of AIIG, affecting the professional consumers of AIIG. The elements and paradoxes will be explained further per category in their sections.

A paradox can be explained as two characteristics so different that they exist on opposite sides of a spectrum. The two characteristics of a paradox contradict each other but are still interwoven. The interplay of and the choices regarding these paradoxes can result in practices changing or staying the same when there is no shift on a particular spectrum compared to current practices (Schad & Miron-Spektor, 2020).

Mick and Fournier (1998) also used paradoxes to describe the effects of technology on consumers instead of focusing on either/or outcomes. Their paradox concept created intriguing questions, such as: *“What strategies do consumers use to manage those paradoxes?”* (Mick & Fournier, 1998, p. 142). By deriving paradoxes from the data of the interviews, consumers of AIIG can be informed by these concepts and can choose a way to manage this technology. By managing the adaptation of AIIG through these insights, business practices can create competitive advantages by (re)forming practices accordingly.

Stakeholders

Another influence on professional consumers of AIIG, as seen in the model (figure 4), is their stakeholders. In this context, stakeholders consist of managers, clients or customers of the professionals. Analysis of the data shows that the professional consumers of AIIG have to adjust their practices to fit the needs of these stakeholders. Walter said: *“If it does not fit with the style or need of the client, then it [AI generated images] of course have no value”*. Furthermore, George also emphasized the importance of this fit:

George: “I think that when people are going to use it [AIIG] for real and would separate from a marketing team, that you will miss the link between the organization and the people who

receive it”. Followed up with: “I would think of a way how to link the organization with the people that are coming to your organization”

Stakeholders have influence as they are often the requestors that need to be satisfied with the final products, and in some cases informed about and integrated into the process. Christina explained this by saying the following: *“Everybody that works with a designer, they also get pulled into this process and become a designer a bit themselves as well”*. Brad explains that when he uses AIIG to create images, his manager in the future could be held responsible for this use in case rules are suddenly added. To avoid this, Brad does not take the risk of professionally using AIIG until rules are more clear. This influence of stakeholders can be seen throughout examples in the next sections as well. Altogether, the Practice Theory elements and the stakeholders shape how AIIG can be used by professionals and thus (re)form their practices.

Materials

When looking at the elements concerning materials, the model (figure 4) shows that resources, tools, assets and time influence the paradox AI - non-AI. This paradox can be described as what parts of a practice, when creating an image, are performed without using AI and what part is done with the help of AI (or vice versa). Knowing how these elements influence this paradox can be beneficial if, based on the context/preferred outcome, choices about when to use AI or when not to use AI are made accordingly.

The availability of these elements decides whether a professional can perform practices with or without AI. For example, when there is a lack of resources like money to create or buy assets and tools without the help of AI, but there is an AI tool available to generate these assets, these elements could cause more use of AI. Calvin would prefer non-AI-made products if costs were similar, but: *“Often AI is like 10 times cheaper... a 100 times cheaper”*. Meanwhile,

George has opted to use AI for content in marketing when AI tools are available multiple times using the words “*why not*”. In these cases, the lack of resources and the availability of AI tools influence the choice of whether to use AI or not.

But even if applicable AI tools are available, Tim gives an example of why not to use AI. While using AI tools enable users to create more in a short time, Tim also stated that not using AI could have resulted in a more “*thought-out concept*”. In this case, a constraint in the resource time or money could lead to more AI used, and possibly making concepts less thought-out. This could result in worse quality products when the amount of AI used is high.

The data gathered shows that practices involving AI often take less time and/or are more efficient when compared to non-AI practices. Sophie explained: “*I don't have that same attachment of time and energy that I did. – Oh and now the client wants these changes and I literally have to go back and pen and ink and make these changes, something like that. It is a huge leap productivity wise in that regard.*”. This example shows that using AI could alter the attachment the consumers have to material elements like time. But again, nuance was given by Tim. He gave an example where he lost himself in overcommitting to a certain prompt or idea. This led to time loss while trying to refine prompts. In this case, the element of time could lead to practices being (partly) non-AI.

