MASTER THESIS

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An exploratory study on the customer characteristics influencing the hedonic- and utilitarian experience with artificial image generation

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Preface

This is my Master Thesis which finalizes my master Business Administration, specialization in Innovation & Entrepreneurship, at Radboud University Nijmegen. Writing this thesis has had hectic and quieter moments. I would like to take this opportunity to express my sincere gratitude and appreciation to everyone who has helped me through this process.

First and foremost, I want to thank my supervisor Karim Sidaoui for his great guidance and support throughout this period. His expertise and commitment have been crucial in shaping this thesis and challenged me to expand the boundaries of my research. I am grateful for having the opportunity to discuss and ask questions whenever needed and for the critical view that encouraged me to deliver the best quality of work.

Secondly, I would like to express my gratitude towards Paolo Franco, the second examiner, who contributed to a great start of this journey during thesis circle meetings and by providing essential tips and feedback throughout the process. Next to that, I want to thank my fellow students and friends with whom I was able to discuss our work, support each other in chaotic times and share our experiences, which encouraged me every time. Lastly, I want to thank all respondents who participated in my research, making this study possible.

This Master Thesis is the result of several months of hard work. It is my hope that the findings of this study contribute to the existing body of literature and promote further research on this fairly new topic. I share this thesis with pride and have enjoyed conducting the research on this topic, which encourages me to further investigate in my future career.

Enjoy reading my work.

Timo van Hoof

Abstract

There is a substantial need for evaluating customer experiences with AI generated imagery for real-world systems and applications, since it is currently not clear what influences people's experiences with artificial image generation. This study aimed to understand customer experiences with artificial image generation, which is the automatic creation of artificial and fake content, to explore the customer characteristics that influence these experiences. Through a comprehensive literature review, seven potential customer characteristics have been identified. This abductive study followed an exploratory and qualitative approach by conducting 19 semi-structured interviews with participants who did or did not have any experience with artificial image generation, to explore these and potential other characteristics. With the use of template analysis, the characteristics have been analysed. These being: IT-related personal innovativeness, bias towards artificial intelligence, shared socio-cultural interpretations, previous experience with artificial intelligence, (un)familiarity with artificial intelligence, trust in algorithms, and desire for control. This research was first to study these customer characteristics in relation to the customer experience with artificial image generation. The findings of this research contribute to both customer experience (CX) and human-computer interaction (HCI) literature, and more specifically to artificial image generation (AIG) literature, by means of identifying potential customer characteristics, exploring if and how these characteristics influence CX with AIG, and exploring the outcomes of these experiences. Findings suggest practitioners to offer online tutorials that provide tips and tricks for generating good prompts with AIG, to integrate AI generated imagery in marketing practices whereby the role of AI is informed and the creativity and innovativeness is highlighted, and to consider the customer characteristics with other advanced technologies in marketing practices to create personalized, positive experiences. The findings indicate that these customer characteristics, to a greater or lesser degree, influence the customer experience with artificial image generation. Future research has the opportunity to further exploit this concept and understand the effects of customer characteristics on experiences with artificial image generation.

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1. Introduction

1.1 Artificial image generation

Artificial intelligence (AI) is one of the most recent and biggest technological developments in the consumer market (Sohn et al., 2020). Companies are increasingly showing interest in using generative AI, which is defined as algorithms, programs, machines and systems that show intelligence, for the production of creative outputs which are considered unique to humans (Shankar, 2018).

Recently, AI text-to-image generators became very popular because of its sophistication in creating images based on human natural language. Although this offers many possibilities and are considered exciting artifacts (Kietzmann et al., 2020; Vosoughi et al., 2018), AI image generators also rise a lot of criticism about ethical issues, impact, and concerns about the replacement of humans (Huang, 2022).

Artificial image generation (AIG) can be used for a wide range of applications (Salminen et al., 2022) and can change the way people use and experience technology (Stelmaszewska et al., 2004). Nevertheless, there is limited research on the impact of AIG on user experience (UX), and the impact and quality of AI-imagery on user perceptions is often ignored (Salminen et al., 2022; Wu & Wen, 2021). Similarly, as AI in advertising is still in its infancy, current research on AI advertising has examined AI predominantly from the perspective of advertising professionals (Wu & Wen, 2021). Though, it is already being used to enhance customer experiences (Whittaker et al., 2021).

1.2 Customer experience with AIG

Research on UX with technologies is receiving increasing attention as technological developments are changing the way people use and experience technologies (Stelmaszewska et al., 2004). The field of human-computer interaction (HCI) focussed on achieving the efficient, satisfying and effective use of technology. Interactions with different technologies in different contexts and how this affects the customer experience (CX) needs to be better understood (Stelmaszewska et al., 2004). Customers react differently towards new products and services, which could be influenced by certain customer characteristics (Midgley & Dowling, 1978). Specifically, there is a substantial need for evaluating CX with AI-imagery for real-world systems and applications (Salminen et al., 2022), since it is currently not clear what influences people's experiences with AIG.

As responses to offering-related stimuli and their outcomes evaluated depend on the customer, the situation and the sociocultural context, CX is subjective and context specific (Becker & Jaakkola, 2020). CX is perceived and should therefore be measured from the perspective of an individual's overall human experience (Fisk et al., 2020). Prior research on CX has mainly focussed on the antecedents and outcomes, rather than defining and understanding it as a holistic, complex and subjective phenomenon (Kawaf & Tagg, 2017).

Studies have focused on understanding the perception and attitudes towards AI-generated art (Hong & Curran, 2019), agency, authorship, intention with AIG (McCormack et al., 2019; Oppenlaender et al., 2023), and the potential bias towards it (Ragot et al., 2020). The latter has manifested in negative behaviours and attitudes towards the algorithm compared to a human agent (Jussupow et al., 2020) and could disrupt the acceptance of AI within customer service contexts (Dietvorst et al., 2015). This is becoming increasingly relevant and several studies have tackled its trustworthiness (Ene et al., 2019). Subjective tasks, such as creating artistic work, are perceived to be less suitable for machines (e.g., AI image generators) (e.g., Arriagada, 2020; Wu & Wen, 2021). This is mostly examined from the perspective of anthropomorphism when customers have direct interactions with AI programs, such as chatbots (Millet et al., 2023; Wu & Wen, 2021).

1.3 Research objective

Despite the importance of CX, as practitioners can only design for experience if they have an adequate understanding of it and its different aspects (Wright et al., 2005), limited academic research has been found around CX with AIG. In addition, it is not clear what characteristics influence their experience with AIG. Therefore, the aim of this master thesis is to fill this research gap by exploring what customer characteristics influence customers' experiences with AIG, ultimately in order for practitioners to be able to improve these experiences. This has resulted in the following research question:

What customer characteristics influence customer experiences with artificial image generation?

1.4 Relevance

There is scarce information about the practical impacts of generative AI on CX (Sohn et al., 2020). This research fills a research gap in CX and HCI literature, and more specifically AIG literature, by three means. 1) this study has identified customer characteristics that influence customer experiences with AIG. 2) this study explored if and how these

characteristics influence customer experiences with AIG by means of their hedonic and utilitarian value of the experience. 3) this study explored the outcomes of these hedonic and utilitarian value of the experiences.

It is important to explore the influence of technology on CX (Ostrom et al., 2021). AI is believed to be the future of our society by practitioners and academicians (Verma et al., 2021). Creating meaningful CX may provide a significant opportunity for companies to differentiate itself from competition (Pine & Gilmore, 1999) and have customers accepting new technologies (Davis, 1989). It is one of the most important factors contributing to a company's profitability (Popa & Pelau, 2016) and according to marketing scholars the fundamental basis for marketing management (Becker & Jaakkola, 2020; Lemon & Verhoef, 2016).

The findings of this study are relevant to practitioners in order to successfully implement AIG technologies by developing appropriate strategies (Wu & Wen, 2021) that will enhance CX outcomes (Becker & Jaakkola, 2020) by realizing the openly appreciation of AI-imagery, expanding the level of enjoyment with it (Millet et al., 2023), and accelerate the diffusion process (Valente & Davis, 1999).

1.5 Outline of the thesis

This report consists of seven chapters. This introduction covers chapter 1. Chapter 2 provides theoretical background regarding the stated problem, including a conceptual model. Chapter 3 discusses the methodology for data collection and analysis and research ethics. Chapter 4 covers the results of the data analysis, in which chapter 5 provides a discussion including the theoretical contributions, practical implications, limitations of the present study and suggestions for future research. Chapter 6 contains the references used and chapter 7 consists of the appendix, including the interview guide, data analysis procedure, consent forms, and statistical information about the interviews.

2. Theoretical background

This chapter contains a literature review describing the key concepts regarding the research question. Propositions are derived from the findings of scholarly literature. Based on the proposed relationship between these concepts, a conceptual model has been developed to reflect the identified problem. It describes the potential customer characteristics that influence CX with AIG and the concept of CX.

2.1 Customer characteristics

Customer characteristics are essential factors that influence how one experiences AIG (Wu & Wen, 2021) and can vary between individuals, differing in how they consume, perceive, and associate experiences (Adhikari & Bhattacharya, 2016). According to HCI literature, the perceptions of humans determines how they react to AI and AI-created content (Sundar, 2020). While customers want to enhance their quality of life and productivity (Yi et al., 2006), new technologies are increasingly becoming a substantial part of everyday life (Venkatesh, 2006). Attitudes are driving customers' decisions towards using new technologies, which are defined by beliefs (Agarwal & Prasad, 1998; Lewis et al., 2003). People seek both sensory and cognitive experiences (Venkatraman & Price, 1990) and affective and cognitive beliefs are essential determinants for new technology use (Bakke & Henry, 2015). Understanding the impact of such customer characteristics on their experience with AIG might contribute to the successful migration of AIG into mainstream use (Bakke & Henry, 2015). The concept of CX is further elaborated on in chapter 2.2 Customer experience (CX).

