AI-Designed Jewelry – A new way to get design inspiration.

Exploring consumer perceptions, consumption drivers, and barriers in the DACH market

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Abstract

The emergence of AI is profoundly impacting various industries, including the jewelry industry. This research aims to explore the perceptions of AI-designed jewelry in the DACH market and the factors and barriers influencing its adoption and purchase. The study is motivated by the growth of the jewelry industry internationally and the increasing trend of AI applications in various manufacturing sectors.

The primary objective of this study is to determine the perceptions of AI-generated jewelry in the DACH market, along with the factors and obstacles affecting its adoption and purchase. The study reviewed relevant literature and identified variables that are pertinent to the research. The research employed a mixed-methods methodology, which involved conducting seven in-depth interviews and administering an online questionnaire that produced 236 valid responses. The analysis of the data unveiled that despite the limited awareness and purchase of jewelry designed with artificial intelligence in the DACH market, a significant segment of consumers indicated a strong inclination to embrace and acquire the product.

Furthermore, the perceived degree of innovation, and the usefulness that consumer needs are analyzed by AI, the first perceived impression together with the aesthetic features of the jewelry, and the technical optimism of the consumer were identified as the most important purchase factors influencing the willingness to buy AI-designed jewelry. In contrast, the lack of influence of the jewelry designer, and thus the loss of uniqueness and design, and the associated hedonism associated with jewelry were identified as the most significant barriers to purchase.

Keywords: AI-designed Jewelry, Jewelry, Artificial Intelligence, Drivers, Barriers, Consumer perceptions

Title: AI-Designed Jewelry – A new way to get design inspiration (Exploring consumer perceptions, consumption drivers, and barriers in the DACH market)

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Sumário

A IA está impactando profundamente várias indústrias, incluindo a de joias. Este estudo tem como objetivo explorar as perceções sobre joias projetadas por IA no mercado DACH e os fatores e barreiras que influenciam sua adoção e compra. A pesquisa é motivada pelo crescimento da indústria de joias e pela tendência crescente de aplicativos de IA em vários setores de fabricação.

Foram adotadas variáveis relevantes para este estudo após revisão minuciosa da literatura, exploradas a partir do estado atual da pesquisa. A pesquisa adota uma abordagem de métodos mistos, incluindo sete entrevistas em profundidade e um questionário online que produziu 236 respostas válidas. A análise dos dados indica que, apesar da baixa conscientização e compra de joias projetadas por IA no mercado DACH, uma percentagem significativa de consumidores mostrou forte interesse em adotar e comprar este produto.

Além disso, o grau percebido de inovação, a utilidade da análise das necessidades do consumidor pela IA, a primeira impressão percebida juntamente com as características estéticas da joia e o otimismo técnico do consumidor foram identificados como os principais fatores de compra que influenciam a disposição para comprar joias projetadas por IA. Em contraste, a falta de influência do designer de joias e, portanto, a perda de singularidade e design, e o hedonismo associado à joia foram identificados como as principais barreiras para a compra.

Palavras-chave: Jóias desenhadas por IA, Jóias, Inteligência Artificial, Condutores, Barreiras, Percepções dos consumidores

Título: Jóias com design AI - Uma nova forma de obter inspiração no design (Explorando as perceções dos consumidores, fatores de consumo e barreiras no mercado DACH)

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AI	Artificial Intelligence
DT	Digital Transformation
IoT	Internet-of-Things
M	Sample mean
MD	Mean difference
n	observations in the sample
N	total sample size
p	p-value
sd	Standard Deviation
se	Standard Error

Chapter I - Introduction

1.1 Contextualization

The advent of the Covid-19 pandemic has had a profound impact on the operations of businesses and the behavior of consumers (Das, 2022). The rapid spread of the virus and the implementation of social distancing measures have resulted in a significant increase in e-commerce and a transition towards digital channels (Sheth, 2020). This trend toward online shopping has been intensified by closures and limitations on brick-and-mortar establishments, resulting in a heightened emphasis on digital transformation (DT) across various industries (Sheth, 2020; Das, 2022).

The jewelry market, like many other industries, has been affected by these changes (McKinsey & Company; Business of Fashion, 2021). Consumers have increasingly turned to online platforms for their jewelry purchases, which has led to increased use of digital technologies and deeper customer engagement in the industry (Young, 2021; Danziger, 2022). In response, many jewelry companies have adopted digital technologies such as artificial intelligence (AI) to improve their operations and meet the demands of the digital age (Danziger, 2022). This constantly improving technology has the potential to revolutionize the way jewelry is designed, manufactured, and sold.

AI can be applied to the jewelry market in a variety of ways, including design, production, and sales (Loureiro, Guerreiro, & Tussyadiah, 2021). In terms of design, AI can develop unique and innovative ideas for jewelry, drawing inspiration from a variety of sources including art, fashion, and nature (Gomelsky, 2021). It can also be used to create individual designs for individual customers, personalizing the buying experience. In manufacturing, AI can streamline processes, increasing efficiency and reducing the need for manual labor (Zeba, Dabić, Čičak, Daim, & Yalcin, 2021). In sales, AI can be used to personalize the customer experience by making recommendations and helping customers find the perfect piece of jewelry (Deloitte, 2018).

This master's thesis aims to investigate the use of AI in the jewelry market, particularly in the area of design and the possible customer reactions that arise from it. It will present how AI can

be used to create unique and high-quality jewelry, as well as the benefits and challenges of implementing AI in the design process.

1.2 Problem Statement

The emergence of Industry 4.0 and the resulting new opportunities to apply collected data and technologies have also enabled the support of designs in the jewelry industry with AI (Rana, Singh, & Chauhan, 2020). From necklaces and earrings (Gupta, Damani, & Narahari, 2018) to detailed imitations of natural elements (Gomelsky, 2021), the future of the jewelry industry is expected to be intertwined with the integration of AI, to explore new techniques and designs and deliver personalized products that meet customers' unique preferences (Duan, 2021) and an overall experience (Huang & Rust, 2021). Although practitioners and researchers are exploring the application and consumer reactions of AI in product-design (Zhang, Bai, & Ma, 2022), existing studies have several limitations. Despite the potential impact on the industry, no studies examine how consumers perceive and adopt AI-designed jewelry. Previous studies have focused on the application of AI technologies in the fashion industry (Luce, 2018; Pan, 2020) or their use in areas such as personalization and customization (Gao & Liu, 2022; Grandinetti, 2020) without understanding consumer perceptions, despite this being one of the most important goals for all markets. Given the scarcity of research on the subject, there are still numerous questions concerning how customers experience AI-designed jewelry, its benefits and drawbacks, and how they influence adoption and purchase.

This research aims to investigate consumer perspectives, motivators, and impediments to the adoption or purchase of a relatively innovative commodity like jewelry designed with AI. The study will be limited to the German, Austrian, and Swiss (DACH) markets with a focus on high/fine jewelry, allowing a more in-depth analysis of the research topic. Intended to understand how designs made with the support of AI affect customers in the jewelry industry, the following questions help elucidate:

Research Question 1:

What are the main drivers of the purchase intention for AI-designed jewelry?

Research Question 2:

What are the main barriers to the purchase intention for AI-designed jewelry?

Before answering the research questions, a review of the relevant literature on DT in the jewelry industry, AI in product design, and its role in this transformation are provided.

Based on Alfredo Soares' Master Thesis titled "3D-Printed Jewelry - A new era for online jewelry customization," which explores the perceptions of Portuguese consumers on 3D-printed jewelry, this thesis builds upon his insights while focusing on the application of AI design in the DACH market (Soares, 2022). Soares' research, which adopted the Technology Acceptance Model (TAM), identified the key drivers and barriers to the adoption and acquisition of 3D-printed jewelry in the Portuguese market. While perceived ease of use, usefulness, compatibility, customization level, aesthetic features, and consumer attitude were identified as key drivers, perceived cost, lack of awareness, and online shopping-related problems and concerns were identified as the main barriers (Soares, 2022). By incorporating the sole focus of AI design into the study, the aim is to investigate how this technology can impact the DACH jewelry market and consumer perceptions and behaviors towards customized and personalized jewelry using a data collection algorithm. In doing so, it will be interesting to determine if there are similar results and perceptions from customers regarding 3D-printed versus AI-designed jewelry.

1.3 Academic Relevance

The relationship between AI design and customer response has already been studied in the academic literature on the topic of purchase intention. Despite the recent growth in the number of papers on AI design, including the jewelry sector, the available research on reactions to AI-designed jewelry is still an unexplored topic especially focusing on the DACH market. As a foundation for future studies, exploratory qualitative research is needed in addition to establishing new research questions and hypotheses based on the literature review.

1.4 Managerial Relevance

This research study holds significant relevance for corporate management, particularly for companies operating in the jewelry markets of Germany, Austria, and Switzerland who aim to incorporate the novel technology of AI design into their manufacturing processes or seek to gain further knowledge and insights into its usage. The findings of this study can aid these companies in comprehending consumer attitudes and necessities regarding jewelry that is designed using artificial intelligence, which in turn can lead to a considerable competitive edge for these manufacturers, particularly for the more traditional firms facing challenges in adapting to emerging technologies in an advancing digital marketplace.

Chapter II - Literature Review

2.1 Jewelry Industry

The global economy is in a constant state of transformation due to trends such as the acceleration of technological innovation, the importance of building long-term value and sustainability, economic interdependence, and the global marketplace, which challenges companies to keep up with the rapid pace of change (Ernst & Young, 2020). The jewelry sector is one of the industries most impacted by these current trends (Sachs, 2020), but these changes also involve a variety of perspectives ranging from consumer behavior to business models to the products themselves (McKinsey & Company; Business of Fashion, 2021). Considering the production, sale, promotion, and advertising of wearable high/fine jewelry, i.e., made of high-quality materials such as gold or silver, and fashion jewelry, the global jewelry market amounted to 22 billion EURO with India, China, and the USA holding the lion's share (Smith, 2022). The world's leading jewelry retailers include Signet Jewelers, the Richemont Group, and the LVMH Group (Smith, 2022). According to Smith, 2022 and Statista, 2022 the market in the jewelry segment is expected to grow at a CAGR of 4.25% annually through 2022 (CAGR 2022-2026), while the DACH market revenue will grow at a CAGR of 0.68% annually (CAGR 2023-2026). It is expected to reach 5.72 billion EURO, based on the total population of the DACH region, and per capita sales will reach 56.28 EURO in 2023 (Statista, 2022). Revenue is created through various distribution channels, with consumers buying products most frequently in physical stores, closely followed by digital channels (web/smartphone) (Dauriz, Remy, & Tochtermann, 2020). In addition, the trend can be observed towards more people buying jewelry online, which already reached 27.3% in 2021 in comparison to 2017 when only 17,5% of jewelry consumers bought online (Statista, 2022).

The Covid-19 crisis has accelerated these channel shifts, making e-commerce sales channels even more relevant than previously predicted (McKinsey & Company, 2020). Consumer behavior, expectations, and habits have altered as a result (Zwanka & Buff, 2021). This shift in consumer behavior is also driving jewelry retailers to succeed online and produce improved products that meet expectations in the highly competitive marketplace, driving the industry's DT (McKinsey & Company; Business of Fashion, 2021).

2.2 Digital transformation in the jewelry industry

DT is the significant change that digital technology is causing or influencing in all aspects of human life (Lazazzara, Metallo, Ferrara, & Za, 2020) and therefore also businesses

(Zaramenskikh & Fedorova, 2021). This rising influence has altered how businesses operate, how organizations compete and interact, how employees, customers, and users behave, and what they anticipate (Castagna, et al., 2020; Lazazzara, Metallo, Ferrara, & Za, 2020). The main objectives of DT are to prepare companies for the digital age and enable them to adapt quickly to changing conditions (Berghaus & Back, 2017). To remain competitive, improve and maintain customer satisfaction, and increase revenue, the motivation for digitalization is aimed toward the development of innovative products, the improvement of existing products, and the research and development of new, potentially disruptive business models (Osmundsen, Iden, & Bygstad, 2018). Hence, the general drivers for the DT of companies and industries include *competition* and *digital technologies* especially along the product lifecycle (Verhoef, et al., 2021; Berghaus & Back, 2017). Each of these drivers and their impact on the jewelry industry are explained below:

Competition

The internet's introduction as a sales channel allowed online-only competitors to offer a novel purchasing experience while also creating new competition for traditional players (McKinsey & Company; Business of Fashion, 2021). In addition, there was a shift in jewelry manufacturers no longer reaching their products to end customers through retailers but now selling directly to consumers (McKinsey & Company, 2014). As a result of this new distribution channel's potential, traditional jewelry producers recognized it, and the notion of multi- and omnichannel retailing evolved (Anupam, Singh, & Chauhan, 2020). In addition, manufacturers began branding their products, creating sophisticated marketing concepts, and opening stores to connect directly with their customers (McKinsey & Company; Business of Fashion, 2021; Anupam, Singh, & Chauhan, 2020). The new online-only competitors, the removal of the physical boundaries of the retail space, the access to practically any jewelry item in the world at the click of a mouse, and the new connection to jewelry customers have changed and increased the competitive pressure in the market (Signifyd, 2018). This illustrates how competition is driving and has pushed DT in the jewelry industry by driving businesses to develop more efficient, digitally driven business processes and consider innovative strategies to maintain or increase market share.

Digital Technologies

Enabling innovative and creative techniques to transform conventional processes and make them more efficient, digital technologies serve as DT drivers and are directly linked to the actual

internal transformation of processes (Tsiavos & Kitsios, 2022). Digital technologies are revolutionizing the jewelry industry by transforming every stage of the value chain (Rana, Singh, & Chauhan, 2020; Fellenberg, 2021). This includes digitizing logistics management, enhancing the customer experience during the buying process with cutting-edge augmented and virtual reality store concepts, and utilizing data-driven product development using advanced technologies such as AI (Signifyd, 2018; Deloitte, 2018; Rana, Singh, & Chauhan, 2020). The latter is a new approach to success in the jewelry industry, as it examines data from customer wishes and incorporates it into the product design and manufacturing process (Duan, 2021). Innovative solutions enable creative thinking processes to be supported with AI and thus transfer customer expectations into the digital creation process (Puntoni, Reczek, Giesler, & Botti, 2020). Furthermore, increasingly personalization options are being created that allow customers to present their wishes online, collecting data that is then later available to the jewelry manufacturer (Boudet, Gregg, Rathje, Stein, & Vollhardt, 2019). In addition, websites and application software are enabling shoppers to buy products online anytime, anywhere (Cheng, Choi, & Cheung, 2019). Innovations in digital product presentation and simulation such as touchscreen functionality, 2D and 3D rotation, mix-and-match technology, virtual models, and virtual fitting rooms are helping to enable customers to visualize and interact with products in a more immersive way (Cheng, Choi, & Cheung, 2019; Pfabe, Barann, Cordes, Hermann, & Gollhardt, 2021; Fellenberg, 2021). Consumer technologies are constantly evolving, and companies need a strong open mind to continue learning to keep up with this rapid pace of the digital revolution (McKinsey & Company; Business of Fashion, 2021; Fellenberg, 2021).

