**VILNIUS UNIVERSITY**

**FACULTY OF ECONOMICS AND BUSINESS ADMINISTRATION**

**MARKETING AND INTEGRATED COMMUNICATION**

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**MASTER THESIS**

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| **Veiksniai, darantys įtaką Z kartos ir tūkstantmečio kartos atstovų ketinimams naudoti papildytąją realybę mados elektroninėje prekyboje** | **Factors influencing the intention to use Augmented Reality in fashion e-commerce among Gen Z and Millennials** |

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# INTRODUCTION

Digital technologies like augmented reality (AR) have become an essential part of e-commerce. Fashion retailers try to bring remarkable experiences to consumers not only in physical stores but also online, and AR helps to add to that experience. Augmented reality allows consumers to visualize objects in the real environment (Dargan, Bansal, Kumar, M., Mittal & Kumar, K., 2022). COVID-19 accelerated the adoption of online shopping, and most people use e-commerce while shopping (Kang, Kim, Lee & Lin, 2023). According to the 2021 Consumer AR Global Report, Gen Z and Millennials are 71% more likely to use augmented reality; this number is expected to grow in the coming years. The number of users in immersive technology market (both AR and VR) is predicted to reach 3.8 billion users worldwide by 2030 (Statista, n.d.). Augmented reality shapes customer engagement as 92% of Gen Z are interested in AR-based shopping (Atallah, 2024). Due to advancements in technology and huge investments, AR market will grow, and this trend applies worldwide (Statista, n.d.). While the numbers are growing, it is still not clear what drives consumers to use the AR application in fashion e-commerce. Despite its novelty, brands in fashion e-commerce like Gucci and Balenciaga serve as pioneering examples. Balenciaga uses it as a gaming experience to engage consumers, and Gucci uses it as a storytelling advertising campaign (Iannialli and Linfante, 2021).

Augmented Reality is applied in areas like education (Avila-Garzon, Bacca-Acosta, Kinshuk, Duarte & Betancourt, 2021), medicine, gaming, and retail (Parekh, Patel, S., Patel, N., & Shah, 2020). Nevertheless, according to Parekh et al. (2020) in retail augmented reality is a new concept. It was revealed that the fashion sector is at the center of retail literature, with products of clothing, accessories, and eyewear attracting the most interest of scholars (Riar, Korbel, Xi, Zarnekow & Hamarie, 2021). Most studies focus on existing AR apps and suggest what retailers should do to improve them. A little research was done to analyze what factors influence consumers like Gen Z and Millennials behavioral intention to use augmented reality in the retail context of fashion. The theories researchers use are the Technology Acceptance Model (TAM) developed by Davis (1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) model developed by Venkatesh, Davis, G., Morris, and Davis, F. (2003), while TAM is the most popular model. UTAUT model has been employed in recent studies, which helps to explain the underlying cognitive behavioral responses, hedonic and utilitarian motivation of consumers (Schapsis, Chiagouris & Wingate, 2024).

Some studies reveal possible factors that may influence the intention to use augmented reality in fashion e-commerce. The experience that the users acquire from using augmented reality in non-shopping context may be translated to shopping. Gen Z and Millennials are digital natives; the studies focus mainly on them and reveal that Gen Z experiences utilitarian motivation, while Millennials experience hedonic motivation (Schapsis et al., 2024). The augmented reality application should also be easy to use, engaging, and fun. It should bring practical benefits for consumers (Kovács and Keresztes, 2024). The media characteristics of technology also play a key role. The virtual objects should resemble the real objects that are shown in the stores. The augmented reality environment should translate into users' expectations. Users should feel that the system is responding to the actions performed; immerse and engage with them. For Gen Z, it is important to have a good augmentation of a virtual product, whereas for Millennials, the perception of vividness is important for engagement (Ganesan and Kumar, 2024). Additionally, involvement in fashion (Kovács & Keresztes, 2024) and gender differences (Kovács & Keresztes, 2024; Hilpert & Zumstein, 2023) play key roles when shopping online. Women are more willing to use AR. They show a higher tendency to use it in e-commerce via their smartphones rather than AR glasses (Hilpert & Zumstein, 2023). It is also crucial to mention privacy and data protection. If the consumer trusts the company, they do not have issues with AR applications on the website (Hilpert & Zumstein, 2023). As the studies are limited, but the implications for businesses are high, it is crucial to further research the topic (Tan, Chandukala & Reddy, 2022). Studies involving AR often focus on a particular aspect, it is either too much product-related factors without AR media characteristics (Micheletto et al., 2025) or consumer-related (Oyman et al., 2021), or immersion is used but in gaming AR context (Shin 2019). This study is important to AR fashion e-commerce research as it aims to close gaps by analysing factors such as AR media characteristics, immersion and trust which are mentioned as crucial factors for behavioural intention. This research will balance different type of factor categories to understand consumer behaviour toward AR technology.

**The problem of the paper**. What are the factors that influence behavioral intention to use augmented reality in fashion e-commerce among Gen Z and Millennials? Therefore, **this paper aims** to identify key factors influencing the intention to use the augmented reality in e-commerce among Gen Z and Millennials.

**The objectives** of this paper are as follows:

- To identify the definition and uses of augmented reality and to describe the difference between - augmented and virtual reality by introducing the XR framework

- To discuss the use of augmented reality in the retail context and the benefits of using these applications
- To analyze the theories based on which behavioral intention to use augmented reality can be explored
- To list the factors that may influence the intention to use augmented reality in e-commerce
- To analyze generational and gender differences between Generation Z and Millennials in terms of their behavior in both augmented reality applications and shopping contexts
- To prepare the methodology for examining the factors influencing Gen Z and Millennials' intention to use augmented reality in fashion e-commerce.
- To examine the relationships of augmented reality characteristics (perceived augmentation, perceived interactivity, perceived vividness) and perceived immersion, to examine the relationship between perceived immersion and perceived enjoyment, to explore the relationship between perceived enjoyment and trust, and behavioral intention to use augmented reality, to examine the relationship between trust in augmented reality and behavioral intention to use augmented reality, to explore the relationship between TAM constructs: perceived ease of use, perceived usefulness, and behavioral intention to use
- To prepare the questionnaire to conduct the research based on the factors that are discussed.
- To employ quantitative research methods to examine the factors that influence behavioral intention to use AR technology.
- To provide conclusions and recommendations based on the research results.

## Research methodology and data analysis methods

The scientific literature in this study consists of scientific publications in the field of technology, marketing and consumer behaviour. The literature was analysed by content analysis method, as relevant theoretical and empirical studies were examined and compared to find the key factors influencing the intention to use augmented reality in fashion e-commerce. The key trends, factors, gaps were identified by synthesizing various studies. The method was used due to its convenience and ease to find relevant information. The quantitative method was used for conducting research in the empirical part. An online survey was distributed by convenience sampling method. The data from the survey was structured by Microsoft Excel, then was cleared by IBM SPSS. The hypotheses were checked by linear and multiple regression analysis, for moderation and mediation hypotheses IBM SPSS PROCESS Model 1 and Model 4 syntax coding

was applied. The IBM SPSS was used for data analysis due its easy-to-handle interface and ready-to-use output for analysis.

## Structure of the study

The study consists of introduction, theoretical analysis of factors influencing the intention to use augmented reality in fashion e-commerce among Gen Z and Millennials, research methodology, quantitative analysis of the findings, conclusions, limitations and recommendations, list of references and appendices.

The theoretical analysis is split into 5 parts: analysis of AR definition and use in literature and industry, AR in fashion retail and consumer benefits, theories to analyze augmented reality use in fashion e-commerce (TAM and UTAUT), factors that influence the behavioral intention to use augmented reality and analysis of Millennials and Gen-Z and their shopping behavior. The factors' subchapter is also split into parts. It consists of 9 subchapters: perceived usefulness (PU) and perceived ease of use (PEOU), perceived augmentation, perceived interactivity, perceived vividness, habit and experience, perceived immersion, perceived enjoyment, trust (or privacy concerns), and summary of the factors. The theoretical analysis part answers the five objectives set in the introduction. This section sets the definition, uses of augmented reality, by analyzing and comparing TAM and UTAUT, the most suitable theoretical background is chosen. By examining different studies, the similarities and differences in generational behavior are revealed.

The research methodology is split into three parts, the first part is research aim and objectives, development of the research model, the second part is data collection methods and research instruments, and the third part is research sample size and structure. This part of the study answers the sixth, seventh and eighth objectives.

The third chapter of the study is quantitative analysis and empirical findings of the study. This chapter is split into 5 parts: methodical approach and demographic insights of participants, reliability of the constructs and computing variables, normality analysis, descriptive statistics, examination of hypotheses in empirical research and discussion of quantitative analysis results. The third chapter responds to the ninth objective that is set in introduction.

The next chapter is conclusions, and it is numbered, each number answers the objective that is set in the introduction part. The study ends with limitations and recommendations chapter. This section concludes the last objective that is present in the introductory part. After limitations and recommendations chapter, the list of references and sources are stated. At the end of the paper, annexes can be found. In total, there are 5 annexes in this paper: item scales, questionnaire development, list of countries where respondents live, normality analysis – Q-Q plots, and VIF values.

# 1. THEORETICAL ANALYSIS OF FACTORS INFLUENCING THE INTENTION TO USE AUGMENTED REALITY IN FASHION E-COMMERCE AMONG GEN-Z AND MILLENNIALS

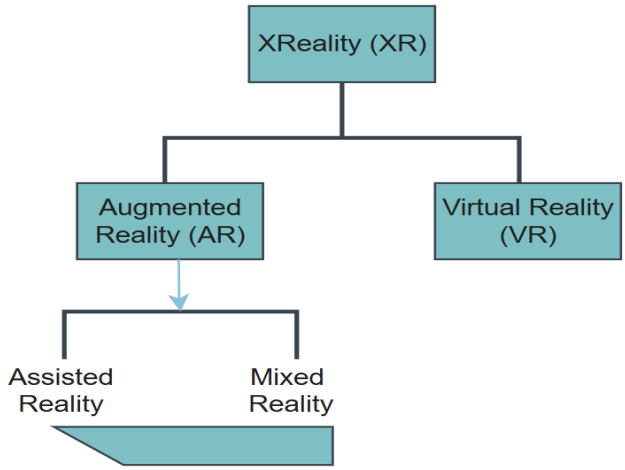
## 1.1 Theoretical analysis of Augmented reality (AR) definition and use in literature and industry

Since its first use, Augmented Reality has various definitions proposed by many authors. These definitions are influenced by the type of studies the researchers are performing (decision–making, customers, marketing) (Kumar, 2021). In simple terms, Augmented Reality integrates real and virtual worlds by imposing digital objects with the help of technology onto the real world. The purpose of Augmented Reality is to combine, align virtual and real objects, and to provide a dynamic interaction between these two objects (Dargan et al., 2022). It can be achieved using computer vision (Baytar, Chung & Shin, 2020), mobile phones (Ganesan and Kumar, 2024; Schapsis et al., 2024), and AR glasses (Wu and Kim, 2022). The dynamic between the objects makes the real world interactive (Dargan et al., 2022).

It is important to note that Virtual Reality and Augmented Reality share some similarities like image processing, human-computer interaction, and computer vision, but they are different in nature. Virtual Reality creates a new world, and an individual is immersed in it. The difference also lies in the definition of these terms, augment is defined as making something bigger, hence putting objects to the real world (Dargan et al., 2022). To show their differences, the XR framework was introduced (see Figure 1), it is a term that has a continuum. On one continuum, there is AR (left), and on another VR (right). Based on the XR framework, it separates AR and VR for the presence of a physical environment. If the user of technology feels the physical environment he is in, it is AR if not it is said to be VR (Rauschnabel, Felix, Hinsch, Shahab & Alt, 2022). VR also has a higher level of telepresence than AR, and that sets it apart from augmented reality. Two terms in which AR is separated are assisted reality and mixed reality. In literature, different definitions can be proposed for these terms. But Rauschnabel et al. (2022) define them based on presence levels. Assisted reality is low levels of local presence, and mixed reality is defined as high levels of local presence. For assisted reality, virtual objects are imposed on the real environment, but the user feels more of the real environment rather than for mixed reality. In mixed reality, virtual and real objects merge, and it is sometimes difficult to distinguish it from VR (Rauschnabel et al., 2022).

**Figure 1**

*XR framework*




Source: Dwivedi et al., 2020

Augmented reality has different uses, it is classified as marker-based, marker less, GPS or location-based, and superimposition. For the marker-based, a physical object is required for it to work (Dargan et al., 2022). It is a simple system, which is used when scanning QR codes (Arena, Collotta, Pau, & Termine, 2022). For the marker less, the surrounding space is required, the purpose is to impose 3D virtual objects onto the physical space, and it is a more flexible alternative to the marker-based type (Dargan et al., 2022). The third type of AR as the name suggests requires a location. It places objects in particular locations (Dargan et al., 2022). The last type of AR is mostly used by various manufacturing industries and businesses (Dargan et al., 2022), as it requires higher processing capabilities (Arena et al., 2022). Its objective is based on projecting light (Dargan et al., 2022).

To summarize, augmented reality has different definitions based on the study fields. However, to put in simple terms, augmented reality combines virtual objects with the real environment (Dargan et al., 2022). Sometimes people confuse augmented reality with virtual reality, despite similarities they are different. XR framework is used to show the difference between them, the difference lies in the physical environment (Rauschnabel et al., 2022). In the industry, there are different uses of augmented reality (marker-based, marker less, GPS or location-based, and superimposition). Some involve GPS, or QR codes to use it (Dargan et al. 2022). Fashion industry also employs augmented reality to make it easier for consumers to shop. All the types of augmented reality in retail are discussed next along with the benefits for consumers.

### 1.2 Augmented reality (AR) uses in fashion retail and consumer benefits

In retail, the use of augmented reality is a relatively new phenomenon compared to other fields. Fashion brands also started to use augmented reality to gain a competitive advantage and attract customers. Fashion is a broad term, and can be explained from business, sociology, and humanities perspectives. It is a term describing a popular theme in a given time, this time can be a decade, years, or months. Fashion is applied not only to clothing but also to food, cars, and technology. Something fashionable at one point may lose its popularity over time, but fashion is repeated in cycles (Barnes, 2013). When it comes to clothing, there is a hierarchy in fashion. It starts with the designer creating original models using the inspiration of house creators, those designs are high quality and low imitation (Weller, 2007). Most of these designs can be ready-to-wear or haute couture, shown in fashion week months (Birtwistle et. al., 2003; cited in Barnes, 2013) in Paris, London, New York, and Milan. Those designer pieces are luxury brands like Chanel, Dior, Prada, Hermes, etc (Aage and Belussi, 2008; cited in Barnes, 2013; Moreau, Prandelli, Schreier & Hieke, 2020). Then the fast-fashion brands like Zara (Wang, 2024) imitate the newest fashion looks and styles and present them to their target group (Barnes, 2013). Examples of the use of augmented reality in fashion retail are online (web-based), in-store, and mobile apps (Caboni and Hagberg, 2019). There are luxury brands (e.g., Burberry), fast-fashion brands (e.g., Zara), cosmetic brands (e.g., L'Oréal), and jewelry brands (Swarovski) that employ augmented reality (Caboni and Hagberg, 2019). Some of the examples of fashion brands are given in Table 1, the table shows the AR platform that the brand utilizes and its function.

**Table 1**

*Augmented reality uses for brands*

| Brands | Platform | Function |
|---|---|---|
| Gucci | Snapchat | Virtual try-on (VTO) of shoes |
| Nike | BytePlus Effects | |
| L'Oréal | Modiface | |
| Dior | WebAR | |
| Uniqlo | Magic Mirror | In-store try-on of clothing items |
| Farfetch | Wanna | VTO of handbags |

Source: Compiled by the author through the web

The fashion brands that adopted augmented reality not only use it in apps as try-ons, but they also try to utilize it in every way that is possible. There are several examples of that, some fashion houses started to employ augmented reality even before the pandemic. For example, some, such as Gcds and Balenciaga, used it as a gaming experience, enhancing customer satisfaction. Customers can see the show in a game format, creatively view the clothing line, and even create their own avatars. Fashion brands like Gucci use augmented reality from a storytelling perspective. Hence, they created an advertising campaign, where famous art paintings come alive, vestured in Gucci garments. All this happens thanks to augmented reality technology; consumers view the campaign from the comfort of the home or the boutique as well (Iannilli and Linfante, 2021). As is evident from these examples, augmented reality technology is not just a buzzword; it is here to stay. The items that are sold in fashion can be included in categories such as watches, bags, or coats (Hornig et al., 2013). What once was used as a purely functional tool is now used as a fashion item (Khan, Rodwell, & Zevlaris, 2025). Due to technological advancements (Khan et al., 2025), not only sunglasses but also optical glasses can be considered as a fashion accessory and is labelled as an eyewear category (Hornig et al., 2013). People choose their optical glasses that would answer their medical needs but also compliment their personal style and taste (Khan et al., 2025). There are studies that used different categories, such as eyewear (Yim et al., 2017; Bonnin, 2019; Wu and Kim, 2022; Ganesan and Kumar, 202), footwear (Schapsis et al., 2024; Bonnin, 2019), dresses (Baytar et al., 2020), watches (Yim et al., 2017; Günduru and Deniz, 2024).

Retailers, when adopting AR for e-commerce, should also stress the practical benefits it brings for consumers (Schapsis et al., 2024). Kovács and Keresztes (2024), while analyzing AR applications, suggested several factors that could lead to the intention to adopt those applications. There is no doubt that digital marketing is vital for businesses. To level up with digital marketing strategies, scholars Kovács and Keresztes (2024) suggest adopting emerging technologies, specifically AR. The first factor is that it provides technological advancement that is very much needed for fashion e-commerce. It gives consumers a user-friendly interface, presenting visuals in a way that engages consumers (Kovács and Keresztes, 2024). In their study, AR applications created a positive consumer attitude and addressed sustainability concerns. They not only talked about factors but also discussed how retailers can adopt and utilize AR in fashion e-commerce. According to Kovács and Keresztes (2024), there are three ways, they are as follows:

1) Pre-purchase stage. AR helps with product review and evaluation.
2) Purchase stage. AR aids decision–making by giving visualization and descriptions of the product.

3) Post-purchase stage. All these benefits of AR will reduce returns (Kovács & Keresztes, 2024)

More practical benefits of AR in fashion e-commerce are adequate smartphone screen size, the option to search by picture, and the capability to identify comparable products across brands (Kovács and Keresztes, 2024). Another important factor in adopting AR in e-commerce is that it helps consumers to find their style. Unfortunately, there are not many studies suggesting what brands need to do to adopt AR. Most studies are focused on already existing AR applications and how they can be improved. But what is noticeable is that studies suggest that even if brands adopt them, it is a good supplement to the physical store of fashion brands. AR alone will not replace physical try-ons. It will aid indecisive consumers with finding their personal style (Baytar et al., 2020; Kovács and Keresztes, 2024). Consumers may visualize different combinations of clothing, colors, and mix & match without spending too much time doing it physically. It is a comfortable and engaging way to shop online (Kovács and Keresztes, 2024).

In summary, augmented reality in retail is a novelty. In fashion retail, AR is used both by luxury and fast-fashion brands through online platforms, in-store technology, and mobile applications (Caboni & Hagberg, 2019). It enhances the shopping experience by supporting the consumers in pre-purchase evaluation, purchase decision-making, and post-purchase satisfaction. The use of augmented reality offers practical benefits for consumers, like visualizing outfits or finding their style (Kovács and Keresztes, 2024). However, it supplements rather than replaces physical try-ons (Baytar et al., 2020), and more research is needed in this area to understand how to effectively implement augmented reality. The next section discusses which theory would be best to analyze the intention to use augmented reality from consumer perspective, and which theories are currently used by scholars.

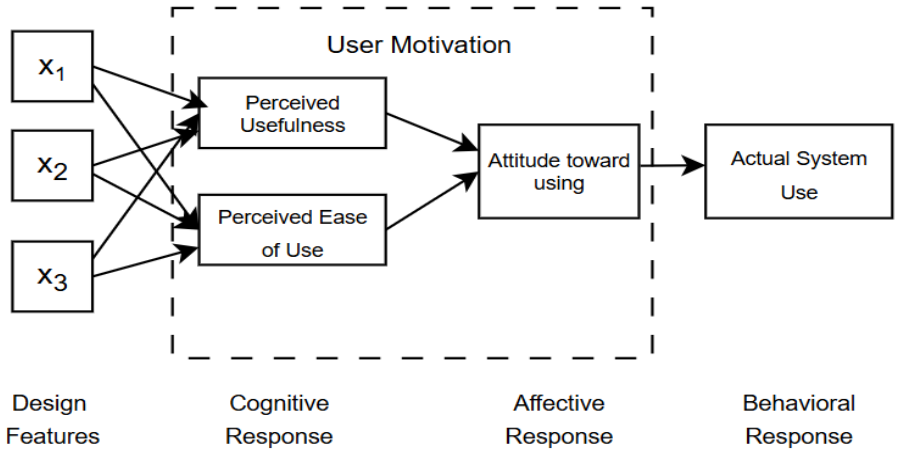
### 1.3 Theories to analyze augmented reality use in fashion e-commerce (TAM and UTAUT)

The most used theories when it comes to augmented reality research are the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) models. The TAM model was originally proposed by Davis (1985), and it includes design features, cognitive, affective, and behavioral responses. Davis (1985) suggests that design features are alternative systems of technology (see Figure 2). At the starting point, design features are not considered important, but if user testing is successful, it would provide valuable information for designers on what to implement at an early stage. The importance is put on the attitude of the user; from the model, it is visible that the overall attitude shows whether or not a person will use the particular technology. Attitude is formed by perceived usefulness and perceived ease of use.

Design features directly influence use and have an indirect influence on attitude through perceived usefulness and perceived ease of use. Perceived usefulness (PU) is "the degree to which an individual believes that using a particular system would enhance his job performance". Perceived ease of use (PEOU) is "the degree to which an individual believes that using a particular system would be free of physical and mental effort" (Davis, 1985). PEOU has a direct effect on PU, as the technology, which is easy to use for a person, will be considered useful as well. PU is considered a major determinant of system use, while PEOU is a secondary determinant compared to PU (Davis, Bagozzi & Warshaw, 1989). Davis (1989) believes that technology that is difficult to use will seriously affect adoption. However, people will try to handle a difficult system if they consider it useful for them. Systems that are easy to use but provide no useful function will not be given consideration by users (Davis, 1989).