2.1.1 IT-related personal innovativeness

Technological advancements have led to development of innovative IT products and services, utilised for both professional and personal use (Bakke & Henry, 2015). Everyone, to a greater or lesser degree, possess IT-related personal innovativeness (PIIT). This personality trait is the willingness to test any new technology, regardless of the consequences. Those most likely to use such products or applications as one of the first generally show a high level of PIIT (Midgley & Dowling, 1978) which is found to directly influence perceived usefulness and perceived ease of use (Lewis et al., 2003; Yi et al., 2006). These individuals frequently serve as opinion leaders accelerating the diffusion process, which makes it important to know what drives this part of society to adopt such new technologies (Valente & Davis, 1999).

Such drivers are based on the fulfilment of sensory and cognitive experiences (Venkatraman & Price, 1990) such as affective beliefs like perceived visual attractiveness or perceived enjoyment (Agarwal & Karahanna, 2000), and often influence the user acceptance of technologies (Wells et al., 2010). Using the technology acceptance model (TAM) framework, Davis et al. (1992) discovered that behavioural intention to use a technology is driven by curiosity and intrinsic motivation. Literature has operationalized intrinsic motivation as enjoyment (Chin & Gopal, 1995; Davis et al., 1992), excitement (Atkinson & Kydd, 1997) and computer playfulness (e.g., Venkatesh, 2000; Webster & Martocchio, 1992). The latter refers to a person's propensity to have a spontaneous interaction with a computer (Webster, 1989). As one gains experience in using a specific technology over time, their playfulness towards it might vary (Hackbarth et al., 2003). Personal innovativeness related to IT might thus influence the customer experience, resulting in the following proposition:

> *P1: Behavioural intention to use a technology is driven by intrinsic motivation, which might increase customers' PIIT resulting in a positive influence on their hedonic- and utilitarian experience with AIG.*

2.1.2 Bias towards artificial intelligence

Biases towards AI, computers and machines are generally cited in human-computer interaction (HCI) studies. Based on a wide-scale experiment by Ragot et al. (2020), artworks presented as AI-generated were less well evaluated as novel, meaningful and beautiful compared to those presented as drawn by humans. According to the 'uncanny valley of mind" theory, some individuals experience a sensation of eeriness or disturbing feelings if the human likeness is almost realistic and overlaps with what is perceived as human distinctiveness (Stein & Ohler, 2017). Human likeness of machines could thus cause unpleasant cognitive dissonance (MacDorman & Ishiguro, 2006; Wu & Wen, 2021) and scepticism about the use of AI (Lee & See, 2004). The social identity theory justifies these feelings by individuals' social identification to negatively response when the uniqueness of humans as an in-group is threatened by the existence of an out-group (i.e., the AI image generators) (Ferrari et al., 2016; Ragot et al., 2020; Tajfel, 1982). However, this is primarily examined from the perspective of anthropomorphism (granting human characteristics of features to non-humans) (Sundar, 2008) in direct interactions between humans and AI programs like chatbots (Araujo, 2018; Wu & Wen, 2021). People's ontological security concerns create a profound psychological threat (i.e., the fear of being replaced by robots) (Millet et al., 2023) and AI acceptance can be retained by

the preferential treatment of humankind over other species (Schmitt, 2020), the perception of tasks as more human, such as artistic creativity (e.g., Arriagada, 2020; Hennessey & Amabile, 2010), and in products with higher symbol value (Granulo et al., 2021). The bias towards AI could therefore have a negative effect on the utilitarian experience as it might be perceived as not useful.

Findings by Millet et al. (2023), focusing on anthropocentric bias in the appreciation of AI art suggest that the bias against AI artistic creation is expressed in cognitive (reduced perception of creativity) and emotional (reduced experience of awe) manners, whereby the former explains the effect of the latter. According to scholarly literature (Campbell et al., 2022; Oppenlaender, 2022), an artifact is creative if it is both original and effective/relevant. Originality refers to its uniqueness, unusualness, and novelty. Effective/relevant refers to its appropriateness as well as its usefulness and applicability to customers' preferences and needs, which might affect the utilitarian value (Choi et al., 2014). This definition takes a product focused view as the measurement requires an observable artifact as the outcome of the creative process (in the current study: AI-generated images). Peoples believe that creativity is unique to humans perceive AI-made labelled work as less creative than human-made. This subsequently resulted in a reduced experience of awe (Millet et al., 2023), which might negatively influence their hedonic experience. Nevertheless, AI-made and human-made art are often indistinguishable (Elgammal et al., 2017), and AI-art is even winning prizes (Roose, 2022). Therefore, perceived creativity might influence the customer experience, leading to proposition 2:

> *P2: Customers' bias against AI can result in the perception that AI art is not creative, which might have a negative influence on their hedonic- and utilitarian experience with AIG.*

2.1.3 Shared sociocultural interpretations

Following up on the previous paragraph, it is important to understand how customers process information and form their individual subjective perceptions within a larger sociocultural context. Thoughts, experiences and expectations are shaped by the cultural lens. Thus, the way society makes sense of the world is changed over time when individuals share and externalize their subjective interpretations. How a society makes sense of an artifact is referred to as 'meaning' (Kietzmann et al., 2020). It is assumed that individuals have equivalent

beliefs about AI when looking at the overall intelligence of AI and its types of skills (such as analytical or socio-emotional) (Castelo et al., 2019), which may change over time (Sohn et al., 2020). When it comes to disruptive technologies and change in general, young people are typically more tolerant and accepting (Ene et al., 2019). Among members of Generation Y (1980-1999) (Cooper et al., 2012), AI is socially desirable and social value is higher when artifacts are labelled with AI-made (Sohn et al., 2020). In TAM 3 (Technology Acceptance Model) (Venkatesh & Bala, 2008), social influence is pointed out as an external determinant and social norm as a powerful predictor of perceived enjoyment (i.e., hedonic value) and perceived usefulness (i.e., utilitarian value) (Dickinger et al., 2008). The sociocultural interpretations about AIG might thus might influence the hedonic and utilitarian experience. This leads to the following proposition:

> *P3: Customers shared sociocultural interpretations can as well positively as negatively influence their hedonic- and utilitarian experience with AIG, depending on how their shared subjective perceptions about the technology are shaped.*

2.1.4 Previous experience with artificial intelligence

Previous experiences with robots are expected to influence customers' reactions to AI created media. This is because people tend to base their interpretation of the process of AI media creation on some analogous, more familiar things, which include robots, computers, and machines. In particular, robots are seen as being closer to AI. This partially comes from the fact that entertainment media like video games and movies are representing robots as being very intelligent (Sundar et al., 2016; Wu & Wen, 2021). The perceived usefulness of robots could be substantially influenced by the previous experiences (Sundar et al., 2016) and the perception that a technology is easy to use is positively related to the amount of experience a customer has about the technology (Igbaria & Iivari, 1995). According to the human-AI interaction (HAI) framework, psychological effects of AI-related heuristics could be affected by previous experience of AI or AI-like (Sundar, 2020). These previous (direct or indirect) experiences might also result in a feeling of uneasiness with robots (Wu & Wen, 2021). This results in proposition 4:

> *P4: Customers' previous experiences with AIG can as well positively as negatively influence their hedonic- and utilitarian experience with it.*

2.1.5 (Un)familiarity with artificial intelligence

A reason people feel uneasy with technologies that feature some levels of intelligence might be due to the fact that they are unfamiliar with these technologies. This is because they lack engineering and computational knowledge, which makes sense of these technologies. When people interact with AI, they are therefore more likely to rely on stereotypes of machines and robots. According to HAI literature these stereotypes have both positive and negative aspects, which explains the uneasiness with robots (Wu & Wen, 2021). Members of Generation Y (Cooper et al., 2012) are usually tech-savvy (Bannon et al., 2011; H. Lee et al., 2020) and knowledge about AI might positively affect customers' responses towards it (Millet et al., 2023; Sohn et al., 2020) and their buying behaviour (Tanner & Wölfing Kast, 2003). The hedonic-motivation system can explain customers' positive assessment of GAN-generated design in terms of curiosity and joy, as well as perceived usefulness and ease of use (Lowry et al., 2012; Watson et al., 2018). As users gain more knowledge and confidence with a system through direct experience, they generally perceive a system easier to use (Hart & Milstein, 2003). This characteristic, however, differs from previous experience with AI in that the engineering and computational knowledge could also be acquired in other ways than direct experience with it (such as reading or hearing about it). Whereas previous experience with AIG might not necessarily lead to enhanced engineering and computational knowledge. Customers' (un)familiarity with AIG might thus influence their experience with it, creating proposition 5:

> *P5: Customers with engineering and/or computational knowledge about AIG might have a better overall hedonic- and utilitarian experience with AIG than those who do not understand the technology behind it.*

2.1.6 Trust in algorithms

People often rather want to rely on humans than algorithms, even if algorithms would provide a better overall outcome. This is because individuals are more tolerant to mistakes made by humans when compared with algorithms, and would thus more likely abandon an algorithm based decision-maker (Dietvorst et al., 2015). In addition, people place less trust and reliance in algorithms for completing subjective tasks, which require emotional perception and interpretation and intuition (Castelo et al., 2019; Wu & Wen, 2021), which might affect their perceived usefulness of the technology (Choi et al., 2014). The next generation of fake news is represented by deepfakes and GANs, which pose a challenge to the trust in online information

since it is very 'true to life' (Whittaker et al., 2020). The capacity of digital content to accurately depict humans (e.g., the use of humanistic physical features, voices and faces) – such as is the case with deepfakes (Whittaker et al., 2021) - is referred to as human realism. The perceived realism is essential as the feeling of authenticity might increase trust (Sundar & Shyam, 2008), creating positive feelings and therefore enhance the hedonic value (Sundar & Kim, 2019), leading to the following propositions:

P6: Customers' trust in AI image generators to be able to create the desired content might affect their hedonic- and utilitarian experience with AIG.