2.3 Consumer Behavior of Digital Transformation in the Jewelry Market

Another factor driving the DT of the jewelry market is consumers and their changing behavior (Rana, Singh, & Chauhan, 2020). As mentioned earlier, digital innovations in the industry are often aimed at improving the customer experience (Sahu, Deng, & Mollah, 2018). This is because customer behavior, purchase decisions, and consequently revenue are strongly influenced by the experienced customer experience (Verhoef, et al., 2009; Fellenberg, 2021) and consequently customer satisfaction (Pei, Guo, Wu, Zhou, & Yeh, 2020). The experience is composed of several levels that include cognitive, affective, emotional, social, and physical aspects, while customer satisfaction is the match of expectation and perceived level of feeling to the product or service, as well as the customer experience together (Verhoef, et al., 2009; Puccinelli, et al., 2009). Jewelry retailers face the challenge of transferring the exceptional customer experience from physical stores to the online environment and creating an improved

omnichannel experience (McKinsey & Company, 2020). To overcome this challenge, leading online retailers are utilizing innovative digital strategies that prioritize the customer, such as customer-centric web design, advanced search capabilities, AI-driven sales associates, and other cutting-edge technologies (Patnaik, 2022). The high customer adoption of the new way to experience and consume jewelry underscores the importance for jewelry brands to maintain a robust online presence and keep up with the continuously advancing online customer experience (Pfabe, Barann, Cordes, Hermann, & Gollhardt, 2021). But in parallel with the digital and virtual worlds, physical jewelry stores are also evolving, making the in-store customer experience an important tool for marketing (Rana, Singh, & Chauhan, 2020). In-store celebrity endorsements, trained sales staff using touch screens to illustrate concepts, panel discussions with designers and trend researchers, in-store testing opportunities for jewelry and gemstones, and state-of-the-art store interiors all provide a great customer experience (Rana, Singh, & Chauhan, 2020). Even though the trend is to buy online, the majority of purchases, especially of fine and high-end jewelry, are still made in stores (Statista, 2022). This is because there is still a continuing attraction to face-to-face contact in the digital age (McKinsey & Company; Business of Fashion, 2021). On the one hand, the buying experience is inherently emotional, and price plays an important role in this. On the other hand, the purchase of fine jewelry is often associated with a consultation, whereby the fitting and confidence in buying often require professional, hands-on support (McKinsey & Company; Business of Fashion, 2021). In addition, customers should be satisfied with the jewelry design and the increasing sustainability demands that customers are looking for and are currently trending (McKinsey & Company; Business of Fashion, 2021). In order to survive in the new digitalized world and the new competition that comes with this change, traditional players must not only participate in the multi-channel distribution of their products but also invest in new technologies to produce the jewelry (Duan, 2021; Gomelsky, 2021). To meet the increased value of sustainability, recycled materials or unsold jewelry are simply remelted to create new designs. Moreover, social transparency is essential in the jewelry industry, for instance, to know where and how diamonds have been mined. (McKinsey & Company; Business of Fashion, 2021; McKinsey & Company, 2014). The focus on user interfaces and their experiences through the whole customer journey becomes even more crucial since the COVID-19 crisis, as it has not only heightened the significance of online sales channels in general but also the willingness of consumers to switch brands, therefore, optimizing user interfaces has become an essential factor for businesses to stay competitive in the current landscape (McKinsey & Company; Business of Fashion, 2021). In addition, the online focus makes it possible to gather even more data from

customer expectations and needs in order to apply them to new and improved products with the help of analytics, such as AI (Zhang, Bai, & Ma, 2022). Thus, shoppers can be offered a better online customer experience and product satisfaction. Nevertheless, consumers are also very biased toward data collection and analysis via AI, as they may perceive data collection as a form of exploitation (Puntoni, Reczek, Giesler, & Botti, 2020). As companies see only revenue as a target, consumers relinquish ownership of their data and may feel they are losing control over their lives (Anant, Donchak, Kaplan, & Soller, 2021). Therefore, brands need to gain an understanding of this and explain to customers that data collection and processing can also have added value.

H1: Consumers prefer to buy fine jewelry in stores because of the lack of customer engagement online.

H2: Consumers are wary of AI-powered and AI-designed products because of the analysis of collected data with AI.

2.4 Artificial Intelligence

John McCarthy, a retired Stanford professor, first used the phrase artificial intelligence (AI) in 1955 and defined it as " The goal of AI is to develop machines that behave as though they were intelligent" (Ertel, 2017). Humans have designed robots to exhibit clever behavior, for instance, during chess games, nowadays, the emphasis is on machines that can learn, to some extent, similar to humans and it is still an emerging technology (Echeberria, 2022). As a result, AI is the ability of a machine to mimic human qualities such as reasoning, learning, planning, and creativity (Huang & Rust, 2021). It allows technical systems to observe their surroundings, cope with what they see, and solve difficulties in order to attain a specified purpose (Huang & Rust, 2021; Kreutzer & Sirrenberg, 2019). The emergence of new technologies such as Big Data, better computing power, and the Internet of Things (IoT), are the main factors that drive the development of AI (Kreutzer & Sirrenberg, 2019; Haenlein & Kaplan, 2019). Its applications have expanded and evolved sectors like as biology, education, engineering, finance, healthcare, and marketing (Huang & Rust, 2018; Ma & Sun, 2020). AI has a major impact on many facets of marketing, including retail, advertising, pricing, brand relations, and customer relationship management (Vlačić, Corbo, Costa e Silva, & Dabić, 2021). It's also essential to note that AI has started to play an important role in recent years in all phases of product innovation, particularly in the field of product design (Zhang, Bai, & Ma, 2022).

2.5 AI in Product Design

Theory and practice have demonstrated that as AI technology continues to progress, it can play a crucial role in product design. During the ideation phase, human innovators may face challenges in handling large amounts of data (Verganti, Vendraminelli, & Iansiti, 2020). However, AI algorithms can analyze trends, make predictions, identify potentials, and generate ideas that human experts may not have considered (Verganti, Vendraminelli, & Iansiti, 2020). In the process, AI enables the development of more user-centric solutions than human approaches, while continuously updating throughout the whole product lifecycle (Verganti, Vendraminelli, & Iansiti, 2020). Employees of commercial businesses are highly susceptible to their own biases when making creative decisions during the idea-screening phase and are unable to make objective decisions (Zhang, Bai, & Ma, 2022). This limitation can be compensated by using AI to integrate offline or real-time data, connect concepts or events, and analyze data for effective idea screening (Wedel & Kannan, 2016). Furthermore, AI can reduce costs and time by taking on tedious and repetitive tasks (Haenlein & Kaplan, 2019), while helping companies achieve innovative breakthroughs (Nozaki, et al., 2017). To summarize, AI has the potential to improve product creativity and play an indispensable role in the product design phase (Zhang, Bai, & Ma, 2022). On the other hand, AI design is not yet widely adopted by consumers (Zhang, Bai, & Ma, 2022). The reason behind this is that product design using AI is a relatively new practice, which can create a significant correlation between AI design and novelty, thus resulting in a unique consumer experience (Blijlevens & Hekkert, 2019). According to research, there is a positive relationship between novelty and aesthetic preference (Hung & Chen, 2012), and the pursuit of innovation is a primary motivation for people to investigate and gain new experiences and stimuli (Zhang, Bai, & Ma, 2022). Furthermore, previous research has shown that the integration of AI into a service or product is perceived as innovative by customers, who develop positive behavioral intentions (McLeay, Osburg, Yoganathan, & Patterson, 2021).

H3: The willingness of consumers to buy AI-designed jewelry is higher when they perceive it as an innovative product.

2.6 AI in Jewelry Design

Modern contemporary high jewelry reflects the feelings, emotions, and personal experiences of designers and wearers (Gong & Yuan, 2017). There is no restriction on values or specifications of how a piece should be worn (Duan, 2021).

As a result of the rapid advancement of the Internet, Big Data, cloud computing, IoT, and other related technologies, AI has enabled new opportunities for jewelry design and customization.

One such application of AI is the use of chatbot technology to create images of (Roose, 2022), for instance, in jewelry designs. This technology can be used to create virtual representations of jewelry, allowing customers to envision the final product and make an informed purchase decision (Info-Tech Research Group, 2022). In addition, AI-powered chatbots can also be used to make design suggestions based on a customer's preferences and specifications, enabling a more personalized and efficient shopping experience (Roth, 2022). Integrating AI into jewelry design can also facilitate the process of prototyping and manufacturing, allowing for faster and more accurate production of unique and intricate designs (Gawade & Tilak, 2022).

The integration of AI and 3D printing has a significant impact on various aspects of the jewelry design and production field, including graphic creative design, modeling, material selection, and production (Duan, 2021). The application of AI in the jewelry industry supports intelligent digital integration, allowing to produce of customized jewelry pieces to cater to consumer demands, with the aid of 3D printing (Duan, 2021). The use of this technology enhances the overall thought process involved in the design, material selection, manufacturing techniques, market trends, and other relevant factors (Duan, 2021).

Designers play a critical role in conveying emotions, artistic concepts, and humanistic insights (Gong & Yuan, 2017), the context of time, and other aspects of thought and consideration, as well as the selection of design sketches of AI and the in-depth refinement of the design (Duan, 2021). Whereby AI does the repetitive, trivial, boring work, such as obtaining and searching for massive design inspiration, including comparing design manuscripts (Duan, 2021). This ensures that the same or similar designs from contemporary designers are eliminated, and designers can develop more original ideas (Duan, 2021). Ultimately, this approach confers significant time and cost savings during the jewelry design process. Following that, the algorithm creates appealing ornaments with different design variations, and thanks to digital design, customization of designs and arrangement of diamonds, pearls, or stones are possible in a unique way (Gawade & Tilak, 2022; Gupta, Damani, & Narahari, 2018). In essence, innovative design can not only be an imitation of original designs, because this has no dynamic growth (Duan, 2021). It is necessary to understand that artistic creation and design include characteristics such as the human spiritual level and soul (Gong & Yuan, 2017), as well as the care of human nature and, above all, the understanding of the epoch of creation (Duan, 2021). This cannot be completely replaced by an algorithm. In combination with the jewelry designer's design style, the AI uses customer needs (e.g., wear size, price) and sources of inspiration in the database (e.g., natural shape profiles and patterns) (Gomelsky, 2021), style characteristics, and jewelry categories (Gupta, Damani, & Narahari, 2018; Duan, 2021). Thus, the parameters

of the design scheme can be completed according to consumers' modern design goal, i.e., original designers and artists are not eliminated by artificial intelligence, but their designs or works become more valuable (Gawade & Tilak, 2022).

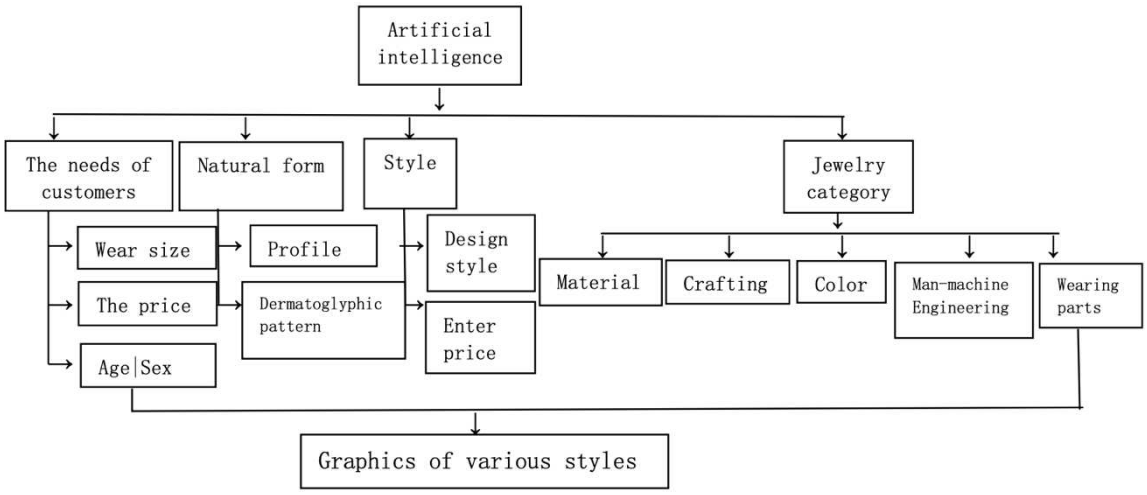


Figure 1: Duans' Value of AI in Creative Design of Jewelry

H4: The incentive to buy AI-designed jewelry increases when consumers perceive it as an added value to having their needs analyzed.

Another approach to AI-designed jewelry that leaves the designer out of the equation has been taken by a team of researchers at Microsoft (Gupta, Damani, & Narahari, 2018). In research from Gupta, Damani and Narahari in 2018 traditional jewelry design practices have been redefined and a unique system has been developed using machine learning.

In this form of jewelry design, the focus was on traditional stone jewelry, i.e., the arrangement of precious and semi-precious stones into various patterns. This process, while imaginative and interesting, is slow and laborious. Microsoft researchers leveraged the principles of jewelry design and used machine learning to optimize the space required to reduce the time needed to create designs. The rules of optimized AI were based on maximizing a given set of jewelry design principles that combined harmony, proportion, unity, and balance. Finally, to evaluate the quality of the designs, the team used a random sample of 100 AI-generated designs, each of which was judged by 15 commentators to account for different notions of beauty. Nearly 53% of the designs were appreciated by the commentators. Thus, more than half, which is why it can be assumed that only AI can create designs that humans find beautiful based on the described specifications.

H5: Consumers will buy jewelry designed by AI because they perceive it as an aesthetic design, which consists of components such as harmony, proportion, unity, and balance.

2.7 Perceptions of Consumers on AI-Designs

Creativity and AI have historically been incompatible. Formerly it may seem almost unimaginable that businesses might and should embrace AI and machine learning for innovation. Given their "unique" capacity for creativity, humans have historically been viewed as the domain of innovation (Haefner, Wincent, Parida, & Gassmann, 2021). Traditionally, only skilled designers were assumed to have the skills necessary to create high-quality design creations, but that perception quickly changed when the ability to design and personalize products themselves emerged (Schreier, Fuchs, & Dahl, 2012). However, it continues to be emphasized that AI, compared to professionals, cannot truly capture consumers' emotional needs in design (Longoni & Cian, 2020), and consumers perceive those algorithms as less useful and feel less comfortable trying them in tasks or products (Castelo, Bos, & Lehmann, 2019), even though there is a lot of study examining ongoing developments (Puntoni, Reczek, Giesler, & Botti, 2020). In addition, it is possible that consumers will be more accepting of traditional human designers in product innovation and design (Paharia & Swaminathan, 2019).

