



# Beyond Augmented Reality: Leveraging Virtual Reality to Enhance Digital Shopping Experiences in Beauty Retail

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## **Abstract**

**Title:** Beyond Augmented Reality: Leveraging Virtual Reality to Enhance Digital Shopping Experiences in Beauty Retail

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This research provides an exploratory analysis of integrating Virtual Reality (VR) and Augmented Reality (AR) technologies to enhance beauty brands' online shopping experiences. Specifically, it examines the potential of VR to provide a competitive edge in the digital beauty landscape by enhancing brand positioning. With AR widely used for virtual try-ons (VTOs) and skin diagnostics - bridging physical and digital shopping by reducing uncertainties and improving decision-making - VR creates multi-sensory environments that offer immersive product interactions and brand storytelling. However, while AR is extensively adopted in beauty retail, VR's application remains rather limited, presenting a significant opportunity for innovation.

This study offers a preliminary investigation into how AR and VR can complement one another to develop hybrid shopping journeys that merge online and offline experiences. Employing qualitative methods, including expert interviews and consumer observations and interviews, the study identifies key opportunities and challenges for beauty brands exploring these technologies. The findings suggest that AR-VR integration holds the potential to enhance brand engagement, foster consumer loyalty, and drive differentiation in competitive markets. Yet, significant barriers persist, including technological immaturity, sensory limitations, and high resource demands.

As such, this work provides an academic foundation for future research by offering initial insights into the feasibility and implications of AR-VR hybridization in the beauty industry while also serving as a practical guide for managers to navigate the integration of these technologies, enhance online shopping experiences, and position their brands competitively within the evolving digital beauty market.

**Key Words:** Virtual Reality (VR), Augmented Reality (AR), Virtual Store (VS), Virtual Environment (VE), Beauty Retail, Immersive Technologies, eCommerce, Retail Innovation

## **Resumo**

**Título:** Para além da Realidade Aumentada: Alavancar a Realidade Virtual para Melhorar as Experiências de Compra Digitais no Comércio de Produtos de Beleza

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Este estudo consiste numa análise exploratória da integração das tecnologias de Realidade Virtual (RV) e de Realidade Aumentada (RA) para aprimorar a experiência de compra online de marcas de beleza. Especificamente, é investigado o potencial dessas tecnologias para criar vantagem competitiva no cenário digital, fortalecendo o posicionamento das marcas. A RA, amplamente usada em provas virtuais de produtos (VTOs) e diagnósticos de pele, possibilita a ligação entre compras físicas e digitais, reduzindo incertezas e melhorando a tomada de decisão. A RV, por sua vez, cria ambientes multissensoriais que oferecem interações imersivas com produtos e narrativas de marca. Apesar da ampla adoção da RA no comércio de produtos de beleza, o uso da RV é ainda limitado, constituindo uma oportunidade significativa para inovação.

O estudo analisa como a RA e a RV podem complementar-se para criar jornadas híbridas que integrem experiências online e offline. Através de uma metodologia qualitativa incluindo entrevistas com especialistas e consumidores, assim como observações de consumidores, identificaram-se principais oportunidades e desafios para as marcas que explorem essas tecnologias. Os resultados sugerem que a integração RA-RV pode aumentar o engajamento com a marca, fortalecer a lealdade do consumidor e impulsionar a diferenciação em mercados competitivos. No entanto, barreiras como imaturidade tecnológica, limitações sensoriais e alta necessidade de recursos persistem.

Este trabalho oferece uma base académica para futuras investigações e um guia prático para gestores que procuram integrar essas tecnologias, aprimorar experiências de compra online e posicionar as marcas de forma competitiva num mercado digital em evolução.

**Palavras chave:** Realidade Virtual (RV), Realidade Aumentada (RA), Loja Virtual (VS), Ambiente Virtual (VE), Comércio de Beleza, Tecnologias Imersivas, Comércio Eletrónico, Inovação no Retalho

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## Abbreviations

3D	<i>Three Dimensional</i>
<b>A</b>	
AJG	<i>Academic Journal Guide</i>
AR	<i>Augmented Reality</i>
AV	<i>Augmented Virtuality</i>
<b>D</b>	
D2C	<i>Direct-to-Customer</i>
<b>G</b>	
GenZ	<i>Generation Z</i>
<b>M</b>	
MR	<i>Mixed Reality</i>
<b>O</b>	
O+O	<i>Online + Offline</i>
<b>R</b>	
ROI	<i>Return on Investment</i>
<b>U</b>	
UX	<i>User Experience</i>
<b>V</b>	
VE	<i>Virtual Environment(s)</i>
VR	<i>Virtual Reality</i>
VS	<i>Virtual Store(s)</i>
VTO	<i>Virtual Try On</i>
<b>X</b>	
XR	<i>Extended Reality</i>