P7: Customers' trust in digital content is affected by the capacity of AIG to accurately depict humans, which might affect their hedonic- and utilitarian experience with AIG.

2.1.7 Desire for control

People strive to meet their fundamental psychological needs of autonomy and competence (Deci, 1975). They have greater enjoyment with activities and their behaviour is likely to continue when these needs are met (Deci & Ryan, 2000). Control is an intrinsic requirement of life (Adler, 1930) manifested through autonomy. This is a person's need to have control over their surroundings and their outcomes to some extent (De Charms, 1983; Martínez-López et al., 2014). This desire is perceived universal, but the intensity might vary significantly from person to person (Bakke & Henry, 2015). Intrinsic motivation drives their engagement in a task and as long as they perceive to be in control, they are content (Burger, 1992). When the balance between the amount of control desired and the amount of control possessed distorted, discomfort and distress arise (Logan et al., 1991). User control is perceived to be a key determinant of ease-of-use and usefulness (Choi et al., 2014). As AI image generators are perceived to have some level of autonomy (e.g., Ene et al., 2019), the perceived ease of use might by affected for those desiring a large amount of control (Liu & Liao, 2021) and a feeling of discomfort or distress might influence the hedonic experience (Wu & Wen, 2021). This leads to the final proposition:

P8: Customers with a high desire for control possess a feeling of discomfort and distress with the autonomy of AI image generators, which might affect their hedonic- and utilitarian experience with AIG.

2.2 Customer experience (CX)

Customer experience (CX) has gained significant attention in marketing research as well as practice. CX is perceived as central to a firm's competitiveness (Becker & Jaakkola, 2020). Next to that, it is called the fundamental basis for marketing management (Homburg et al., 2017; Lemon & Verhoef, 2016). Technological advancements are changing the way people use and experience technology (Stelmaszewska et al., 2004). However, little research is done on the impact of AIG on UX and design applications (Salminen et al., 2022). Understanding CX is of paramount importance for service organizations when aiming to successfully co-create value with their customers (McColl-Kennedy et al., 2015). This has resulted in a strong increase in academic literature across many different literature fields and significant improvement in theoretical understanding regarding this concept. Becker & Jaakkola (2020, p. 637) suggest to define CX as "*nondeliberate, spontaneous responses and reactions to particular stimuli*" by which CX is separated from the stimuli that customers react to and the conscious evaluation followed by it.

2.2.1 Dimensionality of an experience

CX is subjective and context specific as responses to offering-related stimuli and their outcomes evaluated depend on the customer, the situation and the sociocultural context (Becker & Jaakkola, 2020). Thus, CX with AIG might be different based on 1) different customer characteristics (Jain et al., 2017) and 2) the innovativeness of AIG being a different context (Jain et al., 2017; Ragot et al., 2020). De Keyser et al. (2020) have identified three building blocks containing twelve basic CX components. These building blocks are Touchpoints, Context, and Qualities (TCQ). The latter entails the attributes that reflect the nature of customer responses and reactions to interactions with the company, distinguished by five qualities: participation level, time flow, dimensionality, ordinariness, and valence (De Keyser et al., 2015; Keiningham et al., 2020). Dimensionality of an experience is the most established CX quality in literature. This quality is based on a customer's emotional, sensorial, cognitive, behavioural and social responses to a company's offerings across the customer journey (De Keyser et al., 2020; Lemon & Verhoef, 2016). Today's research widely acknowledges the emotional and cognitive dimensions of CX (De Keyser et al., 2020), which often influences the acceptance of technologies (Wells et al., 2010).

2.2.2 Hedonic and utilitarian value

Schmitt (1999) has identified five elements of CX: sensation (sense), affective (feel), thought (think), activity (act) and social-identity (relate). According to literature, focusing on the feeling element will address managerial research priorities of (1) improving emotional experiences (Temkin, 2018) and (2) establishing strong emotional connections between customers and companies (Marketing Science Institute, 2018; Sidaoui et al., 2020). Since CX is perceived, it should be measured from the perspective of an individual's overall human experience, whereby feelings relating to outcomes of service encounters are holistically connected (Fisk et al., 2020) and should be treated as a continuous phenomenon which occurs in- and outside the service context (Fisk et al., 2020; Lemon & Verhoef, 2016). Sidaoui et al. (2020) state that the CX element feelings consists of three sub-elements: mood, emotion and hedonic value. The latter refers to context-specific feelings (Sidaoui et al., 2020), after having experienced the service (Lemon & Verhoef, 2016). Opposite to hedonic value, utilitarian value is about the usefulness of consumption, is necessity oriented (Babin et al., 1994) and is the goal-related aspect of the technology acceptance model by (Davis, 1989). The products' practical and rational benefits yield the utilitarian dimension (Afonso Vieira et al., 2022; Voss et al., 2003). Literature has defined satisfaction, loyalty, and word of mouth as outcome variables in CX (Becker & Jaakkola, 2020; Williams et al., 2020) whereby CX drives satisfaction, which in turn drives loyalty (e.g., Shankar et al., 2003).

2.2.3 Hedonic experience

There is a need for better understanding how customers interact with different types of technology in different contexts and how their hedonic experience (HE) is affected by these contexts (Stelmaszewska et al., 2004). The hedonic value perceptions of customers related to certain products and services could be of importance for establishing their behavioural intentions (Dedeoglu et al., 2018), what creates experience, and how it can be designed (Stelmaszewska et al., 2004). These context-specific feelings are pleasure, excitement, fun, enjoyment and happiness (Stelmaszewska et al., 2004) and are likely to affect the user acceptance on technologies (Bakke & Henry, 2015; Wu & Wen, 2021).

Stelmaszewska et al. (2004) identified four sets of determinants of HE in the context of technology which are: interactivity-social element, appealingness, usability/functionality and

novelty. Usage of the technologies mostly occurred outside the work environment, which is in line with the focus of this research.

Interactivity-social element concerns issues such as sense of affiliation, interactivity with others and functions that are used in social context. Being an owner of a very advanced technology brings pleasurable experience. People performing different activities when sharing technology leads to experiencing excitement or pleasure and they take great pride in their artifacts, especially when it attracts the interest of outside observers (Stelmaszewska et al., 2004).

Appealingness consists of two attributes: aesthetic and physical factors. Aesthetic factors refer to the attractiveness of the technology, whereas physical factors refer to the size (weight) and a feel in one's hand. The latter obviously concerns a physical product. The former, however, can also refer to e.g., a clean webpage layout and appropriate colours, just like AI image generators. These attributes are instrumental in creating pleasurable devices (Stelmaszewska et al., 2004).

Usability/functionality relates to how efficient and usable the technology is, how easy and stress free the learning process and interaction between the customer and the technology is, and how useful the functions of the technology are in helping in one's activity, which is the utilitarian value (Davis, 1989). It is of high importance in relation to goal-oriented usability as well as in the context of HE, as it has a direct impact on happiness and pleasure (Stelmaszewska et al., 2004).

Novelty concerns a sense of surprise, a sense of discoveries and an element of novelty. This is, AI generating appealing art as one did not expect (Campbell et al., 2022) and finding, learning, or observing new features of technology for the first time and is linked to joy and curiosity. Curiosity allows one to be absorbed to novelty and is essential to experiencing pleasure (e.g., Csikszentmihalyi, 1990) and positively related to customers' PIIT (Bakke & Henry, 2015). For a system to be perceived as enjoyable or fun to use, it needs to be novel, surprising, and interesting (Hassenzahl et al., 2000).

2.2.4 Utilitarian experience

Utilitarian consumer behaviour is task-related, rational and ergic (e.g., Babin et al., 1994; Batra & Ahtola, 1991). Utilitarian, as opposed to hedonic, consumption is more cognitively driven, reflecting functional benefits, based on instrumental and functional goals, and is determined by to what extent a product is a tool to achieve a goal (e.g., Botti & McGill, 2011; Holbrook, 1994). According to the technology acceptance model (TAM), two beliefs determine user behaviour, being usefulness and ease-of-use (Davis, 1989). These elements are essentially utilitarian and influence the attitudes of users towards using it (Dimitrijević & Devedžić, 2021). However, this can have a direct impact on HE (Stelmaszewska et al., 2004). According to Sun and Zhang (2006), perceived ease-of-use is more relevant for entertainment-oriented technology, whereas perceived usefulness has greater relevance for work-oriented technologies. These values could thus depend on the perceived goal of using AIG.

Perceived usefulness is often conceptualized as extrinsic motivation emphasizing outcomes that can be obtained from the use of a particular technology instead of the use of the technology itself (Davis et al., 1992). Therefore, the usefulness of a technology constitutes the utilitarian value which users are trying to obtain from using AIG (Choi et al., 2014).

Perceived ease-of-use refers to "the degree to which a person believes that using a particular system would be free of effort." (Davis, 1989, p. 320). It supports users in achieving utilitarian value from the use of AIG (Davis et al., 1992). A system is perceived as easier to use by users as they acquire more confidence and knowledge with it through direct experience, as proposition 4, previous experience with AI, suggests. This perception thus changes favourably over time (Hackbarth et al., 2003).

2.3 Conceptual framework

The concepts from the literature review constitute the foundation for a conceptual framework which can be seen in Figure 1 below. This framework consists of seven customer characteristics that influence the hedonic- and utilitarian experience with AIG, which in turn affect the CX outcomes.