These findings show that when to use AI and when not to, depends on the context. Using AI can bring advantages like efficiency, but also should be avoided in certain aspects. Because materials have a big influence on when AI is used or not, controlling these elements is important. This way the use of AI can be adjusted to keep the right fit with stakeholders. For a preference for non-AI, money and time is needed. But when choosing for efficiency, the right tools and assets to use AIIG while keeping the right fit with stakeholders is more important. When the use of AI creates a contrast with practices before, practices are (re)formed or even disrupted, depending on the severity of changes.

Competences

The model (figure 4) shows that the elements that fall under the category of competences are related to the paradox of new skills - de-skilling. This is a paradox retrieved from the data where skill was brought up in both regards. Other elements which are part of the competences category are knowledge (information gained through experience) and the ability to practice this knowledge, described as know-how. Practices involving the use of AI can require new skills, knowledge and know-how, but also could make these elements less relevant. The change in these elements could (re)form practices. Knowing what competences change due to the use of AI could help professional consumers (re)forming these practices accordingly.

To create prompts that can generate good-quality images and choose the right version to continue iterating, certain skills, knowledge and know-how are needed. Tim described this as: *“a lot of time needed, to iterate, to find what I am searching for”* – *“it might be impacted by your vocabulary when you do not use the right words”* and *“on the GitHub, you could read which conditions you can type in as filters, or a specific camera angle, or a realistic style”*. To choose the right image, experience of which images might have the best fit is needed. The role of the artist, according to Tim, Christina and Petra will become closer to being a curator, which requires different competences as well.

Tim also mentioned that the industry is stirred up. Because of AIIG by increased accessibility and ease of use, additional activities will be asked from a professional, requiring more skills. *“When before specific branch experts would be needed, now it is possible to do a lot more stuff yourself. So more activities will need to be done by you.”* AIIG enabling a professional to take on more activities was also suggested by Calvin and Mila. Mila argues that this technology can broaden skills of the users with the addition of new tools. Instead of being *“super-specialized”* she explains that *“whoever falls in between, needs to make a choice”*. In both cases, more competences will be required in the practices of these professional consumers.

But on the contrary side of the spectrum concerning this paradox, de-skilling was also mentioned. AI can take over certain actions of practices, which formerly would only be performed by humans with certain skills, potentially making the consumers “*lazy*”. Tim explained how de-skilling could emerge: “*I think that is really easy for humans to de-skill if you are used to having a button to work out an idea*”. The full quote can be found in Appendix A.

Furthermore, Petra gave an example where a certain skill that was important before using AI, is now less relevant. As a photographer of people, the taker needs to work with humans as their objects. When taking photos is replaced with making prompts in AIIG, there is no direct contact with humans needed. Petra explains the need for the skills when working with people as your object as follows: “*You need to make everything in order to get him to get it to you because you, you can't fake it. - It's not AI..*”. But with AIIG this is less relevant: “*all the people skills is very much less relevant when you're talking to a bot*”.

During the Photoelicitation part of the interview, Petra explained how she was able to create an image (figure 5) with AIIG for an app, that without AIIG would be more complex to create. A model, studio, make-up artists and other resources would be needed to deliver a similar product. In addition to the skill needed to work with humans becoming less relevant, some other skills were brought up by participants. Dorine argued that drawing could be replaced, and similarly, Christina and Dorine explained that the ability to sketch by hand could disappear.



Figure 5. Example of an image used during Photoelicitation by Petra (written permission to use image received, generated with Mid-Journey).

Apart from new skills, and de-skilling there are also skills that carry over to AIIG practices. George and Petra explained how the skills of creating pictures can be used while working with AIIG. Knowledge of how lighting should be arranged in certain situations, and know-how of how this could be done with software, is also important when using AIIG. Along with this, Mick explained, among others, that AI-generated images can contain mistakes in details “*sometimes fingers are not right*”. When AI-generated images are not perfect, finishing up images with non-AI-generating software is still needed and remains a valuable skill according to Tim, George, Christina and Petra.