**Figure 2**

*Technology Acceptance Model*



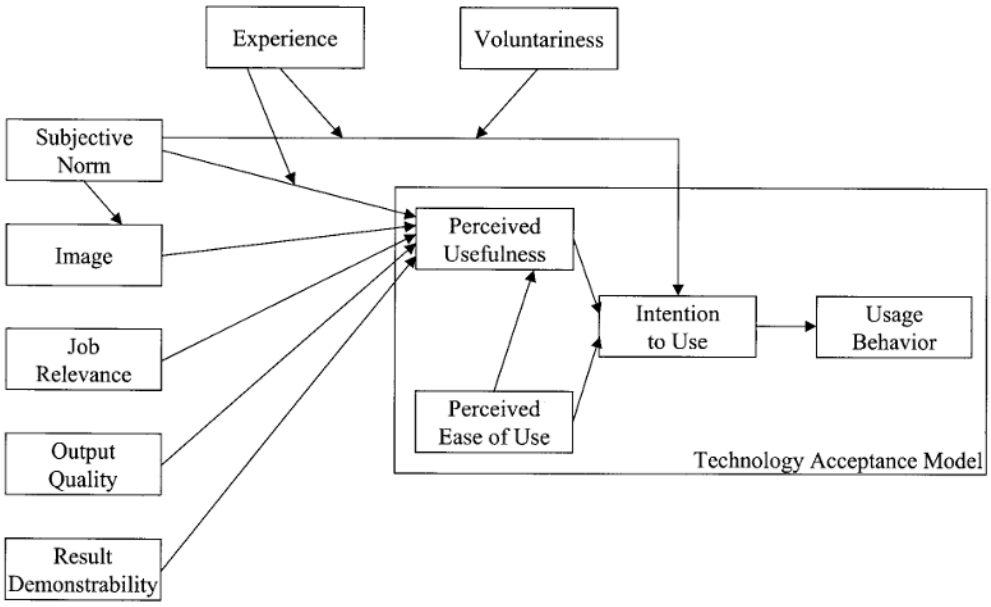

Source: Davis (1985)

The TAM original model was extended to TAM2 by adding additional constructs to the model. They are social influences (subjective norm, voluntariness, and image), and cognitive instrumental processes (job relevance, output quality, result demonstrability, and perceived ease of use) (Venkatesh and Davis, 2000). TAM2 model with TAM and additional constructs is shown in Figure 3. The tests done using the TAM model were separated into voluntary and mandatory settings. The difference between TAM and TAM2 is that social influence played a significant role in the results. One of the constructs, which is a subjective norm, has an effect in mandatory settings, but not in voluntary settings. Subjective norm also had a direct effect on intention to use more than perceived usefulness and perceived ease of use, but that again in a mandatory setting (Venkatesh

and Davis, 2000). Subjective norm means to behave in a way other people find favorable (Venkatesh and Davis, 2000). It is believed that the effect of social influence like subjective norm will decrease on perceived usefulness and intention to use over time as the person gains experience using that system. Apart from perceived ease of use and perceived usefulness of the technology, people will also look at how the system performs a certain job, hence its output quality. Job relevance is the "person's judgment whether the system fits into user's tasks". The cognitive instrumental processes, like job relevance and output quality, proved to be important and had a direct impact on perceived usefulness. (Venkatesh and Davis, 2000). The system should not only demonstrate quality but also do it regularly, showing positive results. This is a description that fits the construct of result demonstrability. Image can be defined using different theories, in simple terms, it is to sustain a favorable perception within a reference group (Kelman, 1958 cited in Venkatesh and Davis, 2000).

**Figure 3**

*TAM2 – Extension of Technology Acceptance Model*



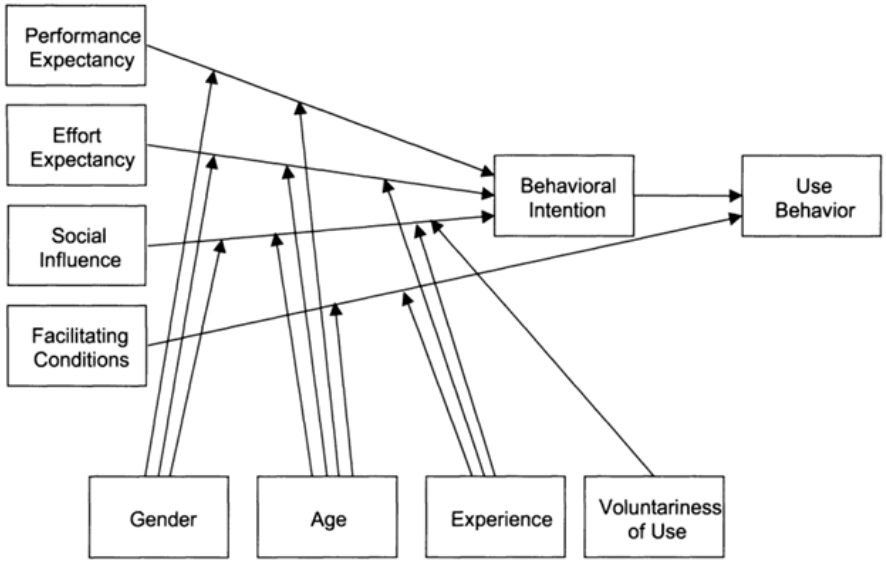

Source: Venkatesh and Davis (2000)

Another important theory when it comes to the acceptance of technology is the Unified Theory of Acceptance and Use of Technology (UTAUT). In the UTAUT model (see Figure 4), direct determinants of use behavior are performance expectancy, effort expectancy, social influence, and facilitating conditions. Performance expectancy is the "degree to which a user believes that using technology will help him to reach gains in job performance" (Venkatesh et al.,

2003). It is a similar construct to PU in the TAM model (Davis, 1985). Effort expectancy is "the degree of ease that comes when using the technology" (Venkatesh et al., 2003), and is similar to the PEOU in the TAM (Davis, 1985). Social influence is the "degree to which a person believes that others perceive that the system is important, and he or she should use it". Lastly, facilitating conditions are the "degree to which organizational infrastructure exists to support use of the particular system" (Venkatesh et al., 2003). UTAUT model is unique as it captures the important parts of previously studied eight models (Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behavior (TPB)/Decomposed Theory of Planned Behavior (DTPB), Combined-TAM-TPB, Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT) and Social Cognitive Theory (SCT)). These models were studied and compared to form the UTAUT model. The direct determinants of intention to use are performance expectancy, effort expectancy, and social influence. For usage behavior, facilitating conditions and intention to use have a direct influence. The researchers believe that using the UTAUT model can give a bigger picture as it involves moderating variables such as age, gender, experience, and voluntary use. This is also the first model that ran the tests in voluntary and mandatory settings and stressed that previous models were done in voluntary settings (Venkatesh et al., 2003).

**Figure 4**

*UTAUT model – Unified Theory of Acceptance and Use of Technology*

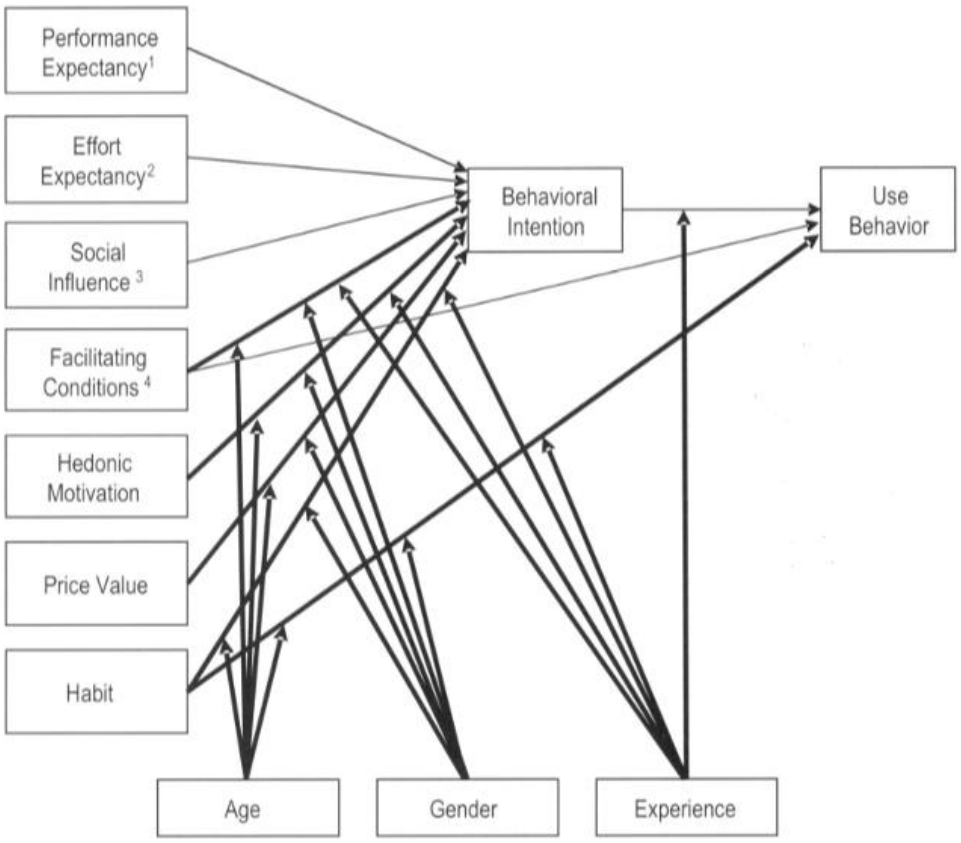



Source: Venkatesh, Morris, B. Davis and D. Davis (2003)

As new technologies arise, there is a need to understand their use from a broader perspective. Hence, UTAUT2 was developed to explain consumer user context, as UTAUT was more efficient in organizational adoption of technologies for employees. The new constructs were added to the original model (hedonic motivation, habit, and price value). The added constructs to the model are shown in Figure 5. Hedonic motivation is "fun or pleasure a user gets from using the technology". Habit is "the performance of behavior automatically because of learning" (Limayem et al., 2007, cited in Venkatesh, Thong & Xu, 2012). The price value is considered positive when the person thinks that the usefulness of a technology will outweigh any costs of it. The results showed that habit is an important construct and has a direct effect on behavioral intention, and an indirect effect on use through age, gender, and experience. The difference between UTAUT and UTAUT2 is not only the broad consumer spectrum of it, but also in the UTAUT2 experience of technology moderates the relation between intention and use (Venkatesh et al., 2012)

**Figure 5**

*UTAUT2 model*




Source: Venkatesh, Thong and Xu (2012)

The Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model has constructs that work well when analyzing the acceptance or adoption of smart technologies like augmented reality (Schapsis et al. 2024). Four constructs were chosen to be added to the UTAUT2 model – habit, performance expectancy, effort expectancy, and hedonic motivation (Schapsis et al. 2024). Schapsis et al. (2014) believe that the UTAUT2 model should be used to analyze emerging technologies like augmented reality by adding construct about preexisting habits. This construct helps to observe behavior when using the applications and finds factors for the acceptance of technology (Schapsis et al. 2024). Schapsis et al. (2024) believe that UTAUT2 model is effective model to analyze acceptance of AR, and future research can be focused on this model. There are many studies that examine shopping behavior, but they are limited when it comes to adding augmented reality as a factor (Schapsis et al., 2024). Future research should not only use AR with the UTAUT model but also extend the product categories (Schapsis et al., 2024). Khashan, Elsotouhy, Alasker & Ghonim (2023) believe that UTAUT2 is comprehensive compared to other models and suggest that other scholars should implement it in their research. However, their research involved Task–Technology–Fit together with the UTAUT2 model (Khashan et al., 2023). There is no evidence whether UTAUT2 alone can explain the behavioral intention of augmented reality in fashion e-commerce. Upon analyzing TAM and UTAUT models, it is evident that TAM is the most suitable model for this study. It is flexible, one can add additional constructs to the framework (Alam, Susmit, Lin, Masukujjaman & Ho, 2021). From the education context, TAM was used to understand the effect of AR and VR. In this study, all original TAM construct relationships were validated (Jang, Ko, Shin, & Han, 2021). Oyman, Bal & Ozer (2021) also validated the original TAM relationships in their study. They also added additional constructs to the original TAM model, which again reinforces the flexibility and adaptability of TAM (Oyman et al., 2021). Those studies not only reveal significant results for theory but also show practical implications that can be drawn from the results of the research. UTAUT2 model has an explanatory power to reveal factors for intention to use, but it is too early to implement this model, as not enough studies have been done with augmented reality. The TAM model seems to be perfect to use in this study; there are numerous studies done with augmented reality using this model (Kumar, 2021), and it is also the first model that revealed results on why users accept or reject technology (Parekh et al., 2020).

In summary, both the TAM and UTAUT models are used to analyze the acceptance and use of technologies. TAM was proposed by Davis (1985), and later it was extended to TAM2, which involved social influence and cognitive instrumental processes. For TAM2, scholars began testing both in voluntary and mandatory settings (Venkatesh and Davis, 2000). On the other hand, UTAUT was developed by analyzing other theories, including TAM (Venkatesh et al., 2003). However, for

this study, TAM is more relevant for its flexibility (Alam et al., 2021). The next part of theoretical analysis is factors that influence the intention to use augmented reality.

## 1.4 Factors that influence the behavioral intention to use augmented reality

Several factors may affect the intention to use augmented reality in retail. By analyzing several studies, those factors are revealed and will be discussed in this chapter. Two factors are related to TAM model (Davis, 1989), one factor is taken from the UTAUT2 and TAM2 model (Venkatesh et al., 2003; Venkatesh and Davis, 2000), the other four are related to AR media characteristics and the result of them, (Ganesan and Kumar, 2024; Javornik, 2016), the remaining two are consumer-centric (Oyman et al., 2021; Holdack, Lurie – Stoyanov & Fromme, 2020; Kowalczuk, Siepmann & Adler, 2020; Kang, et al., 2023; Saprikis, Avlogiaris & Katarachia, 2021; Harborth and Pape, 2021; Bonnin, 2019).

### 1.4.1 Perceived Usefulness (PU) and Perceived Ease of Use (PEOU)

Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are fundamental determinants of the use of the system (Davis, 1989). Davis (1989) performed studies to test the relationship between PU and PEOU, as there was a belief that PEOU pre-exists PU. Thus, if the person does not find a system that is easy to use, he or she will not explore its usefulness. Some scholars believe that there is a parallel relationship for these constructs (Davis, 1989). The results of the studies revealed that there is a strong relationship between usefulness and usage of the system rather than ease of use and usage relationship. Hence, PU affects the use of the system more than PEOU (Davis, 1989). Davis (1989) explained that PU is crucial for the adoption and use of the system. For instance, users start to use the system for the first time and look for functional tasks that the technology provides. After that, they observe whether technology is easy to use or not. Sometimes people may tolerate the difficulties related to technology if they believe that it provides substantial benefits for their work. Difficulties may indeed hinder adoption or use, however, a system that lacks functional utility is unlikely to achieve sustained success among users. Hence, PEOU alone cannot affect the use, it goes together with PU (Davis, 1989). In a study performed by Xue, Parker & Hart (2023), PEOU and PU were equally important for both the AR app and the magic mirror (in-store augmented reality). Consumers in this study preferred the AR application, as the magic mirror may create long queues and crowds when someone does not fully understand its functionality. Hence, many participants would choose the application (Xue et al., 2023). The participants like something simple and easy to use. Some would search for an attractive and enjoyable augmented reality application. But most agree that if the application does not deliver

certain functionality, usefulness, or takes long response times, they would quit using it. Almost 90 % of participants chose perceived usefulness as the main reason to use the application. Enjoyment is crucial, but it should be tied to the usefulness of the app (Xue et al., 2023). Perceived Ease of Use was an important factor for use in the magic mirror case, rather than in AR application. As it was mentioned, if the magic mirror is not easy to use, it will create queues, and people would go to the fitting rooms or use the application. Thus, it will not have any value among the consumers (Xue et al., 2023). Even though PEOU was not as important for the augmented reality application of Xue et al. (2023) study, it was for Wu, Xiong & Zhang (2025) study; analyzing virtual make-up augmented reality try-ons found that PEOU moderates the effect of perceived augmentation on utilitarian value (Wu et al., 2025)

In conclusion, both Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are key factors influencing technology adoption, with Perceived Usefulness (PU) generally having a stronger impact on the system usage (Davis, 1989). While PEOU is important at the beginning, to continue using the system, its usefulness is crucial. People also may tolerate some technological difficulties if that technology brings them significant benefits. In certain contexts, such as magic mirrors (in-store AR), perceived ease of use is a critical factor for system use due to practical concerns (for example, long queues). Wu et al. (2025) showed that in a virtual make-up AR application (mobile augmented reality), perceived ease of use moderates perceived augmentation on utilitarian perception, and ease of use should not be disregarded for AR applications.

### 1.4.2 Perceived Augmentation

Augmented reality has distinct features that affect consumers' responses. Thereby, those features influence intention to use. One of those features is perceived augmentation, which is a psychological feature taken from the TIME model (Javornik, 2016). People expect the augmented reality application to have a high level of augmentation. It means that when trying on virtual items, the experience should correspond to that of a real try-on. For example, when someone tries on glasses, they not only want them to look good from the front but also check the sides. Hence, when participants turn their head, the virtual item should turn as well. Therefore, the "real and authentic" effect should not be lost. This applies not only to glasses but also to other product categories like furniture (Javornik, 2016). Hence, augmentation should transcribe the real try-on so that consumers can confidently use the application and will not need to visit the store to check the item. Perceived augmentation is important for behavioral intention, however, Javornik (2016) raised concern that consumers who enjoy the application, remember the app, but do not associate it with the brand itself. In her study, participants who enjoyed the augmentation were ready to purchase

items or use the platform again, some recommended the application to friends and family. For most respondents, augmentation created a sense of flow. All else, that is not related to the application, like the brand, was forgotten (Javornik, 2016). This raises important questions for marketers who want to promote the brand or create brand awareness among consumers by creating AR applications. Thereby, they may seek another way if the message to consumers is brand related.
Perceived augmentation is a crucial factor when it comes to explaining the interface of augmented reality try-ons (footwear app), as it influences the decision-making through the utilitarian and hedonic values of consumers (Ivanov, Head & Biela, 2023). The same result was achieved for another study that examined a beauty-related augmented reality application (virtual makeup try-on) (Wu et al., 2025). Wu et al. (2025) also proved that perceived augmentation influences two types of perceived value: hedonic and utilitarian. Consumers, when using the application, expect it to be as authentic as it is possible. This "real" effect helps not only to choose the right product but also creates a fun way to shop (Wu et al., 2025). Perceived augmentation is also related to another factor, PEOU: it was found that the relationship between the perceived augmentation and perceived ease of use was significant. Additionally, PEOU strengthened the influence of perceived augmentation on utilitarian value. The different levels of PEOU were studied; participants with the higher PEOU had a stronger effect of perceived augmentation on utilitarian value (Wu et al., 2025). Hence, it can be concluded that consumers who can use the application easily will view the perceived augmentation positively and will benefit from the practical functionality that the app offers.

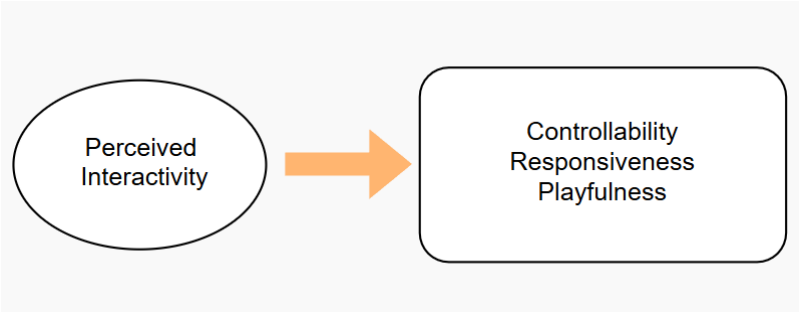
In summary, perceived augmentation – how realistically an AR application mimics a real-life experience – is a key factor for intention to use AR try-ons (Javornik, 2016). In order to use technology like augmented reality, consumers expect its interface to be as real as possible (for example, moving virtual objects when user tilts their head, virtual objects corresponding to the environment from every angle) it is important for them to make confident purchase decisions without visiting a store. While perceived augmentation creates an enjoyable and immersive experience for users, it may not effectively promote brand awareness, as users forget the brand while focusing on the experience. Research by Ivanov et al. (2023) and Wu et al. (2025) show that perceived augmentation enhances both utilitarian and hedonic values. It is also related to another factor: PEOU, it was found that users who view the system easy to use will also perceive augmentation positively (Wu et al., 2025).

### 1.4.3 Perceived Interactivity

Another factor that is related to AR characteristics is perceived interactivity, and it is difficult to put a specific definition for this factor, as scholars explain it differently. Park and Yoo (2019) describe perceived interactivity in three dimensions (controllability, responsiveness, and playfulness). The first is related to how much users feel the control of the application, the second addresses how this application reacts to the control when specific actions are performed, and the last one is the enjoyment users feel when they utilize the augmented reality application (Park and Yoo, 2019). This definition, with its dimensions, is shown below in Figure 6:

**Figure 6**

*Definition of interactivity*




Source: Park and Yoo (2019)

Ganesan and Kumar (2024), when explaining three (perceived augmentation, perceived vividness, perceived interactivity) of the AR attributes, referred to the Theory of Interactive Media Effects (TIME) model. According to the TIME model, interactivity is linked to customer perception (Sundar, Jia, Waddell & Huang, 2015). The purpose and definition of perceived interactivity is to help users understand augmented reality more easily, allowing them to interact and engage with the application. There is a degree of control associated with interactivity (Ganesan and Kumar, 2024). Alalwan et al. (2020) research is centered on the customer's perspective, and their study, interactivity is explained using six dimensions: active control, personalization, ubiquitous connectivity, connectedness, responsiveness, and synchronicity. They believe that literature does not have a standard definition, and it depends on the scholar; some use a unidimensional and others a multidimensional definition for their research (Alalwan et al. 2020). The consistent dimension for three of the mentioned studies is the control aspect of the perceived interactivity.

There are not many studies done on the relationship between perceived interactivity and behavioral intention. In one study, perceived interactivity had a positive influence on customer engagement, but the effect of perceived interactivity on intention to use was not supported

(Ganesan and Kumar, 2024). However, Chaudhry, Subhani, Naz, Nazir & Ameer's (2023) research showed that perceived interactivity, along with perceived usefulness, perceived enjoyment, had a positive effect on behavioral intention to use augmented reality. Here, perceived interactivity also played a mediating role between perceived usefulness/perceived enjoyment and behavioral intention (Chaudhry et al., 2023). Perceived interactivity impacts mental imagery, this effect facilitates a relationship between interactivity and attitude. Consumers who hold a strong mental image will view a product in an augmented reality application in a favorable way, showing a positive attitude towards it. Thus, attitude itself positively influences the intention to use (Park and Yoo, 2019).

Perceived interactivity of augmented reality is a multifaceted concept, often defined differently by scholars. Common dimensions include controllability, responsiveness, and playfulness (Park and Yoo, 2019), as well as personalization and connectivity (Alalwan et al., 2020). Although varying definitions, the control aspect appears consistent across studies. Interactivity improves customer engagement and experience with the application (Ganesan and Kumar, 2024). While some studies found a limited direct impact of perceived interactivity on intention to use, others (Chaudhry et al., 2023) showed that it positively influences behavioral intention to use and forms positive attitude (Park and Yoo, 2019).