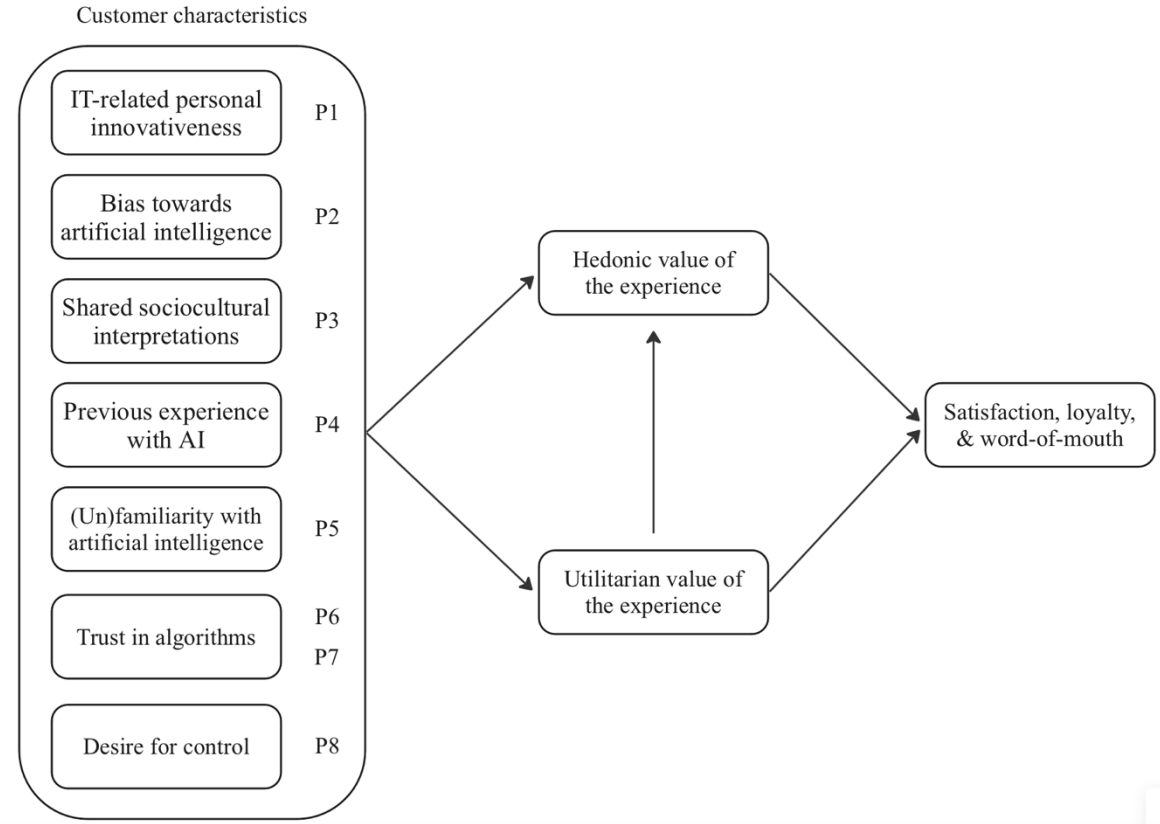

Figure 1 conceptual framework

3. Methodology

This chapter outlines the research strategy, research design, method for data collection, data analysis procedure, and how research ethics are addressed.

3.1 Research strategy

This exploratory, qualitative study tried to explore what customer characteristics influence the experiences with AIG in terms of hedonic and utilitarian value. This research is interpretative in nature as it tried to understand the phenomenon of CX as a social construct through the meanings people assign to them (Orlikowski & Baroudi, 1991). As this study tried to understand a specific subject in depth which is a relatively new topic, exploratory research is the most appropriate approach (Stevens et al., 2013). The data collection method was semi-structured interviews as it allows to gather rich data from people (Schultze & Avital, 2011). This involves a list of predefined questions. In this study, these have been asked in a pre-defined order to explore the concept of bias towards algorithms, as some questions have been asked twice, before and after the demonstration. This structure for interviews allowed for improvisation in terms of additional questions and room for extra input from interviewees, whereby the researcher could elaborate on their thoughts (Kallio et al., 2016). This could help explore any new concepts different from the *a priori* themes (**Error! Reference source not found.** below) (Braun & Clarke, 2012).

3.2 Research design

As this study moved back and forth between the existing literature and the newly collected data, it was, so called, abductive in nature (Bleijenbergh, 2015). An interview guide has been developed for the semi-structured interviews, including questions and instructions. This design allowed the researcher to explore feelings, perceptions, and experiences of respondents (Kallio et al., 2016). With several iterations, including a trial interview with a fellow student and some tweaks during the first three interviews, the final interview guide had been developed, which has been used for all other interviews. The guide was originally written in English, which can be found in Appendix 1 – Interview guidelines. It has been translated to Dutch for the interviews to enhance the richness of the data as respondents could answer freely in their native language (Bleijenbergh, 2015). The interview questions were developed on the concepts and corresponding propositions found in **Error! Reference source not found.** below.

Table 1 Concepts & propositions

Concepts		Propositions
IT-related personal innovativeness	1	Behavioural intention to use a technology is driven by intrinsic motivation, which might increase customers' IT related personal innovativeness resulting in a positive influence on their hedonic- and utilitarian experience with AIG.
Bias towards AI	2	Customers' bias against AI can result in the perception that AI art is not creative, which might have a negative influence on their hedonic- and utilitarian experience with AIG.
Shared sociocultural interpretations	3	Customers shared sociocultural interpretations can as well positively as negatively influence their hedonic- and utilitarian experience with AIG, depending on how their shared subjective perceptions about the technology are shaped.
Previous experience with AI	4	Customers' previous experiences with AIG can as well positively as negatively influence their hedonic- and utilitarian experience with it.
(Un)familiarity with AI	5	Customers with engineering and/or computational knowledge about AIG might have a better overall hedonic- and utilitarian experience with AIG than those who do not understand the technology behind it.
Trust in algorithms	6	Customers' trust in AI image generators to be able to create the desired content might affect their hedonic- and utilitarian experience with AIG.
	7	Customers' trust in digital content is affected by the capacity of AIG to accurately depict humans, which might affect their hedonic- and utilitarian experience with AIG.
Desire for control	8	Customers with a high desire for control possess a feeling of discomfort and distress with the autonomy of AI image generators, which might affect their hedonic- and utilitarian experience with AIG.

The interviews started with an introduction on the purpose of the research, the topic, and the proposed time for the interview. Consent for recording the interview has been asked with the use of the written or verbal consent form (Appendix 2). The latter is used in case of online interviews (N=2 in this study), in which the verbal consent is recorded. The ethical issues will be discussed, including the informing of the respondents' rights.

3.3 Data collection

The unit of analysis in this study are individuals who have or have not seen and/or used AIG before. The variety of the respondents, including age, gender, and professional background, helped explore potential customer characteristics by a means of differences in the observed outcomes. The criterium for selection was therefore to find a diverse population. This has been attempted to accomplish using convenience sampling. A downside of this method is that it possibly does not promote external validity (Sedgwick, 2013).

In the period of May 1st to May 26th 2023, 19 interviews have been conducted (no interviews were excluded). Two of which were conducted via the online video-conferencing platform Microsoft Teams (Microsoft, 2023b), as it was found hard to schedule the interview. The remaining 17 interviews have been conducted face-to-face. All interviews have been audio recorded using a smartphone or the record function in Microsoft Teams (Microsoft, 2023b). Prior to the interviews, the respondents have been informed about any ethical issues and their rights during and after the interview, which can be found in Appendix 2 – Consent forms for interviews. Appendix 3 – Table of interview respondents contains a table with statistics about the interviews.

Questions were related to the experiences and perceptions respondents had with AI text-to-image generators and AI generated images. CX are defined as spontaneous responses and reactions, which propose that timing is a relevant issue for measurement. Becker and Jaakkola (2020) recommend to capture customer responses right after their interaction with the artifact. Therefore, this study showed a demonstration of Midjourney, an AI text-to-image generator (Ruskov, 2023), and several AI-generated images. A demonstration of the tool has been showed instead of having respondents test the tool live because the skill of good text prompting requires some knowledge (McCormack et al., 2023), which respondents are expected to lack if they have not used any AI text-to-image generators before. Better perceived images can result by the practice of elaboration and refinement of the text prompts (McCormack et al., 2023). A life demonstration or test could therefore negatively affect CX. Instead, the pre-recorded demo showed several possibilities with prompting including the results and followed options. Hereafter, a few AI-generated images have been showed, varying in optically realistic and non-realistic, with and without humans and with and without ‘mistakes’ as it comes to optically realistic imagery.

3.4 Data analysis

All interviews were transcribed verbatim using the dictate function in Microsoft Word Online, which automatically transfers speech to text (Microsoft, 2023a). These transcripts have been completely checked and mistakes were corrected. In this way, the researcher started to familiarize himself with the data by hearing and reading the interviews again. Any information that could identify the interviewees has been anonymised using pseudonyms.

To systematically identify, organize, and offer insight into the patterns of meaning (themes) across the data set, the method of thematic analysis has been used. With this method it is possible for the researcher to find and make sense of shared experiences and meanings, which helped identifying patterns relevant for answering the research question (Braun & Clarke, 2012). To systematically analyse the data, the six phases approach by Braun & Clarke (2012) has been applied, which can be seen in Figure 2 below. The full elaboration of this process can be found in Appendix 2 – Data analysis procedure.