New skills and de-skilling both change practices when generating images using AI. But skills that carry over have the opposite effect. Both these changes in elements result in change or even disruption in practices when completely new skills take over the skills that have been discarded. Consumers should adopt new skills that are needed to maximize their use of AI and can form competences that fit their style and stakeholders. But users should be thoughtful of investing in skills that might disappear.

Meanings

Next up, the influence of elements which fall under the category meanings, relating to the paradox of opaque - transparent, are explained. This paradox focuses on (the lack of) transparency of practices when using AIIG. This is a relevant subject as data shows that stakeholders have different opinions about the use of AIIG. This paradox is influenced by pride, identity, innovation attitude and trust.

Walter is part of the biggest participating organisation with 67 employees. Here, rules were very clear and transparent: *“The company I work for, we are very transparent, so if we use it (AI), the customer knows, so we are not likely to get a conflict in that regard”*. This organisation shares an identity with a positive attitude towards innovation and the influence of managers on professional consumers is clear. In a smaller business, the use of AI was not even brought up towards stakeholders, making these processes more opaque, based on trust. Tim told AI generated-images were used for a presentation in front of stakeholders without mentioning the use of AIIG to them. Meanwhile, he explained that when using stock images in similar situations, they mostly do mention the origin. So, in this case, the use and rules/restrictions surrounding AIIG were not discussed and more vague than before.

The data shows that freelance designers are transparent about their use of AIIG. They shared their use on social media platforms, which forms a clear identity which embraces innovation. Petra explained that her clients specifically want the designer *“to use AI”*. She feels the need to emphasize that it is still a lot of work, as their clients see a lot of benefits in this technology: *“This is not an easy thing - it's a lot of thinking process.”* The full quote can be read in Appendix A. If clients do not agree, they are told to: *“try it yourself”*. Sharing parts of her process shows transparency again.

Calvin and Sophie proudly take full credit for work made with AI. While Petra said the AI has a lot of influence and in certain cases takes away control, making her share credit with

the AIIG, 50-50. But she also nuances as this changes as AIIG develops. Tim argued this: *“I actually think what makes you proud the most, is the fact that you are the initiator and you did it on that moment”* – *“Everybody could do it, but nobody did”* and describes how you can make yourself proud even quicker using AIIG. Overall, data show agreement that the credit and pride mostly come from the required process needed to create images through AIIG.

Calvin and Sophie explain that AIIG enables the abilities of an artist, making it possible to create things they could not create without AIIG. Explained as *“enhanced ideation”* and *“superpowers”* by Sophie. But because of this, the need to be transparent increases to not fall into a certain trap is explained by Calvin: *“I can do it with AI for example. So it allows me to do more for clients than I could. - I try to be transparent and not fall in the trap of I can do, but I cannot do.”*. Falling into this trap where users were enabled to create more because of AIIG, could hurt the trust between the professional user and the client. To combat this having a transparent process and clear identity with a positive attitude to innovation can preserve trust.

When adding AIIG to a process where it was not used before, practice might need to change to create enough transparency for stakeholders. If transparency does not increase, adding AI to an opaque process could create a conflict resulting in a lack of trust. So if current processes are opaque, adding AI to this should initiate a change of practices, like becoming more transparent to preserve trust. Being proud of work done with the help of AIIG, and sharing this with a positive attitude towards innovation could be the changes to practices that are needed when current practices are more opaque. This might be needed until using AI is more accepted. Currently, the data showed that stakeholders have varying opinions when it comes to the use of AIIG. Some are not approving the use of AIIG for being unauthentic, but this opinion would likely change for most people, according to trend analyst Christina.

Combined elements

The data across the interviews show that AI can be used for both brainstorming and generating images that actually can be delivered to the client or customer. In earlier stages, it could be described as more inspiration based. If the technology is used at the end of a process, it can deliver a final product. Together this forms the paradox of inspiration - final product. The model shows that elements from all three practice theory categories have a relation with this paradox and influence how AIIG is used.