### 1.4.4 Perceived Vividness

Vividness is related to the augmented reality to create a sensory-rich environment (Steuer, 1992; cited in Ganesan and Kumar, 2024). Examples of the vivid augmented reality environment are realistic lighting, producing a product to its finest detail, and showing smooth and high-resolution surfaces and textures, significantly improving customer engagement. Users start browsing different products, consequently increasing their intention to use the application (Ganesan and Kumar, 2024). Like perceived augmentation, perceived vividness is related to features of augmented reality (Ganesan and Kumar, 2024). This factor cannot be ignored as it is strongly related to other factors: perceived enjoyment and perceived usefulness (Ngo, Tran, An & Nguyen, 2025). Perceived vividness is not only related to other factors but also affects and demonstrates a strong relationship with hedonic value (Ngo et al., 2025). The vividness of augmented reality provides practical benefits for consumers, and the immersive environment that vividness creates allows consumers to enjoy the application and enhance the shopping experience (Ngo et al., 2025). Perceived vividness also impacts customer engagement and attitude for an AR app. It was also found that customer engagement plays a mediating role between vividness and attitude (Ganesan and Kumar, 2024). Consumers who need to touch products before purchasing

may find the vividness of the augmented reality application more valuable than people who have a low need for touch. This is especially important in fashion, jewelry, and furniture e-commerce (Kim, Park & Kader, 2023). Most of the time, people are reluctant to go online shopping as they are not sure how the product will turn out, and perceived vividness decreases the hesitation (Xu et al., 2024). Javornik (2016) raised a drawback associated with perceived augmentation, the problem was that consumers do not remember the brand, only the application. This problem does not pertain to perceived vividness. A good vivid experience of augmented reality enhances brand awareness and equity. However, this is true for people with prior knowledge of AR (Xu et al., 2024).

Perceived vividness of augmented reality refers to the sensory richness of the experience – such as realistic lighting and textures – which significantly enhances customer engagement and intention to use the app (Ganesan and Kumar, 2024). This factor is closely related to perceived enjoyment, perceived usefulness and hedonic value, making the AR shopping experience both practical and enjoyable (Ngo et al., 2025). Unlike perceived augmentation, vividness can positively affect brand awareness and equity, especially for users with experience of AR applications (Xu et al., 2024).

### 1.4.5 Habit and Experience

Another important factor to consider is prior experience with related technology or a habit. Habit with augmented reality resulted in a positive attitude toward intention to use (Schapsis et al., 2024). People create a mental framework when using technology, such as mobile devices, and apply that framework to similar situations involving the same technology (Yamashita et al., 2007, cited in Schapsis et al., 2024). Luceri, Bijmolt, Bellini & Aiolfi (2022) highlight the importance of habit or previous experience with technology. People who use certain devices gain experience with technology as time passes and develop a habit towards it. This habit forms both hedonic and utilitarian aspects of the technology (Luceri et al., 2022). Habit was analyzed in terms of intention to use (Schapsis et al., 2024) and purchase intention in AR apps (Söderström, Mikalef, Landmark & Gupta, 2024). The importance of habit with AR apps should not be underestimated, as it dictates how the person will interact with a certain app. There is a difference in how the AR app is perceived by a first-time or experienced user. Habit or prior experience is closely related to other factors, for example, like perceived augmentation, enjoyment, vividness (Söderström et al, 2024). The study done by Pinto, Costa, Abreu & Paiva (2022) revealed that habit is the most crucial factor in the use of mobile augmented reality applications. They believe that users' behavioral intention is not affected by prices, friends' or family recommendations, effort, or novelty. All of these mentioned points are not the main reasons for the intention to use as much as habit (Pinto et al. 2022). Pinto

et al. (2022) also pointed out that to develop the habit for MAR apps, users should adopt earlier technologies like smartphones, the internet, and 5G, which are not barriers for younger generations like Millennials or Gen Z.

Habit is a transferable behavior, such as individuals who systematically use AR in non-shopping contexts translate this habit to shopping-related AR applications (Schapsis et al., 2024). Non-shopping-related AR experiences can be Google Street View, Snapchat, or Instagram filters (Sunardi, Ramadhan, Abdurachman, Trisetyarso & Zarlis, 2022). This again highlights that people who have encountered augmented reality will likely show a positive attitude toward behavioral intention to use AR apps (Schapsis et al., 2024). Additionally, over time, users gain a certain experience by accessing certain technology, and factors like perceived usefulness and perceived ease of use become important for continuous use. Individuals start to judge whether the system is useful for them and what benefits they will get (Venkatesh and Davis, 2000). Habit and experience are sometimes used in the same context; they are closely related concepts, but some differences exist. The first difference is that experience is crucial for the user, and often is precedent to habit. The second difference is the time aspect in forming habits. While using technology, people gain various experiences with it, hence formed habits vary for individuals (Venkatesh et al., 2012).

To summarize, habit and experience with augmented reality influence users' intentions to use AR applications. Studies show that habit shape both hedonic and utilitarian values (Luceri et al., 2022), and it is a key factor compared to price, social influence or novelty especially among Gen Z and Millennials (Pinto et al. 2022). The users translate their experience and habit formed in non-shopping AR context to the shopping AR applications (Schapsis et al., 2024). While experience precedes habit, both are important and related factors (Venkatesh et al., 2012), which also connect to other factors that influence the intention to use.

### 1.4.6 Perceived Immersion

Virtual Continuum was proposed in 1995, where Virtual Reality was defined as a fully immersive experience. In Virtual Reality, the person gets to experience an artificial world that resembles the real world, which sometimes defies the laws of gravity and time. This feeling is the person immersed in technology. In comparison, Augmented Reality does not defy laws of gravity and time, hence, according to the studies, Augmented Reality is termed as semi-immersive technology. This technology mimics the immersion that one feels in virtual reality (Milgram, Zhai & Drascic, 1995). There is no exact definition of the term "immersion", and most of the time it is understood from a VR or gaming perspective. When playing a game like Pokémon Go, which uses augmented reality technology, it requires the person to be physically active in the real world and

navigate the virtual objects. The gamers process a lot of information; hence, they feel immersed in the game to complete it. There are different kinds of immersion: sensory, spatial, and social immersion. The audio and visual parts of technology contribute to sensory immersion, the physical feeling of virtual objects or space is considered spatial immersion, and lastly, the games sometimes require players to interact with other people in virtual space, and this constitutes social immersion (Shin, 2019). The studies about immersion in augmented reality technology are not only constrained to gaming, but also relevant to business and marketing. Scholars suggest that to create the best AR experiences, consumers should be immersed in them. Immersion in technology creates a feeling of being there in an AR environment, which leads to satisfaction and enjoyment (Tom Dieck, Cranmer, Prim & Bamford, 2023). Hence, immersion as a factor is connected to enjoyment. The study about immersion in the shopping context found that immersion creates a feeling of ownership of the virtual product. Immersion allows consumers to be able to make decisions and control the virtual objects in the AR environment (Song, Baek & Choo, 2020). However, Song et al. (2020) found that immersion and prior experience are negatively correlated. Hence, users with prior experience in AR feel less immersed in it. This can be ruled out by introducing more novelty to the interface and making the experience personalized for consumers (Song et al., 2020).

In summary, immersion was introduced as part of a virtual continuum. Augmented reality is considered a semi-immersive system (Milgram et al., 1995). Even though there is no distinct definition of immersion, it is an important aspect for studies in technology. In simple terms, it is understood as "a feeling of being there" and is researched not only from a gaming perspective (Shin, 2019) but also from a shopping context (Song et al., 2020). Hence, it is important for this paper. As immersion often leads to enjoyment, and enjoyment will be discussed next.

### 1.4.7 Perceived Enjoyment

Consumers want useful and easy-to-use AR applications. Nevertheless, having a good time (Oyman et al., 2021) while being on an app is also important. Hence, perceived enjoyment is one of the factors that influence intention to use. Oyman et al. (2021) researched virtual try-on makeup application on their respondents using the TAM model, and perceived enjoyment was added as a construct and was tested. The results showed that consumers value the entertainment side of augmented reality, and it positively influences their behavioral intention (Oyman et al., 2021). The only drawback of this research is that only female respondents took part in it. Hence, the results of it cannot be generalized. In another study, enjoyment was researched, but for reuse intention (Kowalczuk et al., 2020). This study used the IKEA smartphone application, and it involved both men and women participants. It was found that enjoyment in AR applications increases the reuse

intention. Enjoyment is also tied to another factor, interactivity, as it mediates the effect of interactivity on the reuse intention. Participants used both web-based and AR-based applications, and it turned out that enjoyment was higher was the AR one (Kowalczuk et al., 2020). Kowalczuk et al. (2020) conclude that enjoyment is important, but customers need applications that would combine system quality, usefulness, and product information. Marketers who use only the entertainment aspect of it will lose customers in the long run, as it will create short-term buzz, and applications need a combination of factors to create an exceptional customer experience (Kowalczuk et al., 2020). Bonnin (2019) holds the same views regarding the short-term buzz effect. He agrees that applications should be fun to use, but it should be avoided to market the AR application as hype to consumers. After consumers become confident using the application, they would look for simple, realistic, and efficient aspects of the augmented reality (Bonnin, 2019).

Holdack and colleagues (2020) researched perceived enjoyment of AR wearables in stores. They verified that perceived enjoyment affects positively both attitude and behavioral intention. The respondents described their experience of using the application as easy to use, useful, and enjoyable. The informativeness aspect of the application was also mentioned. These factors together improve the respondents' attitude towards AR wearables. The study concludes that when applied correctly, AR smart glasses can improve customer satisfaction in stores (Holdack et al., 2020). Perceived enjoyment is also connected to perceived ease of use (PEOU) and perceived usefulness (PU). In mobile AR applications, perceived enjoyment is a causal variable for perceived usefulness, but in store AR, perceived enjoyment acts directly on attitude without perceived usefulness (Holdack et al., 2020). When it comes to PEOU, this study showed that it affects PU and attitude, but through perceived enjoyment and perceived informativeness. Lastly, perceived enjoyment mediated the relationship between perceived informativeness and perceived usefulness. Smart AR glasses, when useful and informative, lead customers to enhance their overall enjoyment (Holdack et al., 2020). These different studies (Oyman et al., 2021; Kowalczuk et al., 2020; Holdack et al., 2020) show that the effect of perceived enjoyment differs for AR types, and it connects and mediates relationships with other factors. Nevertheless, perceived enjoyment is an important factor to consider for intention to use. Consumers at the end want to experience an application that will combine enjoyment, easy-to-use, useful, and interactive features for augmented reality.

To conclude, perceived enjoyment is an important factor not only for behavioral intention to use (Oyman et al., 2021), but also for reuse intention (Kowalczuk et al., 2020). Enjoyment is also related to another factor: perceived interactivity, and it plays mediating relationship between interactivity and reuse intention (Kowalczuk et al., 2020). Technology can be easy to use and useful, but still consumers want to have fun while using the app. However, in the long run

enjoyment loses its effect, successful application for continuous use for consumers are those which would combine all the important factors, balancing between enjoyment, system quality, usefulness and product information.

### 1.4.8 Trust (or Privacy Concerns)

Trust as a factor is related to the experience of users with AR. When users try a certain technology and are satisfied with it, they expect a similar outcome from it for repeated use. There is less uncertainty with the use. People who may have never used AR for different purposes may feel certain risks associated with the application or may not trust using it (Bonnin, 2019). Kang et al. (2023) found that people who are inclined toward new experiences associated with mobile AR apps are more likely to trust AR apps. This trust aspect is also valid for people who have fashion informativeness. People who seek new ways to be stylish are aware of the trends and tend to be more innovative than those who are not. As a result, they trust the augmented reality application, which affects their behavioral intention positively (Kang et al., 2023). On the contrary, people who use AR apps for relaxation purposes are likely not to trust augmented reality (Kang et al., 2023). Kang et al. (2023) could not explain the reason for such a case between relaxation and trust. The same relationship is true with sociability and trust. Mobile users who engage in AR apps for sociability needs also were not likely to trust AR apps (Kang et al., 2023). Although some people view AR applications to become socially active on them, Kang et al. (2023) sociability aspect does not affect the trust. Unfortunately, no distinct explanation was proposed for these relationships. By considering all the different types of AR applications that were discussed in this paper, YouCam MakeUp (Oyman et al., 2021), Snapchat, or Instagram filters (Sunardi et al., 2022), and Smart AR glasses (Holdack et al., 2020), an explanation can be that people who use these applications want to get an idea of how certain products will look. In the case of Snapchat or Instagram, users try out different filters and forget about them. The explanation is that not much thought goes into those actions.

In another study, social influence, performance expectancy, reward, enjoyment, and trust were tested on their influence on AR behavioral intention to use. It was revealed that social influence does not affect the intention to use. It does so through trust, as social influence showed a positive influence on trust. Trust showed a positive effect on the usefulness of the AR. Reward had a positive influence on trust (Saprikis et al., 2021). Trust serves as a central mediating factor in this study, which shows its importance for users' intention to use. This study shows that incentives that are brought to the application may increase trust (Saprikis et al., 2021). Consumers who believe that the application is useful will trust the app, which reinforces the behavioral

intention. This research showed that trust as a factor is connected to another factor that was mentioned in this paper: perceived usefulness (PU).

Harborth and Pape's (2021) study investigated privacy concerns related to mobile augmented reality applications on download intention. This paper intends to research intention to use, however, some of the findings of Harborth and Pape (2021) may be relevant for this paper as well. Also, before starting to use mobile applications, consumers need to download them. The study revealed that overall privacy concerns and trust are related to pre-existing knowledge of the users. For example, if the app is popular, users are inclined to trust and download it. It is important to mention that app stores also play a role here. As people have general trust toward their app stores, and if the application is downloadable in the stores, there is no concern (Harborth and Pape, 2021). Harborth and Pape (2021) also found that the trust towards augmented reality has a strong correlation with the general attitude of consumers to AR. In their study, participants had positive views about mobile augmented reality (Harborth and Pape, 2021).

In conclusion, trust plays a significant role in influencing the intention to use augmented reality applications. Consumers who have positive experience with AR are more likely to trust and repeat the use of the apps. However, users unfamiliar with AR or those using it for non-innovative purposes (for example, relaxation or sociability) may show lower trust levels (Kang et al., 2023). Kang et al. (2023) shows that users who are inclined toward new experience or fashion-informed tend to trust AR, and this affects their behavioral intention. Social influence affects the intention to use through trust. Also, introducing incentives to the app may increase trust, consequently enhancing intention to use (Saprikis et al., 2021). The popularity of the app and the known stores for downloading it address users' privacy concerns. Trust overall is correlated with the general attitude of consumers (Harborth and Pape, 2021).

### 1.4.9 Summary of the factors

The paper identifies eight key factors that may influence the intention to use augmented reality. They are perceived usefulness (PU), perceived ease of use (PEOU), perceived augmentation, perceived interactivity, perceived vividness, habit and experience, perceived immersion, perceived enjoyment, and trust (privacy concerns). At the core of the use is the experience; users who are already familiar with technology will show positive behavioral intention to use it. But the habit can be formed and is transferable (Schapsis et al., 2024). The perceived usefulness and perceived ease of use are central constructs of the TAM model (Davis, 1989), but they were studied in an augmented reality context and were found important for the intention to use (Wu et al., 2025). If the user finds that the augmented reality application is easy to use, useful,

and brings entertainment value (perceived enjoyment), this will enhance the engagement and behavioral intention (Oyman et al., 2021). Augmented reality creates a feeling of being there (immersion), which is connected to enjoyment (Tom Dieck et al., 2023). The trust factor is critical when it comes to people who are using the app for relaxation and sociability purposes (Kang et al., 2023). It is also important to mention that the AR-specific features - perceived augmentation, perceived vividness, and perceived interactivity - play a crucial role in affecting the intention to use (Ganesan and Kumar, 2024). Below is the table that summarizes the factors, relations with other factors and the relevant studies.

**Table 2**

*Factors influencing the intention to use AR*

| Factors | Relations with other factors | Reference to the study |
|---|---|---|
| Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) | Key factors of technology adoption according to TAM. PEOU is a predecessor of PU. For the in-store AR, PEOU is important | Davis, 1989; Wu et al., 2025 |
| Perceived Augmentation | Provides hedonic and utilitarian values, and is related to PEOU through utilitarian value (in-store AR) | Ivanov et al., 2023 ; Wu et al., 2025 |
| Perceived Interactivity | Enhances the engagement, mediates the role between PU, PEOU, & Behavioral intention, and affects mental imagery and attitude | Ganesan and Kumar, 2024; Chaudhry et al., 2023; Park and Yoo, 2019 |
| Perceived Vividness | Enhances brand awareness and engagement, is related to Perceived Enjoyment, Perceived Usefulness, & hedonic perception | Xu et al., 2024; Ganesan and Kumar, 2024; Ngo et al., 2025 |
| Habit, Experience | Enhances the hedonic and utilitarian values | Luceri et al., 2022 |
| Perceived Immersion | Related to the perception of usability, hedonic values, and intentions of users | Shin, 2017 |
| Perceived Enjoyment | Mediates the effect of perceived interactivity on the reuse intention, affects attitude, and behavioral | Kowalczuk et al., 2020; Holdack et al., 2020 |

**Continuation of Table 2**

| | | |
|---|---|---|
| | intention, for the in-store AR - mediates the relationship between PEOU and PU | |
| Trust (or Privacy Concerns) | Trust influences PU and reward, fashion informativeness increases trust. Trust affects the general attitude toward technology | Kang et al., 2023; Harborth and Pape, 2021 |

Source: Author's own creation based on the discussed studies

### 1.5 Theoretical analysis of Millennials and Gen-Z and their shopping behavior

According to the birth year, people are said to belong to different generations. It was first coined by Ingelhart and is called Generational Cohort Theory. The idea is to divide people into generational segments. Everything that happens globally in economy, politics, and society shapes people, and this affects how they behave, their attitudes, and their characteristics. Dividing by generational cohorts makes it easier to understand society now and in the future. This is true for marketing, as people from the same generations have similar purchasing power and habits. Hence, it is important to understand the characteristics of generational cohorts when targeting specific consumer groups (Ingelhart, cited in Lissitsa and Kol, 2019) The birth years may vary in the literature, but the most agreed groups are as follows: baby boomers (1946 – 1964), Gen X (1965 – 1980), Gen Y or Millennials (1981 – 1996), and Generation Z (1997 – 2012) (Dimock, 2019). Generational traits should be considered as there are differences when they shop online or use applications like augmented reality. For example, baby boomers and Gen X are open to experience when it comes to online shopping. Nevertheless, there are risk factors involved when shopping online for baby boomers and Gen X, in comparison with Millennials and Generation Z these factors do not exist, as they are often called digital natives. Online shopping has become a natural part of their life (Lissitsa and Kol, 2019). A study done by Lissitsa and Kol (2019) examined personality traits for generational cohorts and their m-shopping intention for hedonic products. Even if both Generation Y and Z are digital natives, the social media that they use is different. For example, Gen Y is active on Facebook, whereas Gen Z prefers Instagram. Millennials who are extroverts are active on social media and share their experience with friends and have higher intentions for m-shopping use compared to introverted Millennials. There is no such difference for Gen Z, as both extroverts and introverted Gen Z are m-shoppers. Gen Z are also non-conformists, and this explains their intention to shop online (Lissitsa and Kol, 2019).

Gen Z is characterized as tech-savvy, open and values their uniqueness (Puiu, Demyen, Tănase, Vărzaru & Bocean, 2022). Generation Z, for example, enjoys shopping and has deal-

hunting behavior (Thangaval, Pathak & Chandra, 2019), and is not willing to compromise with the quality (Agrawal, 2022). They enjoy browsing and reading ratings and reviews on the products (Agrawal, 2022). Generation Z also values their friends' opinions and follows known influencers' feedback (Puiu et al., 2022). Although compared to Millennials they are considered less social in their shopping behavior, Millennials do not only listen to friends' opinions, but they also participate in feedback and leave reviews (Agrawal, 2022). Agrawal (2022) also points out that Millennials use technologies selectively when shopping in comparison to Gen Z. Generation Z is more individualistic and likes to express themselves and enjoy personalization (Puiu et al., 2022).

It is interesting to note that technology like AR is perceived differently by these generations. Overall, studies show that Generation Z has more fun, and Millennials have a distinct purpose when shopping. But when it comes to AR applications, Millennials experience hedonic motivation (Schapsis et al., 2024). For Generation Z, the existence of augmented reality on the website serves as a functional tool (Schapsis et al., 2024). However, there is one factor that holds value for both generations, and it is a practical benefit that AR brings to their shopping journey (Schapsis et al., 2024). When it comes to characteristics of augmented reality, Millennials engage with the AR app when it has the perception of vividness, for Gen Z it is augmentation (Ganesan and Kumar, 2024). Habit plays a key role for Gen Z, for Millennials it is switching costs as a factor is important in intention to use (Lee, Nguyen & Yang, 2023). Social influence affects the intention to use online shopping with technology for Gen Y and does not have any effect on Gen Z Hence, retailers can take advantage of e-WOM for Millennials when adopting the AR applications. When developing marketing strategies research suggests that Gen Z values mostly user-generated content. There is consensus when it comes to targeting Millennials in online shopping (Agrawal, 2022; Lissitsa & Kol, 2019). There should be social media involved in shopping, for example, adding a sharing option button for a better experience (Agrawal, 2022; Lissitsa and Kol, 2019). Agrawal (2022) also points out that the interface should be simple, and detailed information about the products is readily available in within a few clicks. When it comes to Gen Z retailers may think about more advanced digital solutions (Agrawal, 2022). Agrawal (2022) also points out the importance of ratings and reviews for Gen Z. For both generations important factors are service quality, convenience, and price (Agrawal, 2022). Retailers should also think about post-sales services. (Agrawal, 2022). Shopping is a process, and retailers need to build trust. Trust is a determinant factor for both generations (Agrawal, 2022).

Apart from generational differences, there are also social factors such as fashion involvement, and events that change behavior. Perceived usefulness, self-expression, and confidence impact on a person's fashion involvement and attitude, whereas ease of use does not have any impact (Copeland, Bhaduri & Huang, 2023). Studies showed that people involved in

fashion enjoyed shopping before and after the pandemic. They found other channels to shop while in the pandemic. The Pandemic affected the views of respondents. Sustainability and circular fashion became a topic for discussion among youth. Whether the pandemic will have a lasting effect on Gen Z is not identified. (Simek and Sadilek, 2024).