## 1. Introduction

Advancements in immersive technologies like Augmented Reality (AR) and Virtual Reality (VR) are transforming digital shopping experiences. As the digital world gains relevance, brands face growing pressure to create interactive, personalized environments that match or exceed traditional shopping experiences. This shift is crucial in beauty retail, where sensory engagement - touch, sight, and smell - is key to product evaluation (Cai & Lo, 2020; Cowan et al., 2023; Flavián et al., 2019; Wen & Leung, 2021).

The beauty industry, known for its resilience and profitability, spans products like skincare, makeup, and fragrance (McKinsey, 2023; Statista, 2023). AR technologies, widely adopted through virtual try-ons (VTOs) and real-time skin analyses, have become central to beauty brands' strategies (Caliò & Şabanoglu, 2022; Wedel et al., 2020; Xue et al., 2023). Meanwhile, VR offers immersive virtual stores (VS) where consumers interact with digital product representations in simulated, multi-sensory environments (Cowan et al., 2023; Flavián et al., 2019; Trabelsi-Zoghalmi & Touzani, 2019). However, VR adoption remains relatively limited compared to AR (Tan et al., 2021; Wedel et al., 2020).

This thesis investigates how VR could complement existing AR applications to create immersive VS for beauty brands. The goal is to understand how integrating these technologies can enhance the consumers' online shopping experience. The study bridges this gap by examining VR-AR integration's technological feasibility and strategic potential to fortify brand positioning in the digital beauty landscape. Thus, this thesis addresses the following research questions:

*RQ 1: What are the potential benefits and impacts of integrating VR with existing AR technologies for beauty brands?*

*RQ 2: What are beauty brands' key challenges and considerations in combining VR and AR technologies?*

This thesis analyzes the current use of AR and VR in beauty retail, highlighting the limited research on VR compared to other industries (Tan et al., 2021; Wedel et al., 2020). To address this gap, it explores best practices and innovative applications of VR from other sectors. Combining a literature review with expert and consumer interviews, the research examines challenges, best practices, and solutions for VR integration in beauty eCommerce, considering both technological and consumer perspectives. From an academic perspective, it addresses the

underutilization of VR in beauty retail, contrasting it with AR's established success in enhancing consumer interaction, reducing return rates, and increasing satisfaction and loyalty (Grewal et al., 2017; Tan et al., 2021).

From a managerial perspective, this study is highly relevant for beauty brands aiming to stay ahead of technological trends in digital retail. The global beauty industry is rapidly growing, with e-commerce accounting for 21% of beauty retail sales worldwide and continuing to expand. The market grew from \$115.23 billion in 2018 to \$196.56 billion in 2022, with projections showing revenues rising from \$202.65 billion in 2023 to \$338.93 billion by 2029 (Statista, 2023). Brands adopting these technologies can gain a competitive edge as immersive experiences enhance customer loyalty, boost conversions, and drive differentiation (Suh & Lee, 2005; Wedel et al., 2020; Wen & Leung, 2021).

The remainder of this thesis is structured as follows: Chapter two reviews the literature on immersive technologies, focusing on AR and VR. Chapter three outlines the methodology for data collection and analysis. Chapter four presents qualitative findings, followed by a discussion in Chapter five. Chapter six provides the conclusion and discusses limitations and future research directions.

## **2. Literature Review**

This literature review clusters findings by thematic areas to provide a structured overview of relevant research. The systematic search process, detailed in Appendix 1, follows the methodologies outlined by Denyer and Tranfield (2009) and Wang and Chugh (2014), ensuring transparency, rigor, and validity.

### **2.1 Immersive Technologies**

AR, VR, and mixed reality (MR) are united under the term extended reality (XR). The literature asserts that VR and AR follow different principles and could potentially affect consumers differently. While VR completely replaces physical reality with a virtual environment (VE), AR adds a digital layer to the real world. These fundamental differences in functionality suggest that VR and AR could promote different types of visual and cognitive interaction (Chen et al., 2023).