Conversely, it can be observed that consumer reactions to AI-assisted product design is diverse. Several previous studies demonstrate as mentioned the consumers' resistance to AI (Morewedge, 2019; Xie, Yu, Zhang, & Chen, 2022), others have revealed that consumers prefer AI to human product development due to its more rational and logical approach (Longoni & Cian, 2020; Dietvorst, Simmons, & Massey, 2018; Granulo, Fuchs, & Puntoni, 2021). Since AI design is a new concept and phenomenon that differs from traditional professional design in terms of design basis and logic, a study by Zhang et. al discovered that “curiosity” is one of the main reasons why AI-designed products may be preferred to those designed by professionals (Zhang, Bai, & Ma, 2022). This attitude may be caused by the fact that consumers have a lack of knowledge about the AI algorithm (Swasy & Rethans, 1986). Besides this, it also highlighted that for hedonic products, consumers' willingness to pay for AI-created products is significantly lower than for professional-created products (Zhang, Bai, & Ma, 2022). This is due to the belief of consumers that AI cannot capture and replicate human emotions and thus have a lower willingness to pay for hedonic products that they associate with emotional benefits (Castelo, Bos, & Lehmann, 2019). Jewelry, especially fine jewelry, is classified as a hedonic item (Park & Moon, 2003), which offers experiential consumption, sensory experience, and enjoyment

(Pezoldt, Michaelis, Roschk, & Geigenmueller, 2014). Therefore, it can be assumed that the willingness to buy AI-designed jewelry is lower. Based on this reasoning, the following hypotheses are provided.

H6: Consumers have a greater willingness to buy jewelry designed by professionals than those designed by AI.

H7: Consumer curiosity about the new manufacturing process positively affects consumer willingness to buy AI-designed jewelry.

H8: The willingness of consumers to buy AI-designed jewelry is tempered by its hedonistic character.

H9: Consumers believe that the uniqueness of the designed jewelry, which is related to the influence and creativity of the designer, is lost when it is designed by AI.

Chapter III - Research Methodology & Data

3.1 Research Method

The primary objective of this study is to explore consumer perceptions, motivators, and obstacles to the adoption of an innovative product, such as jewelry designed with the help of AI. To accomplish this goal, the first phase of the research collected secondary data via an exploratory review of the main literature on the research topic, followed by primary data collection. In the second phase, a qualitative investigation was conducted through in-depth interviews to elicit primary data from consumers. The interviews sought to gain insights into consumers' perceptions, purchase motivations, and impediments to the adoption of AI-designed jewelry. Moreover, the interviews served as a preliminary test to ascertain the validity of the study's earlier stated hypotheses. This is relevant to obtain regional feedback, as the existing published literature is not based on the DACH market. Furthermore, it was investigated if there are significant insights and differences between the online and offline jewelry market. After analyzing the interviews and introducing a new hypothesis, a quantitative survey was developed using an online questionnaire to conduct a more in-depth analysis of these findings.

The integration of multiple research approaches in a single study is commonly referred to as mixed-methods research. This approach is widely recognized among researchers as a valuable tool for obtaining diverse perspectives on a given research topic, particularly in exploratory and evaluative research (Stoecker & Avila, 2021).

3.2 Secondary Data Collection

During the literature review phase, the study collated secondary data from various sources, including academic literature, books, corporate reports, journals, and relevant websites. These sources encompassed a diverse array of topics related to the research subject and laid the groundwork for the formulation of the study's hypotheses.

3.3 Primary Data – Qualitative Data

Structured in-depth interviews were selected as the research method for gathering qualitative primary data, primarily because they enable participants to express their opinions freely, without being influenced by social pressure or conforming to group opinions (Mears, 2012). This is a significant advantage over other survey methods, such as focus groups, which may be susceptible to groupthink and social desirability biases (Mears, 2012). In addition, contradictory individual positions, for example, can be identified very well and increases the spontaneity and

willingness to provide information of the respondents and is suitable for precise recording and analysis of the range of polarizing statements (Goodman, 2001)

By removing peer group pressure, the participant can express their personal and unbiased thoughts and beliefs (Acocella, 2012), which is especially important to analyze in the context of accepting a new innovative product such as AI-designed jewelry, which can generate many controversial opinions. Since participants are not bound to closed questions, this method also has the advantage that an unlimited amount of data can be collected (Mears, 2012). This encourages the gathering of significant supplementary data, which can eventually lead to the formulation of new research hypotheses (Schmidt, 2015).
As a model, some questions by Soares were modified and adapted to see a comparison between both studies of 3D-printed and AI-designed jewelry in the conclusion (Soares, 2022).

3.3.1 Qualitative Data – In-depth Interviews

This study employed semi-structured interviews to obtain a preliminary understanding of consumer perceptions towards AI-designed jewelry, as well as their motivations and barriers to purchase. A sample of seven participants was selected, comprising two male and five female individuals, who were all current residents of the DACH region and considered representative of the study's target market. The interviews were conducted for a duration of 20 to 30 minutes, and the participants' ages ranged from 22 to 59 years, with an average age of 27 years. Of the seven participants, three were students, while the remaining four held non-student occupations, including a fashion product manager, a pharmacist, and two consultants. Among the student participants, two were enrolled in a master's degree program in management, while one was pursuing a bachelor's degree in biology.

The interview (Appendix 1) was structured in the following:
I - General attitudes toward purchasing high jewelry.
II - General perceptions, reasons for purchase, and barriers to AI-designed jewelry:
- A - Awareness of AI-designed jewelry and possible future purchase intention.
- B - Perceived benefits and consumption drivers related to AI-designed jewelry.
- C - Perceived risks and consumption barriers related to AI-designed jewelry.

3.3.1.1 General Attitudes Toward Jewelry Shopping

First, participants were asked about their overall sentiments regarding jewelry buying, with an emphasis on their jewelry product purchasing behaviors (Soares, 2022). Six of the seven respondents reported that they had already purchased a minimum of one piece of jewelry online at this time, with four out of seven indicating that this was their preferred channel for jewelry purchases. Since this is not decisive, there is no reason to examine the online market in greater depth in the survey.

Second, respondents were asked about the regularity of their jewelry purchases (5 to 6 times per year on average) and the preferred type of jewelry purchased, with a clear preference for earrings (6 out of 7). The fourth question posed to the participants was to imagine that they would like to buy fine jewelry and how they would proceed. It became clear that expensive jewelry would rather be purchased in stores (6 out of 7), which significantly supports H1. The reasons for this were the advice given by salespersons as well as making sure that the product is genuine and can be taken away immediately.

Afterward, the interviewees were asked about their satisfaction with the current range of jewelry on offer in the DACH market. Five of the seven respondents answered this question positively, while one respondent had never bought jewelry online and another respondent stated that he was dissatisfied because the jewelry is very expensive, but the quality is better than in other markets. Finally, respondents were asked to list the main advantages and disadvantages of buying jewelry online compared to buying it in a store (Soares, 2022). These are listed in the table below:

Online jewelry shopping compared to In-store jewelry shopping	
Advantages	Wider product selection (n=6) Cheaper prices (n=4) Convenience (n=3) Timesaving (n=2)
Disadvantages	Missing possibility of trying on (n=4) Missing guidance and consultancy (n=2) Poorer quality (n=2) Less individuality (n=1) Problems with the right product size (n=1)

Table 1: Advantages and Disadvantages of shopping for jewelry online compared to in-store shopping (Soares, 2022).

According to this table, the main benefits perceived by participants were the greater variety and selection of products, as well as the ability to compare prices and find the cheapest one, which were offset by the lack of consultation with the customer and the inability to try on products before purchasing them, which were identified as the main disadvantages of buying jewelry online versus shopping in stores.

3.3.1.2 General Perceptions, Purchase Incentives, and Barriers towards AI-designed Jewelry

In this section of the survey, participants were given an extensive overview of AI technology and AI-designed jewelry, as well as an explanatory film, to help them grasp the ideas. Following that, participants were asked about their past awareness and knowledge of AI-designed jewelry and their intention to acquire it (Soares, 2022).

- *Awareness of AI-designed jewelry and first thoughts*

Of the 7 participants interviewed, only one said they knew about the new jewelry design process but did not yet own a piece of jewelry designed by the AI. When asked if they had ever purchased an AI-designed or AI-powered product, only 3 of the participants answered in the affirmative. Following this, the interviewees were asked if they would be interested in purchasing AI-designed jewelry, with only one positive answer and 6 of the 7 interviewees being hesitant or opposed to an intention to purchase because of their design tastes. This supports H6 that was stated.

Additionally, a question was asked about the participants' level of acceptance towards the use of new technologies on a scale of 1 to 10 (Soares, 2022), with 1 being the lowest and 10 being the highest. This question showed that participants who did not intend to purchase AI-designed jewelry had the lowest acceptance toward new technologies, while those who were unsure or intended to purchase such a product had a higher acceptance. This finding suggests that individuals who are more accepting of new technologies are more inclined to buy AI-designed jewelry, therefore a new hypothesis was developed.

H10: Technology optimism is positively related to attitude toward buying AI-designed jewelry.

After participants received an initial impression of AI-designed jewelry and reflected first intentions in this regard, they were presented with a given choice. They were offered to choose between a high-end piece of jewelry that was AI-designed or one where every step was created and designed by a professional jewelry designer. After answering the question, the participants

were divided into two groups. To enhance the segmentation of subsequent questions and gain a more nuanced understanding of participant perspectives, the study classified respondents into two distinct groups: Group 1, consisting of participants who expressed no interest in purchasing AI-designed jewelry, and Group 2, comprising of participants who were open to the idea of purchasing such jewelry. This categorization enabled a more comprehensive examination of each participant's unique contributions based on their personal characteristics and preferences.

- *Perceived Benefits and Consumption Drivers Regarding AI-designed Jewelry*

Following the participants' selection between AI-designed and handmade jewelry, the majority (four out of seven) opted for the latter due to reasons such as design and production process, thereby providing further support for the established hypothesis H6. The study subsequently sought to gauge participants' perceptions of the advantages of AI-designed jewelry in comparison to traditional jewelry, as a means of comprehending their general attitudes towards AI-designed jewelry and their likelihood of purchasing it. This inquiry aimed to determine whether participants in both groups shared similar perspectives or divergent viewpoints on this topic.

The results are summarized in the following table (Soares, 2022):

AI-designed jewelry benefits and consumption drivers	
Group 1	Group 2
Consumers' needs (Price, Materials) (n=4) Individuality/ Uniqueness (n=2) Designs that are fashionable, trendy (n=1)	Consumers' needs (Price, Materials) (n=2) Curiosity (n=2) Aesthetic features (n=1) Individuality/ Uniqueness (n=1)

Table 2: AI-designed jewelry benefits and consumption drivers of Group 1 & 2

Here it can be stated that AI, if it takes into account the needs of consumers, it could be one of the main benefits and consumption drivers perceived by the participants of both groups. This variable is followed in Group 1 by uniqueness and individuality and finally that through AI trends are processed faster to bring products to market that are up to date.

In Group 2 with one mention each, aesthetic features and uniqueness were the advantages mentioned after "meeting the needs of consumers". In addition, the variable curiosity for such a new design process and the product emerged here.

From these results, H4, H5, and H7 are supported by the participants, as the variables such as integrated consumer needs, aesthetics, and curiosity were demonstrated as driving forces for their purchase intention for AI-designed jewelry.

- *Perceived risks and consumption barriers related to AI-designed jewelry.*

Following the examination of the perceived benefits and drivers of AI-designed jewelry among participants, it was deemed essential to further investigate their perceived risks as potential barriers to consuming this product.

Below are the results of this analysis (Soares, 2022):

Risks and consumption barriers of AI-designed jewelry	
Group 1	Group 2
Loss of creativity/art (n=3) Missing the emotional value (n=2) Loss of design individuality (n=1)	Loss of creativity/art (n=2) Loss of design individuality (n=2)

Table 3: AI-designed jewelry risks and consumption barriers of Group 1 & 2

These results lead to the conclusion that most of them fear that the creativity and art of the designs as well as the influence and resourcefulness of the designers will be lost. Both variables are perceived as the biggest obstacle to consumption by both groups, which H9 confirms. In addition, participants in Group 1 who would not own the AI-designed jewelry were concerned that the emotional value of a hedonistic product like this would be lost. This confirms hypothesis H8 stated for this purpose.

3.4. Primary data - Online Survey

As previously mentioned, a primary quantitative data collection method in the form of an online survey (Appendix 2) was employed following the qualitative data gathering stage. This methodology was chosen due to its ability to collect data from a large sample size in a relatively short period of time and at a reduced cost (Ilieva, Baron, & Healey, 2002). Participants were directed through a series of inquiries about their jewelry purchasing behavior and were asked about their attitudes towards the AI-designed jewelry purchasing process.

A pilot sample of five respondents was initially used to validate the questionnaire's wording and clarify any confusing terms or ideas. Subsequently, the survey was distributed via the Qualtrics platform, and was made available to participants through popular social media

networks such as WhatsApp, Facebook, Instagram, and LinkedIn. This dissemination through social networks allowed for a broader reach and ultimately led to a significant increase in the number of respondents. The questionnaire consisted of 27 items and targeted jewelry consumers who either currently or regularly reside in the DACH region, with a specific focus on their jewelry purchasing habits, as well as their attitudes and buying intentions towards AI-designed jewelry. The first question served as a filter question to ensure that the respondents matched the study's target population. Those who did not meet this criterion were automatically excluded from the study, while others proceeded with the subsequent inquiries. Responses that were incomplete or did not accurately answer attention test questions were removed from the data set. The remaining questions were developed based on the guidelines established during the in-depth interviews:

First, general consumption habits and attitudes about jewelry purchases were investigated. During this phase, participants were initially asked how frequently they bought jewelry and what kind of pieces they normally purchased. In addition, they were also asked about their habits when purchasing fine jewelry online or in-store. In each case, respondents were asked about their preferred shopping location followed by the reasons for this behavior. In addition, each was asked about perceived advantages and disadvantages compared to their non-preferred shopping channel for jewelry. These questions served to explore the preference in jewelry shopping and their reasons to test H1. In addition, to examine H9, participants were asked what significance the designer's creativity has on the uniqueness and personality of a piece of jewelry.