Walter explained how the company he works for, a mid-sized marketing agency, mainly wants to use AI as a final product: *“We mainly see it as something that makes a final product, rather than support what we are creating.”* Professional consumers who have a lack of competences related to creativity could use AIIG in earlier stages for inspiration. But when a consumer is very creative, but lacks the know-how to deliver this in the form of final products, AIIG can be used in the final stages.

In addition to this, two interviewees explain that AI final products have a certain atmosphere that is recognizable and final products might not always be spot on. Walter: *“I think it looks very futuristic”*. Mick explains that most of the time they can see when an image is generated by AIIG. But Petra mentioned that this is expected to change with updates. When this atmosphere does not fit with the users’ identity or with stakeholder needs, this could mean usage would be limited to inspiration purposes. This is related to the category meanings.

Christina shows how stakeholders influence this paradox as well. They can get involved by using AIIG themselves to help in the earlier stages of designing images. This is done by generating *“images to share ideas to others – it really helps when you can talk about it yourself with a designer in the starting phase like: something like this would be cool or this would look really nice”*.

Time is also an element that influences this paradox. Tim explains how AIIG sometimes

do not give the “*spot on*” result, which can lead to spending a lot of time finetuning “*hoping for a lucky shot*”. So using AIIG for final products can be difficult in that sense. Some interviewees carry skills over and fix details with software like Photoshop. These influences on the professional use of AIIG for final products are related to the categories of competences and materials.

Together these elements show different influences on how and when AIIG is used during a process. This (re)forms practices if certain stages in the process are done with the help of AI, like using it for inspiration or final products. If both stages are performed with AI, this could have a disruptive influence on the current practice, leaving little behind of the former practice. Apart from these elements, it is again important to ensure a fit with stakeholders to prevent misalignment due to changing practices.

Discussion

This chapter discusses the contribution of this thesis to literature and gives directions for future research. After this, the managerial implications and a critical reflection through limitations based on the conducted research will be discussed

Contributions to literature

The main contribution of this thesis is extending the UTAUT theories (Venkatesh et al., 2003, 2012). The UTAUT theory published in 2003 combines eight models on the acceptance and use of technology, mainly with constructs focussed within organisations. In this thesis influences on professional consumers of AIIG are described, including external influences. This shows the acceptance and use of new technology beyond just within the organisation, like external acceptance, contributing to the UTAUT theory.

The findings of this thesis show how practices are influenced from outside of organisations and how this could change the practices of professionals. Christina suggests that AIIG “*has impact on people who make visuals, but also on people that somehow work with visuals*”. So also those around the users of this technology can be impacted. By realising this, organisations who are frontrunning the implementation of this technology can gain a head start by adding this outside influence to this adoption theory and creating practices that also fit with their stakeholders. Further research looking at the difference between an internal focus versus an external focus when researching the use and acceptance of technology could display this even more.

The UTAUT extension adds concepts like hedonics, habits and individual differences, focused on the individual consumer market through numerical scales in surveys (Venkatesh et al., 2012). To truly understand habits and hedonics, depth is added through this research by finding out why certain practices re(form) with the use of technology. This is done by focusing

less on individual reasons for use and acceptance, and by concentrating on how the consumer culture surrounding AIIG influences practices. This way, a deeper understanding of the acceptance and use of technology through this qualitative method is created, contributing to the extended UTAUT theory.

This is done by looking through the Practice Theory enabling lens, adding a focus on experience and practices is to the extended UTAUT theory (Venkatesh et al., 2012). This lens contributes as it does not only concern what meanings (what people think), but also extends into materials and competences which can influence technology adoption. By using the CCT approach, the culture of the consumers is added to these concepts showing how technology is used and accepted by a certain culture. Both the approach and lens make contribution to the extended UTAUT theory possible.