#### **2.1.1 Augmented Reality**

AR technologies overlay digital elements such as images, videos, or information onto the physical world in real-time and, therefore, combine real and virtual objects to create an interactive

experience (Jimeno-Morenilla et al., 2013; Xi & Hamari, 2021). AR applications are accessible on smartphones, tablets, desktops, laptops, or AR glasses. Adding interactive digital content into the real world enhances the users' perceptions of their physical surroundings, allowing them to experience MR (De Lurdes Calisto & Sarkar, 2024; Grewal et al., 2017; Steffen et al., 2019; Yoo et al., 2023; Wedel et al., 2020). MR includes AR and augmented virtuality (AV) as it bridges the existing extremes of realities, which are the real and the virtual world (Flavián et al., 2019). Further, AR is seen as a gateway technology that can connect real and virtual worlds by adding layers onto reality without fully immersing into a VE as VR does (Flavián et al., 2019; Guttentag, 2010; Kaplan & Haenlein, 2024; Moffett et al., 2020). This interactivity of AR can improve customer engagement and decision-making, making the buying process more efficient (Grewal et al., 2017). Moreover, it provides an entertaining experience, increasing engagement and positive attitudes (Puntoni, 2023).

AR overlays real-time data to enhance efficiency and reduce errors (Balaji et al., 2024). It is widely used in consumer-facing industries, and its capabilities are particularly useful in the retail sector (e.g. fashion, beauty, and furnishing), where sensory engagement and product interaction are key factors in the buying process (Alzayat & Lee, 2021; Dwivedi et al., 2022; Flavián et al., 2019; Jayawardena et al., 2023; Luangrath et al., 2022; Xue et al., 2023).

The literature suggests that AR could be used more extensively in retail both online and offline to provide real-time product information, comparisons, or VTOs, enabling customers to make more informed purchase decisions (Moffett et al., 2020). Offline AR overlays digital content onto physical retail stores, providing additional information, reviews, or interactive product demonstrations (Barrera & Shah, 2022; Bogicevic et al., 2020; Martínez-Navarro et al., 2018). While online AR allows consumers to try on products virtually, view additional product information, or see how products would look in their environment (Puntoni, 2023). This fosters a more meaningful interaction with the brand and its products, ultimately leading to more confident purchase decisions by decreasing uncertainties and enhancing engagement (Hilken et al., 2021; Flavián et al., 2019; Tan et al., 2021).

### **2.1.2 Virtual Reality**

VR technologies are used to create three-dimensional (3D) interactive environments where users engage with digital objects in a simulated world (Cowan & Ketron, 2018; Wu et al., 2021). This enables the navigation within VE, enhancing the experience's sense of realism (Xi et al., 2024b). This interaction contributes to a feeling of “presence” within the environment, achieved

through the immersive qualities of VR (Baker et al., 2019; Balaji et al., 2024; Guttentag, 2010; Loureiro et al., 2021). VR replicates or enhances real-world settings (Hilken et al., 2021) or lets users explore otherwise difficult or impossible scenarios (Grewal et al., 2017; Wu et al., 2021). VR is often used in marketing to provide consumers with an interactive, engaging experience of a product or place (Di Dalmazi et al., 2024).

A systematic analysis of 77 academic definitions revealed that VR definitions vary in academia, depending on the technological and contextual framework in which it is discussed.

One perspective emphasizes VR's ability to boost brand engagement and improve user experiences (UX) by immersing customers in VE. Balaji et al. (2024) describe VR as a tool for providing immersive brand experiences, enabling users to interact with products in a virtual space. Similarly, Xi et al. (2024) emphasize VR's potential to create engaging experiences tailored to brand identity, framing VR as a technology that enhances customer interaction. De Regt et al. (2021) found that VR significantly enhances brand perception and attitude by creating emotive and memorable events, which increase the authenticity and validity of marketing messages through reduced psychological distance, first-person perspective, and body ownership (De Regt et al., 2021).

Some definitions focus on VR's ability to create virtual worlds that simulate real-life scenarios. Wu et al. (2021) define VR as a 3D, interactive environment that mimics reality, allowing users to engage with simulated worlds. Baker et al. (2019) also stress VR's application in crafting lifelike environments for training and education, highlighting its role in creating realistic 3D spaces for interaction.

Others center on the immersiveness of the experiences facilitated by computer-generated environments and head-mounted displays. Guttentag (2010) describes VR as an immersive, computer-generated experience where users engage with a simulated environment, emphasizing the sensory-rich features and technical components that support fully immersive experiences.