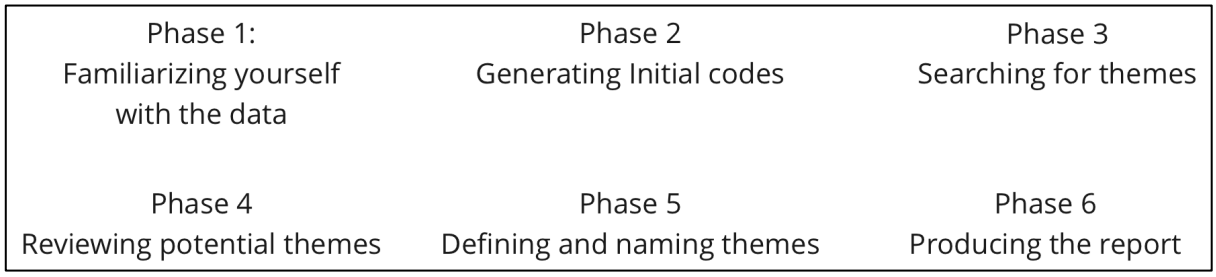

Figure 2 Six phases of thematic analysis (Braun & Clarke, 2012)

3.5 Research ethics

The American psychological Association has provided five general principles as guidance and inspiration for the very highest ethical ideals, used for this study (Americal Psychological Association, 2017).

Beneficence and nonmaleficence. The welfare and rights of those with whom has been interacted in relation to the research were safeguarded and there is taken care of to do no harm. The researcher has prevented any factors resulting in the misuse of his influence. The obtained data from the interviews, including audio recordings and transcripts, were confidentially and safely stored on the researcher's OneDrive account of the University, without possible access by others without consent (Americal Psychological Association, 2017).

Fidelity and responsibility. Relationships of trust has been established with anyone there has been worked with. The researcher followed ethical norms and took responsibility for his actions if applicable. In order to serve the interests of those he worked with, he will refer to, cooperate with or consult with his thesis supervisor (Americal Psychological Association, 2017).

Integrity. The researcher tried to promote honesty, truthfulness and accuracy in the research. There was no intentional misrepresentation of facts. Any resulting mistrust or other harmful effects that arose from the research techniques is taken responsibility for to correct (Americal Psychological Association, 2017).

Justice. The researcher exercised reasonable judgment and prevented unfair practices by any potential biases, the limitations of his expertise, and the boundaries of his competence (Americal Psychological Association, 2017).

Respect for people's rights and dignity. The rights of individuals to confidentiality, self-determination, and privacy and the worth and dignity of all people has been respected. The participants have been asked for their consent to audio-record the interviews and they were informed about their right to withdraw from the study at any time without consequence. The verbal and written consent forms including the privacy terms can be found in Appendix 2 – Consent forms for interviews. Anonymization of identifiable personal data in the transcripts has been done before further processing the data (Americal Psychological Association, 2017).

4. Results

This chapter discusses the results of the data analysis containing eight sections, each responding with one customer characteristic which can be found in Figure 1, Chapter 3, and the final section devoted to the CX outcomes. The results are substantiated with a selected number of quotes, which are translated from Dutch to English.

4.1 IT-related personal innovativeness

Out of 19 respondents, 31.6% (N=6) mentioned to have a high need to test new technologies when these are introduced. 26.3% (N=5) had an average need to test new technologies and mainly found new technologies interesting but needed societal affirmation before using it themselves. Respondent 4 (female, 55) stated:

> "I don't feel the need to test that myself. I am interested in new technology, but then I often follow someone else in it. […] I'm not a leader in that. […] It is interesting and I would like to keep up and I would also like to try it out, but I won't quickly come up with that myself."

100% of the respondents perceived AI image generators easy to use and 94.7% (N=18) perceived it to be useful. However, prior to the demonstration, only respondent 15 (female, 26) mentioned she would use the program as she perceived it as useful for her job. 8 respondents mentioned they would (currently) not use it (again) as they currently don't need it. After the demonstration, 84.2% (N=16) said they would use the program (again), whereby those with a low need to test new technologies often would use it as they perceived it to be useful and those with a high(er) need to test new technologies more often would use the program again out of curiosity and for the fulfilment of joy and pleasure.

All 19 respondents were found to have positive and negative feelings with AIG, which made it hard to express their feelings. Respondent 7 (male, 26) said:

> "It can make for funny pictures but of course it can also be harmful. So of course, it has two sides. On the one hand it is fun and new and everybody thinks something of it, but on the other hand it can also be used negatively. So, you have to be careful with that, I think."

9 out of 11 respondents with an average to high PIIT mentioned AI imagery is fun or AI image generators are fun to use, relative to 1 out of 8 respondents with a low PIIT. Respondent 16 (female, 59), with a high need to test new technology, mentioned:

> "How funny. See, I like this. Look, I'm getting excited already, right?"

4.2 Bias towards artificial intelligence

The bias towards AI is built by the perception that AI, or computers in general, are not creative. Disturbing feelings arise when AI performs tasks that are perceived to be unique to humans, such as creating creative pieces. 52,6% (N=10) perceived AI to not be creative. 3 of them changed their minds after seeing the demonstration, thinking it is creative, two being positively surprised and one thinking it is unfortunate.

In general, respondents had a positive feeling, such as a feeling of security, with the fact that AI could not be creative, such as respondent 16 (female, 59):

> "[…] I don't think it is creative itself, but it is going to combine things, but I don't think creativity comes with that. I don't think that's possible. […] In itself, I don't think that is a bad thing, because then you still feel like you're the creative one, because you are going to come up with things on your own and that it then does something with that. So, you do have to give that creative input."

However, after the demonstration, 84.2% (N=16) appointed that AI-generated imagery is creative, mainly because it looked realistic and therefore called looking good. This change in perception shows a bias towards AI before experiencing AIG. This perception created mixed feelings comprised of a sense of surprise and a feeling of amazement and conversely a feeling of fear and distrust. These feelings were found to be intensified in both directions after the demonstration. The capacity of AI to be creative resulted in a fear that the authenticity and added value of humans will disappear, as it becomes better, easier to use and more useful. For those whose job is perceived to be affected, were more negatively about the developments of AI. Next to that, realistic humans in AI-generated imagery were perceived to be harmful by 100% of the respondents and considered as scary, whereas imagery which were clear to be AI-generated were perceived as funny and nice.

4.3 Shared sociocultural interpretations

It is found that there are overall shared perceptions about AIG. All respondents had positive as well as negative feeling with AIG. This resulted in not finding any differences in shared interpretations between the younger and older generation. All respondents thought AI image generators were easy to use and to some extent useful, either for themselves or their environment. The usefulness of AIG was determined in relation to professions. Jobs and industries which were mentioned AIG could be useful for were: photography, artistic professions, architecture, movie industry and digital marketing. 63.2% (N=12) mentioned to have talked about AIG or AI in general with their environment. Only two of them said they did not agree with their environment. This was because of two perceptions: one is that they talked to a different generation and two is that people who are not using (new) technologies on a regular basis perceive it to be more scary or harmful.

All respondents perceived AIG to be desirable. It was also perceived to be fun by 9 respondents, referring to the imagery being funny and AI image generators being fun to use. AIG was called cool 33 times in total by 10 respondents with the oldest respondent being 32 years old.

On the negative side, however, 100% of the respondents perceived that AIG could do harm, mainly because AI-imagery is perceived to be indistinguishable from real photos. As a result, respondents pointed out to be afraid that AIG could be used with wrong intentions, such as creating a photograph of a situation that did not happen. A feeling of fear was expressed 42 times in total by 73.7% (N=14) of the respondents. Regarding the realistic imagery, respondent 12 (male, 56) said:

> "Definitely. I think the risks are very high, and especially because people often believe what they see and don't think beyond that […] So, you know, no, I think there's definitely a big risk to the harmfulness."

4.4 Previous experience with artificial intelligence

Only 26.3% (N=5) of the respondents said they had previously used AI image generators, of which two respondents experienced it during a demonstration at work. The oldest respondent was 33 years old. These respondents acknowledged, prior to the demonstration in the interview, that AI image generators are easy to use as they had seen it work. However, they

perceived them to be not very useful. This was mainly because they perceived AIG to be in an early stage and not being able to create imagery to expectations.

A few respondents who had seen AI-generated imagery before, were not surprised from the imagery in the demonstration as they were familiar with how realistic these could look. However, most respondents who had seen AI-generated imagery before, were still surprised after the demonstration. This was because the image generators are found to improve rapidly, showing better (often mentioned: more realistic) imagery than before. Similarly, 42.1% (N=8) was not surprised by the privacy policy as they acknowledged personal data is used almost everywhere nowadays.

It is found that the trust in algorithms to perform certain tasks is also positively related to the amount of previous experience with AI. Some respondents who mentioned to have used ChatGPT, an AI chatbot that creates humanlike conversational dialogues (Lund & Wang, 2023), perceived AIG to be very similar and therefore expected it to also be easy to use and useful. Respondent 13 (male, 21) explained:

> "Because I... My personal experience is often though that an AI is still many times beyond the intelligence of humans. And what you pointed out, the term that the AI is still learning it itself by doing and the more it's used, the more intelligent and the smarter it becomes, and so it can also give you what you're looking for much more easily."

4.5 (Un)familiarity with artificial intelligence

31.6% (N=6) of the respondents indicated they were familiar with the technology behind AIG. 5 of these respondents are found to work in the technology industry. As mentioned in chapter 4.3, all respondents perceived AIG to be easy to use. However, this perception was intensified after the demonstration as the respondents became more familiar with AIG. Several respondents expected that one's prompting skills also influence how easy AI image generators are to use, which could be acquired by direct experience as well as by watching videos and visiting website providing tips and tricks. Respondent 13 (male, 21), confirmed this as he explained:

> "Yes, it is very easy to use. You only have to type in a few words and you already get a result. Even if you type one word, it will figure out for itself what it could be. But it is very difficult to get a result specifically what you are looking for. Then you have to type something very elaborate and the more elaborate, the better result you get. So, for just simple purposes, nice to try, it is very easy to use. But if you really need to get something out of it, it's on the difficult side."

As the respondents gained more knowledge about AIG, they often were pleasantly surprised, as mentioned by 78.9% of the respondents (N=15). The remaining 4 respondents had already had seen imagery generated by AI before. This sense of surprise stemmed from AI-generated imagery looking very realistic, often without mistakes, and because of how easy the tools are to use. Next to that, the respondents indicated they were (more) enthusiastic, excited and amazed by AIG. However, the respondents also indicated they were (more) afraid of the harmfulness of realistic imagery and the easiness and the usefulness for wrong intentions.