Gender differences may arise not only between generations but also in the same generational cohorts. Men and women sometimes demonstrate different attitudes toward the use of technology (Kovács and Keresztes, 2024). In a study done by Kovács and Keresztes (2024), it took 8 min to search for men, and 12 min for women. Differences also lay in the channels they used. Men were using Google Search to satisfy their fashion queries. Women had several channels open and were searching for products not only by text like men but also with pictures. Women had 8 websites open while shopping and searching for products, while men only had two or three websites. Women who are fashion-involved also use social media such as Instagram and Pinterest for search and inspiration (Kovács and Keresztes, 2024). Regarding gender differences, men and women Millennials share the time spent on online shopping, however, the money spent on it differs for genders. Women spend less money on online shopping and compared to men believe that online shopping is risky (Melovic, Sehovic, Karadzic, Dabic & Cirovic, 2021). Melovic et al (2021) also suggest that women buy cheaper products online in comparison with men. Women are also like to touch products when shopping. Rathee and Rajain (2019) analyzed NFT (need for touch) and online shopping and revealed that men do not have requirements for touching the products before buying as women do. However, women require an instrumental need for touch which is trying the products before buying. There is also an autotelic NFT, which is a touching product for pleasure and enjoyment. Because women have instrumental NFT, women's satisfaction with online shopping can be achieved by adding detailed product descriptions (Rathee & Rajain, 2019).

To conclude, generational theory is important to consider when adopting technology like augmented reality. Millennials and Gen Z are digitally savvy compared to baby boomers and Gen X (Lissitsa and Kol, 2019). Hence, they are the target audience for augmented reality applications. However, there are differences between those two generations when they shop online and when they shop using augmented reality. With augmented reality for Gen Z, it is important to have an app with perceived augmentation, whereas for Millennials, it is perceived vividness (Ganesan and Kumar, 2019). However, there are similarities like convenience, price, trust, and service quality (Agrawal, 2022). It is crucial to understand factors and gender differences for online shopping with AR. This concludes the theoretical analysis part for augmented reality in fashion e-commerce, the next chapter discusses the research methodology of the study.

# 2. RESEARCH METHODOLOGY ON THE FACTORS THAT INFLUENCE THE INTENTION TO USE AUGMENTED REALITY IN FASHION E-COMMERCE AMONG GEN Z AND MILLENNIALS

## 2.1. Research Aim and Objectives, Development of the Research Model

**The problem of the research.** What are the main factors that would influence behavioral intention to use augmented reality in fashion e-commerce among Gen Z and Millennials?

**The empirical research aims** to analyze the proposed factors that would influence intention to use augmented reality in fashion e-commerce among Gen Z and Millennials.

Objectives of the empirical research:

1. To construct a research model.
2. Develop hypotheses for the research model.
3. To prepare the research instrument.
4. To calculate the sample size.
5. To prepare the questionnaire.

**Research model.** From the literature analysis, it was discussed that the original TAM model constructs will be used in the research model (Perceived Ease of Use, Perceived Usefulness, and Behavioral Intention to Use) (Davis, 1989). This study uses TAM by Davis (1985), and original TAM model involves user motivation (cognitive and affective responses), one of these constructs is attitude which will not be employed in this current model. The reason is that even though it answers the affective response according to Davis (1985), it fails to do so in experiential environments such as AR (Keung et al., 2025). Keung et al. (2025) believe that its outcome is not tangible and rather generic. Hence, for affective response this model utilizes perceived immersion (Kowalczuk et al., 2021) and perceived enjoyment (Kowalczuk et al., 2021; Oyman et al., 2022; Micheletto et al., 2025). Other constructs, Perceived Augmentation, Perceived Vividness, and Perceived Interactivity, which are augmented reality characteristics, are taken from the TIME model (Sundar et al., 2015; Ganesan and Kumar, 2024; Javornik, 2016). Immersion is taken from Milgram et al. (1995). The last factors, which are Enjoyment and Trust, are consumer-centric (Oyman et al., 2021; Holdack et al., 2020; Kowalczuk et al., 2020; Kang et al., 2023; Saprikis et al., 2021; Harborth and Pape, 2021; Bonnin, 2019). This section will discuss the developed research hypotheses and their theoretical backgrounds.

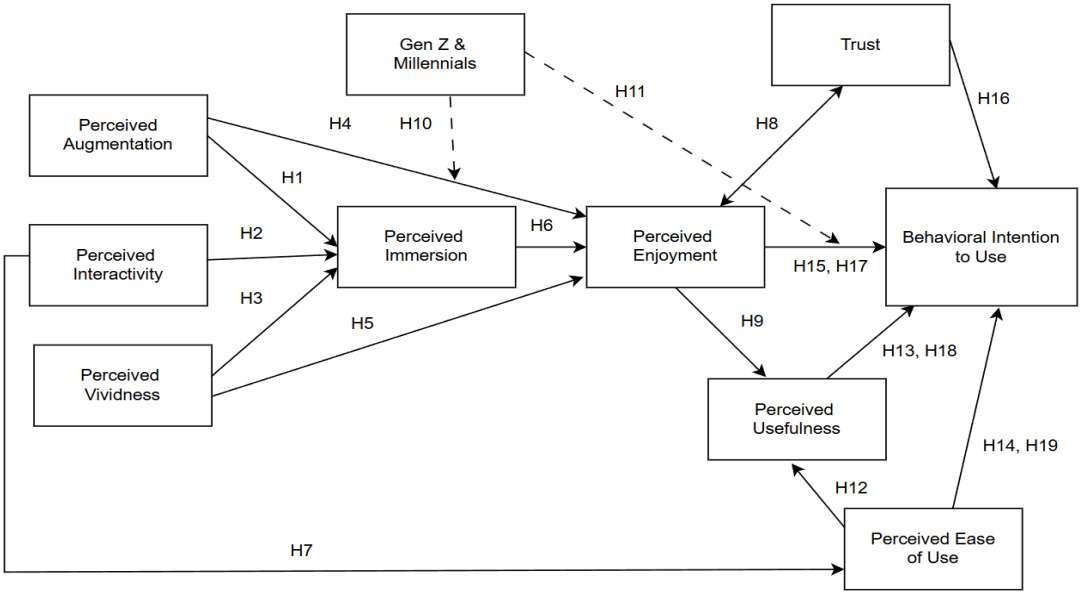
Theory of Interactive Media Effects by Sundar et al. (2015) says that certain media characteristics elicit consumer responses. Those responses can be psychological (e.g., immersion) or behavioral. These media characteristics were used mostly for website-related purposes (Sundar

et al., 2015). Javornik (2016) is one of the first to introduce interactivity and augmentation in the context of AR. It is difficult to pinpoint who proposed the concept of vividness first, however, it is now used in the context of AR (Kim et al., 2023) and VR (Kim, J., Kim, M., Park & Yoo, 2021). By the analysis of literature, it was revealed that the TAM model would be best to explain behavioral intention to use. Combining media characteristics, psychological factors, and technological use in one model will reveal behavioral intention to use augmented reality.

The research hypotheses are based on Figure 7. Overall, 19 hypotheses will be introduced. There are three independent variables: Perceived Augmentation, Perceived Interactivity, Perceived Vividness and one dependent variable: Behavioral Intention to Use. The Gen Z and Millennials group is a moderating variable. Lastly, Perceived Enjoyment, Perceived Usefulness, and Perceived Ease of Use are mediating variables.

**Figure 7**

*Research Model*




Source: compiled by the author

**Hypotheses development:**

AR is superior when comparing the characteristics of AR technology to those of traditional web-based product presentations and how they affect immersion (Yim et al., 2017). When users start to use any technology, they expect the graphics to be appealing; this is true for gaming (Liu,

Wagner, Ip & Shum, 2014) and virtual try-ons (Wu et al., 2025). Hence, the media characteristics such as vividness, interactivity, and augmentation are important.

Perceived augmentation is a powerful AR media characteristic (Ivanov et al., 2023) and creates an immersion effect for the consumers (Javornik et al., 2018). The better the perception of augmentation, the higher the immersion. The study that provided participants with an AR guide application and a non-AR guide application found that the AR guide created more immersion than the non-AR guide. However, not all AR guides create the same level of immersion. Perceived augmentation was stronger for the AR guide that had text and image than the AR guide with only text (Javornik et al., 2018). Perceived interactivity is studied from different technological perspectives, such as Virtual Reality (Chang, Heo, Yeh, Han, & Li, 2018), Augmented Reality (Wu and Kim, 2022), Artificial Intelligence (Chatterjee, George, Verma, Heggde, & Gadhavi, 2025), and live-streaming services (Joo and Yang, 2023). It also proved to be important media characteristics that would enhance perceived immersion, such as interactive AI features make people more involved in the provided services (Chatterjee et al., 2025). Another example is interactive features of live-streaming services that create faster responses for people, which leads to immersion and further enhances behavioral intentions (Joo and Yang, 2023). The same happens in the VR context, when users face an interactive tool that creates immersion for them (Chang et al., 2018). Liu et al. (2014) took vividness and visual appeal separately and investigated how they affect the immersion. It turns out that the perceived vividness has a strong effect on immersion, and most of the time visual appeal is part of the perceived vividness factor (Liu et al., 2014). Based on this background, the following hypotheses are proposed:

**H1:** Perceived Augmentation has a positive impact on Perceived Immersion.
**H2:** Perceived Interactivity has a positive impact on Perceived Immersion.
**H3:** Perceived Vividness has a positive impact on Perceived Immersion.

When the perceived augmentation is strong in the application, the presentation of products appears real to consumers, and they feel more immersed in the technology; this consequently makes users feel entertained (Wu et al., 2025). Perceived augmentation has a positive effect on enjoyment. However, if the user experiences augmented reality for the first time, it can be frustrating for them. But if they have experience of augmented reality in general, augmented features influences the enjoyment factor (Söderström et al., 2024). Ivanov et al. (2022) believe that perceived augmentation is an important AR element and exerts a significant effect on enjoyment. Vivid AR experience elicits pleasure and enjoyment for users (Ngo et al., 2025; Söderström et al., 2024). Based on this information, the following hypotheses are proposed:

**H4:** Perceived Augmentation has a positive impact on Perceived Enjoyment.

**H5:** Perceived Vividness has a positive impact on Perceived Enjoyment.

Augmented reality is considered to be an immersive technology. Immersion drives user engagement and enjoyment. However, compared to Virtual Reality, it is not fully immersive. Several studies were done to understand the effect of immersion on enjoyment, and this relationship was also studied contrarily. The difference between Virtual Reality and Augmented Reality is that the levels of immersion vary between them. Nevertheless, users feel immersed in augmented reality technology, and it affects the perceived enjoyment (Verhulst, Woods, Whittaker, Bennett & Dalton, 2021). In the game context, it was found out that immersion is a strong and direct determinant of the user enjoyment. The immersion affects enjoyment more than the performance of the application. When the users wanted to try the technology again, it was because of the entertainment aspect of it (Liu et al., 2014). Hence, the following hypothesis is formulated:

**H6:** Perceived Immersion has a positive impact on Perceived Enjoyment.

Perceived interactivity of AR is also valued among consumers, they use AR that is simple and provides timely responses (Wu and Kim, 2022). The degree of interactivity of the system can determine how users evaluate the use of that system. Studies suggest that perceived interactivity influences the perceived ease of use more than the perceived usefulness (Wang et al., 2024; Ngo et al., 2025). Most of the time, there was not even an effect of perceived interactivity on perceived usefulness, but the relationship between perceived interactivity and perceived ease of use was significant (Wang et al., 2024). Certain features that AR application has contribute to the ease of use (Papakostas et al., 2021). Based on this, the following hypothesis is formulated:

**H7:** Perceived Interactivity has a positive impact on Perceived Ease of Use.

Perceived enjoyment is related to trust; if people feel happy, they tend to trust the technology, product, and application (Micheletto et al., 2025). Micheletto et al. (2025), in their research, proved this correlation between enjoyment and trust. This relationship is transferable to other contexts as well. For example, in the finance sector, the relationship between enjoyment and trust was proven. People who enjoy the application, irrespective of retail or finance, tend to build trust. If the user's experience is good, the sense of credibility is established. Hence, it is important

to add an entertainment value to the application to ensure trust (Hanif et al., 2024). Trust also exhibits a positive effect on enjoyment (Saprikis et al., 2021). For the e-commerce, the layout and content of the website are important for the marketing activities to work successfully. Hence, when the platform is well-designed, consumers would trust that website. This trust factor will lead to enjoyment, as people like using websites and applications that they trust (Moreno et al., 2022). Hence, the following hypothesis is formulated:

**H8:** The higher the Perceived Enjoyment, the stronger the Trust of AR technology.

Liang et al. (2025) added two external variables (perceived enjoyment and perceived informativeness) to their study, one of which was perceived enjoyment. It was important to the study, and its significance surpassed the other variable (perceived informativeness). Perceived enjoyment was valued among participants when using the AR in e-commerce (Liang et al., 2025). Also, perceived enjoyment affected the usefulness. When it is easy to reach and sustain enjoyment of the AR application, it affects its use (Liang et al., 2025). Kim et al. (2016) also tested the relationship between perceived enjoyment and perceived usefulness. The relationship was supported according to their study (Kim et al., 2016). The following hypothesis is formulated:

**H9:** Perceived Enjoyment has a positive impact on Perceived Usefulness of AR technology.

Both Gen Z and Gen Y expect technology to provide practical benefits. But Gen Z, because of their use of augmented reality in other apps, view augmented reality in shopping contexts as a functional tool. However, Millennials get entertained and enjoy the application more than Gen Z (Schapsis et al., 2024). Also, younger generations are difficult to surprise with various technologies, as they are more exposed to them. For instance, 3D images of artifacts were shown to different age groups, and older adults enjoyed digital content and expressed surprise at the level of realism of the images more than the younger adults (Garro, Sundstedt & Sandahl, 2022). It is argued that age has also an effect on the perceived augmentation and perceived enjoyment influence, due to habitual use of augmented reality Gen Z would not be affected by perceived augmentation like Millennials would (Ivanov et al., 2022). This is contrary to the findings of Söderström et al. (2024), as they believe that people who do not have much experience would be frustrated with perceived augmentation at first. Hence, it is crucial in this study to analyze this relationship between perceived augmentation and enjoyment, and how age of users affect it. Hence, the next hypotheses will be as follows:

**H10:** Age moderates the positive relationship between Perceived Augmentation and Perceived Enjoyment, and as for Millennials, this effect will be stronger than for Gen Z.

**H11:** Age moderates the positive relationship between Perceived Enjoyment and Behavioral Intention to Use augmented reality, and as for Millennials, this effect will be stronger than for Gen Z.

Perceived Ease of Use and Perceived Usefulness are two fundamental TAM constructs that define whether the consumer will use or reject a certain technology. People start using an application if they believe that it will provide certain benefits to them. Apart from the benefits, it should also be easy to use. If the system is useful but difficult to understand, people will reject it (Davis, 1989). Studies show that the perceived ease of use is a predictor of perceived usefulness (Chung, Han & Joun, 2015; Pramana, 2018). Perceived usefulness appears to be the most critical factor influencing behavioral intention; after perceived usefulness, factors like perceived ease of use are added (Venkatesh and Davis, 2000; Pramana, 2018). According to TAM2, Venkatesh and Davis found that perceived ease of use influences the perceived usefulness, and both of them have effects on behavioral intention. However, the effect of PU–BI is stronger than the PEOU–BI relationship (Venkatesh and Davis, 2000). Hence, when consumers start using the augmented reality application, they would evaluate the ease of use of the application. Then they would analyze whether the application provides them with useful functions. If the system is easy to use but does not have any useful functions, people would quit using it (Davis, 1989). Davis (1989) proposed that the usage–usefulness relationship is strong compared to usefulness–usage. As sometimes, people agree to undergo some difficulties with the system if that system provides practical benefits for them (Davis, 1989). Based on the information provided, the following hypotheses are drawn:

**H12:** Perceived Ease of Use has a positive impact on Perceived Usefulness.

**H13:** Perceived Usefulness has a positive impact on Behavioral Intention to Use augmented reality technology.

**H14:** Perceived Ease of Use has a positive impact on Behavioral Intention to Use augmented reality technology.

Augmented reality technology is in its novelty era; hence, it is important to understand that some psychological factors (i.e., user's enjoyment) may affect the behavioral intention. It is believed that when it comes to AR, it has always been researched from an attitude towards AR and AR experience satisfaction perspective. It should indeed provide necessary product information for consumers, but it is also important to add an entertainment factor to it (Micheletto et al., 2025).

Hence, enjoyment is important in augmented reality. However, some scholars believe that enjoyment in the augmented reality context is not a new factor. Its influence was researched in different contexts, such as shopping malls (Saprikis et al., 2021), education (Balog and Pribeanu, 2010), and gaming (Faqih, 2022). Those studies confirm that enjoyment is one of the key factors influencing the behavioral intention to use. Balog and Pribeanu (2010) found that perceived enjoyment has a greater influence on behavioral intention than perceived usefulness. In almost all cases, perceived enjoyment predicts behavioral intention (Lee, H., Chung & Lee, W., 2013). Based on the information provided, the following hypothesis is proposed:

**H15:** Perceived Enjoyment has a positive impact on the Behavioral Intention to Use augmented reality technology.

Trust is strongly related to behavioral intention to use. When people start to use new applications, they fill out certain forms. These forms include the user's data processing and general information about the application. If the user believes that the information provided is true, they trust and use the application. Irrelevant and inaccurate information may cause users to believe that the service provider is untrustworthy (Zhou, 2013). Similarly, Kang et al. (2023) found that trust increases behavioral intention to use. They also found that trust affects the future use (reuse intention, purchase intention, support for a brand) (Kang et al., 2023). It can be stated as:

**H16:** Trust has a positive impact on the Behavioral Intention to Use augmented reality technology.

Perceived immersion represents a positive affective dimension, and influences behaviour (Xie et al., 2022). In a study, conducted by Xie et al. (2022) perceived immersion was the strongest mediator variable and had the largest effect on behavioural intention to use VR technological systems. Hence, for this study, it is proposed that perceived immersion will exert a positive effect on behavioural intention to use AR through perceived enjoyment. The second mediator is related with TAM variables. While testing the relationship of ease of use – intention to use and usefulness – intention to use, Davis (1989) also examined the usefulness as a mediator between usage and ease of use. This relationship is supported (Davis, 1989), but also research suggests that perceived usefulness is a stronger determinant of behavioural intention to use the system, while perceived ease of use comes second (Venkatesh and Davis, 2000). Perceived ease of use exerts direct influence on behavioural intention and also as a mediator through perceived usefulness (Venkatesh, 1999). It was mentioned that the perceived interactivity of AR technology has an impact on perceived ease of use (Wang et al., 2024). As a TAM variable, perceived ease of use

positively influences behavioural intention to use technology (Davis, 1989). A study done by Papakostas et al. (2021) reveals that the features and functionality of AR which correspond to perceived interactivity makes it easy to use, which increases the use of the system. The following mediator hypotheses are proposed:

**H17:** Perceived Immersion has a positive impact on the Behavioral Intention to Use augmented reality technology through Perceived Enjoyment.

**H18:** Perceived Ease of Use has a positive impact on the Behavioral Intention to Use augmented reality technology through Perceived Usefulness.

**H19:** Perceived Interactivity has a positive impact on the Behavioral Intention to Use augmented reality technology through Perceived Ease of Use.

### 2.2 Data collection methods and research instruments

**Product category.** When it comes to AR in fashion e-commerce, there are different product categories. Products include watches (Song et al., 2019), eyewear, footwear (Tom Dieck et al., 2023), and clothing apparel (Baytar et al., 2020). For this study, eyewear is chosen as a product category for the research. Eyewear is generally an easier product to choose from, as the participants use only the frontal camera. Furthermore, eyewear was positively evaluated as an AR shopping product by almost all participants in a study conducted by Wakim, Drak Al Sebai, Miladinovic, and Öztürkcan (2018). Female respondents took their time and were especially impressed by the built-in selfie feature. Male respondents, on the other hand, enjoyed the AR technology itself (Wakim et al., 2018). The website of Zenni Optical will be used to test different eyewear. Zenni Optical was launched in 2003 as an online-only eyewear retailer. The goal of the company was to make quality and at the same time stylish eyewear at affordable prices. Hence, in 2005, they dropped the starting prices to 6.95 USD so that glasses are affordable for all. Zenni Optical delivers what is promised as they have “Under $ 30” category on the website, which showcases glasses under 30 USD. The Virtual Try-On was introduced in 2007, which made choosing glasses online easier. The company also is recognized for exceptional customer service, as Zenni Optical was named first in Newsweek’s America’s Best of the Best 2024. They ship eyewear to over 200 countries worldwide. It is possible to try on glasses both on the website and on the mobile application. Zenni made it easy to use augmented reality technology by making videos that show how one can access and use it. Those short videos will be used in the study, and respondents will need to answer based on those examples. Respondents will also be able to download application

to their phones or open the website using the provided link in the survey voluntarily if they want to see how it works on themselves.

For the research of factors influencing the intention to use Augmented Reality in fashion e-commerce among Gen Z and Millennials, 9 constructs were chosen. The first construct, Perceived augmentation scale, is chosen by Javornik (2016), and it is a 5-item scale with a Cronbach's alpha value = 0.85. The scale for the next construct, Perceived Interactivity, is taken from Yim et al. (2017); it is a 4-item scale, with a Cronbach's alpha value of 0.80. Perceived Vividness is taken from Ganesan and Kumar (2024), original: Yim et al. (2017); it is a 6-item scale, with a Cronbach's alpha value of 0.77. Perceived Immersion is a 4-item scale, taken from Tom Dieck et al. (2022), original: Yim et al. (2017), with a Cronbach's alpha value of 0.89. Perceived Enjoyment is a 4-item scale, from Yim et al. (2017), with a Cronbach's alpha value of 0.94. The next construct, Trust, is taken from Wang and Lin (2016). The Cronbach's alpha value is 0.88, and it is a 3-item scale. Perceived Ease of Use and Perceived Usefulness scales are taken from Davis (1989). Both, Perceived Ease of Use and Perceived Usefulness are 6-item scale, Cronbach's alpha value being 0.91 for PEOU and 0.97 for PU. Lastly, the Behavioral Intention to Use scale is based on Ahn et al. (2004), original: Davis (1989). It is a 5-item scale with the Cronbach's alpha value of 0.92. All items for constructs are measured on a 7-point Likert scale. The items of the constructs can be found in **Annex 1**.

**Table 3**

*Constructs of the questionnaire*

| Variable | Number of items | Measurement | Cronbach's alpha (α) | References |
|---|---|---|---|---|
| Perceived Augmentation | 5 | 7-point Likert-type scale | 0.85 | Javornik (2016) |
| Perceived Interactivity | 4 | 7-point Likert-type scale | 0.80 | Yim et al. (2017) |
| Perceived Vividness | 6 | 7-point Likert-type scale | 0.77 | Ganesan and Kumar (2024) |
| Perceived Immersion | 3 | 7-point Likert-type scale | 0.89 | Tom Dieck et al. (2022) |
| Perceived Enjoyment | 4 | 7-point Likert-type scale | 0.94 | Yim et al. (2017) |

**Continuation of Table 3**

| | | | | |
|---|---|---|---|---|
| Trust | 3 | 7-point Likert-type scale | 0.88 | Wang and Lin (2016) |
| Perceived Ease of Use | 6 | 7-point Likert-type scale | 0.91 | Davis (1989) |
| Perceived Usefulness | 6 | 7-point Likert-type scale | 0.97 | Davis (1989) |
| Behavioral Intention to Use | 5 | 7-point Likert-type scale | 0.92 | Ahn et al. (2004) |

Source: Compiled by the author

### 2.3 Research sample size and structure

This section of the methodology introduces the research sample size and structure. For this study, the target population is determined. The study is focused on Gen Z and Millennials; hence, the youngest participant can be 18 years old, and the oldest 44 years old. The study will be conducted in Lithuania and other countries, the questionnaire developed for this study is in English. The survey can be found in **Annex 2**.