When looking at the Photoelicitation technique (Heisley and Levy, 1991) used in the interviews, a methodological contribution can be made. Originally this technique is described as autodiving, where participants reflect on images, driving the information by themselves. During the interviews, when participants were not able to reflect sufficiently themselves, the interviewer steered this process by asking questions. By leaving behind the autodiving, the data gathered from this technique was richer and made the technique more applicable for interviewing less autonomous participants. Further research could compare both techniques to see if steering the interview would contribute to the Photoelicitation technique in different contexts as well.

Future research directions for literature

The data clearly showed AIIG enabling users' creativity, even described as "*superpower*" that enhances ideation. Idea generation is also successfully explored by Bouschery et al. (2023), with AI text generators. But this could also come with a downside. AI consumers are able to

find instant gratification by being able to visualize any thoughts or ideas easily, while this would not be possible before due to constraints in materials or competences. The same question arises with text generators, where the instant gratification facilitated by AI text generators surpasses that of more simple search engines. Joseph Weizenbaum described a similar concern: *“The danger of computer becoming human is not as great as the danger of humans becoming a computer.”* (Joseph Weizenbaum, 1972, as cited in Tegenlicht, the Price of AI, 2023). What impact could this growing ability have on the motivation and ideation of humans, which before had more boundaries/fewer possibilities, now that people are getting interwoven with the abilities of generative AI?

Furthermore, it would be interesting for future research to find out how AIIG can be combined with other generative AI and how they can support each other and what changes in practices emerge. This could be done by combining research on text, video and environment generators in addition to image generators. This would be similar to research done by Kim et al. (2020) but then finding out what actual experiences of professional use are with different forms of AI. This would give a more complete picture of the impact on practices due to the use of generative technology, instead of focusing on generated images.

Managerial implications

For businesses, successfully implementing generative AI could be beneficial or even required for the continuity of the business because of improvements this technology brings, like efficiency and a decrease in skills needed in certain practices. But there is an important difference between non-generative and AIIG. Non-generative AI already used in the background of businesses (Ramaswamy, 2018), is less noticeable for stakeholders. AIIG creates content which is more directly exposed to clients, customers or anyone who comes in contact with a brand through images.

Multiple participants stated that stakeholders have different opinions about the use of generative AI. This implies that managers should be careful implementing this technology and look closely at the fit with their stakeholders, instead of just going after time and efficiency benefits. When not being transparent about (re)formation of practices by including AIIG, this could have an impact on the trust between organisations and their stakeholders. When managers want to control the amount of AI used in their organisation, they should facilitate enough resources to do so.

At the same time, AIIG could enable entrepreneurs to create imagery with fewer elements needed to perform practices. Resources like time and competences like know-how to perform certain tasks become less relevant due to AIIG tools enabling professionals to do more tasks, as these tools can “*broaden people*”. Any business where normally a part of investments would be assigned to artists, could require less materials and competences with the implementation of AIIG. If the fit with stakeholders and aspects tied to transparency are kept in mind, this could decrease the risk for start-ups and create more opportunities in the I&E field.

But when looking at an opposing strategy, this could also bring opportunities to entrepreneurs. Because the interviews show different opinions on the use of AIIG, focusing on non-AI processes could serve this specific market that is emerging. By targeting those who resist the use of this technology and serving “*a group that values 100% human-made*”, a new market could be found with opportunities for entrepreneurs or managers. Further research about this market could reveal related opportunities.

Limitations

The conceptual model (figure 4) shows that stakeholders influence the professional consumers of AIIG. But interviews were held with the professional consumers themselves and the

perspectives of stakeholders was gathered through them. If there was more time to conduct the research, interviews with stakeholders directly could add their perspectives to the data. But even with extra time, the already complex concepts would create another challenge to implement more elements in the model. This research could be built upon by eliminating these limitations, preferably with another enabling lens. For example, the institutional lens to look at AIIG from the perspective of these stakeholders. By using this lens, structures, strategies, rules and norms that are established by authorities become more clear.