Respondents were often not familiar with the privacy policies of AI image generators, although some had an idea what would happen with their personal data when using these tools. After informing the respondents about the privacy policy regarding the use of personal data, they often expressed to not be surprised about it. It was found to be a common issue in the online environment. However, it was often perceived to be frightening.

4.6 Trust in algorithms

73.7% (N=14) indicated to have complete trust in algorithms performing objective tasks because it is perceived that there is no emotion involved in these tasks, which computers lack. 5 of these respondents mentioned to have this trust as they have seen it work before. Of all respondents, the remaining 5 respondents indicated to have no complete trust because such algorithms depend on the developer, who could have wrong intentions, and the data, which could be wrong.

57.9% (N=11) of the respondents indicated to trust algorithms to successfully perform these tasks. 2 respondents indicated to have no trust and the remaining 4 did not completely trust algorithms. This trust is based on the perception that the creation of imagery is not based on facts, which gives more freedom, and because respondents have seen AI-generated imagery before.

Respondents that trusted algorithms to perform subjective tasks often experience positive feelings as they mentioned it could be useful for those who are less creative and it is innovative as it creates new things by combining existing images. This level of subjectivity is perceived as cool and gives a feeling of amazement. However, it is also perceived to be frightening as it can create imagery that could do harm.

The lack of trust in algorithms performing subjective tasks came from the idea that emotion and creativity, which computers lack, is needed to perform these tasks. Those respondents who had seen AI image generators before, perceived that AI was able to generate images, but needed improvement in order to generate as desired and become useful, especially in the finalizing of the images. The perceived lack of ability of algorithms to perform subjective tasks in general gave a positive feeling among the respondents as it gave a feeling of authenticity and security, such as respondent 17 (female, 30):

> "Yes, I think that is a positive thing, because I think it would be very unfortunate if everything was taken over, especially in creative professions."

Finally, some respondents mentioned to experience a feeling of fear or distrust as AI-generated images and real images could be indistinguishable.

4.7 Desire for control

In line with theory, all respondents have to a greater or lesser degree desire for control. This desire mainly stemmed from a feeling of responsibility. In their work environment, this had to do with a level of security that the outcomes are as personally desired and that they would rather take responsibility when something goes wrong.

Prior to the demonstration, 3 respondents perceived to have no control over the outcomes with AIG at all, which resulted in negative feelings, expressed as unfortunate and difficult. However, after the demonstration, all respondents perceived to have to a greater or lesser degree control over AI image generators and the outcomes. Users could have complete control over the composition of the images. Nevertheless, control over the outcomes was perceived to be limited as the generated images could differ from one's expectations. The amount of control was perceived to depend on the prompting skills and the expectations of the customer. This also affected the perceived usefulness and the amount of satisfaction with the generated imagery. Respondent 13 (male, 21) explained:

> "Yes, in the sense that I have control that I have to enter the text myself. I have no other control over what it is going to make. And so, if something is not to my liking, I have not entered something properly for the AI, not specific enough. So, I have control in what it has to go make in a broad view. But I spend quite a long time typing when you have to make it very specific to really get what you're looking for."

The perceived reasonable amount of control over the outcomes resulted in positive feelings with AIG, giving a calming and comfortable feeling, a feeling of security that humans are still in control and takes away fear. If the AI-generated image was close to expectations, respondents experienced a feeling of excitement and curiosity to test what is possible. Limited control over the outcomes was not considered negative, as humans are still in control of whether or not the image will be used and it could lead to new creative insights and surprise, as respondent 19 (male, 31) mentioned:

> "Yeah good, positive, I think. Because yes, then you're still in control or something, yes. So, look, what comes out of it is always a surprise too, but yeah. Well, if you don't like something, then you can also have several generated and then you choose one to go even further, the one you like the most, and so you go into that process and then.... So yes, in some way, of course, it's always another surprise what comes out."

Finally, two respondents had a negative feeling with the perception that they do not have control over others using AIG. This was especially the case with the generation of imagery with realistic (familiar) humans. The perception that others could do harm with AIG has been mentioned by all respondents.

4.8 Customer experience outcomes

As found in the literature review of this study, CX has different outcome variables, being satisfaction, loyalty and word-of-mouth.

All respondents experienced both positive and negative feelings with AIG and it was perceived easy to use and often useful. Respondents were often satisfied with AI-generated imagery as it was perceived to look good and realistic. Next to that, it was perceived that AIG could reasonable create what was asked with the prompts. This satisfaction, however, was

expected to depend on one's expectations. Mistakes such as weird looking hands of humans in AI-generated imagery were often perceived as creative, giving new insights.

Prior to the demonstration, respondents often would not recommend AIG to their environment as they lacked experience with it. As respondents were often satisfied with both the perceived ease of use and usefulness of the tool and the created imagery after seeing the demonstration, they mentioned that they wanted to start using it. Similarly, as they had a positive experience with AIG and have become more familiar with it, they often were going to talk about it with others and recommend using it. However, they expressed to be selective in whom to advice, as they were afraid of AIG being used with wrong intentions. A positive experience and perceived usefulness are the most important reasons to recommend the tool to others.

5. Discussion and conclusion

The aim of this study was to explore how the potential customer characteristics that influence customer experiences with AIG. The key theoretical contributions, practical implications, limitations and directions for future research are discussed below. The interviews have not resulted in finding any other customer characteristics that might be relevant.

5.1 Theoretical contributions

This study contributes to the CX and HCI literature by three means. First of all, to the best of the researcher's knowledge, prior research in the field of HCI has not explored what influences people's experiences with AIG. This is because AIG is one of the most recent developments in AI (Sohn et al., 2020). This study has identified potential customer characteristics that influence CX with AIG via a comprehensive literature review. Secondly, this study explored if and how these characteristics influence CX with AIG by means of their hedonic and utilitarian value of the experience. And lastly, this study explored the outcomes of these hedonic and utilitarian value of the experiences. This chapter follows the same structure as the results section.

5.1.1 IT-related personal innovativeness (PIIT)

The results show that people with a higher degree of PIIT more often would test AIG for the hedonic value of the experience, being enjoyment and pleasure, which is in line with literature on sensory and cognitive experiences (Agarwal & Karahanna, 2000; Venkatraman & Price, 1990). Whereas for those with a lower degree of PIIT the perceived usefulness and societal affirmation is of higher importance. Most respondents are not early adopters of innovation as only 5 respondents, males ranging age 21-33, had already used AI image generators before. Willingness to test AIG is mainly driven by curiosity towards the usefulness for professional use, which corresponds with the TAM framework by Davis (1989). However, in this study, the degree of PIIT did not have a strong influence on CX as there was little distinction between the respondents' experiences.

5.1.2 Bias towards artificial intelligence

This study found that people's negative bias towards AI results in AIG' creativity being underestimated, which compliments HCI literature (Ragot et al., 2020). People experience both

positive and negative feelings with AIG, whereby the lack of creativity is often experienced positive, and the perception that AIG could perform subjective tasks, such as the creation of artistic pieces, is often experienced negative as it creates a fear that jobs could be replaced by AI (Millet et al., 2023). It is found that creativity is often perceived to be unique to humankind, which builds on theory on anthropomorphism (e.g., Araujo, 2018; L. Wu & Wen, 2021), which negatively affected the perceived usefulness (Choi et al., 2014). The changed perceptions about the level of creativity by AI after the demonstration both positively and negatively intensified respondents' feelings with AIG. Although literature states that peoples believes that creativity is unique to humans perceive AI-made work as less creative (Millet et al., 2023), AI-generated imagery was evaluated as (more) creative after the demonstration in this study.

5.1.3 Shared sociocultural interpretations

Results suggest people have equivalent beliefs about AIG, both positive and negative, which confirms theory by Castelo et al. (2019). The current study suggests there is little difference in the perceived utilitarian value of AIG between different generations (older vs younger). However, only the younger half of the respondents expressed AIG as being cool and predominantly thought AIG is fun, confirming theory that young people are typically more tolerant and accepting toward disruptive technologies (Ene et al., 2019; Sohn et al., 2020). When AIG is perceived as desirable amongst one's environment, they often perceive it to be desirable for themselves too. The perceived usefulness is determined in relation to professions. In jobs and industries in which technologies play a large(r) role, AIG is perceived to be more useful and desirable. People's perceptions are found to be shared amongst their environment and is therefore of paramount importance for the hedonic and utilitarian value of the experience with AIG.

5.1.4 Previous experience with artificial intelligence

Results show that one's previous experience with AI has significant influence on CX with AIG. If one had already seen realistic AI-generated imagery, they were less surprised after the demonstration than those who had not. Respondents who had used AIG before, agreed it was easy to use but not very useful as the generated imagery did not correspond to their expectations. Previous experience with AI results in a higher trust in AI, such as the performance of objective tasks. In line with literature on an extended TAM framework (Igbaria

& Iivari, 1995) and the HAI framework (Sundar, 2020), this previous experience improved the perceived ease of use of AIG.

5.1.5 (Un)familiarity with artificial intelligence

Gaining more knowledge about AIG through the demonstration is found to intensify the perceived ease of use, which is in line with literature by e.g., Hart & Milstein (2003). This is also perceived to be the case when people gain more knowledge in prompting. Becoming more familiar with AIG resulted in a sense of surprise and curiosity, as the imagery was perceived to be more realistic than expected and therefore more useful. Knowledge is therefore found to positively affect people's assessment of AI-generated imagery, which is consistent with literature on the hedonic-motivation system (Lowry et al., 2012). After demonstration, people are better able to imagine the usefulness of AIG in their own profession.