**Table 4**

*Comparable Research sampling method*

| Author | Name of paper | Type of questionnaire | Sampling | Number of respondents |
|---|---|---|---|---|
| Oyman et al., 2021 | Extending the technology acceptance model to explain how perceived augmented reality affects consumers' perceptions | Onsite questionnaire | Non-probability | 205 |
| Park and Yoo, 2019 | Effects of perceived interactivity of augmented reality on consumer responses: A mental imagery perspective | Online questionnaire | Non-probability | 302 |
| Günduru and Deniz, 2024 | Impacts of augmented reality marketing on Gen- | Not stated | Probability | 310 |

**Continuation of Table 4**

| | | | | |
|---|---|---|---|---|
| | Z fashion consumers' behavioral intention | | | |
| Ngo et al., 2025 | Investigating the influence of augmented reality marketing application on consumer purchase intentions: A study in the e-commerce sector | Online questionnaire | Non-probability | 315 |
| Ivanov et al., 2023 | Mobile shopping decision comfort using augmented reality: the effects of perceived augmentation and haptic imagery | Online questionnaire | Non-probability | 178 |
| Jiang and Lyu, 2024 | The role of augmented reality app attributes and customer-based brand equity on consumer behavioral responses: An S-O-R framework perspective | Online questionnaire | Non-probability | 214 |
| Poushneh and Vasquez – Parraga, 2017 | Discernible impact of augmented reality on retail customer's experience, satisfaction and willingness to buy | Online questionnaire | Non-probability | 99 |

Source; compiled by the author

Based on the literature that is related to augmented reality from a retail perspective, the total number of respondents for this study should be 214. Mean (205 + 302 + 310 + 315 + 178 + 214 + 99/7) = 214 respondents. The sampling method used will be a nonprobability convenience sampling method.

Augmented Reality eyewear technology survey created by Google Forms was distributed to participants. A survey was put into several different platforms: social media, Prolific, Survey Circle and Cloud Research. A total of 320 responses were received, after which data clearing started on Excel and SPSS. On Excel, the countries names were corrected to be the same. For

example, some people wrote US, United States, or USA. All these entries were changed to United States, and similar procedure was done for other countries and cities' entries. The survey has 3 screening questions, Google Forms recorded people who did not pass screening questions as respondents too. Hence, 24 people have used Zenni in the past 6 months and could not proceed for other questions. 33 people were not between the ages of 18-44, 47 people were not interested in eyewear products. That left the number of respondents to 215. To be sure, that every respondents' age entry is in the 18-44 range, the age was selected using the condition clause in SPSS, after which 4 responses were omitted. The sample size became 211, which is not the desired 214 respondents that was calculated based on literature. However, the difference between calculated and achieved sample size is small. The next section is the discussion of demographic insights, different statistics and hypotheses testing.

# 3. QUANTITATIVE ANALYSIS AND EMPIRICAL FINDINGS OF THE STUDY

## 3.1. Methodical approach and demographic insights of participants

The demographic insights of the participants were analysed by using SPSS software. The distribution of gender, age, education and average net monthly income is shown in Table 5. The sample size for the study is 211, the sample has more than 50 % (53.1%) female respondents, and close to 50 % (46.4 %) male respondents. The goal was to get an equal distribution of both generations. However, there was a slight majority of Gen Y, with 51.7 % and Gen Z with 48.3 %. But still the difference between generations is not significant, accounting only to 3.4 %. The majority of respondents are bachelor's degree holders, and most people are with average monthly net income of 1,800 or more EUR. When it comes to geographic data of the respondents, 23 countries were registered in the survey, with Azerbaijan 15.6 %, Lithuania 24.6 %, the United States 21.3 %, and the United Kingdom 10 %. The remaining countries registered in the survey were less than 10 % of total. The whole list of countries registered can be found in **Annex 3**. Roughly 85 % (84.4 %) of total respondents have the experience of using augmented reality technology. It can be said that the participants of the study are experienced users of augmented reality technology.

**Table 5**

*Distribution of gender, age categories, education, and average net monthly income of respondents*

| Demographic indicator | Category | Percent (%) of respondents in the survey |
|---|---|---|
| Gender | Female | 53.1 |
| | Male | 46.4 |
| | Other | 0.5 |
| Age | Gen Z (18 - 28) | 48.3 |
| | Millennials (29 – 44) | 51.7 |
| Education | Bachelor's degree | 46.9 |
| | Doctorate degree | 2.4 |
| | High school diploma or equivalent | 24.2 |
| | Lower secondary education | 0.9 |
| | Master's degree | 19.9 |
| | No formal education | 0.9 |

**Continuation of Table 5**

| | | |
|---|---|---|
| | Vocational training | 3.8 |
| | Other | 0.9 |
| Average net monthly income | Less than 700 EUR | 5.2 |
| | 700 – 1,099 EUR | 15.6 |
| | 1,100 – 1,399 EUR | 10.0 |
| | 1,400 – 1,799 EUR | 12.3 |
| | 1,800 or more EUR | 24.2 |
| | No regular income | 16.6 |
| | Prefer not to say | 16.1 |

Source: compiled by author based on the research results

The questionnaire had the options that participants could choose to answer the questions. There was a link to try the Zenni website, photos of users trying on the augmented reality eyewear, and videos of showing how to use the VTO in Zenni. The participants could do all three or choose any option which is suitable for them. When it comes to using the augmented eyewear application (Zenni), only 5 % went for that option. Nearly one-third (34.6 %) of the respondents watched the videos of using Zenni applications, photos of people trying on the eyewear, and using the application itself. The approximately same result (34.1 %) was for choosing "I watched the videos" and "I watched the photos attached to the survey" options. The discussed results are shown in Table 6: Augmented reality options used to answer survey.

**Table 6**

*Augmented Reality options used to answer the survey*

| Option | Percent (%) of respondents choose that option in the survey |
|---|---|
| I used the Zenni application/website | 5.2 |
| I watched the photos attached to the survey | 13.3 |
| I watched the photos attached to the survey; I used the Zenni application/website | 4.7 |
| I watched the videos | 6.6 |
| I watched the videos; I used the Zenni application/website | 1.4 |
| I watched the videos; I watched the photos attached to the survey | 34.1 |

**Continuation of Table 6**

| | |
|---|---|
| I watched the videos; I watched the photos attached to the survey; I used the Zenni application/website | 34.6 |

Source: compiled by author based on the research results

It can be concluded that the age and generation category was almost equally distributed, the respondents that answered the survey have an experience with AR technology. The link was put to try Zenni application, and it was an unexpected result that some respondents not only tried the application but also watched both videos and photos. This also shows that respondents had substantial idea about the AR technology while answering the questions.

### 3.2. Reliability of the constructs and computing variables

To analyse the factors that influence the intention to use Augmented Reality for Gen Z and Millennials, 10 constructs were used. But only 9 constructs were tested for Cronbach's alpha reliability, Gen Z and Millennials constructs contain only age, and was used for moderation analysis. In Table 7, there are two Cronbach's alpha values: original source and from the survey results.

**Table 7**

*Cronbach's alpha coefficients from the original source and each tested construct in the survey*

| Measured construct | Cronbach's alpha coefficients from the original source | Cronbach's alpha values from the survey |
|---|---|---|
| Perceived Augmentation | 0.85 | 0.686 |
| Perceived Interactivity | 0.80 | 0.878 |
| Perceived Vividness | 0.77 | 0.942 |
| Perceived Immersion | 0.89 | 0.881 |
| Perceived Enjoyment | 0.94 | 0.957 |
| Trust | 0.88 | 0.932 |
| Perceived Ease of Use | 0.91 | 0.953 |
| Perceived Usefulness | 0.97 | 0.959 |
| Behavioural Intention to Use | 0.92 | 0.944 |

Source: compiled by the author based on the research results

All the values show acceptable internal consistency, no items from any scale were deleted. Only, Cronbach's alpha value for Perceived Augmentation is slightly below 0.70, which can be explained by adaptability issues of the items for this study. Some Cronbach's alpha values can be considered too high (Perceived Enjoyment, Perceived Ease of Use and Perceived Usefulness), but nonetheless it was predictable as some of the items in those variables are closely worded among each other. In conclusion, with Cronbach's alpha values ranging from 0.686 to 0.959, the constructs were confirmed reliable and could be used for further analysis.

### 3.3. Normality analysis

For the Augmented Reality eyewear technology survey, with sample size of 211 to assess the normality, Kolmogorov-Smirnov and Shapiro-Wilk tests were performed using SPSS. The results of both tests are shown in Table 8. The graphs (Q-Q plots) of normal distribution for every variable can be found in **Annex 4**.

**Table 8**

*Normality test*

| Construct | Augmented Reality eyewear technology survey | | | |
|---|---|---|---|---|
| | Kolmogorov-Smirnov | | Shapiro-Wilk | |
| | Statistic | Sig. | Statistic | Sig. |
| Perceived Augmentation | 0.121 | < 0.001 | 0.955 | < 0.001 |
| Perceived Interactivity | 0.086 | < 0.001 | 0.948 | < 0.001 |
| Perceived Vividness | 0.116 | < 0.001 | 0.922 | < 0.001 |
| Perceived Immersion | 0.075 | 0.006 | 0.977 | 0.002 |
| Perceived Enjoyment | 0.136 | < 0.001 | 0.896 | < 0.001 |
| Trust | 0.101 | < 0.001 | 0.936 | < 0.001 |
| Perceived Ease of Use | 0.136 | < 0.001 | 0.886 | < 0.001 |
| Perceived Usefulness | 0.148 | < 0.001 | 0.875 | < 0.001 |
| Behavioural Intention to Use | 0.094 | < 0.001 | 0.945 | < 0.001 |

Source: compiled by the author based on the research results

From the Table 8, it is seen that for both tests (Kolmogorov-Smirnov and Shapiro-Wilk), data is not normal because for every construct p value < 0.05, in which case the null hypothesis

for normality is rejected, and it can be concluded that the data does not follow normal distribution. This is expected given the sample size (n=211); after performing normality tests, descriptive statistics were calculated for each construct.

### 3.4. Descriptive statistics

In this part of the study, mean values of the 9 constructs will be introduced. Additionally, along with mean values of variables, skewness and kurtosis values for every variable are shown in Table 9.

**Table 9**

*Means after computing variables*

| Construct | Augmented Reality eyewear technology survey | | |
|---|---|---|---|
| | Mean | Skewness | Kurtosis |
| Perceived Augmentation | 5.1886 | -0.854 | 1.361 |
| Perceived Interactivity | 5.4834 | -0.755 | 1.301 |
| Perceived Vividness | 5.6540 | -0.864 | 0.753 |
| Perceived Immersion | 4.0296 | 0.038 | -0.419 |
| Perceived Enjoyment | 5.5948 | -1.093 | 1.343 |
| Trust | 5.2938 | -0.653 | 0.576 |
| Perceived Ease of Use | 5.7891 | -1.355 | 2.831 |
| Perceived Usefulness | 5.6524 | -1.312 | 1.981 |
| Behavioural Intention to Use | 4.7346 | -0.667 | 0.082 |

Source: compiled by the author based on the research results

The Likert type scale is 7 for this study, most mean values of constructs are higher than 5, except for Perceived immersion and Behavioural Intention to Use, with 4.0296 and 4.7346 values respectively. The mean values show that there is a moderate agreement range. Even though, respondents agree that Augmented Reality technology is vivid, interactive, enjoyable, augmented, useful, trusted and easy to use, for immersion and behavioural intention, there is a neutral behaviour. The skewness and kurtosis values of constructs fall into an acceptable range, which assesses that the shapes of these distributions are close to a normal distribution. Only kurtosis value for Perceived Ease of Use has value that is higher than 2, which indicates distribution is more peaked. By visual inspection of Q-Q plot for Perceived Ease of Use, it is seen that the data

is distributed with a high peak on the right (Annex 4). The mean, skewness and kurtosis values were acceptable to move to another part of the study: examination of hypotheses.

### 3.5. Examination of hypotheses in empirical research

This section will discuss the hypotheses of the research, overall, 19 hypotheses were introduced. In this section, they will be tested. Before testing hypotheses, multicollinearity was assessed using Variance Inflation Factor (VIF) and tolerance values. The VIF values range from 1.815 to 4.392, with only one VIF value higher than 4. All other VIF values are below 4, and as no value exceeded 5, for all tolerance values, the threshold of 0.20 was exceeded. All the VIF and tolerance values of variables can be found in **Annex 5**. The results of VIF and tolerance values show that multicollinearity is not a concern in the model. Hence, the regression coefficients can be examined reliably and proceeded with hypotheses testing. First, hypotheses related to AR characteristics (perceived augmentation, perceived interactivity, perceived vividness) and their impact on perceived immersion will be discussed.

**H1:** Perceived Augmentation has a positive impact on Perceived Immersion.

**H2:** Perceived Interactivity has a positive impact on Perceived Immersion.

**H3:** Perceived Vividness has a positive impact on Perceived Immersion.

**Table 10**

*Regression analysis for H1, H2 and H3*

| | Unstandardized Coefficients | | Standardized Coefficients Beta | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | | | | Tolerance | VIF |
| (Constant) | -0.807 | 0.536 | | -1.506 | 0.134 | | |
| Perceived Augmentation | 0.496 | 0.128 | 0.308 | 3.875 | < 0.001 | 0.531 | 1.885 |
| Perceived Interactivity | 0.000 | 0.121 | 0.000 | -0.003 | 0.998 | 0.467 | 2.142 |
| Perceived Vividness | 0.400 | 0.122 | 0.301 | 3.295 | 0.001 | 0.402 | 2.489 |

Source: compiled by the author based on the research results

Multiple regression analysis was conducted to test the relationship of perceived augmentation, perceived interactivity and perceived vividness with perceived immersion. It was found that perceived augmentation ($\beta = 0.308$, $p < 0.001$) and perceived vividness ($\beta = 0.301$, $p = 0.001$) have a positive impact on perceived immersion, the relation is statistically significant. Based on regression coefficients, both perceived augmentation and perceived vividness exert similar positive effect on perceived immersion, with regression coefficient for perceived augmentation being slightly higher. However, the same cannot be said for the relation between perceived interactivity and perceived immersion. The relationship between these variables is not significant ($\beta = 0.000$, $p = 0.998$). Perceived augmentation explains 25.7 % of the variance in perceived immersion ($R^2 = 0.257$, $F = 72.355$), while perceived vividness shows similar variance to perceived augmentation and explains 25.5 % of the variance in perceived immersion ($R^2 = 0.255$, $F = 71.439$). For this reason, it can be concluded that **H1, H3 are accepted**, while **H2 is rejected.**

AR characteristics can also affect the enjoyment of the application or website. Hence, next hypotheses are also related to AR characteristics specifically perceived augmentation and perceived vividness and their effect on perceived enjoyment.

**H4:** Perceived Augmentation has a positive impact on Perceived Enjoyment.

**H5:** Perceived Vividness has a positive impact on Perceived Enjoyment.

**Table 11**

*Regression analysis for H4 and H5*

| | Unstandardized Coefficients | | Standardized Coefficients Beta | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | | | | Tolerance | VIF |
| (Constant) | -0.106 | 0.331 | | -0.318 | 0.750 | | |
| Perceived Augmentation | 0.490 | 0.080 | 0.357 | 6.102 | < 0.001 | 0.559 | 1.788 |
| Perceived Vividness | 0.559 | 0.066 | 0.492 | 8.424 | < 0.001 | 0.559 | 1.788 |

Source: compiled by the author based on the research results

To test the hypotheses 4, 5 multiple regression analysis was done. Both perceived augmentation ($\beta = 0.357$, $p < 0.001$) and perceived vividness ($\beta = 0.492$, $p < 0.001$) positively

influence perceived enjoyment, the relations are statistically significant. Perceived augmentation explains 46.7 % of the variance in perceived enjoyment ($R^2 = 0.467$, F = 160.482), while perceived vividness shows higher variance compared to perceived augmentation and explains 53.4 % of the variance in perceived enjoyment ($R^2 = 0.532$, F = 237.242). The effect that perceived vividness has on perceived enjoyment is stronger than the effect of perceived augmentation on perceived enjoyment. Hence, **H4 and 5 are accepted.**

**H6:** Perceived Immersion has a positive impact on Perceived Enjoyment.

**Table 12**

*Regression analysis for H6*

| | Unstandardized Coefficients | | Standardized Coefficients Beta | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | | | | Tolerance | VIF |
| (Constant) | 3.497 | 0.200 | | 17.442 | < 0.001 | | |
| Perceived Immersion | 0.521 | 0.047 | 0.611 | 11.165 | < 0.001 | 1.000 | 1.000 |

Source: compiled by the author based on the research results

To test the Hypothesis 6, linear regression and correlation analysis were performed. According to linear regression, the relationship between perceived immersion and perceived enjoyment is statistically significant ($\beta = 0.611$, $p < 0.001$). Perceived immersion explains 37.4 % of the variance in enjoyment ($R^2 = 0.374$, F = 124.659). Pearson correlation analysis showed that perceived immersion exhibits fairly strong positive effect on perceived enjoyment ($r = 0.611$, $p < 0.001$). The effect that perceived immersion has on perceived enjoyment is positive. Hence, **H6 is accepted.**

The interactivity of the technology can influence how users perceive its ease of use. Hence, the next hypothesis is related to perceived interactivity and perceived ease of use.

**H7:** Perceived Interactivity has a positive impact on Perceived Ease of Use.

**Table 13**

*Regression analysis for H7*

| | Unstandardized Coefficients | | Standardized Coefficients Beta | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | | | | Tolerance | VIF |
| (Constant) | 1.935 | 0.300 | | 6.441 | < 0.001 | | |
| Perceived Interactivity | 0.703 | 0.054 | 0.670 | 13.057 | < 0.001 | 1.000 | 1.000 |

Source: compiled by the author based on the research results

The same procedure as for hypothesis 6 was done to test this relationship with perceived interactivity and perceived ease of use. From the table above, it is seen that the relationship between perceived interactivity and perceived ease of use is statistically significant ($\beta = 0.670$, $p < 0.001$). Perceived interactivity explains 44.9 % of the variance in perceived ease of use ($R^2 = 0.449$, $F = 170.481$). Pearson correlation analysis revealed that the effect between perceived interactivity and perceived ease of use is strong ($r = 0.670$, $p < 0.001$). Therefore, **H7 is accepted.**

**H8:** The higher the Perceived Enjoyment, the stronger the Trust of AR technology.

**Table 14**

*Regression analysis for H8*

| | Unstandardized Coefficients | | Standardized Coefficients Beta | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | | | | Tolerance | VIF |
| (Constant) | 1.324 | 0.286 | | 4.635 | < 0.001 | | |
| Perceived Enjoyment | 0.710 | 0.050 | 0.702 | 14.250 | < 0.001 | 1.000 | 1.000 |

Source: compiled by the author based on the research results

The linear regression analysis was done to test the relation between perceived enjoyment with AR technology and trust. The relation between those variables is strong and statistically significant ($\beta = 0.702$, $p < 0.001$). Perceived enjoyment explains 49.3 % of the variance in trust ($R^2 = 0.493$, $F = 203.056$), which is close to 50 %. To test whether this relation is a two-way, the

linear regression analysis was performed two times: with perceived enjoyment in dependent and trust in dependent position. Both times the relationship proved to be statistically significant. Because of that, **H8 is accepted.**

**H9:** Perceived Enjoyment has a positive impact on Perceived Usefulness of AR technology.

**Table 15**

*Regression analysis for H9*

| | Unstandardized Coefficients | | Standardized Coefficients Beta | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | | | | Tolerance | VIF |
| (Constant) | 1.042 | 0.229 | | 4.545 | < 0.001 | | |
| Perceived Enjoyment | 0.824 | 0.040 | 0.819 | 20.622 | < 0.001 | 1.000 | 1.000 |

Source: compiled by the author based on the research results

The linear regression and correlation analysis were performed to test Hypothesis 9. The relationship between perceived enjoyment and perceived usefulness is statistically significant ($\beta = 0.819$, $p < 0.001$). Pearson correlation analysis showed that the relation between perceived enjoyment and perceived usefulness is very strong ($r = 0.819$, $p < 0.001$). Perceived enjoyment explains more than 50 % (67.0 %) of the variance in perceived usefulness ($R^2 = 0.670$, $F = 425.270$). Hence, **H9 is accepted.**

**H10:** Age moderates the positive relationship between Perceived Augmentation and Perceived Enjoyment, and as for Millennials, this effect will be stronger than for Gen Z.

**Table 16**

*Moderation analysis for H10*

| | Coefficients | t | p | LLCI | ULCI |
|---|---|---|---|---|---|
| (Constant) | 5.5804 | 85.0576 | 0.0000 | 5.4511 | 5.7097 |
| Perceived Augmentation | 0.9489 | 13.4339 | 0.0000 | 0.8096 | 1.0881 |
| Age (generation) | -0.0945 | -0.7195 | 0.4726 | -0.3533 | 0.1644 |

**Continuation of Table 16**

| | | | | | |
|---|---|---|---|---|---|
| Perceived Augmentation * Age (generation) | 0.1646 | 1.1650 | 0.2454 | -0.1140 | 0.4433 |

Source: compiled by the author based on the research results

To test the hypothesis 10, PROCESS on SPSS was downloaded. The moderation analysis using PROCESS Model 1, with syntax code was performed (bootstrap = 5000). The analysis revealed that the interaction between perceived augmentation and generation is not statistically significant (p = 0.2454), it is higher than the accepted 0.05 value. Thus, it can be concluded that age does not moderate the relationship between perceived augmentation and perceived enjoyment. For this reason, **H10 is rejected.**

**H11:** Age moderates the positive relationship between Perceived Enjoyment and Behavioral Intention to Use augmented reality, and as for Millennials, this effect will be stronger than for Gen Z.

**Table 17**

*Moderation analysis for H11*

| | Coefficients | t | p | LLCI | ULCI |
|---|---|---|---|---|---|
| (Constant) | 4.7845 | 61.4028 | 0.0000 | 4.5960 | 4.9010 |
| Perceived Enjoyment | 0.8351 | 13.7565 | 0.0000 | 0.7154 | 0.9548 |
| Age (generation) | -0.2607 | -1.6849 | 0.0935 | -0.5659 | 0.0444 |
| Perceived Enjoyment * Age (generation) | -0.2363 | -1.9418 | 0.0535 | -0.4763 | 0.0036 |

Source: compiled by the author based on the research results

The same moderation analysis using PROCESS Model 1 was performed to test the hypothesis 11. Before looking at coefficients, it is seen that p value for the interaction between moderator and perceived enjoyment is equal to 0.0535, but it should be lower than 0.05, it can be equal or even slightly higher than the accepted value ($p < 0.05$).