Second, the participants were introduced to the concept of AI-designed jewelry through a visual aid that consisted of three images, which aimed to enhance their understanding of the product's design process and final outcome. Once the presentation concluded, the participants were inquired about their level of familiarity with AI-designed jewelry, and their initial perceptions of the product were carefully analyzed.

This study of participants' awareness of AI-designed jewelry was followed by an evaluation related to this product, which resulted in two distinct groups of participants:

1 - Participants who plan to purchase AI-designed jewelry.

2 - Participants who do not plan to purchase AI-designed jewelry.

Both participant groups were examined to explore the reasons for their behavior towards AI-designed jewelry. They were also questioned about the advantages and disadvantages they

associate with AI-designed jewelry in comparison to handmade jewelry. This inquiry aimed to examine individual opinions and perceptions related to the use of AI for jewelry design and purchase intentions and to test the validity of hypotheses H2 to H10.

Chapter IV – Analysis and Results

4.1 Data Collection and preparation

The statistical program RStudio with the help of MS Excel was chosen for the purpose of data transformation and statistical analysis. The survey data was extracted from Qualtrics through automated means and subsequently imported into RStudio for further processing.
Of the sample of 264 respondents, 18 participants were excluded because they aren't currently living in the DACH region. As previously stated, in order to enhance the reliability and accuracy of the data collected during the experiment, an attention test has been incorporated into the study. The attention test aims to ensure that respondents are carefully reading and comprehending the questions presented to them, rather than rushing through the survey or providing inconsistent or incoherent responses. Participants were instructed to select "Strongly disagree" once and "Strongly agree" on a Likert Scale at Q22. Although most participants answered the attention question correctly, 10 respondents failed this test and whose answers were also deleted. 41 additional respondents participated in more than 50% of the survey but did not fully complete it. Nevertheless, these responses were still included, and the missing questions were marked as N/A in the matrix. Following the screening process, 236 eligible responses were considered for analysis in this study.

4.2 Sample Characterization

This sample of 236 valid responses included 122 female (51.69%), 70 male (29.66%), and 2 non-binary or third gender (0,85%) respondents. Among them, 44 (18.64%) did not specify or did not want to say. The majority of respondents were between 25 and 35 years old (43.22%), followed by 14.41% between 36 and 45 years old. In terms of highest educational attainment, most participants had a master's degree (31.36%) or at least a bachelor's degree (30.51%). Regarding current employment, the majority and more than half of the respondents were currently employed (57.63%) and 23.73% were still students or pupils. Finally, regarding gross monthly income, the majority reported receiving between €1500 and €3000 per month (32.2%), while 23.73% reported receiving between €3000 and €5000.

These results can be read and analyzed in more detail in Table 5 (Appendix 3).

4.3 Descriptive Statistics

First, the means and standard deviations of the variables tested, which comprised the entire data set, were analyzed. These were presented in table 15 in appendix 3.

4.3.1 General Shopping Habits and Attitudes towards the Shopping Channel

Subsequent to the initial screening question, the study participants were queried regarding their annual frequency of purchasing jewelry, as presented in Table 6 of Appendix 3. Among the respondents, 46.61% indicated that they procure new jewelry "2 or fewer times per year," and 20.34% designated that they purchase "6 to 11 times per year." Following this initial analysis of purchase frequency, the participants were further queried concerning the specific type of jewelry they typically acquire, as presented in Table 7 of Appendix 3. The most frequently cited types were rings (25.42%), earrings (23.33%), and necklaces (22.92%). It is noteworthy that these findings align with those from a 2023 survey conducted by DiamondNexus, which also identified earrings, rings, and necklaces as the top-selling products within the global jewelry market (Diamond Nexus, 2023).

Furthermore, the study participants were questioned regarding their prior jewelry-purchasing behavior, as detailed in Table 8 of Appendix 3. Of the total respondents, 166 participants, constituting 70.34% of the total votes, reported that they primarily purchase jewelry in person at a physical store, whereas the remaining 27.97% prefer online channels. One striking aspect is that consumers who purchase 2 or fewer times a year choose to do so in-store (50.6%).
As a further step, the cohort of participants who indicated a proclivity towards conducting their jewelry shopping within physical retail outlets was subjected to an analytical assessment employing a cross-tabulation test, with the objective of discerning any identifiable demographic trends among this subset of respondents. The findings of this test revealed several notable demographic patterns. A majority of the respondents were female (59.15%) and aged between 25 and 35 years (54.93%). A significant portion of the cohort reported being presently employed (63.38%), holding a bachelor's degree as their highest level of academic attainment (39.4%), and earning a gross monthly income ranging from 1500 to 3000 euros (36.62%).

Subsequently, the reasons underlying the preferred sales channel were explored, with most in-store buyers (30.62%) citing a preference for trying on the jewelry before purchasing, followed by 23.44% who expressed greater confidence in the authenticity of in-store jewelry and the provision of professional advice (Consultation 21.05%) (Table 9, Appendix 3). Additionally, the same group of respondents was queried concerning the factors that deterred them from online jewelry purchases (Table 10, Appendix 3), with the majority (26.34%) citing the risk of

fraud, followed by 20.98% who reported complicated return processes and 19,51% the absent consultation that cannot be offered when buying online. Consequently, H1 can be confirmed.

Participants who preferred to purchase jewelry online identified convenience (22.11%) as the primary reason, along with a wide product variety (18.95%) and ease of price comparison (16.84%) (Table 11, Appendix 3). Comparatively, online shoppers were also asked to identify the disadvantages of their preferred purchasing channel. In this case, the group highlighted similarly to in-store buyers that complicated return processes (21.54%) and the risk of fraud (20.00%) were the primary concerns, in addition to the absence of expert consultation (21.54%) (Table 12, Appendix 3).
These results are consistent with those obtained from the qualitative analysis in the in-depth interviews.

Finally, to conclude this chapter on the general shopping habits of the DACH jewelry market respondents, the satisfaction of the participants with the current offer was queried. The results show a high level of satisfaction: more than 52% of the participants stated that they were at least somewhat satisfied. In addition, an investigation was conducted to determine whether females or males as well as in-store or online buyers are more satisfied, although no definitive result was obtained since both variables are equally satisfied.

4.3.2 Attitudes and Consumer Behavior towards AI-designed Jewelry

Subsequently, the concept of AI-designed jewelry was introduced to the respondents, as already explained in point 3.4. Successively, the perception of the product as well as the possible future purchasing behavior and the perceived advantages and disadvantages of such an innovative design process were evaluated.
Of the 210 participants who met the requirements to respond to this section of the questionnaire, 182 (86.67%) said they did not know about the concept, while the remaining 28 (13.33%) said they did (Table 13, Appendix 3) Additionally, everyone was also asked about their first impression, with more than 60% (60.95%) having a "Somewhat positive" or even an "Extremely positive " impression of the concept. In addition, respondents were asked about their aesthetic impression on a Likert scale of 1-10, with a mean of 6.92 and more than 60% (67.96%) expressing a positive opinion of the composition of harmony, proportion, unity, and balance. Finally, 35.92% of respondents rated AI-designed jewelry as extremely innovative.

As a natural progression of the research, an exploration into the proclivity of the participants to purchase jewelry designed through the utilization of AI, as well as their underlying motives for doing so, was conducted. When asked if participants would be willing to purchase jewelry designed by artificial intelligence, 118 people, or 50% of the counted sample, were in favor of the purchase, while 38.14% were opposed to the idea (Table 14, Appendix 3). Moreover, a cross-tabulation analysis was performed to ascertain if any significant demographic associations could be established regarding the participants' preferences for AI-designed jewelry regarding aesthetics, perceived innovativeness, and purchase intention. However, no distinct patterns or correlations were detected through this analysis.

Subsequently, the participants were individually surveyed regarding their decision and requested to enumerate the perceived benefits and disadvantages of AI-designed jewelry.

Among the respondents who stated that they did not want to purchase AI-designed jewelry, it was found that 23.28% of these participants gave "I prefer to purchase handmade jewelry without AI" as the main reason for this Followed by 19.83% was the reason "I think that through the process with AI, the creativity of the designer is lost" (Graph 2, Appendix 3). These results confirm the main reasons already identified in the qualitative research and confirm H6 (cf. Table 3).

Of the subset of participants who expressed an inclination to acquire AI-designed jewelry in the future, a majority (20.25%) cited the uniqueness and difference of the new technology as the primary reason motivating their decision. Additionally, 17.09% of the participants expressed a desire to experiment with novel and unfamiliar products, as they were previously unaware of the existence of such jewelry and were driven by their curiosity toward this innovation (Graph 5, Appendix 3).

Following the screening of the participants' inclinations towards purchasing AI-designed jewelry, respondents who indicated an interest in acquiring this product in the future, as well as those who expressed a lack of interest, were subsequently questioned regarding their perceived advantages and disadvantages of AI-designed jewelry as compared to traditional hand-designed jewelry. This was undertaken with the objective of conducting a more granular examination of the market for the study, which would serve to identify any perceived risks that could be alleviated through targeted communication efforts, as well as to identify areas of focus for jewelry manufacturers' marketing communication strategies.

The participants who would want to buy the jewelry named "Faster design/production process" and "Lower price" as the main advantages of AI-designed jewelry (Graph 3, Appendix 3) and

"Missing creativity of the designer" and "Missing emotional influence" as the main disadvantages (Graph 4, Appendix 3).

In comparison, the participants who decided not to buy choose "Getting new design ideas" and "Innovative product" as the main advantages of AI-designed jewelry (Graphic 6, Appendix 3). On the other side, similar to the group that expressed an interest in purchasing AI-designed jewelry, the lack of creativity on the part of the designer and the absence of emotional influence were identified as the principal drawbacks of AI-designed jewelry (Graph 7, Appendix 3). This confirms again the established thesis H6.

These findings are also consistent with the findings of the qualitative research.

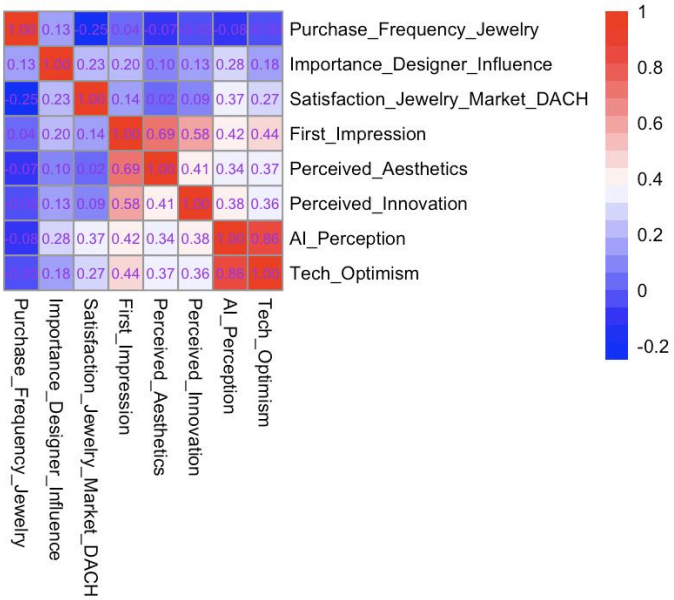
4.4 Hypothesis Testing

4.4.1 Reliability and Correlation Assessment

To assess the validity of the hypotheses formulated in this study, participants were asked to rate their level of agreement with 12 different scales, including two control scales. The inclusion of control scales aimed to ensure the reliability of the data and minimize any potential sources of bias. Additionally, other questions were included in the questionnaire to provide supplementary evidence for the hypotheses. The scales utilized in the study were either adopted from previous literature or developed specifically for this novel concept, which has yet to receive adequate research attention. All variables were measured using a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree." To ensure the quality and appropriateness of the results, the reliability and validity of the scales used were first evaluated (Gnaldi, Bartolucci, & Bacci, 2015). To achieve this, the reliability of the construct was analyzed using Cronbach's alpha test for the latent scales (Gnaldi, Bartolucci, & Bacci, 2015) and a correlation heatmap to illustrate the strength of relationships of the numerical variables (Piegorsch, 2015). Concerning the application of Cronbach's alpha, the scales were first determined, which are on one hand the perceptions towards AI, while alternately, the focus lies on the level of optimism regarding technology. Perceptions towards AI were measured using all scales from Q22, with a Cronbach's alpha of 0.7179893. On the other hand, optimism towards technology was assessed using the following scales with a Cronbach's alpha of 0.8256045:

- Technology gives me more control over my daily life
- New technologies are mentally stimulating for me
- I am excited about the advancements in digital technology
- I'm really curious about the new AI design technique and want to learn more about it

This value confirms that they are sufficiently consistent and are considered reliable because they reach the benchmark Cronbach's alpha of 0.7 (Gnaldi, Bartolucci, & Bacci, 2015)



Graphic 1: Correlation heat map of variables

The correlation heat map displays a scatter of correlations, which are further scrutinized for significance. The Shapiro-Wilk test was applied to examine the metric scales mathematically rigorously for normal distribution (Sen, Sen, Srivastava, & Srivastava, 1990).

	Shapiro Wilk Test	**p-Value**
Purchase_Frequency_Jewelry	W = 0.8523	2,944E-11
Importance_Designer_Influence	W = 0.82091	5.77e-15
Satisfaction_Jewelry_Market_DACH	W = 0.89807	5.91e-11
First_Impression	W = 0.87804	5,622E-09
Perceived_Aesthetics	W = 0.93515	0,00006156
Perceived_Innovation	W = 0.84331	1,224E-10
AI_Perception	W = 0.95529	0,001078
Tech_Optimism	W = 0.93196	5,575E-06

Table 4: Shapiro Wilk Test of metric scales

When conducting the Shapiro-Wilk test to assess normal distribution, a low p-value indicates rejection of the null hypothesis, which suggests that the data is normally distributed

(Sen, Sen, Srivastava, & Srivastava, 1990). Given that neither the ordinal nor metric scales conform to a normal distribution, all parametric tests were performed using non-parametric alternatives.

In the following, the hypotheses of purchase intention and purchase barriers were divided and examined with the appropriate tests.

4.4.2 Purchase Intention

Hypotheses H3, H4, H5, H7, and H10 were examined to assess the purchase intention of consumers toward AI-designed jewelry. A one-sided difference test was utilized to analyze the data, and a boxplot was used to present the matching variables from the dataset (Graph 8; 9; 10; 11; 12 in Appendix 3), followed by the appropriate statistical test (Dalgaard, 2008). Given the comparisons of means, a Wilcoxon rank sum test was performed for all hypotheses in this chapter (Balakrishnan & Ng, 2006).