5.1.6 Trust in algorithms

Results indicate people place more trust in AI performing objective tasks over subjective tasks as these would not require emotion, which is perceived computers do not have. This complies with recent marketing research (Castelo et al., 2019; Wu & Wen, 2021). However, the level of trust in algorithms performing objective tasks also relies on outside factors, being the developer and the data. Contrary to scholarly literature (Castelo et al., 2019; Wu & Wen, 2021), more than half of the respondents trust algorithms in performing subjective tasks. People who perceive it to not be subjective felt a feeling of authenticity and security and those who perceived it to be subjective perceived it as cool and experienced a feeling of amazement. AI-generated imagery is perceived to be indistinguishable from real imagery, which results in feelings of fear and distrust, reflecting existing scholarship (Sundar & Shyam, 2008).

5.1.7 Desire for control

In accordance with established theories, all respondents, to a greater or lesser degree, had the desire to have control over their surroundings and outcomes (Rotter, 1966; White, 1959). Negative feelings occurred when respondents perceived to have no control over the outcomes with AIG. The perception to have complete control over the composition and being in control over what images are used affected the perceived ease of use and usefulness, which

led to positive feelings with AIG (e.g., Ene et al., 2019). On the other hand, the perception to have no control over others using AIG was found to result in a feeling of fear (Logan et al., 1991).

5.1.8 Customer experience outcomes

Satisfaction with the created imagery depended on the expectations. However, more realistic imagery led to a higher satisfaction. When getting more familiar with AIG, the utilitarian value increased and respondents were more likely to recommend it to their environment and use it themselves.

To conclude, all customer characteristics obtained in this study are found to influence CX with AIG to a greater or lesser degree. A higher level of PIIT has customers earlier on trying AIG, gaining experience and becoming familiar with it. This reduces the biases towards it and increases the trust in algorithms. Perceptions are shared amongst people contain mixed feelings. If the perceived control with AIG is less than desired, feelings are negatively affected. The insights from this study can help direct theory on AIG by knowing what customer characteristics influence CX with it.

5.2 Practical implications

The key contributions of this study also suggest potential practical implications. Understanding what and how customer characteristics influence the hedonic and utilitarian value of the customer experience with AIG can help the practical field.

Firstly, the differences among customers ask for different approaches by practitioners in the field of advanced technologies in customer service settings. As customers are often not familiar with the technology of AIG, they might feel more uneasy with it (Wu & Wen, 2021). In the industry of text-to-image generation, managers can create (online) publicity in order to increase awareness and familiarity. In addition, instructing customers in how to formulate solid prompts can positively affect customer responses (Millet et al., 2023; Sohn et al., 2020) and their buying behaviour (Tanner & Wölfing Kast, 2003). This could enhance customers' trust in AI performing subjective tasks and increase their perceived control over the outcomes with AIG, which in turn positively affects the utilitarian value of the customer experience and provides for feelings of security and authenticity (Sundar & Kim, 2019). Managers could do so by offering online tutorials that provide tips and tricks for generating prompts.

Secondly, since AI-generated and real images could be indistinguishable, customers' trust in images is reduced, creating negative feelings with AI-imagery and negatively affect the acceptation of it, for example in marketing practices. Customers' negative feelings with imagery generated by AI is priorly based on the potential harmfulness of realistic imagery. Additionally, AI-generated imagery is found to elicit feelings excitement, amazement and joy and positively assessed. Companies could integrate AI-imagery in their marketing practices, whereby they inform the role of AI and highlight the creativity and innovativeness, being careful with the use of realistic (humans) imagery to enhance the level of trust, and therefore create more positive customer experiences.

Lastly, these customer characteristics are likely to be applicable to other, and future, (advanced) technologies showing forms of autonomy and subjectivity. Therefore, these characteristics should be considered by the complete field of (digital) marketing when applying advanced technologies to enhance CX. The findings of this study are therefore relevant to all kinds of organizations, as marketing is often a standard practice for organizations. For example, with recent developments in augmented reality (AR) and the metaverse (Mystakidis, 2022), managers should consider the customer characteristics to create personalized, positive experiences.

5.3 Limitations and future work

Despite the various contributions, some limitations naturally occurred. First, sample size of 19 respondents, is skewed towards younger respondents (68.4% aged 33 or younger) and males (57.9% of the sample is a male). This sample thereby contains more people who are usually tech-savvy (Bannon et al., 2011; H. Lee et al., 2020). These statistics should be taken into account when generalizing the findings to a broader population.

Secondly, all respondents have been shown the same demonstration of the AI text-to-image generation tool Midjourney and the same nine images. This could result in a biased assessment. This provides the opportunity for future research to explore customer experiences and perceptions between different sample sets, with a wider variety of imagery, with and without realistic humans, including different styles and contexts. In addition, human-made images could be incorporated without informing respondents which images are generated by AI to better explore the potential bias towards algorithms.

Thirdly, the technology of AIG is evolving rapidly, AI generated images are improving and common mistakes are found to be fixed through the technology of machine learning (e.g., Whittaker et al., 2021). Respondents have been showed common mistakes with AI imagery, which are already found to occur less often. Therefore, future research showing more recent developed imagery could result in different responses.

Lastly, only a demonstration of the AI image generation tool Midjourney has been showed. As each tool might differ in design, prompting options, datasets, and outcomes (Huang, 2022), future research could conduct experiments with multiple samples using different AI text-to-image generators to compare findings and provide a more comprehensive understanding of CX. As respondents did not need to think about writing the prompts, their perceptions could differ from when they would be testing such generator themselves. This provides the opportunity for researchers to explore customers' experiences during or immediately after direct interaction with the tools.

6. References

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7. Appendices

Appendix 1 – Interview guidelines

Introduction

An introduction will be given about the researcher himself, the purpose of the research, an introduction on the topic, and the proposed time for the interview. Consent for recording the interview will be asked with the use of the written or verbal consent form (Appendix 2 – Consent forms for interviews), or via verbal consent, which will be recorded, in case of an online interview using the verbal consent form. The ethical issues will be discussed, and the participant will be thanked for participating in advance.

Concepts	**#**	**Questions**
Customer demographics	1	- What is your age?
Customer demographics	2	- What is you gender?
IT-related personal innovativeness	3a 3b 3c 3d	- What do you do for a living (if applicable)? - How does technology play a role in your work and personal life? - To what extent do you have the willingness to test any new technology whenever a new technology is introduced? - Why is that?
Familiarity with AI	4a 4b	- To what extent are you familiar with the technology behind AI text-to-image generators? - Could you explain it to me in short?
Algorithms, AI text-to-image generators and prompting will be explained in plain language for anyone to understand.		
- An algorithm is really nothing more than a finite set of instructions to achieve a goal. Just like following a recipe when cooking. - Artificial intelligence involves a machine displaying human-like skills such as planning, reasoning and learning. - Machine learning is a form of AI. In machine learning, a computer learns on its own. Using a large amount of data, the algorithm itself determines a relationship between input and output of data. Thus, the role of humans is limited here. - KI text-to-image generation is actually a tool to translate texts into images. It is trained with a large amount of data from images and text descriptions associated with them. For example, a computer is shown many images of dogs and given the information that this is a dog. After a while, the computer can recognize the dog itself.		

- A prompt is the text written by the user. Writing the text is also called prompting.		
Trust in algorithms / Utilitarian experience / bias towards AI	5a 5b	- To what extent do you trust an algorithm to successfully perform an objective task such as performing data analysis? - Why is that?
Trust in algorithms / Utilitarian experience / bias towards AI	6a 6b	- To what extent do you trust an algorithm to successfully perform a subjective task such as creating creative artistic pieces? - Why is that?
Trust in algorithms / Hedonic experience	**7a** **7b** **7c**	- To what extent do you have the feeling that AI text-to-image generators can be harmful? - Why is that? - What feelings and emotions does this evoke and why?
Trust in algorithms	**8a** **8b** **8c**	- To what extent do you perceive AI text-to-image generators to be creative? - Why is that? - What feelings and emotions does this evoke and why?
Previous experience / hedonic experience	9a 9b **9c** **9d**	- Have you used an AI text-to-image generator yourself before? (if NO → 10a) - Could you describe your previous experiences with AI text-to-image generators? - What feelings and emotions did you experience when using AI text-to-image generators or seeing AI generated content? *Probe into: pleasure, excitement, fun, enjoyment & happiness*. - Why do you have these feelings and emotions (where do these come from)? Why positive/negative?
Shared socio-cultural interpretations / Hedonic experience	10a 10b	- What do people you know (friends, family, colleagues, etc.) say about AI text-to-image generators (what feelings/emotions)? - What do you think of that and why?
Shared socio-cultural interpretations / Utilitarian experience	11a **11b**	- To what extent do you have the feeling that AI text-to-image generators are desirable among the people you know (friends, family, colleagues, etc.)? - What do you think of that? Do you agree and why?
Shared socio-cultural interpretations / Utilitarian experience	12a **12b**	- To what extent do you have the feeling that the people you know (friends, family, colleagues, etc.) perceive AI text-to-image generators to be useful and easy-to-use? - What do you think of that? Do you agree and why?
Desire for control	13a 13b	- To what extent do you desire to have control over your surroundings and their outcomes? - Why is that?
Desire for control	**14a** **14b**	- To what extent do you perceive that you have control over the outcomes when using AI text-to-image generators? - What feelings and emotions does that evoke and why?