The data from the interviews was collected within a couple of months. Therefore the results mainly apply to these moments in time. AI has developed fast and is expected to keep this pace as stated by multiple interviewees. This fast-evolving industry could mean some concepts of this thesis will be enlarged and some could disappear. A difference in aspects, like the futuristic feeling of AI-generated images changing, was already gathered and described as characteristics of the technology changed between the first and second round. A new round of interviews in a couple of months after the second round of could show the evolution of practices if conducted in further research.

The sample size of this thesis is eleven, which could be seen as small. This, again, has to do with the limited time available for a Master's thesis and to control for the complexity of this research. In return, participants had a lot of experience with the creation of images with and without AIIG. Furthermore, the extensive interviews were held with people from five different countries and three different continents, so data was gathered across different national cultures. This made it possible to explore different perspectives of consumers explained through the practices of participants. The researcher gained a full understanding of the perspective of professionals using AIIG through these interviews, which can be argued as reaching saturation according to Legard et al., (2003, p. 152, as cited in Saunders et al., 2018).

Conclusion

In this thesis, the focus was put on professional use of AIIG. The main research question to be answered in this master thesis is: *What are the implications of professional use of AI Image Generators on current practices?*. The results show the influence of certain elements and stakeholders on the practices of professionals using AIIG. When changes in practices are severe, they even cause disruption.

Resources like time and money are needed for a non-AI preference. But when choosing for efficiency, the right tools and assets to use AIIG while keeping the right fit with stakeholders is more important. Professional consumers should also know which competences to develop, like curating and refining prompts. Focusing on competences like sketching or working with people when taking pictures could bring risks as these might be less relevant or disappear. Technicalities when photographing are still relevant in certain AIIG tools, making investment in this competence still useful.

A clear identity with a positive attitude towards innovation could inform stakeholders about the use of this technology. When current opaque practices add AIIG, they should become transparent. A decrease in trust when AIIG is added to current practices, or the change to more transparent processes both drive change. Implementation of AIIG in later phases of processes would create direct contact of AI-generated images with stakeholders. When AI is implemented in earlier and later stages, these changes to practices are disruptive, as multiple phases have changed. When practices change or are disrupted compared to current practices, the fit with the stakeholder should be kept in mind as these do influence how professional consumers can use AIIG. This is important for all changes on the spectrums of the paradoxes, but more disruptive changes require most thought and adjustment to reach this fit.

By doing this research contributions were added to the UTAUT theories and Photoelicitation. Contribution to the original UTAUT was made by adding influence from

outside organisations to the use and acceptance of technology. The extended UTAUT was pushed forward by delving deeper into the motivation and habit behind the acceptance and use of technology. Contributing to Photoelicitation was made by asking questions about images to enrich data received.

When starting the research, it was aimed to be a bridge between generated images of pets on a skateboard scattered around the internet and finding out ways to implement this technology professionally. Outcomes at times sound obvious but an explanation of why these emerge is explained. This thesis only shows one part under the 'AI umbrella' of many. But knowing the implications that just this part brings, an even wider influence can be expected. With provided insights, consumers of this technology can hopefully benefit in the future and add to a society where AIIG has positive influence, instead of a negative influence.

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Appendices

Appendix A: Quotes

An AI system is a machine-based system that is capable of influencing the environment by producing an output (predictions, recommendations or decisions) for a given set of objectives. It uses machine and/or human-based data and inputs to (i) perceive real and/or virtual environments; (ii) abstract these perceptions into models through analysis in an automated manner (e.g., with machine learning), or manually; and (iii) use model inference to formulate options for outcomes. AI systems are designed to operate with varying levels of autonomy. (The OECD Artificial Intelligence (AI) Principles - OECD.AI, n.d.).

Interviewee Tim: I think that is really easy for humans to de-skill if you are used to having a button to work out an idea, whereas previously you needed to think about it and create it in a week. In that case, you can make different choices, or you get new insights through that, but now it is very easy in one shot. Just like googling, you get a hit instantly, and that is satisfying. Or you have something in mind, and the next moment you generated it, just to see how it would look like. And, oh, I can combine these - I think that instant gratification can be very addictive, when you instantly get an end result, while normally you would not do that because it would take too much time. Now it is like every thought experiment, could be a prompt.