**Table 18**

*Moderation analysis, effect of generations*

| | Effect | t | p | LLCI | ULCI |
|---|---|---|---|---|---|

**Continuation of Table 18**

| | | | | | |
|---|---|---|---|---|---|
| Gen Z | 0.9572 | 10.6543 | 0.0000 | 0.7801 | 1.1343 |
| Millennial | 0.7209 | 8.7796 | 0.0000 | 0.5590 | 0.8828 |

Source: compiled by the author based on the research results

However, before rejecting hypothesis 11, moderation analysis for H11, revealed an interesting result, and it is that perceived enjoyment positively and significantly predicts behavioural intention to use AR for both generations (Effect = 0.9572, 0.7209, p = 0.0000). That effect is stronger for Gen Z (0.9572) than for Millennials (0.7209), which is contrary to the stated hypothesis. Hence, the moderating effect of generation on perceived enjoyment and behavioural intention to use augmented reality technology is statistically not significant. Hence, **H11 is rejected.**

**H12:** Perceived Ease of Use has a positive impact on Perceived Usefulness.

**Table 19**

*Regression analysis for H12*

| | Unstandardized Coefficients | | Standardized Coefficients Beta | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | | | | Tolerance | VIF |
| (Constant) | 0.526 | 0.310 | | 1.695 | 0.092 | | |
| Perceived Ease of Use | 0.886 | 0.053 | 0.758 | 16.824 | < 0.001 | 1.000 | 1.000 |

Source: compiled by the author based on the research results

The regression analysis was performed to test the hypothesis 12. The relationship between perceived ease of use and perceived usefulness is statistically significant ($p < 0.05$). The standardized β coefficients is 0.758 showing the positive direction of the interaction. Perceived ease of use explains 57.5 % of the variance in perceived usefulness ($R^2 = 0.575$, $F = 283.054$). This result is also consistent with TAM theory suggesting that the usage-ease of use relationship is strong. Hence, **H12 is accepted.**

**H13:** Perceived Usefulness has a positive impact on Behavioral Intention to Use augmented reality technology.

**H14:** Perceived Ease of Use has a positive impact on Behavioral Intention to Use augmented reality technology.

**H15:** Perceived Enjoyment has a positive impact on Behavioral Intention to Use augmented reality technology.

**H16:** Trust positively has a positive impact on Behavioral Intention to Use augmented reality technology.

**Table 20**

*Multiple regression analysis for H13, H14, H15, H16*

| | Unstandardized Coefficients | | Standardized Coefficients Beta | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | | | | Tolerance | VIF |
| (Constant) | -0.362 | 0.378 | | -0.958 | 0.339 | | |
| Perceived Usefulness | 0.525 | 0.105 | 0.439 | 5.007 | < 0.001 | 0.263 | 3.807 |
| Perceived Ease of Use | -0.235 | 0.101 | -0.168 | -2.324 | 0.021 | 0.386 | 2.590 |
| Perceived Enjoyment | 0.260 | 0.103 | 0.216 | 2.531 | 0.012 | 0.277 | 3.612 |
| Trust | 0.384 | 0.078 | 0.323 | 4.904 | < 0.001 | 0.466 | 2.148 |

Source: compiled by the author based on the research results

Multiple regression analysis was performed to test the effect of variables (perceived usefulness, perceived ease of use, perceived enjoyment and trust) on behavioural intention to use. Perceived usefulness has the strongest positive effect on behavioural intention to use compared to other variables ($\beta = 0.439$, p value < 0.001). The second strong effect comes from trust, it shows strong positive effect on behavioural intention to use with $\beta = 0.323$, and p value < 0.001. Perceived enjoyment shows moderate positive effect on behavioural intention ($\beta = 0.216$, $p = 0.012$). Perceived usefulness explains 49.9 % of the variance in behavioural intention to use ($R^2 = 0.499$, $F = 208.380$). Trust explains 44.5 % of the variance in behavioural intention to use ($R^2 = 0.445$, $F = 167.515$). When it comes to perceived enjoyment, it explains 46.3% of the variance in dependent variable ($R^2 = 0.463$, $F = 180.309$). The relation between perceived ease of use and behavioural intention to use is statistically significant (p value = 0.021 which is $p < 0.05$), however $\beta = -0.168$ and $B = -0.235$ which signifies negative effect on behavioural intention, this is contrary to the

stated hypothesis. After controlling perceived usefulness, perceived enjoyment and trust, higher perceived ease of use is associated with lower levels of behavioural intention to use AR. In this case, **H14 is rejected**, but **H13, H15 and H16 are accepted.**

**H17:** Perceived Immersion has a positive impact on the Behavioral Intention to Use augmented reality technology through Perceived Enjoyment.

**Table 21**

*Mediation analysis for H17*

| | Indirect effect of Perceived Immersion on Behavioural Intention to Use | | | |
|---|---|---|---|---|
| | Effect | BootSE | BootLLCI | BootULCI |
| Perceived Enjoyment | 0.2599 | 0.0457 | 0.1721 | 0.3531 |

Source: compiled by the author based on the research results

The mediation analysis was conducted using PROCESS Model 4 with 5000 bootstrap samples. Results of the mediation analysis revealed that perceived immersion has a significant indirect effect (effect = 0.2599, 95 %) on behavioural intention to use AR through perceived enjoyment. The bootstrap confident interval (CI: 0.1721, 0.3531) did not include zero, hence confirming the presence of mediation. This shows that perceived enjoyment mediates the relation between perceived immersion and behavioural intention to use AR technology. Thus, **H17 is accepted.**

**H18:** Perceived Ease of Use has a positive impact on the Behavioral Intention to Use augmented reality technology through Perceived Usefulness.

**Table 22**

*Mediation analysis for H18*

| | Indirect effect of Perceived Ease of Use on Behavioural Intention to Use | | | |
|---|---|---|---|---|
| | Effect | BootSE | BootLLCI | BootULCI |
| Perceived Usefulness | 0.7769 | 0.0837 | 0.6176 | 0.9468 |

Source: compiled by the author based on the research results

The mediation analysis was done using PROCESS Model 4 with 5000 bootstrap samples. The goal was to examine whether perceived usefulness mediates the interaction between perceived ease of use and behavioural intention to use AR technology. The indirect effect of perceived ease of use on behavioural intention was significant (Effect = 0.7769, 95 %). The bootstrapped confidence interval (CI: 0.6176, 0.9468) did not include zero, all this signifies that the mediation exists. Perceived usefulness mediates the relationship between perceived ease of use and behavioural intention to use AR technology. Hence, **H18 is accepted.**

**H19:** Perceived Interactivity has a positive impact on the Behavioral Intention to Use augmented reality technology through Perceived Ease of Use.

**Table 23**

*Mediation analysis for H19*

| | Indirect effect of Perceived Interactivity on Behavioural Intention to Use | | | |
|---|---|---|---|---|
| | Effect | BootSE | BootLLCI | BootULCI |
| Perceived Ease of Use | 0.3733 | 0.0936 | 0.1909 | 0.5608 |

Source: compiled by the author based on the research results

The mediation analysis was performed using PROCESS Model 4 with 5000 bootstrap samples. The aim was to understand whether an AR characteristic, perceived interactivity can have an indirect effect on behavioural intention to use AR technology through perceived ease of use. The indirect effect (Effect = 0.3733) of perceived interactivity on behavioural intention through perceived ease of use was significant, the confidence interval (CI: 0.1909, 0.5608) did not include zero. This shows that the mediation effect exists, and perceived ease of use mediates the relationship between perceived interactivity and behavioural intention to use AR technology. Hence, **H19 is accepted.**

In summary, the linear, multiple regression analyses, correlation analysis, moderation and mediation analysis were done to test the hypotheses using SPSS. For hypotheses H1, H2, H3, H4, H5, H13, H14, H15, H16 multiple regression analysis was applied. Linear regression analysis was performed for H6, H7, H8, H9, H12. Moderation analysis was done for H10 and H11, and lastly, mediation analysis was used for H17, H18 and H19. In total, 4 hypotheses were rejected and 15 hypotheses were accepted. The next section is a discussion of quantitative analysis results.

### 3.6. Discussion of quantitative analysis results

This study examined the factors influencing the intention to use augmented reality in fashion e-commerce by integrating Technology Acceptance Model (TAM), psychological (immersion, enjoyment), media attributes (interactivity, vividness, augmentation) and functional (trust) perspectives. The results of the analysis reveal that each perspective plays a crucial role in consumer's behaviour. Most hypotheses were supported, the model was robust in explaining the consumer behaviour toward AR technology. Only 4 out of 19 hypotheses got rejected while doing the analysis. The hypotheses and their respective results are shown in Table 12.

The results show that AR attributes elicit immersion and enjoyment. Augmentation (H1) and vividness (H3) of augmented reality create immersion effect for consumers while perceived interactivity (H2) did not have any effect on perceived immersion. Both augmentation and vividness create similar positive effect on immersion. Also, perceived augmentation and perceived vividness influence enjoyment positively (H4, H5). This concludes that AR characteristics such as perceived augmentation and perceived vividness are important and elicit immersion and enjoyment for users. Immersion and enjoyment (H6) are also related positively between each other. It was mentioned in previous research that immersion is a direct determinant of enjoyment in AR gaming platforms (Liu et al., 2014). This study used this interaction and proved that this effect is applicable in fashion retail context as well. Interactivity as the prior researched suggested, does impact the easy use of the system (H7). The relationship is strong that interactivity even influences consumer behavioural intention to use AR through ease of use (H19). Prior research (Micheletto et al. 2025) suggests that when consumers enjoy an application or a website, they also tend to trust that application/website (H8). This was confirmed true in the study, also both of which influence behavioural intention to use Augmented Reality – trust exerts strong positive effect, while perceived enjoyment shows moderate positive effect (H15, H16). Also, this study proved that when the AR application seems fun and enjoyable, it will affect how users perceive its usefulness. Perceived enjoyment has a strong positive impact on perceived usefulness (H9).

Gen Z and Millennials are important to this study. However, both moderation effect hypotheses using generation as a factor was not confirmed (H10, H11). Enjoyment predicted behavioural intention for both generations and opposed the relationship that the effect would be stronger for Millennials (it was true for Gen Z). The same with the augmentation factor, generation did not moderate that relationship. One possible explanation for this is that majority of respondents that answered the survey are experienced with AR technology. The prior research suggests that both generations (Gen Z and Gen Y) are digitally savvy, but when it comes to AR, Gen Z has more experience and would not be affected by emotional factors (Ivanov et al., 2022). However, this study had both Gen Z and Millennials who are experienced with AR technology. As most of the

respondents (both Gen Z and Millennials) are habitual users of augmented reality in other platforms, they did not show any differences in behaviour toward Zenni application. Prior research suggested that because of habitual use, Gen Z do not get entertained by augmented reality the same way as Millennials (Schapsis et al., 2024). However, as is seen from analysis perceived enjoyment positively influences behavioral intention to use augmented reality. This finding of the study is opposing the statement that people who are exposed to the AR, would not enjoy it on other platforms. This could also be related to the amount of exposure which this study did not test. Overall, three factors had direct positive impact on behavioral intention to use augmented reality for Gen Z and Millennials: perceived usefulness, trust and perceived enjoyment.

The study used Technology Acceptance Model (TAM), and it confirmed to be an effective model to test the relationships between the factors. All the TAM variables (perceived usefulness, perceived ease of use, behavioural intention to use) were important to understand consumer behaviour towards AR technology. Only one TAM variable relationship got rejected (H14), perceived ease of use not only does not influence behavioural intention positively, but this influence is negative, which was an unexpected result, as perceived ease of use according to prior studies, is a direct and indirect determinant of behavioural intention to use of the system (Venkatesh, 1999). However, perceived usefulness (H14) proved to be the strongest predictor of behavioural intention to use in multiple regression analysis out of four variables (perceived ease of use, perceived enjoyment, trust, perceived usefulness). Nevertheless, positive influence of perceived ease of use on behavioural intention as an indirect determinant through perceived usefulness was confirmed in this study (H18). When the AR application is easy to use, people would also perceive it as a useful application. This also got confirmed in this study as perceived ease of use has a strong positive impact on perceived usefulness (H12). Lastly, perceived immersion exerts positive effect on behavioural intention to use AR through perceived enjoyment. This proves that it is important to include psychological factors (immersion, enjoyment) in the model when testing the technology and factors that influence behavioural intention to use that technology. In Figure 8, the research model is shown with quantitative analysis results.

In summary, TAM is a strong model to explain digital technologies, and adding perspectives related to emotional and trust-related variables is important to examine consumer behaviour. The technology-related characteristics create immersion and enjoyment. As well as usefulness of AR technology positively influences the behaviour intention to use AR technology. Generation as a moderation factor did not hold importance in this study.

**Table 24**

*Hypotheses testing results of the Research Model*

| HYPOTHESES | TEST RESULT |
|---|---|
| **H1:** Perceived Augmentation has a positive impact on Perceived Immersion. | **Accepted** |
| **H2:** Perceived Interactivity has a positive impact on Perceived Immersion | **Rejected** |
| **H3:** Perceived Vividness has a positive impact on Perceived Immersion | **Accepted** |
| **H4:** Perceived Augmentation has a positive impact on Perceived Enjoyment | **Accepted** |
| **H5:** Perceived Vividness has a positive impact on Perceived Enjoyment | **Accepted** |
| **H6:** Perceived Immersion has a positive impact on Perceived Enjoyment | **Accepted** |
| **H7:** Perceived Interactivity has a positive impact on Perceived Ease of Use | **Accepted** |
| **H8:** The higher the Perceived Enjoyment, the stronger the Trust of AR technology | **Accepted** |
| **H9:** Perceived Enjoyment has a positive impact on Perceived Usefulness of AR technology | **Accepted** |
| **H10:** Age moderates the positive relationship between Perceived Augmentation and Perceived Enjoyment, and as for Millennials, this effect will be stronger than for Gen Z | **Rejected** |
| **H11:** Age moderates the positive relationship between Perceived Enjoyment and Behavioral Intention to Use augmented reality, and as for Millennials, this effect will be stronger than for Gen Z | **Rejected** |
| **H12:** Perceived Ease of Use has a positive impact on Perceived Usefulness | **Accepted** |

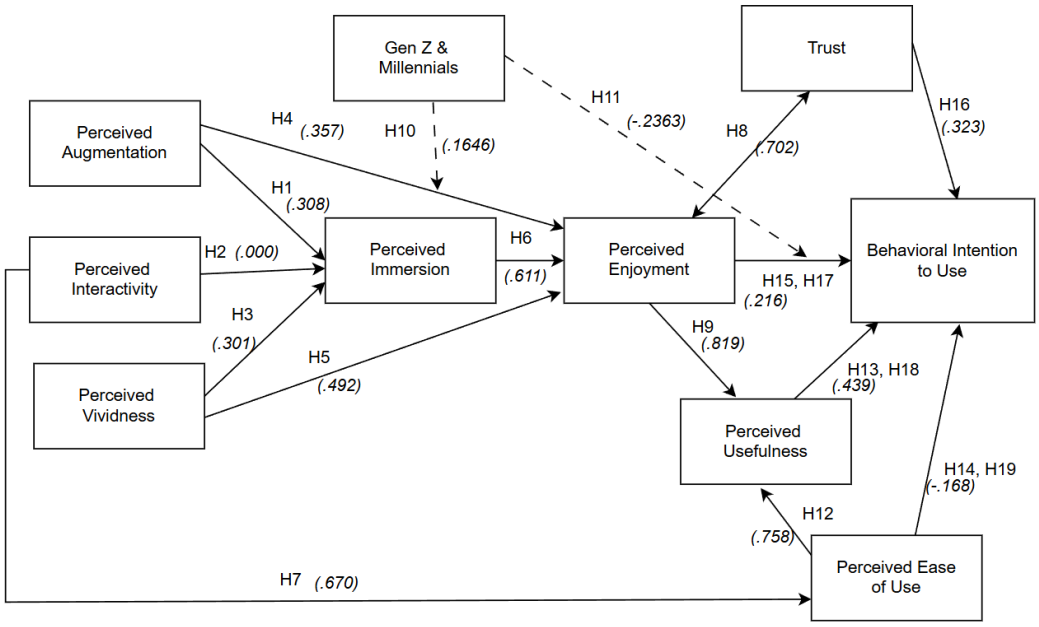
**Continuation of Table 24**

| | |
|---|---|
| **H13:** Perceived Usefulness has a positive impact on Behavioral Intention to Use augmented reality technology. | **Accepted** |
| **H14:** Perceived Ease of Use has a positive impact on Behavioral Intention to Use augmented reality technology | **Rejected** |
| **H15:** Perceived Enjoyment has a positive impact on Behavioral Intention to Use augmented reality technology | **Accepted** |
| **H16:** Trust positively has a positive impact on Behavioral Intention to Use augmented reality technology | **Accepted** |
| **H17:** Perceived Immersion has a positive impact on the Behavioral Intention to Use augmented reality technology through Perceived Enjoyment | **Accepted** |
| **H18:** Perceived Ease of Use has a positive impact on the Behavioral Intention to Use augmented reality technology through Perceived Usefulness | **Accepted** |
| **H19:** Perceived Interactivity has a positive impact on the Behavioral Intention to Use augmented reality technology through Perceived Ease of Use | **Accepted** |

Source: Created by the author based on the results

**Figure 8**

*Research model with quantitative analysis results*




Source: Created by the author

# CONCLUSIONS

1. The definition of augmented reality is combination of real and virtual world, in which virtual objects are imposed to the real world. The uses of augmented reality are as follows: marker-based, marker less, GPS/location-based and superimposition (Dargan et al. 2022). Marker-based is achieved through physical object (e.g., scanning QR code) (Arena et al. 2022), marker less is achieved through physical space (virtual objects are added to the space), GPS/location-based is imposing objects to specific locations, and superimposition is achieved by projecting light and is applied in manufacturing industries (Dargan et al., 2022). The difference of augmented reality and virtual reality can be defined by using XR framework. The difference between these technologies is the presence of physical space in augmented reality. Virtual Reality does not require physical space to function (Rauschnabel et al., 2022).
2. Several brands use augmented reality in their communication channels. There are different uses of augmented reality in fashion retail. It can be a Virtual try-on (VTO) of categories such as shoes or handbags and is achieved through mobile applications or desktop websites. Another use is In-store try on through Magic Mirror (Caboni & Hagberg, 2019). Some brands like Gcds and Balenciage get creative and use it in a gaming format (Iannilli and Linfante, 2021). Hence, it can be said that there are numerous ways of utilizing AR in fashion retail. The benefits are customer satisfaction (Iannilli and Linfante, 2021), easing the process of product view and evaluation, reducing the returns and faster decision-making for consumers (Kovács and Keresztes, 2024).
3. TAM and UTAUT are among the most used theories for augmented reality research. By analyzing both theories, it was revealed that TAM would be more suitable for this study because of its flexibility (Alam et al., 2021). UTAUT is a good fit too, as it is consumer-based theory (Venkatesh et al., 2003) and has enough explanatory power for such studies. It also allows to add moderating variables to the model (Venkatesh et al., 2003). However, this study focuses on exploration of direct relationships of variables and want to examine augmented reality from different aspects such as design features, cognitive response and functionality. TAM theory allows to explore all those aspects and due to that reason, it was chosen as the theoretical background for the research model.
4. The factors that influence behavioral intention to use AR technology in e-commerce are perceived augmentation, perceived interactivity, perceived vividness, perceived immersion, perceived enjoyment, trust, perceived ease of use and perceived usefulness.

5. When it comes to online shopping Gen Z likes to use m-shopping, while Millennials who are extroverted are m-shoppers compared to introverted. Gen Z is less social when it comes to online shopping, while Millennials participated in discussion and feedback for shopping. Social media that those generations use is different (Millennials – Facebook, Gen Z – Instagram) (Lissitsa and Kol, 2019). Gen Z is more individualistic (Puiu et al., 2022) and enjoy shopping online (Thangaval et al, 2019). But when augmented reality is used in the platform, they view it as a functional tool, whereas Millennials enjoy augmented reality use (Schapsis et al., 2024). For gender differences, men take less time to search a product compared to a woman. Women use several platforms when shopping while men may use only one (Kovács and Keresztes, 2024). Women spend less money for online shopping and view it risky, compared to men (Melovic et al., 2021). Women also like to touch a product (NFT) before purchasing it (Rathee and Rajain, 2019).
6. The Research model was created by using TAM constructs by Davis (1985). The idea to combine media characteristics and psychological aspects came from TIME theory by Sundar et al. (2015). Hence, the model consists of AR media characteristics (perceived augmentation, perceived interactivity, perceived vividness), perceived immersion, perceived enjoyment, trust, perceived ease of use, perceived usefulness, behavioral intention to use and age factor (Gen Z and Gen Y). The overall hypotheses are nineteen, with two moderating and three mediating type hypotheses. Sample size was calculated for the study based on comparable research sampling method. Product category (eyewear) and constructs for the variables were chosen.
7. Based on prior research, relationships of the research variable were proposed. The study suggested that three of AR characteristics would have a positive impact on perceived immersion. Perceived immersion would have a positive impact on perceived enjoyment. Perceived enjoyment would have a positive impact on trust and behavioral intention, also would mediate the relation between perceived immersion and behavioral intention. Generation would moderate the relation between perceived augmentation and perceived enjoyment, and between perceived enjoyment and behavioral intention. Perceived augmentation and perceived vividness would have a positive effect on perceived enjoyment, while perceived interactivity would influence perceived ease of use. Trust would have a positive impact on behavioral intention. Perceived ease of use would positively impact perceived usefulness and behavioral intention and mediate the relation between mentioned variables. Perceived usefulness would influence behavioral intention positively.

8. To evaluate the relationships of the research model, questionnaire was developed consisting of twenty-one questions. There were four screening, six demographics, two regarding AR use, and nine scale type questions. The respondents were given a short information about Zenni and AR. The link and instructions to use Zenni website was provided, photos and videos of Zenni VTO use were attached to the questionnaire.
9. Quantitative research methods were employed to examine the factors that influence behavioral intention to use AR technology. Key demographic insights are 53.1 % female, 46.4 % male, 51.7 % Gen Y and 48.3 % Gen Z respondents. Most respondents are from Lithuania (24.6 %) and 84.4 % of respondents have experience with AR. 34.6 % of respondents used Zenni website, watched videos and photos. All the constructs passed the reliability test and showed acceptable internal consistency. The null hypothesis for normality was rejected, and data was not normally distributed. The mean values showed moderate agreement range. The skewness and kurtosis values were also acceptable. Out of 19 hypotheses, 4 got rejected and 15 got accepted.

# LIMITATIONS AND RECOMMENDATIONS

The result of this study provides limitations of this research and proposes several recommendations.