The first purchase intention hypothesis H3 proposes that there is a significant difference in the willingness of consumers to buy AI-designed jewelry (Preferred_Choice_AI) when they perceive it as an innovative product (Perceived_Innovation). The results of the Wilcoxon rank sum test indicate that the p-value was 1.816e-10, which is below the significance level of 0.05. (Balakrishnan & Ng, 2006). Therefore, the null hypothesis can be rejected. This means that when the preferred choice is AI jewelry, the perceived innovation of the product is significantly larger. Hence, the willingness of consumers to buy AI-designed jewelry is higher when they perceive it as an innovative product.

The following Hypothesis 4 suggests that there is a significant increase in the incentive to buy AI-designed jewelry (Preferred_Choice_AI) when consumers perceive it as an added value to having their needs analyzed (AI_Perception). The results of the Wilcoxon rank sum test with continuity correction showed that the p-value was 1.132e-07, which is also less than the significance level. Therefore, the null hypothesis can be rejected. This means that when the preferred choice is AI jewelry, the AI perception is significantly larger. Hence, the incentive to buy AI-designed jewelry increases when consumers perceive it as an added value to having their needs analyzed.

Hypothesis 5 postulates that consumers purchase AI-designed jewelry (Preferred_Choice_AI) because they perceive it as having aesthetic designs that comprise harmony, proportion, unity, and balance (Perceived_Aesthetics). The Wilcoxon rank sum test with continuity correction

yielded a p-value of 2.663e-14, less than the predetermined significance level of 0.05. Hence, the null hypothesis is rejected, and it can be concluded that consumers' perception of AI-designed jewelry as aesthetically pleasing significantly influences their purchasing behavior.

Hypothesis 7 argues that consumer curiosity about the new manufacturing process (First_Impression) positively affects their willingness to buy AI-designed jewelry (Preferred_Choice_AI). The Wilcoxon rank sum test with continuity correction showed a p-value of 3.727e-16, less than the predetermined significance level of 0.05. Thus, the null hypothesis is rejected, and it can be concluded that consumers' initial impression of AI-designed jewelry significantly influences their purchasing behavior.

Hypothesis 10 suggests that consumers' technology optimism (Tech_Optimism) is positively related to their attitude towards purchasing AI-designed jewelry (Preferred_Choice_AI). The Wilcoxon rank sum test with continuity correction yielded a p-value of 8.106e-11, less than the predetermined significance level of 0.05. Consequently, the null hypothesis is rejected, indicating that consumers' optimistic attitude toward technology significantly influences their purchasing behavior toward AI-designed jewelry.

4.4.3 Purchase Barrier

H2, H6, H8, and H9 were assigned as purchase barriers toward AI-designed jewelry. In addition, H1 was included to supplement the chapter and confirm the determination that H1 can be accepted. As H6 was already confirmed several times in chapter 4.3.2 there was no further investigation needed.

H1 tested whether consumers prefer to buy fine jewelry in stores due to the lack of customer engagement online. The one-sided probability test was conducted using the prop.test function in R. The results showed that the null hypothesis can be rejected with a p-value $< 2.2e-16$, indicating that the lack of customer engagement when shopping online was significantly often (above average between the choices) chosen. Therefore, consumers do prefer to buy fine jewelry in stores because of the lack of customer engagement online. This is also consistent with the observation made in 4.3.1.

Hypothesis 2 investigated whether consumers are hesitant to purchase AI-powered and AI-designed products due to the analysis of collected data with AI. The null hypothesis that

consumers are not wary of AI-powered and AI-designed products because of the analyzation of collected data with AI cannot be rejected. The one-sided probability test conducted on Non_AI_Choice_Reasons_No_Purchase_Data responses showed that the proportion of respondents who chose "Yes" was 0.03389831, which is less than the assumed proportion of 1/7. Therefore, it can be concluded that analysis of data collection is not a significant choice for consumers when deciding to not purchase AI-powered and AI-designed products.

Hypothesis 8 regards the willingness of consumers to buy AI-designed jewelry that is tempered by its hedonistic character was tested using a one-sided probability test. The test yielded a p-value of 1.178e-07, which indicates that the null hypothesis can be rejected. Therefore, when choosing AI jewelry, hedonism was significantly often chosen above average between the choices as a reason.

Hypothesis 9 explored if consumers believe that the uniqueness of the designed jewelry, which is related to the influence and creativity of the designer, is lost when it is designed by AI was tested using a one-sided probability test. The test yielded a p-value of 0.01417, which indicates that the null hypothesis can be rejected. Therefore, the loss of designers' creativity and influence was significantly often chosen above average between the choices as a reason not to choose AI jewelry.

Chapter V - Conclusion

5.1 Main findings

The purpose of this dissertation was to investigate the perceptions, drivers, and barriers that impact consumer adoption of AI-designed jewelry by consumers in the DACH jewelry market. To achieve this goal, two research questions were formulated, which focused on identifying the main drivers and barriers to the purchase intention for AI-designed jewelry.

Research Question 1: What are the main drivers of the purchase intention for AI-designed jewelry?

Research Question 2: What are the main barriers to the purchase intention for AI-designed jewelry?

A comprehensive literature review was conducted to explore relevant topics in the jewelry industry and AI, and prior findings were presented. Based on this data, hypotheses were developed to investigate how AI-generated design processes and executions are perceived by consumers and what factors should be taken into account.

First, the general behavior towards jewelry and how consumers prefer to buy their jewelry was investigated to build up a basic understanding and to determine at this stage what influences a jewelry purchase. The findings indicated that high-quality jewelry has a clear tendency to be purchased in-store, where customers value factors such as advice and consultation from the sales staff, as well as trying the products on and the trust aspect. Online purchases are primarily made due to convenience, the larger selection, and the quick price comparison. Furthermore, the study identified several barriers that prevented a greater number of jewelry consumers from purchasing online, including concerns about fraud, problematic return policies, and lack of customer advice, ultimately leading to a higher preference for the in-store shopping channel. This information can be used to expand on the respective channels in the future and thus AI-designed jewelry can be promoted accordingly. For instance, in-store personal consultations can showcase the identified benefits of this jewelry, such as the influence of consumer needs, faster turnaround, and design ideas, and provide appropriate qualitative answers to questions about quality concerns or the design process.

The analysis, both qualitative and quantitative, validated the proposed hypotheses and established the impact of all variables on consumers' intent to buy AI-designed jewelry, while also identifying the critical factors that shape their perception and purchasing inclination for the product. Participants placed significant importance on perceived aesthetics, meaning that the

more aesthetically pleasing they judged the AI-designed jewelry to be, the more likely they were to purchase it. This highlights how important the design and overall style of the jewelry is to consumers and how well these designs must fit their needs. As the hypothesis was refuted that customers find it concerning that their needs and preferred preferences are analyzed, it is imperative for jewelry companies to frequently undertake market and trend analyses and employ AI for transcribing and implementing them to remain abreast in this competitive market.

The study also found that the first impression and accompanying curiosity toward a new product was crucial to increase purchase intention. Furthermore, it was tested how important it is that the product is perceived as innovative and concluded that a novel design concept such as AI-designed jewelry reflects a positive purchase intention. Moreover, the findings indicated that consumers' attitude toward technology plays a significant role in their adoption and purchase of AI-designed jewelry, with those who hold a more optimistic outlook being more likely to embrace this innovative product. This also reflects the general attitude and acceptance towards AI products, as those who perceive an added value from using AI are more willing to try products such as AI-designed jewelry. As a result, these discoveries can serve as pivotal constituents of the marketing strategy for AI-crafted jewelry and be presented on inventive platforms with a meticulously formulated concept. One potential approach could involve showcasing how to integrate personalization, AI, and designers to create an innovative user experience.

To answer the first research question, the study concluded that the most critical factors that positively influence the purchase intention for AI-designed jewelry are aesthetics, perceived first impression, perceived level of innovation, technical optimism, and attitude towards AI products and applications.

On the other hand, and contrary to the previously mentioned drivers, there are barriers against the purchase of AI-designed jewelry. The study highlighted that one of the primary reasons for this is the hedonistic nature that consumers associate with jewelry. Consequently, consumers perceive that artificial intelligence cannot compensate for this with its designs. Moreover, participants indicated that the influence and creativity of a professional designer are lost when using AI, which also aligns with the hedonistic nature of jewelry. In conclusion, and to answer the second proposed research question, two barriers that prevent consumers from purchasing AI-designed jewelry were identified: Lack of craftsmanship and uniqueness due to the absence of design and emotion from a professional designer.

As a final remark to this study, through the presentation of all these results and conclusions, it was shown that there is a high acceptance of AI-designed jewelry by consumers in the DACH jewelry market. As a consequence of the significant interest in such innovative design concepts, they can be effectively communicated and marketed to counter existing perceptions towards AI design. Jewelry manufacturers can utilize AI as a tool to implement new design ideas, personalization requirements, and customer requests, leading to potential cost savings and increased efficiency.

Lastly, an insight into the comparison of the study by Alfredo Soares on "3D-Printed Jewelry - A new era for online jewelry customization". Both studies aimed to investigate the drivers and barriers to customer purchase intentions for a particular type of jewelry in different markets. In terms of commonalities, both studies highlighted the importance of aesthetics and innovation as key factors in purchase intention, with positive attitudes toward technology and first impressions also playing an important role. In addition, concerns about loss of craftsmanship and uniqueness were cited in both studies as barriers to purchasing AI-developed or 3D-printed jewelry. However, there were also some differences in the results. As mentioned earlier, it was determined that customers prefer to buy high-end jewelry in a store because of advice, consultation, and trust, while Soares' study focused exclusively on the online jewelry market. In addition, the 3D-printed jewelry study found that price was a major barrier to 3D-printed jewelry purchase intent. Ultimately, both studies showed that AI and 3D-printed jewelry are accepted by consumers and that these innovative design concepts can be effectively communicated and marketed to overcome existing prejudices against them.

5.2 Limitations and Potential for future research

The present study aimed to investigate consumers' perceptions, attitudes, and buying behaviors toward AI-designed jewelry in the DACH market. Despite the meaningful results of this research, some limitations must be acknowledged in its interpretation of the findings.

Firstly, the scarcity of academic literature on the topic of AI-designed jewelry, particularly in the DACH market, presents a significant limitation. As AI-designed jewelry is a relatively novel concept, it remains an unexplored area of research. Furthermore, there is currently no jewelry manufacturer in the DACH market that has expressed or professed any commitment to AI designs.

Secondly, the sample size of this study, consisting of 236 valid participants, is relatively small. As a result, the sample may not be representative of the broader population of jewelry

consumers in the DACH market, making the results susceptible to sampling error. Additionally, the high level of unfamiliarity displayed by the majority of participants regarding AI-designed jewelry may have increased the likelihood of biased results. This is because most participants had their first exposure to the concept through a rather explanatory yet reductive description of the process and final appearance of the product, without the opportunity to learn more about it or try it out, leading to perceptions-based responses rather than experience-based ones.

Considering these limitations, future studies in this area should aim to collect a larger and more representative sample of jewelry consumers. Additionally, it would be beneficial to familiarize participants with the product and provide them with examples of AI-designed jewelry during the survey, to facilitate more meaningful conclusions.

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Appendix

Appendix 1 – In-Depth Interview Guidelines

Introduction

Hello [name],

Thank you for agreeing to participate in this interview. My name is Regine Reichert, and I am currently completing my master's degree in management, specializing in Marketing at Católica Lisbon School of Business and Economics. For my dissertation, I am researching consumer perceptions, purchasing drivers, and barriers towards AI-designed jewelry, focusing on the German, Austrian, and Swiss online markets.

To gain initial insights into this topic, I am conducting interviews with individuals, and I appreciate you taking the time to talk with me. Although I have some general questions, this is meant to be an open conversation. You are free to add any information you believe is relevant to the topic. Please remember that there are no right or wrong answers, and your honest opinion is what matters most.

The interview will last approximately 20 to 30 minutes and will be recorded so that I can analyze your answers in detail later. Furthermore, all your responses will remain confidential, and you will not be contacted again after this interview.

Thank you once again for your participation and let us begin.

Consumers interviewed:

A.R.: Austrian, 22 years old, Female, Bachelor's Student in Biology.

C.R.: German, 59 years old, Female, Pharmacist.

C.B.: German, 55 years old, Male, Consultant.

T.M.: Swiss, 27 years old, Female, Master's Student in Management.

J.L.: Austrian, 24 years old, Female, Masters Student in Management.

M.L.: Swiss, 30 years old, Male, Consultant

P.S.: German, 28 years old, Female, Product Manager

I - General attitudes towards jewelry shopping:

1. Initial question: Tell me about how you usually shop for jewelry (where, when, how, how

often...) (Soares, 2022)

A.R.: Not that often and mostly online when I get some advertisements and I like to buy them or just look at what the shop has.

C.R.: I like to do both, during the year online, at Christmas with more romance in the store (Tiffany, Bucherer)

C.B.: Mostly for special occasions like birthdays, Christmas, or similar. Currently actually always in stores but only 1-2 times a year

T.M.: I do not often shop for jewelry and usually never plan to shop for it. I buy them when I'm out shopping for clothes and see something nice. Maybe twice a year.

J.L.: Most of the time if I get my inspiration for jewelry from pieces other girls are wearing, so I will look up the style online and search for a similar piece where the quality and price are okay for me. This happens like once a month. So, most of the time I buy online jewelry except if it is something really expensive like fine luxury piercings with diamonds.

M.L.: Not really often but if I something pops up on my social media platforms like Instagram or TikTok I get teased and maybe even buy something I don't need. So most of the time I buy online but only like 4 or 5 times a year.

P.S.: I love new jewelry pieces as there are always new trends and I like to be up-to-date because of my fashion background. So I think I buy like once a month something new, but most of the time online because you have a bigger selection and can compare the prices and quality better.

2. Do you prefer to buy jewelry online or in-store? Why? (Soares, 2022)

A.R.: Lately more online because I don't like to go into stores so much.

C.R.: Actually, I would rather buy it online, more practical, faster, maybe cheaper, but sometimes there is just not everything online.

C.B.: As already said, in the store because the selection and the offer are satisfactory.

T.M.: I prefer to buy in-store because I can see the product, try and touch it.

J.L.: I prefer to buy actually in-store even if I buy more online because you get consulting and more often decide even differently because you can try it on.

M.L.: Most of the time online, because of the cheaper prices and discount codes I find online.

P.S.: I actually would say I buy jewelry always online because you can compare prices, have a bigger selection and it is so much more convenient and easier.

3. How many times did you shop for jewelry products online in the last year and what kinds of jewelry products do you usually buy online? (Soares, 2022)

A.R.: Maybe twice a year and most of the time piercings, rings, or earrings.