CX outcomes	**15a** **15b**	- To what extent do you feel satisfied with AI text-to-image generators or AI generated content? - Why is that?
CX outcomes	**16a** **16b**	- To what extent would you want to use the same AI text-to-image generator (again)? - Why is that?
CX outcomes	**17a** **17b**	- To what extent would you recommend AI text-to-image generators to people you know (friends, family, colleagues, etc.)? - Why is that?
The artifacts (video + images) will be shown and explained.		
1 video - First image. Prompt at top. 4 ladies - Prompt at bottom is written - studio light - Prompt being adjusted: backlight with hair - Prompt being adjusted: silhouette light with side light - Selects top right. Upscaling & Variations. Image of just enhanced - Lions, from below, side view, golden hour, National Geographic - Background, lighting, color, location, person, style (realistic or theme), etc. 2 turtle and duck - What animal do you see here? 3 Raccoon with newspaper - Fictional but seems realistic 4 Einstein - But this is fake 5 Trump arrested - Realistic but the fingers are not quite right 6 Animal selfie - Funny and some animals look real but the proportions are not right. Above a cow body with a cat head 7 Painting made in the style of van Gogh - You can have everything made in a certain style. So for example also the selfie with the animals or Donald Trump 8 Obama homeless - Here Obama looks homeless. Looks realistic but is fake 9 Trump and Biden playing guitar - What is not right here? - Trump and Biden together and Trump's fingers are doing something weird 10 Biden ninja - Does anything stand out here? - - Biden has 4 and 7 fingers		
Bias towards AI / Hedonic experience	18a 18b 18c	- What feelings and emotions do you experience with AI text-to-image generators now that you have seen it work? - How have your feelings and emotions changed in relative to before? - Why is that?

Hedonic experience	19a 19b	- To what extent are you surprised by the ability of AI text-to-image generators and the created artifacts? (Sense of surprise) - Why is that?
Hereafter, the following questions will be asked again (the numbers are bold): 7abc, 8abc, 9cd, 11b, 12b, 14ab, 15ab, 16ab, 17ab. These questions will start with: now that you have seen the AI text-to-image generator work …		
Familiarity with AI	20 a b c d	- Do you know what happens with your personal data when using AI text-to-image generators? Could you explain: ▪ What data is collected/stored and where/how? ▪ Who has access to it / who is it shared with? ▪ What is the data used for? ▪ For how long is it stored?
The privacy policy of AI text-to-image generators will be shared.		

Personal data collected:
- Your username
- Text or images you enter and public chats you have with the service
- Your IP address
- Usage data
- Cookies
- Contact details
- Organizational information such as the title of your company
- Your email
- Other data you choose to send to Midjourney

Personal data is used:
- To offer, maintain and improve their service.
- To manage your account
- For the performance of the service
- To contact you to share information about the service
- To provide news, special offers, and general information about the service to you. Unless you have indicated that you do not want this.
- To handle your requests to the program.
- For business transfers. For example, in case of a merger, reorganization or acquisition. Your data will then be transferred.
- For other purposes such as data analysis, establishing usage trends, determining the effectiveness of promotional campaigns and to evaluate and improve the service, products, services, marketing and your experience.

Your personal information may be shared in the following situations:
- With service providers, outside vendors, consultants and other business partners.
- For business transfers
- For other purposes, as long as you have given your consent
- With law enforcement and authorities, according to law
- With other parties to:

- Comply with a legal obligation
- Protect and defend the rights or property of the Company
- Prevent or investigate possible violations in connection with the Service

<table>
<tr><td colspan="3">- Protect the personal safety of Service Users or the public
- Protect against legal liability
Additional information:
- Your personal data will be kept for as long as the Company believes is necessary, in line with the law.
- Your personal data is processed at the Company's offices and other places where other parties are involved.
- The Company strives to protect your personal data, but cannot guarantee this.
- You have the right to request the Company to delete your personal data.</td></tr>
<tr><td>Bias towards AI / Hedonic experience</td><td>21a

21b</td><td>- Does understanding more about how your personal data might be used change how you feel about these text-to-image generators?
- How and why (not)?</td></tr>
<tr><td colspan="3">Closing the interview. Providing room for questions and comments. Thanking for participation.</td></tr>
</table>

* The bold numbered questioned will be asked again after the demonstrations.

Appendix 2 – Data analysis procedure

Phase 1

After the first few interviews were conducted, these were transcribed and therefore listened to and read again. The researcher specifically focussed on finding pieces of content that might be relevant to answering the research question. This helped tweaking the interview guide a little bit in order to enrich the data of the following interviews. It was also analysed whether all *a priori* themes (Table 2 below) (Braun & Clarke, 2012), resulting from the literature review, were addressed, in order to decide what types of individuals should still be recruited.

Phase 2

After the first six interview were conducted, the initial round of coding started. The complete coding process has been done using Atlas.ti (ATLAS.ti, 2023), which made the data analysis more convenient and organized using tools as code manager, quotation manager and code-document analysis. These initial codes remained close to the data. The goal here was to find anything that could be relevant to answering the research question.

Phase 3

With the coded data of the first six interviews, the list of codes was analysed to search for patterns (themes) by clustering the codes. In particular, it was searched for patterns that could support the *a priori* themes. While the data was found to address these themes, no new themes were discovered. As the remaining interviews continued, the researcher went back and forth between the data, initial codes, and themes in order to search for any new observations and potential themes.

Phase 4

To check the quality of the coding, the developed themes were reviewed in relation to the complete set of data. Some first order codes were found to be better suited amongst different second order codes or applied to multiple codes and themes. This iterative process happened throughout the complete data analysis phase.

Phase 5

When developing the final themes in the codebook, the *a priori* themes have been kept in mind, while still searching for any potential new themes. As no new themes were found, some second order codes have been merged and divided to better suit the *a priori* themes. These themes were therefore found to be the final themes for this research. While iteratively going through the data, some marked quotations were linked to multiple second order codes, as these were found to be rich in data. After 19 interviews, code saturation was reached as the transcript did not result in any new second-order codes (Hennink et al., 2017). Next to that, this final respondent was one of five respondents who had used AI image generators before. As their perceptions towards AIG corresponded, meaning saturation was reached (Hennink et al., 2017).

Phase 6

The final phase was writing the results section, chapter 4 of this report. In order to do so, patterns in the data needed to be found, linking the customer characteristics to the hedonic and utilitarian value of the experience. To structure this process, an Excel sheet has been developed with the columns corresponding to every respondent and the underneath rows containing keywords named after the second order themes, which were linked to the data of each respondent. By colouring certain words with the function of conditional formatting, patterns were more easily found.

Table 2 A priori themes

A priori themes
IT-related personal innovativeness
Bias towards artificial intelligence
Shared sociocultural interpretations
Previous experience with artificial intelligence
(Un)familiarity with artificial intelligence
Trust in algorithms
Desire for control
Hedonic value of the experience
Utilitarian value of the experience

Appendix 2 – Consent forms for interviews

2.1 Verbal consent form

* In case of an online interview.

ENGLISH

Participation in this research study is completely voluntary. It is up to you to decide whether or not to take part. If you do decide to take part, you will be given adequate time to read the participant information sheet and ask questions. You will then 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 previously supplied. 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 penalised 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. The data will be transcribed, and then personally identifiable information will be removed. All information collected will be strictly confidential and will only be retained for the purpose of this study. Confidentiality, privacy and anonymity will be ensured in the collection, storage and publication of research material. To protect the privacy participants, direct identifiers such as names, places, occupation, institution and email addresses will be replaced with pseudonyms when transcribing interviews. Identifiable personal data will be anonymised using pseudonyms.

Do you understand the information and do you agree to this?

2.2 Written consent form

Research interview consent form

Purpose of Study: exploring customer experiences with AI image generators

See additional information on the privacy terms on page 2. *By signing this form, you agree with the privacy terms on page 2.*	**Please initial each box if you agree with the statement**
1. I confirm that I have read and understand the information sheet for the above research. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	☐
2. I understand that my participation is voluntary and that I am free to withdraw at any point until **23/06/2023**, without giving any reason.	☐
3. I understand who will have access to personal data provided, how the data will be stored and what will happen to the data at the end of the project.	☐
4. I understand that I will not be identifiable from any publications.	☐
5. I consent to being audio recorded.	☐
6. I understand how audio recordings will be used in research outputs.	☐
7. I agree to the use of quotations in research outputs if I am not identifiable.	☐
8. I give permission to the researcher to contact me again to clarify information and share the results of the study with me by email. The email will only be used for the latter purposes and will be discarded immediately after the study has taken place. *In case of agreement, write email here:* _____	☐
9. I understand how to raise a concern or make a complaint.	☐
10. I agree to take part.	☐

_____	_____	_____
Name of participant	Date	Signature
_____	_____	_____
Name of person taking	Date[1]	Signature

Privacy terms

- All personal information will be stored on secure university storage, only accessible to the researcher.
- All stored personal information will be deleted after submission of the final thesis by the researcher.
- Any personal information of the participant of the interview will only be accessible to the researcher. This personal information will not be shared with anyone else.
- The interviews will be audio recorded and transcribed. The audio recordings will only be accessible to the researcher. The interview transcript could be shared with the examiner. In this case, any information that could identify the interviewee will be anonymised such as the use of names, address or other information.

Appendix 3 – Table of interview respondents

Table 3 Interview respondents

Demographics (N=19)	Age	Gender	Duration
Respondent 1	28	Female	00:32:37
Respondent 2	25	Male	00:41:46
Respondent 3	25	Male	00:23:55
Respondent 4	55	Female	00:26:44
Respondent 5	59	Male	00:35:45
Respondent 6	23	Male	00:42:37
Respondent 7	26	Male	00:34:27
Respondent 8	24	Female	00:42:08
Respondent 9	30	Female	00:37:07
Respondent 10	32	Female	00:33:49
Respondent 11	26	Male	00:35:05
Respondent 12	56	Male	00:32:15
Respondent 13	21	Male	00:37:22
Respondent 14	91	Male	00:33:28
Respondent 15	26	Female	00:26:12
Respondent 16	59	Female	00:32:24
Respondent 17	30	Female	00:27:12
Respondent 18	60	Male	00:28:36
Respondent 19	33	Male	00:40:52