1. Several limitations should be acknowledged, despite the contributions of this study. The first one is that only one third of the respondents used all the sources attached to the survey, meaning used Zenni website, looked through photos and watched the Zenni website videos. Therefore, when these respondents were answering questionnaire, their answers were based on the experience of Zenni website. Other respondents answered the questionnaire based on what they feel by watching videos and photos. This is the main limitation of this study, as most prior research would recruit participants and ask them to use AR technology websites for 10-15 minutes in controlled settings. After that the participants would be given the questionnaire based on already gained experience from that website. This would reveal on how they felt after the use of the technology. Unfortunately, this study was unable to do that.
2. Another limitation is connected to the first limitation. As prior research asks people to try the AR application, they have a usage of the system variable. In this study, there is only behavioural intention to use, but no actual use of AR technology construct. Next research on augmented reality technology may include behavioural intention to use and actual use of AR technology. This would reveal a lot more to the researchers, as they would understand whether people would use AR technology if it was introduced to various retailer platforms. As now, by looking at the mean of behavioural intention, it can be judged that people have neutral to slightly agree view on AR technology. More experiments with different AR platforms may show if people are interested in technology.
3. The study contributes to the literature on augmented reality technology by extending TAM with psychological and trust-related constructs. The findings demonstrate that hedonic factors such as perceived immersion and perceived enjoyment are important mechanisms through which AR characteristics influence user behaviour. This highlights that it is important to include affective responses in technology research context.
4. When it comes to practical importance, fashion retailers should focus not only on functional and practical benefits that they present to consumers, but also on experiential benefits. Introducing technologies like AR to fashion retail platforms can create an added value for consumers. AR technology would not replace an actual try-on, but it can be a

memorable customer experience, consumers will remember those retailers for the experience that they bring to them.

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# SUMMARY

71 pages, 24 tables, 8 figures, 111 references.

The main purpose of this master thesis is to determine factors that influence intention to use augmented reality in fashion e-commerce among Gen Z and Millennials.

The Master thesis consists of three main parts: the analysis of the literature, the research and its results, conclusions and limitations/recommendations.

The analysis of literature examined augmented reality definition, uses in literature and industry. Then the author discussed how it is utilized in fashion retail and how consumers benefit from using augmented reality. By examining TAM and UTAUT theories, the author chose TAM as the theoretical background for the master thesis. The next part of literature analysis was the discussion of the factors: perceived usefulness, perceived ease of use, perceived augmentation, perceived vividness, perceived interactivity, perceived immersion, perceived enjoyment, habit and experience, and trust (or privacy concerns). In the final part of literature analysis, the author examined Gen Z and Millennials shopping behaviour with and without augmented reality.

Consequently, the author compiled the research model and hypotheses. Based on the theoretical analysis and model, the questionnaire was developed. Overall, the author received 211 responses to be analysed. The results were analysed by using IBM SPSS program. Cronbach's alpha coefficients of all constructs were consistent. The hypotheses testing was carried out by linear, multiple regression and by SPSS PROCESS. Out of 19 hypotheses, 16 were accepted and 4 were rejected.

The conclusions' part was written to answer all the objectives set at the beginning of the master thesis. As a result, TAM proved to be a right theoretical model to carry the research. Perceived usefulness, trust and perceived enjoyment have a positive impact on behavioural intention to use augmented reality in fashion e-commerce among Gen Z and Millennials. Factors like perceived immersion, perceived ease of use and perceived interactivity also influences behavioural intention to use augmented reality through mediating variables: perceived enjoyment, perceived usefulness and perceived ease of use, consecutively. When it comes to experience of augmented reality use, approximately 80 % of respondents are familiar and used it in the past.

The author believes that introducing augmented reality to fashion retail platforms would be an added value and bring experiential value for consumers. Future research should add usage

variables to the model and conduct the research in controlled setting to further understand consumer behaviour toward augmented reality in fashion e-commerce.

# SANTRAUKA

71 puslapiai, 24 lentelės, 8 paveikslai, 111 nuorodu.

Pagrindis šio magistro darbo tikslas - nustatyti veiksnius, kurie daro įtaką Z kartos ir milenialų ketinimui naudoti papildytą realybę mados elektroninėje komercijoje.

Magistro darbas susideda iš trijų pagrindinių dalių: literatūros analizės, tyrimo ir jo rezultatų, išvadų bei apribojimų/rekomendacijų.

Literatūros analize buvo nagrinėjama papildytos realybės apibrėžtis, jos naudojimas literatūroje ir pramonėje. Tada autorė aptarė, kaip ji naudojama mados mažmeninėje prekyboje ir kaip vartotojai gauna naudos iš papildytos realybės naudojimo. Nagrinėdama TAM ir UTAUT teorijas, autorė pasirinko TAM kaip magistro darbo teorinį pagrindą. Kitoje literatūros analizės dalyje buvo aptarti šie veiksniai: suvokiamas gyvumas, suvokiamas interaktvymas, suvokiamas įsitraukimas, suvokiamas malonumas, įprotis ir patirtis bei pasitikėjimas (arba privatumo klausimai). Paskutinėje literatūros analizės dalyje autorius nagrinėjo Z kartos ir tūkstantmėčio kartos pirkimo elgseną papildytą realybę ir jos nenaudojant.

Todėl autorius sudarė tyrimo modelį ir hipotezes. Remiantis teorine analize ir modeliu, buvo parengtas klausimynas. Iš viso autorius gavo 211 atskakymų, kuriuos reikėjo išanalizuoti. Rezultatai buvo analizuojami naudojant IBM SPSS programą. Visi konstruktai turėjo nuoseklius Cronbacho alfa koeficientus. Hipotezės buvo tikrinamos taikant linijinę, daugialypę regresiją ir SPSS PROCESS. Iš 19 hipotezių 16 buvo priimtos, o 4 atmestos.

Išvados dalis buvo parašyta siekiant atsakyti į visus magistro darbo pradžioje iškeltus tikslus. Rezultatas parodė, kad TAM yra tinkamas teorinis modelis tyrimui atlikti. Suvokiamas naudingumas, pasitikėjimas ir suvokiamas malonumas turi teigiamą poveikį Z kartos ir tūkstantmečio kartos elgesio ketinimus naudoti papildytą realybę mados elektroninėje komercijoje. Tokie veiksniai kaip suvokiamas įsitraukimas, suvokiamas naudojimo paprastumas ir suvokiamas interaktvymas taip pat daro įtaką elgesio ketinimui naudoti papildytą realybę per tarpininkaujančios kintamuosius: suvokiamą malonumą, suvokiamą naudingumą ir suvokiamą naudojimo paprastumą. Kalbant apie papildytos realybės naudojimo patirtį, maždaug 80 % respondentų yra susipažinę su ją ir yra naudoję praeityje.

Autorius mano, kad papildytos realybės įdiegimas į mados mažmeninės prekybos platformas būtų pridėtinė vertė ir suteiktų vartotojams patirtinę vertė. Ateityje atliekant turimus reikėtų į modelį

įtraukti naudojimo kintamuosius ir turimus atlikti kontroliuojamomis sąlygomis, kad būtų galima geriau suprasti vartotojų elgesį mados elektroninės prekybos srityje, susijusį su papildyta realybe.

# Annexes

**Annex 1**

**Item scales**

| Variable | Description | Measurement | References |
|---|---|---|---|
| Perceived Augmentation | I felt I could enrich X After I stopped using the site, I could still imagine Y<br><br>The virtual objects seemed completely real<br><br>I felt that the virtual objects did not add anything to X<br><br>Reality seemed richer (where X is the element that is being augmented and Y is the virtual element depicted in the application) | 7-point Likert-type scale | Javornik (2016) |
| Perceived Interactivity | I was in control of my navigation through the augmented reality technology (website)<br><br>I had some control over the content of the augmented reality technology (website) that I wanted to see | 7-point Likert-type scale | Yim et al. (2017) |

| | | | |
|---|---|---|---|
| | I was in control over the pace to watch products<br><br>The augmented reality technology (website) had the ability to respond to my specific needs quickly and efficiently | | |
| Perceived Vividness | The visual display provided through this Lenskart mobile app was clear<br><br>The visual display provided through this Lenskart mobile app was detailed<br><br>The visual display provided through this Lenskart mobile app was sharp<br>The visual display provided through this Lenskart mobile app was vivid<br><br>The visual display provided through this [Lenskart] mobile app was well-defined | 7-point Likert-type scale | Ganesan and Kumar (2024) |
| Perceived Immersion | I was completely immersed in the AR experiences | 7-point Likert-type scale | Tom Dieck et al. (2022) |

| | | | |
|---|---|---|---|
| | I lost track of time while using the AR applications<br><br>I became very involved in the AR applications forgetting about other things<br><br>I became unaware of my surroundings while experiencing AR | | |
| Perceived Enjoyment | The augmented reality technology (website) was entertaining<br><br>The augmented reality technology (website) was enjoyable<br><br>The augmented reality technology (website) was pleasing<br><br>The augmented reality technology (website) was fun to use | 7-point Likert-type scale | Yim et al. (2017) |
| Trust | Augmented reality technology (website) is trustworthy<br><br>Augmented reality technology (website) keeps its promise | 7-point Likert-type scale | Wang and Lin (2016) |

| | | | |
|---|---|---|---|
| | Augmented reality technology (website) keeps users' interests in mind | | |
| Perceived Ease of Use | Learning to operate CHART-MASTER would be easy for me<br><br>I would find it easy to get CHART-MASTER to do what I want it to do<br><br>My interaction with CHART-MASTER would be clear and understandable<br><br>I would find CHART-MASTER to be flexible to interact with<br><br>It would be easy for me to become skillful at using CHART-MASTER<br><br>I would find CHART-MASTER easy to use | 7-point Likert-type scale | Davis (1989) |
| Perceived Usefulness | Using CHART-MASTER in my job would enable me to accomplish tasks more quickly | 7-point Likert-type scale | Davis (1989) |

| | | | |
|---|---|---|---|
| | Using CHART-MASTER would improve my job performance<br><br>Using CHART-MASTER in my job would increase my productivity<br><br>Using CHART-MASTER would enhance my effectiveness on the job<br><br>Using CHART-MASTER would make it easier to do my job<br><br>I would find CHART-MASTER useful in my job | | |
| Behavioral Intention to Use | I will keep use of this Web site in the future<br><br>I will use this Web on a regular basis in the future<br><br>I will frequently use this Web site in the future<br><br>I will this Web site rather than other Web sites for purchasing product<br><br>I will recommend others to use this Web site | 7-point Likert-type scale | Ahn et al. (2004) |

**Annex 2**
**Questionnaire development**

Dear respondent,

My name is Maryam Abdullayeva, and I am a Marketing and Integrated Communication student at Vilnius University conducting a thesis on factors that influence intention to use augmented reality in fashion e-commerce among Gen Z and Millennials. It is important to understand the effect of digital technologies on consumers. By doing this research, I aim to analyze the effect of digital technologies (Augmented Reality) on the intention to use them. The survey will take 7 – 10 minutes of your time. The survey responses are anonymous and are solely used for research purposes.

Thank you for your input and participation!

Launched in 2003, Zenni is the first online-only eyewear site that provides stylish, quality glasses at an affordable price. In 2007, they introduced Virtual-Try On feature on their website so that people could find their perfect pair online.

1. Are you familiar with the application/website – Zenni

   ☐ Yes ☐ No

2. Have you used Zenni in the past 6 months?

   ☐ Yes ☐ No

   (If yes, skip the survey.)

3. Are you between the ages of 18 – 44?

   ☐ Yes ☐ No

   (If no, skip the survey.)

4. Are you interested in eyewear products?

☐ Yes ☐ No

(If no, skip the survey.)

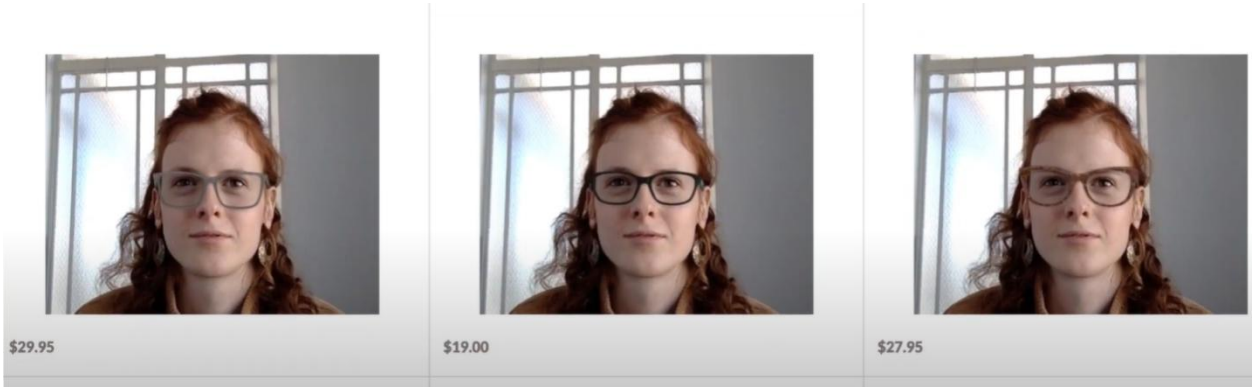
Augmented reality is placing virtual objects in physical space. Zenni uses augmented reality so that consumers feel confident in choosing a pair. You can see the example videos of how it looks, based on those examples you will answer the questions. The examples: https://www.youtube.com/watch?v=Aikck5AwlTs, https://www.youtube.com/watch?v=sV4Rhx0co3o

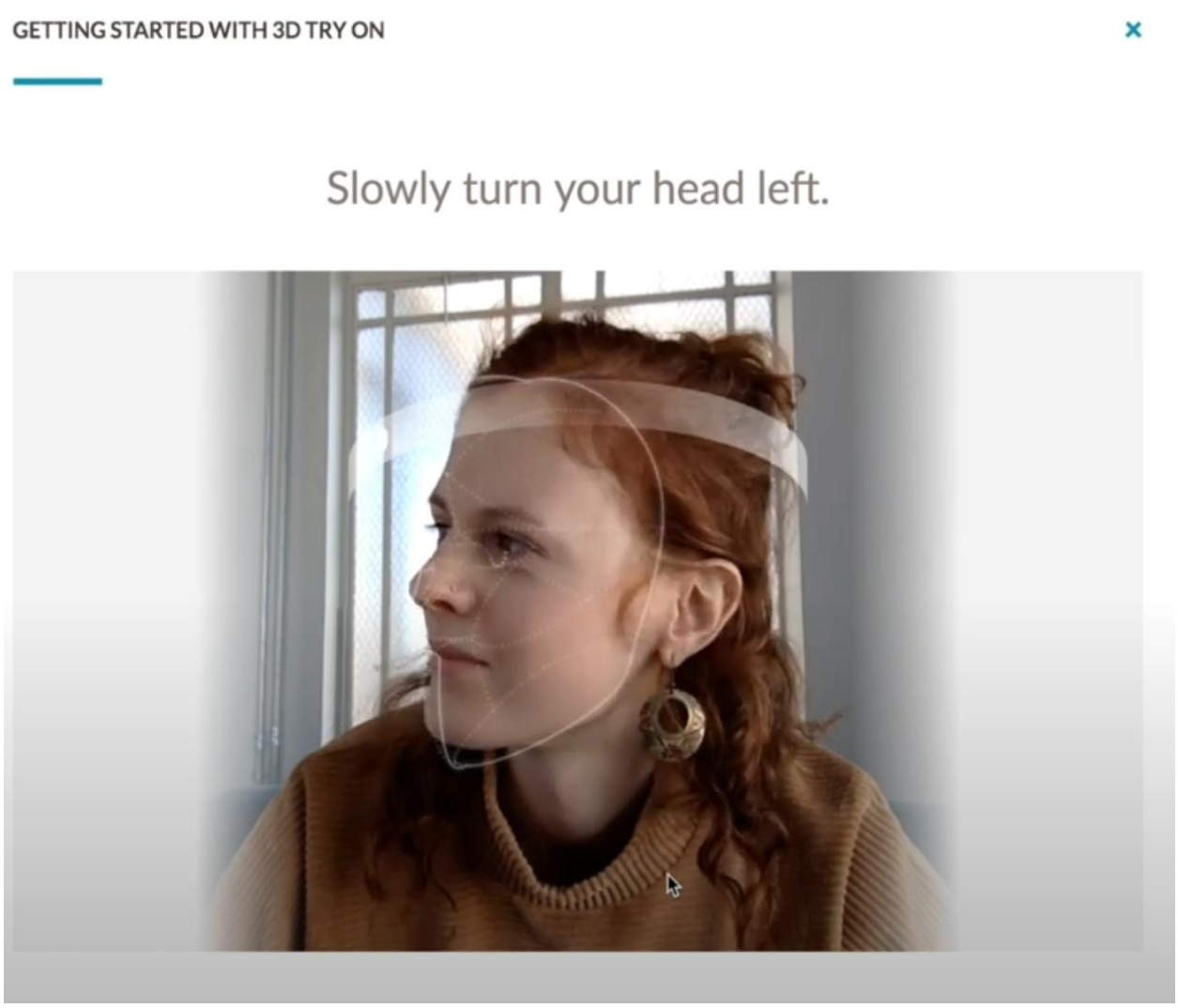
If you would like to know how it will look on you can test it by using the following link: https://www.zennioptical.com/?srsltid=AfmBOoqGLldqi_7XSoKsSnhEf7v8Za3jv__2eYTTWwDZpLS-6luBd14x Instructions to use: The pair that you like can be tried on by pressing the "Try On" button. Then by opening the frontal camera, you could see how the pair would look like in reality. You can access Zenni using the link or by downloading the application from the Apple Store.

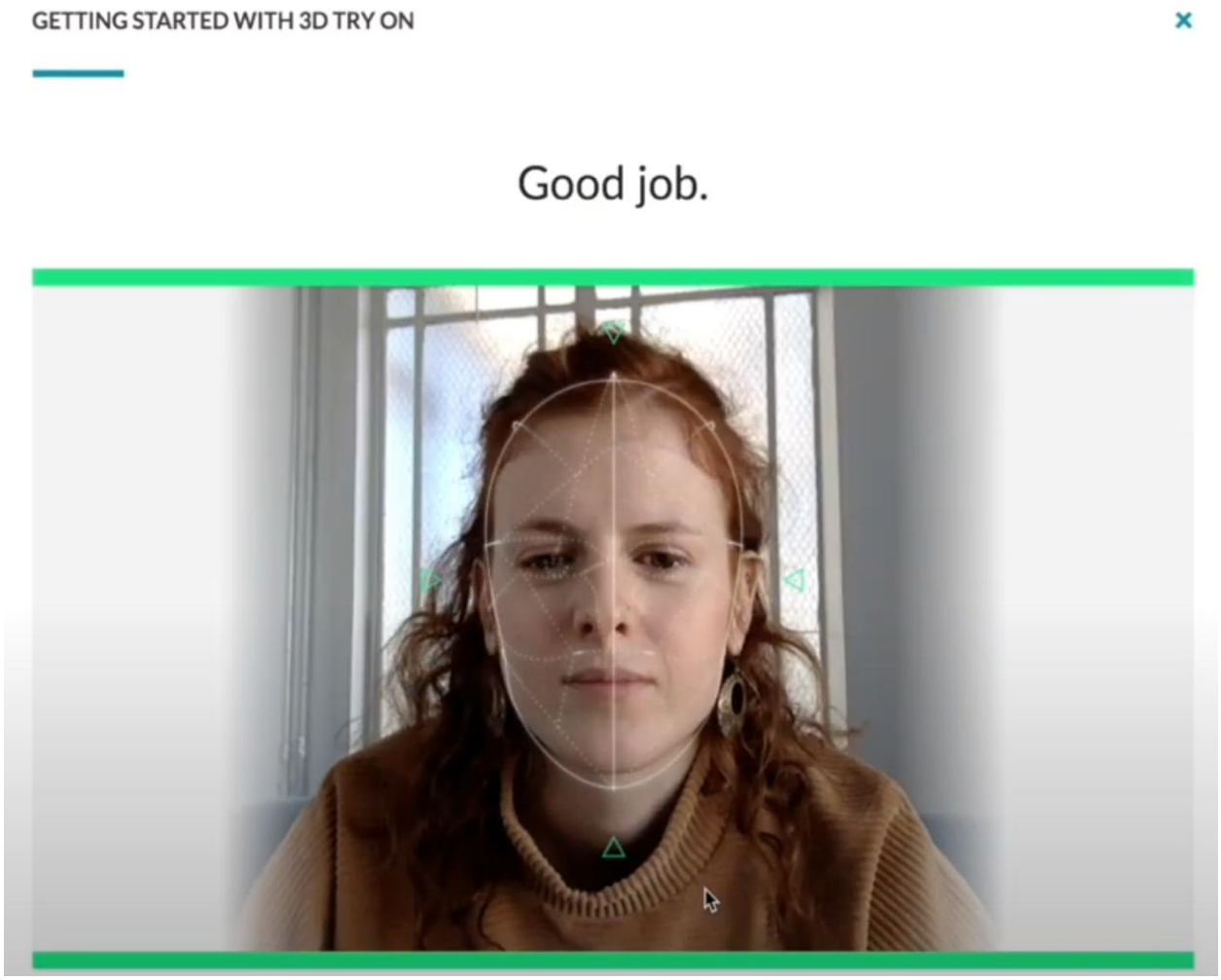
Please see some examples below (next page):


ZENNI


ZENNI


$29.95
$19.00
$27.95


GETTING STARTED WITH 3D TRY ON
Slowly turn your head left.