C.R.: I think like 3 to 4 times a year. I love to buy earrings with matching necklaces.

C.B.: Not applicable.

T.M.: I only bought one or two times online and I think it was a pair of small flower earrings

J.L.: Up to 10 times a year and all kinds of jewelry especially piercings and earrings.

M.L.: As mentioned like 4 to 5 times a year and often necklaces or bracelets.

P.S.: Oh, I think like every month a year so maybe 12 times or even more, and as I have a lot of ear piercings, I like to buy new matching earrings or piercings and sometimes bracelets or necklaces.

4. Imagine you would like to buy fine jewelry made of gold, silver, and real stones like diamonds, how would you approach the purchase?

A.R.: I would think carefully about what kind of jewelry I would want and research online. After that, I would go to a jewelry store that I like and get advice because I would be afraid that the package may not arrive.

C.R.: I am mostly inspired by expensive jewelry by magazines like Elle or Vogue and then go as mentioned earlier in the matching stores and enjoy the beautifully wrapped jewelry.

C.B.: Since I only buy jewelry as gifts in stores anyway, I would do the same here. This is the way to get advice on what my wife and daughters might like.

T.M.: So directly I never plan to buy expensive jewelry I am mostly inspired in displays or shop windows because if I spend a lot of money on such a thing then I want to try it on and make sure it's real and I can take it home right away.

J.L.: I would also do research online on like expensive diamond piercings and then buy them locally so I can try them on and get advice if they fit me.

M.L.: Actually, I would look on the websites of retailers or stores to see if they sell something that I like and then order it there. Mostly the jewelry is then beautifully packaged with a nice card when it arrives.

P.S.: For expensive jewelry I make an exception to my online purchases because here I can just make sure everything fits and I receive the product, get advice and make sure the jewelry is genuine.

5. What is your level of satisfaction with the current offer in the DACH jewelry market? What aspects do you value the most? What aspects do you think can be improved? (Soares, 2022)

A.R.: I think it's quite expensive, but the quality is better than in other countries.

C.R.: The jewelry market is a bit boring, always the same.

C.B.: Not applicable.

T.M.: I am really satisfied as I am not that much into jewelry. I think there are a lot of nice online shops but usually, I buy it when I'm on holiday. I don't know what could be improved.

J.L.: I'm really satisfied as you can find every style online even from DACH brands or DACH Etsy shops.

M.L.: It's pretty good because you get even American brands here on retailer online stores, but I think it is a bit flooded with the same designs

P.S.: I love the offer and selection right now, so I would say I'm really satisfied. And I think the algorithms are getting better and better so online stores show you exactly what you're looking for.

6. What are, in your opinion, the main advantages of purchasing jewelry online, compared to in a store? (Soares, 2022)

A.R.: It's cheaper and it's easier. You don't have to go outside and find a shop that has the piece you want.

C.R.: You dare to do something new because of the big selection. For example, a new mix of materials and stones can also be beautiful. As an idea, I find it interesting that you can choose them yourself online. Because currently, an improvement in the quality of the stones is clearly necessary, because here you are quickly presented with a fait accompli, and you do not know what you finally get.

C.B.: Find especially important the selection, advice as well as the reasonable price

T.M.: Maybe there's a bigger selection

J.L.: Larger selection and you can find what you're looking for faster, plus you can compare prices quickly.

M.L.: Advantages are the broad offer and I think it is quite convenient because you can stay inside.

P.S.: It's so convenient, you can compare prices, as I said the selection and the crazy good algorithms.

7. And what are the main disadvantages of purchasing jewelry online, compared to in-store? (Soares, 2022)

A.R.: You can get the wrong size, or it looks different than you thought, and you must send it back or reclaim it.

C.R.: *(Transition from 4 to 5 without posing the question.)* In stores, I can then still complain if the quality of the jewelry is not according to my wishes, but it is then usually more expensive, but more individual.

C.B.: The missing guidance and consulting

T.M.: You cannot touch it and see how the color is in real life.

J.L.: You cannot try the jewelry piece and look if it fits you and by more expensive pieces or piercings you really have to try them.

M.L.: The missing consultation and also that you can't touch or try it because I think it is quite important to see if the color is fitting you.

P.S.: I don't like it to wait for the picked pieces to arrive and you can't try them before buying them.

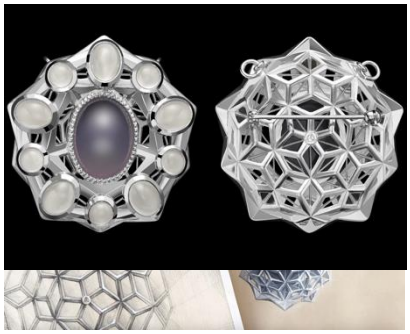
II - General perceptions, purchase drivers, and barriers toward AI-designed jewelry

Before proceeding, I will give you a brief overview of AI technology and AI-designed jewelry products. Additionally, I will present an explanatory video demonstrating a potential collaboration between an AI and a designer:

https://www.youtube.com/watch?v=tC0JgvyYbRg&ab_channel=HowtoGenerate-Almost-Anything

As well as three pictures:

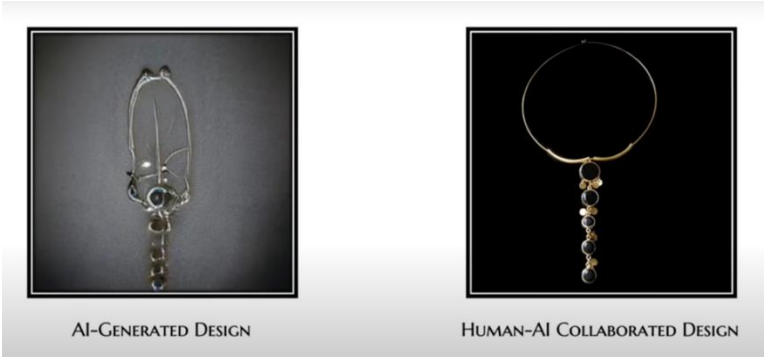
First, the front and back of the Enchantress Brooch from Volund Jewelry are made with moonstones and chalcedony. The design was assisted by artificial intelligence, where the algorithm helped create flower patterns and leaves.



Here an AI-chatbot was asked to design jewelry using the following prompt:

"stunning magic ring, diamonds, poison, blue and black, mist, engraving, d & d, item, graphic, close — up, design, shimmer, artbook, page, detailed, trending on artstation, cgsociety, greg rutkowski and thomas kinkade and moebius"

In the following images, older design sketches and customer data were analyzed by AI to generate new designs by AI. Afterward, these were interpreted and implemented by a jewelry designer.



1 - Awareness of AI-designed jewelry and first thoughts

1. Did you know about AI-designed jewelry? If the answer is yes, can you tell me where did you hear about it? (Soares, 2022)

A.R.: No

C.R.: Not yet but the YouTube video is rather AI-hostile: a creepy idea of AI art. That's awful, has nothing to do with harmony or real art. But art is known to be a matter of taste.

C.B.: No not yet.

T.M.: No

J.L.: Actually no

M.L.: Not yet but seems interesting.

P.S.: Yes, I saw an online article about it as I always read a jewelry blog from a fashion influencer I love.

2. More specifically, have you ever purchased or tried any AI-designed product before? (When yes, where?)

A.R.: No

C.R.: No, still none bought, not yet knowingly seen

C.B.: No

T.M.: No

J.L.: Not that I know of but sometimes I use Siri or Alexa.

M.L.: Only the classics like my home pod and Siri.

P.S.: No, I don't think so but you never know the production and design process of a product if you don't research it.

3. Would you be interested in purchasing this AI-designed jewelry in the future? (Soares, 2022)

A.R.: Maybe but I don't like the designs in the video, maybe a different designer would interpret the AI templates differently.

C.R.: After the video not anymore, I don't like the designs.

C.B.: Maybe but not really sure about the process

T.M.: Not really, I don't like the end-designed jewelry pieces.

J.L.: Hmm in the video I don't really like the designs but maybe with a different designer and Data, I would buy one.

M.L.: I think so, when it's a bit more advanced some new designs might emerge that stand out from the mainstream.

P.S.: No, I don't think so but maybe the video is giving a wrong impression of how it could be as the designs are a matter of taste.

4. How would you describe your level of acceptance toward the use of new technologies? (High, medium, low, not sure, …) and on a scale from 1 to 10, with being 1 the lowest and 10 being the highest? (Soares, 2022)

A.R.: Not sure maybe a 6

C.R.: Maybe a 5, I like to try new things but don't have to buy everything that seems interesting

C.B.: I think a 7 or 8, I love to try new innovative products if they offer me some advantages
T.M.: Medium, I think a 5
J.L.: I think an 8 because I love to try new stuff that is on the market.
M.L.: Like a 7 or 8 but also just what everyone else does, have the newest phone and laptop and so on.
P.S.: Maybe an 8 but that's just what my gut tells me.

Now imagine you were allowed to choose a piece of fine jewelry worth 500€ and keep it. Would you rather choose one that was created based on AI, where at the end the designer uses the AI artwork to finalize his design, or would you rather choose a piece of jewelry that has been designed by a jewelry designer throughout the entire design process?
A.R.: Depends on the jewelry. If I can have the same from both sides, I would choose AI
C.R.: Because of the things I said I would choose the design that was done by a designer throughout the whole process
C.B.: I would choose the AI-Design
T.M.: I would prefer the piece that was designed by a jewelry designer throughout the entire design process.
J.L.: I think I would take the handcrafted piece has it has more emotional value
M.L.: I would take the AI design, maybe it has more value.
P.S.: I think I would choose the handmade one, there is so much work and love processed, and you just know what you get for the price.

Target 1: Consumers who would not take AI-designed jewelry

A – Perceived benefits and consumption drivers regarding AI-designed jewelry (Soares, 2022)

1. What do you think are the key drivers to buying an AI-designed jewelry piece?

C.R.: I think there are no benefits, except maybe for the price,… (goes on)
T.M.: People who do not like classic jewelry and prefer something more creative
J.L.: Maybe the data that is put in the AI algorithm, like style, and consumer needs as selected types of materials or stones
P.S.: It could be cheaper, and I would think with the analyzed data its piece will be more trendy, fashionable, and up-to-date. And maybe the process is a bit faster so there will be more jewelry pieces finished in a shorter time and will be therefore much cheaper.

B – Perceived risks and consumption barriers regarding AI-designed jewelry (Soares, 2022)

1. Can you mention some possible barriers to the purchase of this type of product?

C.R.: I am still of the opinion that there can be no new jewelry designed by AI, only a collection of things that ever existed in the www. once or was entered. and what comes out of it, is no art, no individuality. therefore, an artist or a jewelry designer remains an artist.

T. M.: If one does not like the style and also missing the creativity process.

J.L.: The style, design as well as the emotional value and missing creativity of the jewelry designer.

P.S.: Hmmm I wouldn't buy an AI design because of the missing emotional influence and creative design thinking process of the designer but maybe with future development even that can be a part of an algorithm like AI.

Target 2: Consumers who would take AI-designed jewelry

A – Perceived benefits and consumption drivers regarding AI-designed jewelry (Soares, 2022)

1. What do you think are the key drivers to buying an AI-designed jewelry piece?

A.R.: Natural elements could be represented more beautifully and in more detail.

C.B.: Maybe it is cheaper because less time is spent and I'm actually really curious how a fine jewelry brand design would look like.

M.L.: A new design, something different and interesting, which also gives the designer new perspectives and ideas. And on the other hand, it could be much cheaper and with consumer preferred materials.

B - Perceived risks and consumption barriers regarding AI-designed jewelry: (Soares, 2022)

1. Can you mention possible barriers to purchasing this type of product?

A.R.: Perhaps some of the designers' inventiveness would be lost and therefore the brand design I desire would no longer be as I am used to it.

C.B.: At the moment I do not see any

M.L.: I think the initial mistrust of customers could be an issue or that if a brand has a special design like Tiffany or Gucci then this could be lost because customers want to individualize and stand out.

Appendix 2 – Online Questionnaire

Introduction

I want to express my gratitude for taking the time to participate in this survey. The purpose of this questionnaire is to investigate the perceptions and factors that influence consumers' decisions when it comes to purchasing AI-designed jewelry. This research is a critical component of my MSc thesis in Management, with a specialization in Strategic Marketing. Be assured that your responses will be entirely anonymous.
It is essential to note that there are no right or wrong answers to the questions, and all opinions are valuable and significant. Therefore, I urge you to provide your honest answers to all the queries. The survey should take about ten minutes to complete.

If you have any questions or suggestions regarding the study or the survey, please do not hesitate to contact me at s-rreichert@ucp.pt.

Thank you for your help
Regine Reichert

End of Block: Introduction
Start of Block: Screening question

Q1 Do you currently/regularly live in Germany, Austria, or Switzerland?

- Yes (1)
- No (2)

Skip To: End of Survey If Do you currently/regularly live in Germany, Austria, or Switzerland? = No

End of Block: Screening question
Start of Block: Jewelry buying habits

Q2 How often do you buy new pieces of jewelry? (Soares, 2022)

- 2 or less times per year (5)
- 3 to 5 times per year (3)
- 6 to 11 times per year (4)
- Once a month (2)
- 2 or more times per month (1)
- Never (6)

Q3 What kinds of jewelry products do you usually buy? (Multiple answers allowed) (Soares, 2022)

- Earrings (1)
- Necklaces (2)
- Rings (3)
- Bracelets (4)
- Piercings (5)
- Other (6) _____

Q4 If you buy expensive jewelry, made of silver or gold possibly even with precious stones (ex. diamonds), would you rather buy it online or in a store?

- Online (1)
- In-Store (2)

Skip To: Q7 If If you buy expensive jewelry, made of silver or gold possibly even with precious stones (ex. diam... = Online

Q5 What are, in your opinion, the main advantages of purchasing fine jewelry in a store, compared to buying it online? (Multiple answers allowed) (Soares, 2022)

- Consultation (1)
- Try the jewelry on (2)
- More trust that it is genuine (3)
- Packaging (4)
- Quality (5)
- Other (6) _____

Q6 And what are, in your opinion, the main disadvantages of purchasing fine jewelry online, compared to in a store? (Multiple answers allowed) (Soares, 2022)

- Shipping Problems and Delay (1)
- Less customer interaction (2)
- Returns can be complicated (3)
- Risk of fraud (4)
- Missing consultation (5)
- I see no disadvantages (6)
- Other (7) _____

Display This Question:

If If you buy expensive jewelry, made of silver or gold possibly even with precious stones (ex. diam... = Online

Q7 What are, in your opinion, the main advantages of purchasing fine jewelry online, compared to in a store? (Multiple answers allowed) (Soares, 2022)

- Better prices (1)
- Time saving (2)
- Convenience (3)
- Higher product variety (4)
- Easier price comparisons (5)
- More control (6)
- I see no advantages (7)
- Consultation with a chatbot (8)
- Suggestions through AI (9)
- Other (10) _____

Display This Question:

If If you buy expensive jewelry, made of silver or gold possibly even with precious stones (ex. diam... = Online

Q8 And what are, in your opinion, the main disadvantages of purchasing fine jewelry online, compared to in a store? (Multiple answers allowed) (Soares, 2022)

- Shipping Problems and Delay (1)
- Less customer interaction (2)
- Returns can be complicated (3)
- Risk of fraud (4)
- Missing consultation (5)
- I see no disadvantages (6)
- Other (7) _____

Q9 Please rate this statement: I think that the influence and creativity of the designer are important factors in determining the uniqueness/individuality of jewelry.