Another perspective emphasizes VR's capability to enable telepresence, where users feel virtually present in remote or simulated environments. Baker et al. (2019) describe VR's ability to create a sense of presence, allowing users to interact with virtual spaces as if physically there.

Balaji et al. (2024) also note VR's role in fostering real-time interactions with virtual objects and places, which is crucial for remote collaboration by bridging virtual and physical spaces.

Finally, VR is often explored in terms of application in virtual tours and immersive experiences across tourism, real estate, and retail. Guttentag (2010) discusses VR's use in tourism to provide potential travelers with virtual tours of destinations and hotels. Balaji et al. (2024) further highlight VR's role in showcasing products and locations realistically.

VR experiences are categorized as fully or semi-immersive (Cowan et al., 2023; Kim & Choo, 2023). Immersion is a process in which users engage to temporarily access an environment mentally and physically, such that it seems more physically and psychologically proximal. Immersion is a crucial element in brand reactions, affecting the overall experience. It can be experienced gradually or instantly and can vary on a continuum. Increased immersion doesn't always lead to better results, as it's not associated with emotional valence. Instead, it triggers a flow state, generating favorable brand reactions (Cowan et al., 2023).

Flow theory suggests that when consumers are deeply engaged in VR environments, their senses are dominated by the VE, and they may experience heightened states of cognitive engagement, resulting in stronger brand responses (Cowan et al., 2020). The theory describes the ideal UX as a state of deep engagement and absorption, where individuals are fully immersed in and focused on their activity (Han et al., 2020). Flow is the result of active engagement and is tied to positive emotions, while immersion can also result from passive experiences with no concrete emotional valence (Cowan et al., 2020). The state of flow has a positive impact on consumers' perceptions of information utility, learning, and enjoyment, which are significant predictors of satisfaction with an experience (Xi & Hamari, 2021). Studies have found that one dimension of flow, shopping enjoyment, significantly affects consumer intentions to return to a website (Jiang & Benbasat, 2004).

While immersion can be experienced independently, flow activates only at peak immersion levels when sufficient challenge exists. Therefore, VR showcases significant potential for generating flow based on its immersive capabilities (Cowan et al., 2020; Cowan et al., 2023). The level of full immersion can be equated with flow, as players are completely focused on the activities performed within the experience (Leveau & Camus, 2023).

Another core concept driving consumer engagement and immersion is telepresence. Telepresence immerses consumers in a VE where brands and products are showcased, enhancing product understanding and facilitating evaluation in a virtual setting. This deep engagement enriches the relationship between product understanding and satisfaction (Baker et al., 2019; Guttentag, 2010; Meißner et al., 2020).

Telepresence is an integral part of VR experiences. It refers to the psychological sensation of "being there," meaning the user feels physically present and immersed in a digital space. Telepresence is central to the immersive nature of VR and its influence on user engagement, learning, decision-making, and overall satisfaction. Feeling more attentive and involved during virtual product exploration leads to improved attitude formation, better memory encoding, and deeper cognitive processing (Guttentag, 2010; Kostyk et al., 2024; Tussyadiah et al., 2018). It emphasizes how the perception of physical presence within a VE enhances UX by creating a sense of control and interaction with the VE (Bogicevic et al., 2019; Li et al., 2020; Li et al., 2023). The state of immersion is crucial for consumer engagement as it drives consumers' exploratory behaviors and potentially increases purchase intentions (Cowan & Ketron, 2018; Baker et al., 2019; Huang, 2003).

Studies show that higher levels of telepresence in VR shopping enhance experiences, with vividness and personalization distinguishing VR from AR-based and conventional applications (Alzayat & Lee, 2021; Meißner et al., 2020; Jayawardena et al., 2023; Lee et al., 2020; Wu et al., 2021). Elevated telepresence drives stronger consumer engagement, brand recall, and emotional connections, boosting satisfaction and retention (De Lurdes Calisto & Sarkar, 2024; De Regt et al., 2021; Han et al., 2020). High-immersive VR encourages variety-seeking and higher spending, while low-immersion VR offers profitability through accessible 3D shopping experiences without specialized equipment (Meißner et al., 2020; Hsiao et al., 2024). However, satisfaction levels are comparable, indicating that while immersion enhances engagement, it has a limited impact on overall satisfaction. VR adoption still faces barriers such as technological limitations, cost, and accessibility issues (Loureiro et al., 2018).