Interviewee Petra: This is not an easy thing, you know in any kind of use in design. - it's a lot of thinking process. And a lot of iterations, you know, experiments, you try one thing and then you try another and then you go back and try another angle. It is work, that is what I'm trying to say".

Appendix B: Verbal consent form for interviewees

Consent form, read out loud while recording, asking for verbal agreement after initial introduction and receiving consent to record (is translated for Dutch speaking participants):

Participation in this research study is completely voluntary. It is up to you to decide whether or not to take part. You will be asked to give your verbal consent before participating in the study. If you decide to take part, you are still free to withdraw at any time for any reason and withdraw any unprocessed data. You can refuse to answer any individual question and request for the researcher to not use certain types of information at any time. You will not be penalized or disadvantaged in any way for your decision whether or not to participate in this study.

With your permission, interviews will be audio-recorded and then transcribed. This recording and transcription both are accessible for the interviewed participant when requested. All information collected will be strictly confidential and will only be retained for the purpose of this or other studies of the thesis circle within Radboud University. Confidentiality, privacy and anonymity will be ensured in the collection, storage and publication of research material. To protect privacy of participants, direct identifiers such as names, places, institution and email addresses will be replaced with pseudonyms when transcribing interviews. Identifiable personal data will also be anonymized using pseudonyms.

Is this clear and do you agree to this statement?

Dutch version:

Deelname aan dit onderzoek is geheel vrijwillig. Het is aan jou om te besluiten of je meedoet of niet. Als je besluit om mee te doen, moet je voor het meedoen aan de studie verbaal toestemming geven. Het staat je vrij om op elk moment niet verwerkte gegevens en je deelname terug te trekken zonder opgave van reden. Het staat je ook vrij om de onderzoeker te vragen om bepaalde informatie niet te gebruiken of geen antwoord te geven op een vraag. Er zit geen straf of nadeel vast aan het besluit om wel of niet mee te doen aan de studie.

Met jouw toestemming zal het interview worden opgenomen en daarna getranscribeerd. Zowel de opname als de transcriptie zijn toegankelijk voor de geïnterviewde wanneer dit wordt aangevraagd. Wanneer de data wordt getranscribeerd zal de persoonlijke of herkenbare informatie worden verwijderd. Alle informatie die verzameld wordt, zal vertrouwelijk worden behandeld en wordt alleen behouden met als doel het doen van onderzoek binnen de Radboud Universiteit. Vertrouwelijkheid, privacy en anonimiteit zal dus gewaarborgd blijven in de verzameling, opslag en publicatie tijdens de studie. Om de privacy van deelnemers te beschermen zal identificeerbare informatie zoals namen, plaatsen, instituties en adressen worden vervangen met pseudoniemen wanneer een interview wordt getranscribeerd.

Is dit duidelijk en ga je hiermee akkoord?

Appendix C: Semi-structured interview guide first round

Questions asked after agreement to verbal consent form. Non relevant questions can be skipped and follow/up questions possible where more depth is needed, allowed by semi-structured guide.

Introduction questions:

Q: Could you introduce yourself and your job/work?

Q: Could you tell me about the organisation you work at or/and the business you own?

Q: Could you tell me about your experience in this industry?

AI general questions and explanation when needed:

Q: What do you know about AI and specifically AI image generators?

Q: Have you heard about Dall-E and if so what are your thoughts about it?

Q: Have you heard about Mid-Journey and if so what are your thoughts about it?

Extra questions if experience with AI image generators appear to be limited:

Q: Do you see yourself using this technology?

Q: If so, for what and how would you use it?

Q: Do you have questions surrounding this technology before starting the content related questions about AI image generators?

General explanation AI image generators (explain what has not been answered above):

AI text-to-image generators are a type of artificial intelligence (AI) system that are designed to generate new images based on words/input. It uses databases with billions of images to learn and create understanding based on the words and images in the database, and with this it generates new images. The advanced (diffusion models) versions popped up in the last years and they improved quickly when looking at quality and understanding. But to make this a success there is still 'skill' required to use the software appropriately. Input of words, ideas and refining could be defined as part of this 'skill'. These models don't copy or paste existing images, but learn the understanding and generate new images from scratch (Hypotenuse AI, 2023).