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

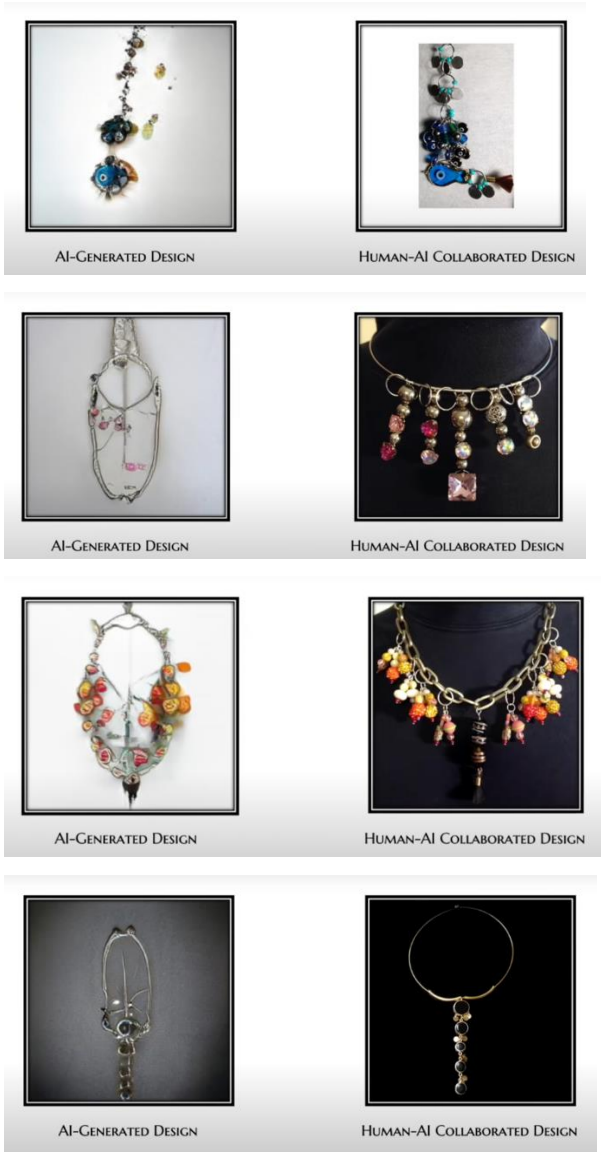
Q10 Overall, what is your level of satisfaction with the current offer in the German/Austrian/Swiss jewelry market?

- Extremely dissatisfied (1)
- Somewhat dissatisfied (2)
- Neither satisfied nor dissatisfied (3)
- Somewhat satisfied (4)
- Extremely satisfied (5)

End of Block: Jewelry buying habits
Start of Block: Introduction to AI-designed jewelry

Introduction
At this point, I would like to introduce you to the concept of AI-designed jewelry: As the name suggests, artificial intelligence is used to design jewelry, a very new methodology. The algorithm AI helps the designers to analyze and process a lot of data collections from the internet of consumer wishes/needs such as preferred price, color's etc., nature elements, and designs from other designers to create the first design sketches. Based on these designs, the jewelry designer continues to work and manufacture the final piece of jewelry. To give you a better understanding of this process, I will present you three pictures of AI-designed jewelry to show you an idea of their final appearance.

Picture 1:
In the following images, older design sketches and customer data were analyzed by AI to generate new designs by AI. Afterward, these were interpreted and implemented by a jewelry designer.



Picture 2:

Here an AI-chatbot was asked to design jewelry using the following prompt:

"stunning magic ring, diamonds, poison, blue and black, mist, engraving, d & d, item, graphic, close up, design, shimmer, artbook, page, detailed, trending on artstation, cgsociety, greg rutkowski and thomas kinkade and moebius"

Picture 3:

The front and back of the Enchantress Brooch from Volund Jewelry are made with moonstones and chalcedony. The design was assisted by artificial intelligence, where the algorithm helped to create the patterns of flowers and leaves.

End of Block: Introduction to AI-designed jewelry

Start of Block: AI-designed jewelry - Previous knowledge

Q11 Did you know about AI-designed jewelry?

- Yes (1)
- No (2)

Q12 How would you evaluate your first impression of this new design technique and product?

- Extremely negative (1)
- Somewhat negative (2)
- Neither positive nor negative (3)
- Somewhat positive (4)
- Extremely positive (5)

Q13 Please rate your overall perceived aesthetic of the AI-designed jewelry on a scale of 1-10.

Not aesthetic at all									Very aesthetic
1	2	3	4	5	6	7	8	9	10

Perceived aesthetic (harmony, proportion, unity and balance) ()	

Q14 How innovative do you perceive the manufacturing process of AI-designed jewelry?

- Not at all innovative (1)
- Slightly innovative (2)
- Moderately innovative (3)
- Extremely innovative (4)

End of Block: AI-designed jewelry - Previous knowledge

Start of Block: Consumers who would not like to purchase AI-designed jewelry in the future

Q15 Which would you rather choose?

- I would like to purchase AI-designed jewelry (1)
- I would not like to purchase AI-designed jewelry (2)

Skip To: End of Block If Which would you rather choose? = I would like to purchase AI-designed jewelry

Q16 What are the main reasons why you would not purchase AI-designed jewelry? (Multiple answers allowed)

- I don’t like the process (1)
- I prefer to purchase handmade jewelry without AI (2)
- I don't like the aesthetic design of the AI-designed jewelry (3)
- I think that through the process with AI the emotional influence of the designer is lost (4)
- I think that through the process with AI, the creativity of the designer is lost (5)
- I think the uniqueness of the jewelry piece is lost (6)
- Because my data is collected and analyzed (7)
- Other (8) _____

Q17 What do you think are the main advantages of AI-designed jewelry when compared to traditional pieces (handmade pieces)? (Multiple answers allowed) (Soares, 2022)

- Lower Price (1)
- Influence of customer needs (2)
- Allowing more complex designs (3)
- Faster design/production process (4)
- Detailed precision (5)
- Getting new design ideas (6)
- Innovative product (7)
- I see no advantages (8)
- Other (9) _____

Q18 What do you think are the main disadvantages of AI-designed jewelry when compared to traditional ones (handmade ones)? (Multiple answers allowed) (Soares, 2022)

- A lower amount of handmade work (1)
- Missing emotional influence (2)
- Missing creativity of the designer (3)
- Lower quality (4)
- Lower durability (5)
- Customer data collection and analysis (6)
- I see no disadvantages (7)
- Other (8) _____

End of Block: Consumers who would not like to purchase AI-designed jewelry in the future
Start of Block: Consumers who would like to purchase AI-designed jewelry in the future

Display This Question:

If Which would you rather choose? = I would like to purchase AI-designed jewelry

Q19 What are the main reasons why you would like to buy AI-designed jewelry? (Multiple answers allowed)

- I was not aware of its existence and want to try something new (1)
- I like the design and composition (harmony, unity, balance, etc.) (2)
- It is something unique and different (3)
- I'm really curious about the jewelry piece (4)
- Through analyzing the trends, it could turn out trendy and fashionable (5)
- I like innovative products (6)
- Other (7) _____

Display This Question:

If Which would you rather choose? = I would like to purchase AI-designed jewelry

Q20 What are the main advantages of AI-designed jewelry compared to traditional pieces (handmade pieces)? (Multiple answers allowed) (Soares, 2022)

- Lower Price (1)
- Influence of customer needs (2)
- Allowing more complex designs (3)
- Faster design/production process (4)
- Detailed precision (5)
- Getting new design ideas (6)
- Innovative product (7)
- I see no advantages (8)
- Other (9) _____

Display This Question:

If Which would you rather choose? = I would like to purchase AI-designed jewelry

Q21 What are the main disadvantages of AI-designed jewelry compared to traditional ones (handmade ones)? (Multiple answers allowed) (Soares, 2022)

- A lower amount of handmade work (1)
- Missing emotional influence (2)
- Missing creativity of the designer (3)
- Lower quality (4)
- Lower durability (5)
- Customer data collection and analysis (6)
- I see no disadvantages (7)
- Other (8) _____

End of Block: Consumers who would like to purchase AI-designed jewelry in the future.
Start of Block: AI-designed jewelry - Consumer behavior

Q22 Please rate the following statements according to your opinion on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). In case you have never used or purchased AI-designed jewelry please rate it according to your general perception/ expectation. (Soares, 2022)

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
Technology gives me more control over my daily life. (1)	•	•	•	•	•
New technologies are mentally stimulating for me. (2)	•	•	•	•	•
I am excited about the advancements in digital technology. (3)	•	•	•	•	•
I would consider buying AI-designed jewelry. (4)	•	•	•	•	•
Please select strongly agree. (5)	•	•	•	•	•
Overall, I think it adds value that data is analyzed to meet consumer needs. (6)	•	•	•	•	•
I think handmade jewelry designed by a professional has a greater value. (7)	•	•	•	•	•
Please select strongly disagree. (8)	•	•	•	•	•
I'm really curious about the new AI-design technique and want to learn more about it. (9)	•	•	•	•	•

I think the creative influence and therefore uniqueness is lost with an AI-design. (10)	• • • • •
I find it disturbing that my data is used for an analysis by AI. (11)	• • • • •
I consider jewelry as a product that is mainly bought for pleasure. (12)	• • • • •

End of Block: AI-designed jewelry - Consumer behavior

Start of Block: Demographic Data

Q23 What is your gender?

- Male (1)
- Female (2)
- Non-binary/third gender (3)
- Prefer not to say (4)

Q24 How old are you?

- Younger than 18 (1)
- 18-24 (2)
- 25-35 (3)
- 36-45 (4)
- 46-55 (5)
- 56-65 (6)
- 66-older (7)

Q25 Which is the highest level of education you have completed?

- Less than high school (1)
- Highschool (2)
- Professional degree (3)
- Bachelor's degree (4)
- Masters' degree (5)
- Doctoral degree (6)

Q26 What is your current occupation?

- Student (1)
- Employed (2)
- Unemployed (3)
- Retired (4)

Q27 What is your gross monthly income/allowance?

- Less than 500€ (1)
- 500€ - 1500€ (2)
- 1500€ - 3000€ (3)
- 3000€ - 5000€ (4)
- More than 5000€ (5)

End of Block: Demographic Data

Appendix 3 – Survey Analysis

		Frequency	Percentage
Gender	Female	122	51,69%
	Male	70	29,66%
	Non-binary / third gender	2	0,85%
	Prefer not to say	8	3,39%
	N/A	34	14,41%
Age	Younger than 18	0	0%
	18-24	26	11,02%
	25-35	102	43,22%
	36-45	34	14,41%
	46-55	30	12,71%
	56-65	10	4,24%
	66-older	0	0%
	N/A	34	14,41%
Education	Less than highschool	2	0,85%
	Highschool	20	8,47%
	Professional degree	24	10,17%
	Bachelors' degree	72	30,51%
	Masters' degree	74	31,36%
	Doctoral degree	10	4,24%
	N/A	34	14,41%
Occupation	Student	56	23,73%
	Employed	136	57,63%
	Unemployed	8	3,39%
	Retired	2	0,85%
	N/A	34	14,41%
Gross monthly income	Less than 500€	2	0,85%
	500€ - 1500€	52	22,03%
	1500€ - 3000€	76	32,20%
	3000€ - 5000€	56	23,73%
	More than 5000€	16	6,78%
	N/A	34	14,41%
Total respondents		236	100%

Table 5: Sample characterization and Demographics (N = 236)

Answer	Frequency	Percentage
2 or more times per month	6	2,54%
Once a month	8	3,39%
6 to 11 times per year	48	20,34%
3 to 5 times per year	24	10,17%
2 or less times per year	110	46,61%
Never	40	17%
Total respondents	236	100%

Table 6: Descriptive statistics for jewelry purchase frequencies

Answer	Frequency	Percentage
Earrings	112	23,33%
Necklaces	110	22,92%
Rings	122	25,42%
Bracelets	58	12,08%
Piercings	44	9,17%
Other	34	7,08%
Total respondents	480	100%

Table 7: Descriptive statistics for jewelry type purchases.

Answer	Frequency	Percentage
Online	66	27,97%
In-Store	166	70,34%
N/A	4	1,69%
Total respondents	236	100%

Table 8: Descriptive statistic for previous jewelry purchase channel preference

Answer	Frequency	Percentage
Consultation	88	21,05%
Try the jewelry	128	30,62%
More trust that it is genuine	98	23,44%
Packaging	20	4,78%
Quality	72	17,22%
Other	12	2,87%
Total respondents	418	100%

Table 9: Descriptive statistics on the reasons why in-store is the preferred distribution channel for jewelry.

Answer	Frequency	Percentage
Shipping Problems and Delay	58	14,15%
Less customer interaction	56	13,66%
Returns can be complicated	86	20,98%
Risk of fraud	108	26,34%
Missing consultation	80	19,51%
I see no disadvantages	6	1,46%
Other	16	3,90%
Total respondents	410	100%

Table 10: Descriptive statistics of in-store shoppers' perceived disadvantages of jewelry online shopping.

Answer	Frequency	Percentage
Better prices	28	14,74%
Time saving	30	15,79%
Convenience	42	22,11%
Higher product variety	36	18,95%
Easier price comparisons	32	16,84%
More control	10	5,26%
I see no advantages	2	1,05%
Consultation with a chatbot	2	1,05%
Suggestions through AI	6	3,16%
Other	2	1,05%
Total respondents	190	100%

Table 11: Descriptive statistics on the reasons why online is the preferred distribution channel for jewelry.