## **2.2 Cross-Industry Applications**

Having defined the key characteristics of VR and AR and highlighted the various scientific perspectives, examining their practical applications is crucial. This section highlights how VR has been successfully applied in different industries, providing insights and best practices that can be adapted to beauty retail.

### ***Tourism/Hospitality***

VR is a powerful tool for hotel brands to differentiate themselves by enhancing experiences before, during, and after trips. It strengthens brand connections, drives visit intentions and evokes a significantly higher sense of presence, leading to stronger telepresence (Bogicevic et al., 2019; De Lurdes Calisto & Sarkar, 2024).

AR gamifies tourism through location-based games, boosting engagement and interactivity, while VR enables travel agencies and hotels to dynamically showcase their services (Guttentag, 2010). VR tours aid pre-travel planning and foster episodic memories, increasing the likelihood of real-life visits. These tours engage customers emotionally and cognitively, influencing tourist decisions and encouraging re-visits and positive word-of-mouth (Bogicevic et al., 2019; Kostyk et al., 2024; Li et al., 2023; Yu et al., 2024). Di Dalmazi et al. (2024) found that participants exposed to immersive VR content reported higher physiological presence compared to traditional formats.

Beyond travel planning, VR offers immersive experiences like virtual museum tours, historical recreations, and visits to remote or hard-to-reach destinations such as Antarctica or space. These interactive previews influence real-life visit intentions by immersing users in potential experiences (Kim et al., 2018; Skard et al., 2021; Tussyadiah et al., 2018; Zeng et al., 2020). VR is also utilized for interactive experiences at theme parks, sporting events, and large tourist attractions (Kim et al., 2018).

While AR and VR enhance hotel stay and return intentions, they do not strongly impact revisit decisions (Lim et al., 2023). VR improves engagement, presence, and satisfaction, with brands like Hilton, Marriott, Emirates, and Virgin Airlines using virtual previews to support customer decision-making. However, widespread adoption in tourism faces challenges such as high costs, specialized equipment requirements, and concerns about user isolation (De Lurdes Calisto & Sarkar, 2024; Zeng et al., 2020).

### ***Fashion***

In fashion, VR and AR technologies are widely used to provide VTOs and immersive shopping experiences (Flavián et al., 2019; Jayawardena et al., 2023; Raza et al., 2024). AR allows users to try on virtual clothing using apps or in-store AR mirrors, improving the customer's decision-making process by providing a realistic view of the product (Kim & Choo, 2023). More

precisely, the footwear industry leverages this magic mirror technology to simplify shoe try-ons (Jimeno-Morenilla et al., 2013).

High-immersive VR applications include virtual fashion shows, where luxury brands like Louis Vuitton and ELLE offer prerecorded catwalk experiences through VR devices (Jung et al., 2021). In the metaverse, virtual fashion shows and digital clothing allow avatars to try on and purchase items, bridging physical and digital fashion while opening new revenue streams (Barrera & Shah, 2022).

Fashion brands are also creating virtual worlds for digital shopping and interaction. Gucci's "Gucci Town" blends mini-games, art displays, and a VS to enhance engagement and build brand communities (Barrera & Shah, 2022; Jayawardena et al., 2023). Similarly, Nike's "Nikeland" combines competitions and digital merchandise for avatars, extending the brand's presence into immersive virtual spaces (Jayawardena et al., 2023). Nike's VR game, *The Neymar Jr. Effect*, immerses players in soccer scenarios while showcasing virtual Nike shoes (Van Berlo et al., 2021; Barrera & Shah, 2022).

### ***Furnishments***

In VR retail environments, furniture stores enable consumers to explore product placements and customize interiors, fostering creativity and engagement in home decoration (Flavián et al., 2019; Kim & Choo, 2023).

A notable example is IKEA, which uses AR to aid the visualization of furniture (Jayawardena et al., 2023; Raza et al., 2024). Through its AR app, customers can place virtual furniture models in their spaces via smartphones or tablets, offering realistic previews of fit and appearance (Xi & Hamari, 2021; Xi et al., 2024a). IKEA uses VR kitchen showrooms, allowing visitors to explore layouts, interact with design elements, and better understand how the space fits their specifications pre-purchase (Xi & Hamari, 2021). Ultimately, IKEA's rationale for using these technologies is to deepen customer engagement and influence decision-making.