5. Based on the given Zenni examples that you saw, please rate your level of agreement with the following statements regarding the perceived augmentation in Zenni website, where 1 – Strongly disagree, 7 – Strongly agree

| | 1- Strongly disagree | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree |
|---|---|---|---|---|---|---|---|
| I feel I could enrich my appearance while using Zenni website augmented reality eyewear | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| After I stopped watching the Zenni website examples, I could still imagine the augmented reality eyewear | | | | | | | |
| The augmented reality eyewear in Zenni website examples seemed completely real | | | | | | | |
| I felt that the augmented reality eyewear would not add anything to my appearance in Zenni website examples | | | | | | | |
| I think the appearance in Zenni website examples seemed richer with augmented reality eyewear | | | | | | | |

6. Based on the given Zenni examples that you saw, please rate your level of agreement with the following statements regarding the perceived interactivity in Zenni website, where 1 – Strongly disagree, 7 – Strongly agree

| | 1- Strongly disagree | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| I think I would be in control of my navigation through the augmented reality eyewear technology in Zenni website | | | | | | | |
| I think I would have some control over the content of the augmented reality eyewear technology in Zenni website that I want to see | | | | | | | |
| I think I would be in control over the pace to watch products in augmented reality eyewear technology in Zenni website | | | | | | | |
| I think the augmented reality eyewear technology in Zenni website could respond to my specific needs quickly and efficiently | | | | | | | |

7. Based on the given Zenni examples that you saw, please rate your level of agreement with the following statements regarding the perceived vividness, where 1 – Strongly disagree, 7 – Strongly agree

| | 1 - Strongly disagree | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree |
|---|---|---|---|---|---|---|---|
| The visual display provided through augmented reality eyewear technology in Zenni website was clear | | | | | | | |
| The visual display provided through augmented reality eyewear technology in Zenni website was detailed | | | | | | | |
| The visual display provided through augmented reality eyewear technology in Zenni website was detailed | | | | | | | |
| The visual display provided through augmented reality eyewear technology in Zenni website was sharp | | | | | | | |
| The visual display provided through | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| augmented reality eyewear technology in Zenni website was vivid | | | | | | | |
| The visual display provided through Zenni website well-defined | | | | | | | |

8. Please estimate on a 7- point scale how involved you felt using (or imaging using while watching the examples) the augmented reality application (Zenni). For example, did the augmented reality experience capture your full attention?

| | 1- Strongly disagree | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree |
|---|---|---|---|---|---|---|---|
| I was completely immersed in the augmented reality eyewear technology in Zenni website | | | | | | | |
| I lost track of time while using the augmented reality eyewear technology in Zenni website | | | | | | | |
| I became very involved in the augmented reality eyewear technology | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| forgetting about other things | | | | | | | |
| I became unaware of my surroundings while experiencing augmented reality eyewear technology in Zenni website | | | | | | | |

9. Based on the given Zenni examples that you saw, please rate your level of agreement with the following statements regarding the perceived enjoyment, where 1 – Strongly disagree, 7 – Strongly agree

| | 1- Strongly disagree | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree |
|---|---|---|---|---|---|---|---|
| I believe that the augmented reality eyewear technology in Zenni website seems entertaining | | | | | | | |
| I believe that the augmented reality eyewear technology in Zenni website seems enjoyable | | | | | | | |
| I believe that the augmented reality eyewear technology in Zenni website seems pleasing | | | | | | | |
| I believe that the augmented reality eyewear technology | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| in Zenni website seems fun to use | | | | | | | |

10. Based on the given Zenni examples that you saw, please rate your level of agreement with the following statements regarding the trust in technology, where 1 – Strongly disagree, 7 – Strongly agree

| | 1 - Strongly disagree | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree |
|---|---|---|---|---|---|---|---|
| I believe the augmented reality eyewear technology in Zenni website is trustworthy | | | | | | | |
| I believe the augmented reality eyewear technology in the Zenni website keeps its promise | | | | | | | |
| I believe the augmented reality eyewear technology in Zenni website keeps users' interests in mind | | | | | | | |

11. Based on the given Zenni examples that you saw, please rate your level of agreement with the following statements regarding the ease of use, where 1 – Strongly disagree, 7 – Strongly agree

| | 1 - Strongly disagree | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| I think learning to operate augmented reality eyewear technology in Zenni website would be easy for me | | | | | | | |
| I would find it easy to get augmented reality eyewear technology in Zenni website to do what I want it to do | | | | | | | |
| I think my interaction with augmented reality eyewear technology in Zenni website would be clear and understandable | | | | | | | |
| I would find augmented reality eyewear technology in Zenni website to be flexible to interact with | | | | | | | |
| It would be easy for me to become skillful at using augmented reality eyewear technology in Zenni website | | | | | | | |
| I would find augmented reality eyewear technology | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| in Zenni website easy to use | | | | | | | |

12. Based on the given Zenni examples that you saw, please rate your level of agreement with the following statements regarding the usefulness, where 1 – Strongly disagree, 7 – Strongly agree

| | 1 - Strongly disagree | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree |
|---|---|---|---|---|---|---|---|
| Using augmented reality eyewear technology in Zenni website would enable me to accomplish choosing eyewear more quickly | | | | | | | |
| Using augmented reality eyewear technology in Zenni website would improve my choosing eyewear experience | | | | | | | |
| Using augmented reality eyewear technology in Zenni website for choosing my eyewear would increase my productivity | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Using augmented reality eyewear technology in Zenni website would enhance my effectiveness on choosing the eyewear | | | | | | | |
| Using augmented reality eyewear technology in Zenni website would make it easier to choose eyewear | | | | | | | |
| I would find augmented reality eyewear technology in Zenni website useful in choosing eyewear | | | | | | | |

13. Based on the given Zenni examples that you saw, please rate your level of agreement with the following statements regarding the behavioral intention to use augmented reality technology, where 1 – Strongly disagree, 7 – Strongly agree

| | 1- Strongly disagree | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree |
|---|---|---|---|---|---|---|---|
| I will keep use of augmented reality eyewear technology in Zenni website in the future | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| I will use augmented reality eyewear technology in Zenni website on a regular basis in the future | | | | | | | |
| I will frequently use augmented reality eyewear technology in Zenni website in the future | | | | | | | |
| I will use augmented reality eyewear technology in Zenni website rather than other websites for purchasing product | | | | | | | |
| I will recommend others to use augmented reality eyewear technology in Zenni website | | | | | | | |

14. Please choose your gender:

- Female
- Male
- Prefer not to say

15. Please write your age: _____

16. What is your average monthly personal income (after taxes)?

- I do not have a regular income
- Less than 700 EUR
- 700 – 1,099 EUR
- 1,100 – 1,399 EUR
- 1,400 – 1,799 EUR
- 1,800 or more EUR
- Prefer not to say

17. What is the highest level of education you have completed?

- No formal education
- Primary education
- Lower secondary education
- High school diploma or equivalent
- Vocational training
- Bachelor's degree
- Master's degree
- Doctorate degree
- Other (please specify): _____

18. Please specify the country where you currently live _____
19. Please specify the city where you currently live _____
20. Please select the option that you used for answering the survey questions
    - I watched the videos
    - I watched the photos attached to the survey
    - I used the Zenni application/website
21. Have you ever used any Augmented reality technology before (e.g., Snapchat, Instagram, TikTok filters, or any other websites)?
    - Yes
    - No

**Annex 3**

**List of countries where respondents reside**

**Please specify the country where you currently live:**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Australia | 2 | .9 | .9 | .9 |
| | Azerbaijan | 33 | 15.6 | 15.6 | 16.6 |
| | Canada | 8 | 3.8 | 3.8 | 20.4 |
| | Czech Republic | 2 | .9 | .9 | 21.3 |
| | England | 1 | .5 | .5 | 21.8 |
| | Finland | 2 | .9 | .9 | 22.7 |
| | France | 1 | .5 | .5 | 23.2 |
| | Germany | 9 | 4.3 | 4.3 | 27.5 |
| | India | 3 | 1.4 | 1.4 | 28.9 |
| | Iran | 1 | .5 | .5 | 29.4 |
| | Italy | 4 | 1.9 | 1.9 | 31.3 |
| | Japan | 1 | .5 | .5 | 31.8 |
| | Latvia | 1 | .5 | .5 | 32.2 |
| | Lithuania | 52 | 24.6 | 24.6 | 56.9 |
| | Netherlands | 1 | .5 | .5 | 57.3 |
| | Poland | 5 | 2.4 | 2.4 | 59.7 |
| | Portugal | 6 | 2.8 | 2.8 | 62.6 |
| | Scotland | 1 | .5 | .5 | 63.0 |
| | South Korea | 2 | .9 | .9 | 64.0 |
| | Turkey | 3 | 1.4 | 1.4 | 65.4 |
| | United Arab Emirates | 7 | 3.3 | 3.3 | 68.7 |

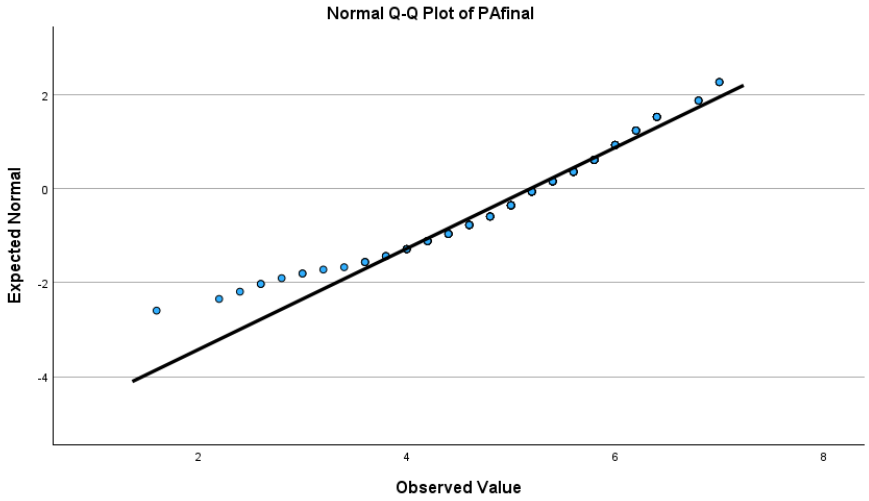
| | | | | | |
|---|---|---|---|---|---|
| | United Kingdom | 21 | 10.0 | 10.0 | 78.7 |
| | United States | 45 | 21.3 | 21.3 | 100.0 |
| | Total | 211 | 100.0 | 100.0 | |

Source: SPSS analysis result

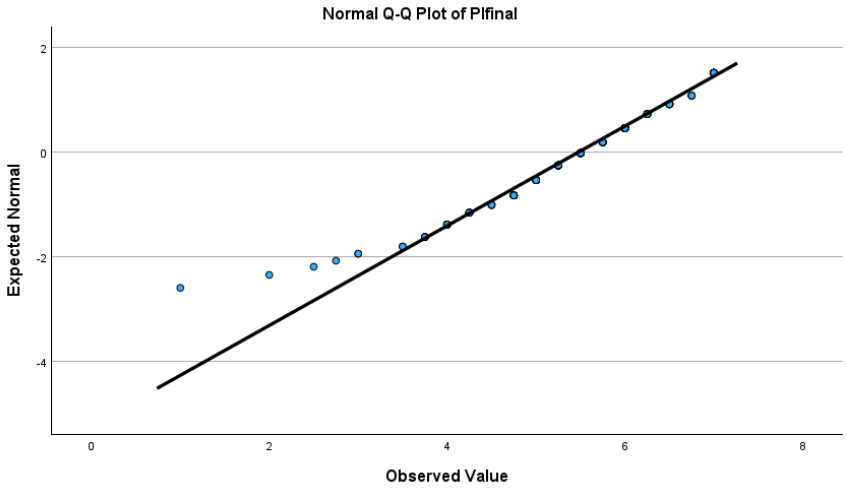
## Annex 4

## Normality analysis – Q-Q plots

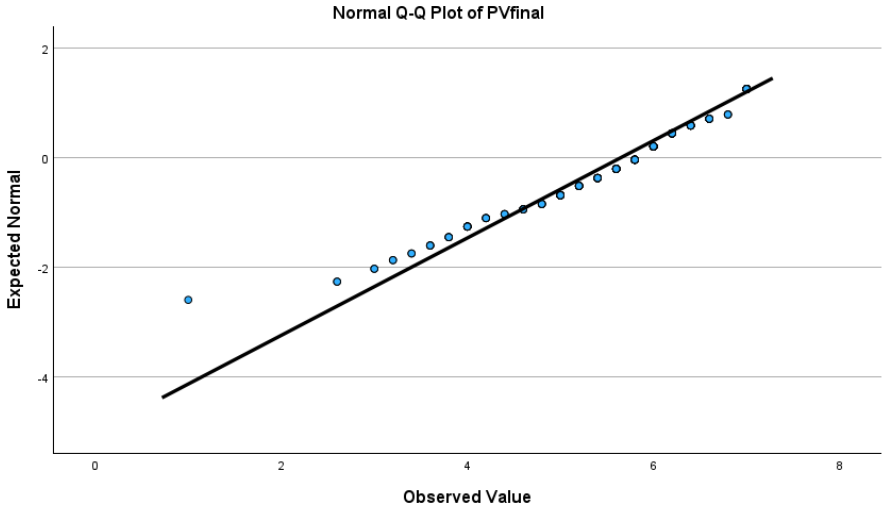
Normal Q-Q plot of perceived augmentation



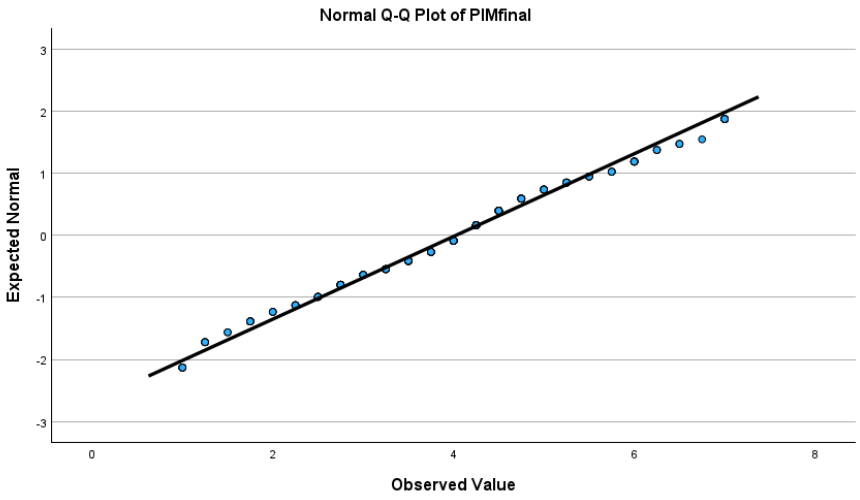

Normal Q-Q plot of perceived interactivity



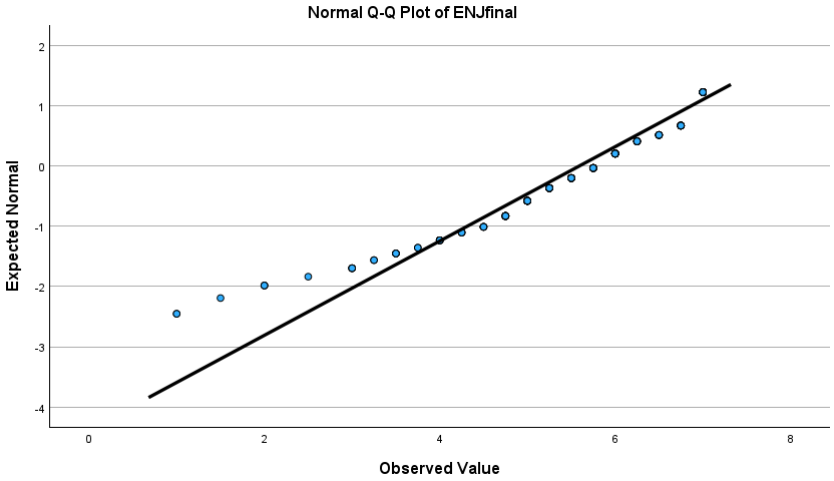
Normal Q-Q plot of perceived vividness



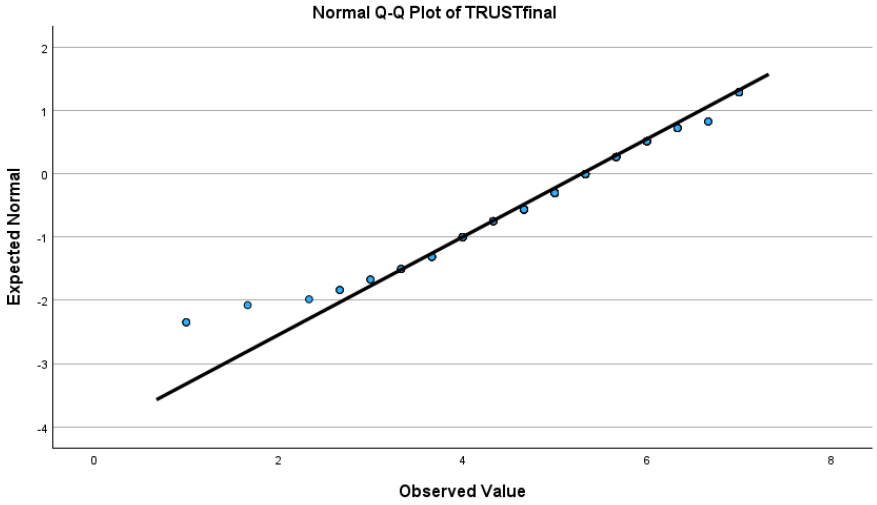

Normal Q-Q plot of perceived immersion



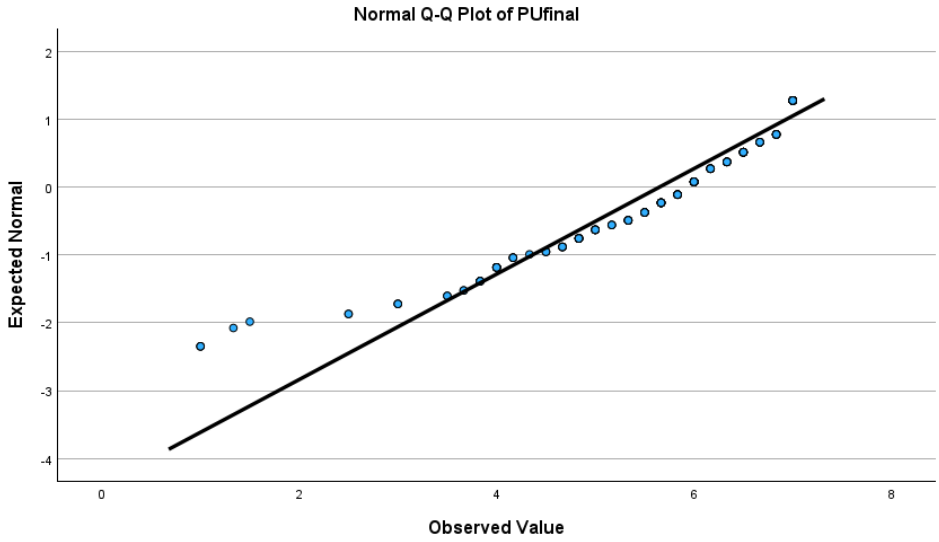

Normal Q-Q plot of perceived enjoyment



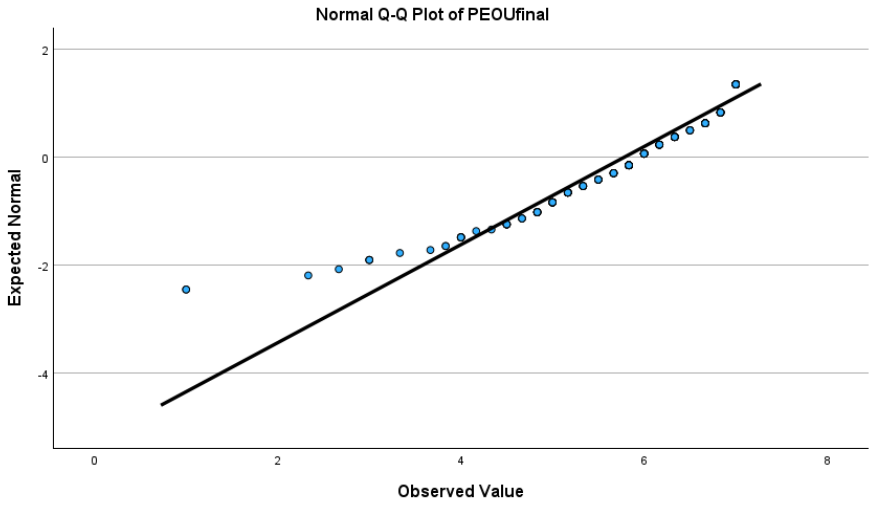
Normal Q-Q plot of trust



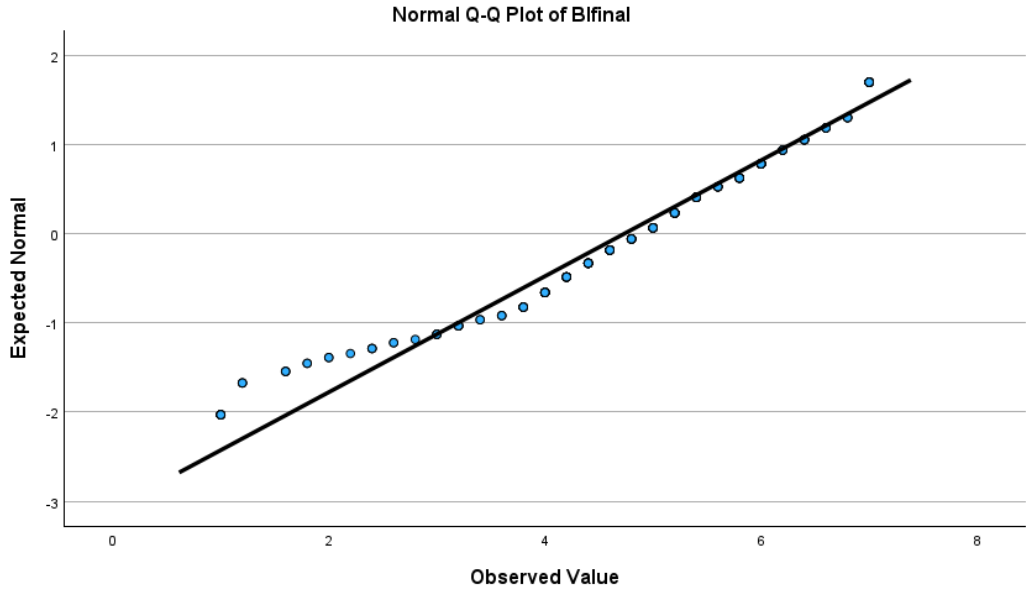

Normal Q-Q plot perceived usefulness




Normal Q-Q plot of perceived ease of use



Normal Q-Q plot of behavioural intention to use




All the graphs were taken from IBM SPSS output.

**Annex 5**

**VIF values**

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| 1 | (Constant) | -.478 | .398 | | -1.202 | .231 | | |
| | PAfinal | .069 | .100 | .042 | .686 | .493 | .444 | 2.252 |
| | PIfinal | -.088 | .093 | -.060 | -.943 | .347 | .406 | 2.460 |
| | PVfinal | .037 | .102 | .027 | .363 | .717 | .292 | 3.429 |
| | PIMfinal | .384 | .056 | .374 | 6.864 | <.001 | .551 | 1.815 |
| | ENJfinal | -.004 | .102 | -.003 | -.037 | .971 | .228 | 4.392 |
| | TRUSTfinal | .250 | .078 | .210 | 3.187 | .002 | .378 | 2.644 |
| | PEOUfinal | -.101 | .102 | -.072 | -.994 | .321 | .310 | 3.227 |
| | PUfinal | .506 | .096 | .423 | 5.300 | <.001 | .257 | 3.889 |

**a. Dependent Variable: BIfinal**

Multicollinearity diagnostics of all variables against behavioural intention to use. The analysis was taken from IBM SPSS output.

PAfinal = perceived augmentation, PIfinal = perceived interactivity, PVfinal = perceived vividness, PIMfinal = perceived immersion, ENJfinal = perceived enjoyment, TRUSTfinal = trust, PEOUfinal = perceived ease of use, PUfinal = perceived usefulness, BIfinal = behavioural intention to use.