Answer	Frequency	Percentage
Shipping Problems and Delay	20	15,38%
Less customer interaction	18	13,85%
Returns can be complicated	28	21,54%
Risk of fraud	26	20,00%
Missing consultation	28	21,54%
I see no disadvantages	4	3,08%
Other	6	4,62%
Total respondents	130	100%

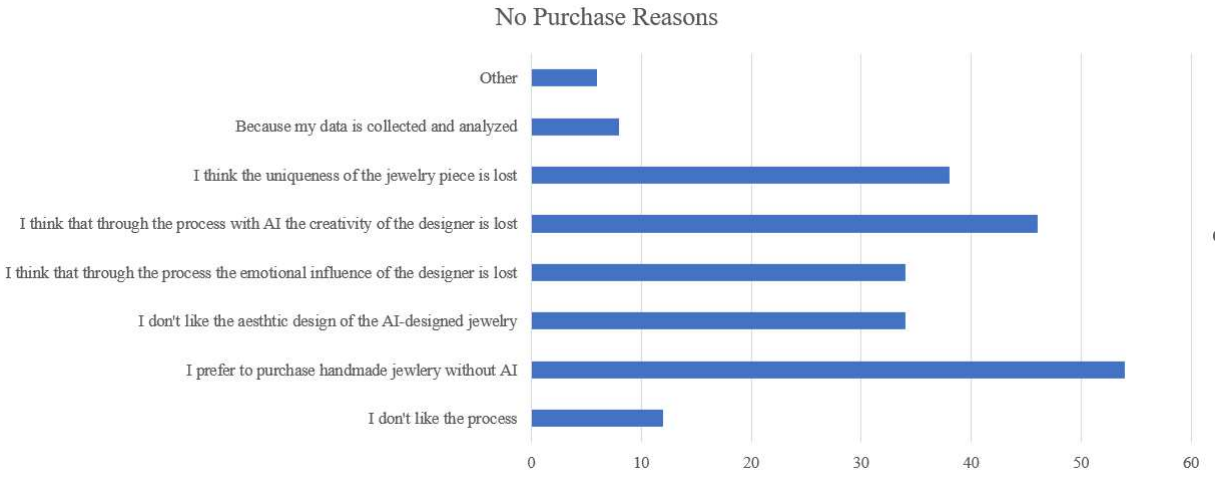
Table 12: Descriptive statistics of online shoppers' perceived disadvantages of jewelry online shopping.

Answer	Frequency	Percentage
Yes	28	11,86%
No	182	77,12%
Total respondents	210	100%

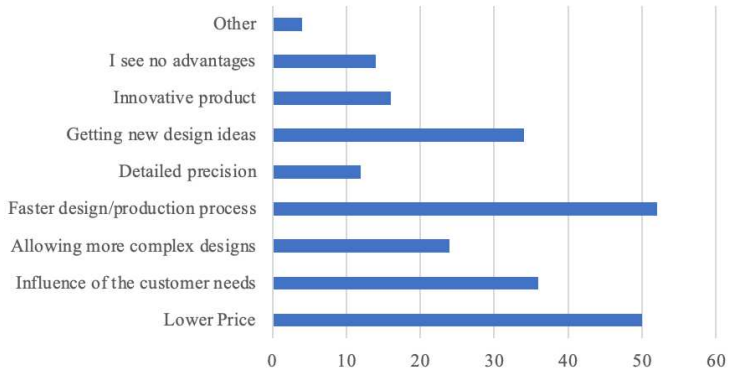
Table 13: Descriptive statistic on respondents' awareness of AI-designed jewelry

Answer	Frequency	Percentage
I would like to purchase AI-designed jewlry	118	50,00%
I would not like to purchase AI-designed jewlry	90	38,14%
N/A	28	11,86%
Total respondents	236	100%

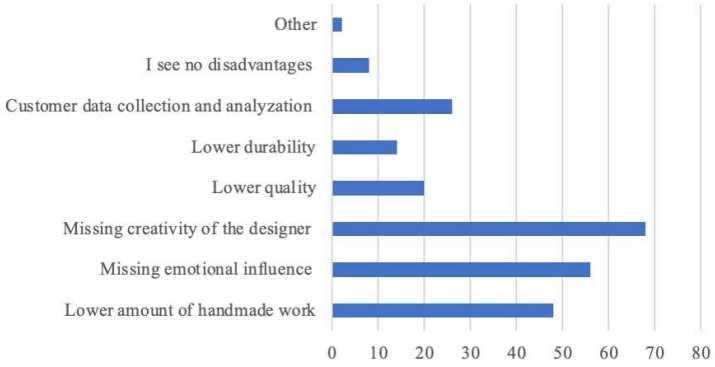
Table 14: Descriptive statistics of the purchase intention of AI-designed jewelry



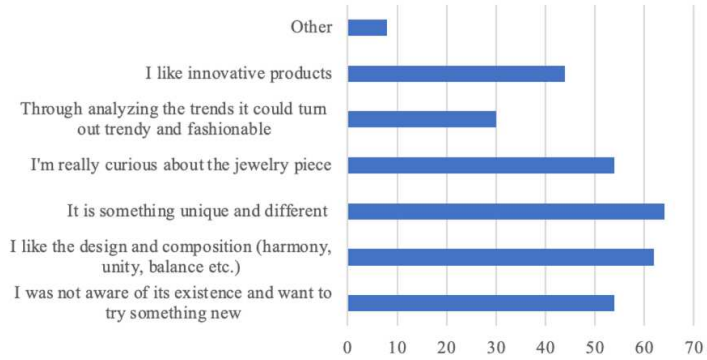
Graphic 2: Respondents' main reasons for not buying AI-designed jewelry.



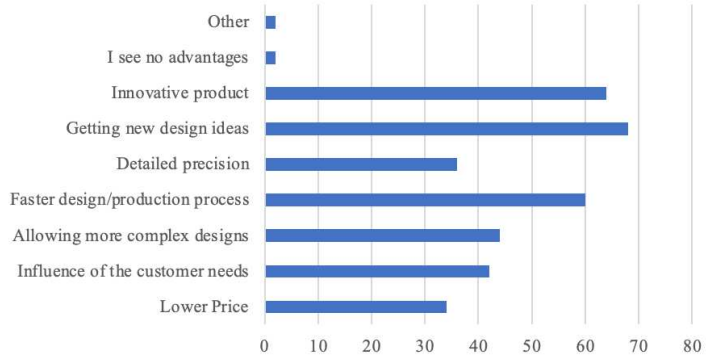
Graphic 3: Advantages of AI-designed jewelry compared to traditional jewelry from a non-buyers perspective.



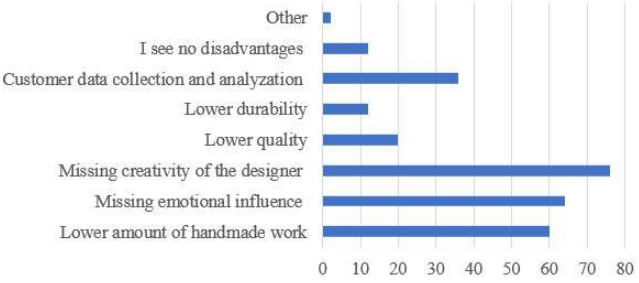
Graphic 4: Disadvantages of AI-designed jewelry compared to traditional jewelry from a non-buyers perspective.



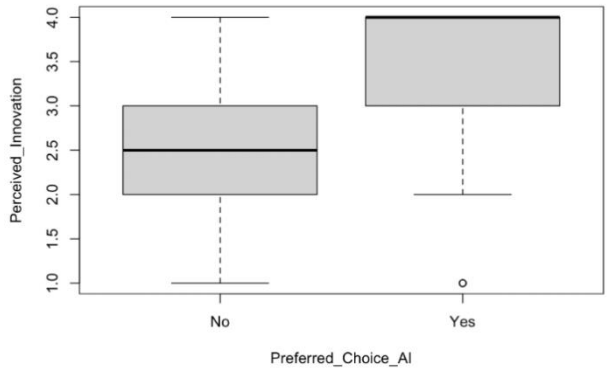
Graphic 5: Respondents' main reasons to buy AI-designed jewelry.



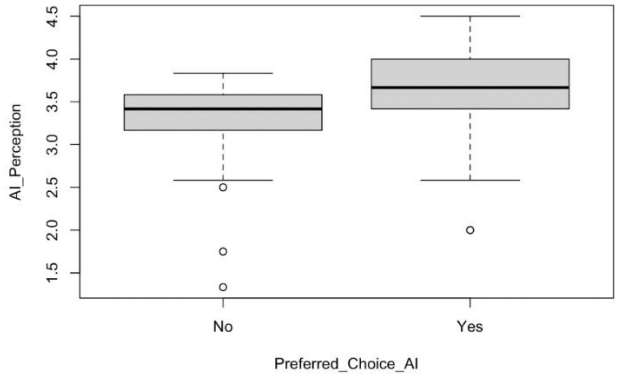
Graphic 6: Advantages of AI-designed jewelry perceived by potential buyers compared to traditional jewelry.



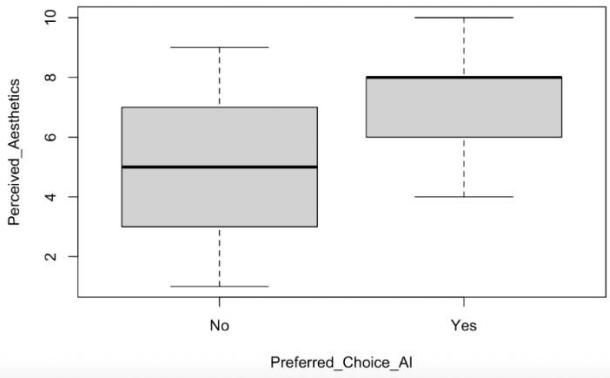
Graphic 7: Disadvantages of AI-designed jewelry perceived by potential buyers compared to traditional jewelry.



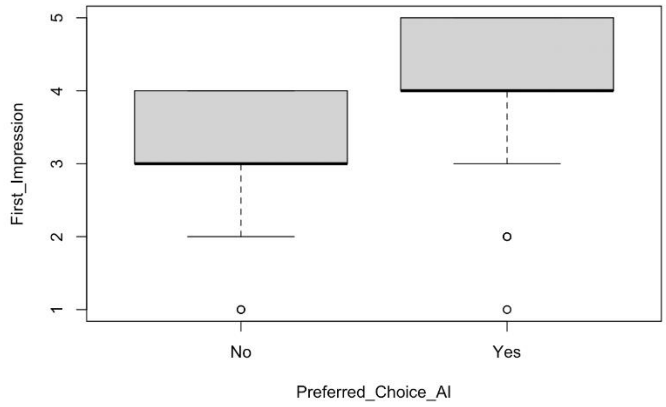
Graphic 8: Boxplot of H3



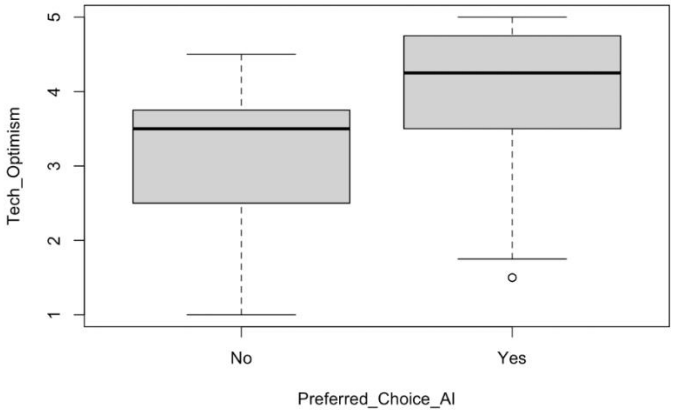
Graphic 9: Boxplot of H4



Graphic 10: Boxplot of H5



Graphic 11: Boxplot of H7



Graphic 12: Boxplot of H10

	vars	n	mean	sd	median	trimmed	mad	min	max	range	skew	kurtosis	se
Purchase_Frequency_Jewelry	1	236	4.46	1.23	5.00	4.55	1.48	1.00	6.0	5.00	-0.81	-0.02	0.08
Importance_Designer_Influence	2	214	4.00	1.08	4.00	4.15	1.48	1.00	5.0	4.00	-0.85	-0.24	0.07
Satisfaction_Jewelry_Market_DACH	3	216	3.53	1.01	4.00	3.56	1.48	1.00	5.0	4.00	-0.21	-0.64	0.07
First_Impression	4	210	3.60	0.98	4.00	3.66	1.48	1.00	5.0	4.00	-0.58	-0.10	0.07
Perceived_Aesthetics	5	206	6.28	2.24	7.00	6.45	1.48	1.00	10.0	9.00	-0.64	-0.20	0.16
Perceived_Innovation	6	206	2.97	0.95	3.00	3.06	1.48	1.00	4.0	3.00	-0.48	-0.83	0.07
AI_Perception_	7	202	3.58	1.15	4.00	3.67	1.48	1.00	5.0	4.00	-0.56	-0.61	0.08
AI_Perception_.1	8	202	3.53	1.24	4.00	3.62	1.48	1.00	5.0	4.00	-0.44	-0.98	0.09
AI_Perception_.2	9	202	3.96	1.12	4.00	4.12	1.48	1.00	5.0	4.00	-0.98	0.15	0.08
AI_Perception_.3	10	202	3.31	1.20	4.00	3.36	1.48	1.00	5.0	4.00	-0.29	-0.94	0.08
AI_Perception_.4	11	203	5.00	0.00	5.00	5.00	0.00	5.00	5.0	0.00	NaN	NaN	0.00
AI_Perception_.5	12	202	3.40	1.19	4.00	3.47	1.48	1.00	5.0	4.00	-0.48	-0.77	0.08
AI_Perception_.6	13	200	3.97	1.11	4.00	4.14	1.48	1.00	5.0	4.00	-0.99	0.37	0.08
AI_Perception_.7	14	203	1.00	0.00	1.00	1.00	0.00	1.00	1.0	0.00	NaN	NaN	0.00
AI_Perception_.8	15	200	3.49	1.25	4.00	3.61	1.48	1.00	5.0	4.00	-0.67	-0.57	0.09
AI_Perception_.9	16	202	3.29	1.16	4.00	3.33	1.48	1.00	5.0	4.00	-0.38	-0.82	0.08
AI_Perception_.10	17	200	2.89	1.23	3.00	2.86	1.48	1.00	5.0	4.00	0.11	-0.91	0.09
AI_Perception_.11	18	202	4.08	0.96	4.00	4.22	1.48	1.00	5.0	4.00	-0.95	0.28	0.07
AI_Perception	19	236	3.50	0.50	3.58	3.54	0.25	1.33	4.5	3.17	-1.32	3.37	0.03
Tech_Optimism	20	236	3.69	0.90	4.00	3.78	0.74	1.00	5.0	4.00	-0.83	0.26	0.06

Table 15: Descriptive statistics of variables