### ***Beauty***

The current literature on VR and AR utilization in the beauty industry is rather scarce. Brands like L'Oréal and Sephora leverage AR technology to enhance customer experiences by offering VTOs for products ranging from makeup, such as eyeshadows and lipsticks (Tan et al., 2021), to hair coloring products (Xue et al., 2023). For instance, L'Oréal's Makeup Genius app allows users to virtually try on beauty products using smartphones or computers, helping to reduce uncertainty about product fit, color match, and style (Hoyer et al., 2020; Puntoni, 2023).

### **2.3 Retail Application**

In omnichannel retail, consumers often browse in-store but buy online, or the reverse. A seamless shopping experience must cater to consumers' cognitive, emotional, social, and physical responses. AR and VR technologies, like VTOs, showrooms, and interactive customizations, can streamline decision-making and elevate the experience (Cai & Lo, 2020; Flavián et al., 2019; Grewal et al., 2017; Huang, 2003). The application can enhance the customer journey, adding value through immersive experiences that drive purchasing decisions (Flavián et al., 2019). Studies have shown that in-store behaviors can be mimicked in a VE, e.g., through tech reconstruction of physical stores in the digital world (Branca et al., 2022; Pizzi et al., 2019).

The key difference between web-based and virtual world-based eCommerce rests in the concept of presence (Baker et al., 2019). VS then can be divided into two types: a virtual brand store in an existing virtual world, such as Roblox, Second Life, or the metaverse, or a VS within its own VE (Baker et al., 2019; Barnes et al., 2014; Kaplan & Haenlein, 2024).

Virtual worlds are described as interactive, three-dimensional digital environments that resemble aspects of the real world (Barnes et al., 2014). Unlike VR, which focuses on immersive, sensory-rich experiences, virtual worlds prioritize user interaction and creativity without attempting to replicate sensory experiences fully. As Baker et al. (2019) note, VR typically offers first-person, immersive experiences, whereas virtual worlds are accessible through standard devices and often present third-person perspectives.

Platforms like Second Life and the metaverse support avatars, social interactions, and activities that mimic real-world environments (Jung et al., 2013; Kaplan & Haenlein, 2024). These spaces provide settings for branded virtual experiences, enabling customers to explore products immersively (Moffett et al., 2020). While brands initially focused on selling virtual products in these embedded stores, there has been a growing shift towards selling real-world products in digital settings (Baker et al., 2019). Prominent examples include brands such as Armani, Mercedes, and Hublot, which have established virtual spaces to facilitate user interaction, collaboration, and immersive brand experiences (Baker et al., 2019; Barnes et al., 2014).

However, embedding brands in virtual worlds presents challenges. One major issue is the difficulty in creating emotional brand value, which is critical for sustaining customer engagement in these digital environments (Barnes et al., 2014). Without meaningful emotional connections, brands struggle to build loyalty or sustain long-term success. To thrive in virtual branding, brands must integrate interactive features and enhance emotional content to foster deeper

engagement and encourage repeat visits (Barnes et al., 2014). Simply replicating real-world branding elements in virtual environments is insufficient; meaningful ties with users are necessary for building loyalty and driving long-term engagement (Barnes et al., 2014).

The objectives of VS must align with the involvement level of the products they feature. High-involvement products, such as luxury items, aim to engage consumers more deeply, boosting purchase intent. In contrast, low-involvement products focus on creating enjoyable and interactive experiences that enhance brand awareness and engagement (Cowan & Ketron, 2018). VS are initially appealing due to their convenience, entertainment value, and escapism. Their accessible, immersive environments and engaging features make them attractive to users (Chakraborty et al., 2024; Loureiro et al., 2021). However, sustaining engagement depends significantly on perceived trust. High levels of initial trust not only foster deeper emotional connections but also enhance long-term commitment, resulting in more consistent and meaningful interactions within virtual environments (Chakraborty et al., 2024).

The effectiveness varies based on consumer knowledge. Cowan et al. (2020) identified that low-knowledge consumers benefit most from VR's immersive storytelling, which helps them better understand products and brand narratives. In contrast, high-knowledge consumers prefer straightforward, fact-based content, as they are already equipped to make informed decisions. Interestingly, 360-degree VR is found to be more impactful in online settings than in-store implementations, highlighting its potential to enhance digital shopping experiences.