Topic - experience AI and experience AI image generators:

Q: Could you tell me about your first-time using AI (image generators)

Q: Could you tell me about your last time using AI (image generators)

Q: Could you tell me about the best result you had with AI (image generators)

Q: Could you tell me about the worst result you had with AI (image generators)

Q: Did you ever experienced a conflict (as a creator or receiver) because of this technology?

Topic - thoughts of using AI image generators (influence on identity of artists when using AI):

Q: Would/does using AI image generator technology change the perspective of you as an artist of yourself and why?

Q: How does the perception of you as an artist changes when you use AI image generators?

Q: How would you feel if others provide you with work that makes use of AI image generators?

Q: In what way could pride differ when using this technology?

Q: Does your perception (example the skill level, quality and sincerity) of an artist change if they use AI image generators?

Q: Does your perception (example skill level, quality and sincerity) of an organization change if they use AI image generators?

Q: What would be reasons to use this technology and why?

Q: What would be reasons to not use this technology and why?

Q: What is for you the biggest difference between an image created by humans without the help of AI (but with help of other technologies) and without help of AI?

Topic - Instruction/rules given by managers and clients:

Q: Do you think your managers and/or clients have a good understanding of AI Image Generators and why?

Q: Do managers and/or clients bring this topic up themselves, and if yes: how do they bring this up?

Q: What is the general opinion about using these technologies of your managers and/or clients (based on what they communicate with you)

Q: Do managers and/or clients give restrictions, instructions and/or rules concerning the use of these technologies?

Topic - Potential practices involving AI Image Generators in the future:

Q: Could AI Image generators be used in your professional field? To what extend and why?

Q: How would this technology best be used in a professional working environment?

Q: What will be needed for you to use of AI Image Generators on designs for your job?

Q: What would be consequences for you when using this technology on designs for your job?

Q: What would be consequences for your organization, when using this technology in your job?

Q: What are consequences for you when others are using this technology for their job?

Q: What would be consequences of not using this technology for you and your organization?

Topic: Photoelicitation (Heisley & Levy, 1991) (interviewee brings material AI if possible, if not possible interviewer brings examples: custom generated AI images and professional generated AI images)

If generated images by interviewee are available:

Show images, and tell that after looking at them, there will be questions asked about the images and the process surrounding the images.

Q: What was the purpose of this image and for what client (example purposes: brainstorm, sketches, intermediate/final product etc.)?

Q: What was the prompt used to generate, which AI technology used and approximately how many iterations did it take to end up with this product/image?

Q: Could you describe any other information about the process of creating this product/image?

Q: Were you and the client satisfied with the result and why?

Q: What (dis)advantages were created by using the generator?

Q: Could you tell any other information about this image?

If generated images by interviewee are not available:

Show images generated for their organization. Explain these have been made by the researcher without any experience in their industry and are don't have any iterations. Explain that after showing the images, some questions about these images will be asked.

Q: What are your first thought when seeing these images?

Q: What do you think about these images in terms of quality, attractiveness and delivering a message?

Q: Would there be any use for these images and why? (Don't only have to be as final products, give examples like brainstorm, sketches, intermediate/final product etc.)

Show examples of images generated by experienced users using multiple generations to improve them with some context.

Q: What are your first thought when seeing these images?

Q: What do you think about these images in terms of quality/attractiveness/delivering a message?

Q: Would there be any use for these images, how and why? (Don't only have to be as final products, give examples as brainstorm, sketches, intermediate/final product etc.)

Q: What do you think about the 'artist' behind these images?

Q: Do you think your managers and/or clients think comparable images would be sufficient if you generated these and why(not)?

These were all the questions of the interview. Are there any questions from you or subjects you want to make a comment about? If not, thank you for participating!