The design of the VE plays a critical role in shaping consumer behavior, with fantasy-based and unrealistic VS settings heightening the immersive effects of VR. These settings spark curiosity and encourage interactions with products, leading to higher purchase intentions (Kim & Choo, 2023). Allowing users to customize their experience by switching between realistic and fantasy environments or adjusting product displays further boosts satisfaction and immersion (Wu et al., 2021). Frequent online shoppers tend to experience a stronger sense of presence in high-sensory environments; however, this heightened presence does not always translate to greater decision-making accuracy (Kinzinger et al., 2022). Playfulness in these VE enhances consumer preference for hedonic product attributes, driving engagement and product exploration. However, for this engagement to translate into actual purchases, it must be paired with informative content that guides decision-making (Kang et al., 2019).

Visit frequency and time spent significantly impact sales outcomes in VS, as greater engagement correlates with higher sales. Interactive, intuitive designs, such as menu-based navigation and realistic walk-through options, enhance exploration. This combination of convenience and realism distinguishes VS from traditional eCommerce platforms (Krasonikolakis et al., 2014).

Furthermore, the integration of VR and AR in VS creates distinct attention patterns, enhancing sales and customer satisfaction (Chen et al., 2023; Barrera & Shah, 2022). Because, in combination, they enable in-store-like actions, bridging the physical-digital gap and strengthening brand loyalty through emotive, memorable experiences (Hadi et al., 2023; Tan et al., 2021; De Regt et al., 2021). Although VR offers greater enjoyment, AR's usability challenges limit its impact, emphasizing the need for improvements to boost engagement and revisit intentions (Xi et al., 2024a; Xi et al., 2024b). AR also reduces uncertainty, encourages confident purchase decisions, and lowers return rates (Cowan & Ketron, 2018; Jiang & Benbasat, 2004).

VS replicate physical store interactions, enhancing perceived product value and ownership feelings (Baker et al., 2019; Martínez-Navarro et al., 2018). VR enhances experiential, hedonic value, particularly for products requiring physical interaction, though its impact on utilitarian value remains limited compared to traditional eCommerce (Alzayat & Lee, 2021; Mishra et al., 2020; Hsiao et al., 2024).

### **3. Methodology**

This chapter details the qualitative research design used to explore VR utilization in the beauty industry, combining practical industry insights with broader market trends for a comprehensive investigation (Gephart, 2004; Clark et al., 2021).

#### **3.1 Research Design**

This study adopts the grounded theory approach, in which the theory is developed directly from the data collected. Through its iterative nature, it is possible to react flexibly to new findings and develop the theory based on the actual data without preconceived hypotheses restricting the research process. This ensures that the theory is closely aligned with the experiences and patterns of the participants (Clark et al., 2021). Furthermore, a qualitative design is employed, using expert and consumer interviews and observations to explore VR and AR in the beauty sector, capturing nuanced perspectives and laying the groundwork for future quantitative research (Gephart, 2004).

### **3.2 Data Collection**

As the method of inquiry, semi-structured, non-standardized interviews were chosen to collect data from two samples: industry experts and “consumers” (Saunders et al., 2009b). While consumer observations and interviews are essential for understanding user perspectives, expert interviews provide industry insights, allowing a comprehensive exploration of VR and AR technologies in the beauty industry (Von Soest, 2022).

All interviews were conducted via Microsoft Teams, chosen for its convenience, accessibility, and ability to include a diverse set of participants without geographic limitations (De Villiers et al., 2021). The semi-structured approach balances structure and flexibility, offering focus while allowing for in-depth exploration of emerging topics. This format is widely used in qualitative research as it facilitates meaningful insights while maintaining comparability across participants (Clark et al., 2021; Saunders et al., 2009b; Trinczek, 2009).

Purposive sampling was used in both groups to ensure data reliability and select a suitable sample based on defined attributes (Robinson, 2013). The first sample included industry and field experts such as (digital) brand managers and eCommerce specialists of beauty brands, as they are typically best positioned to provide in-depth technological and industry insights, allowing for a richer exploration of complex issues (Von Soest, 2022). Experts were recruited via email and LinkedIn based on their professional profiles and expertise. Relevance was determined based on profile information such as current and past positions, mentions in topic-relevant posts and articles, VR and AR service provider websites, and own topic-relevant posts online.

Alongside expert interviews, consumer interviews and observations were conducted to uncover user needs and preferences, informing the design of engaging virtual retail experiences. To ensure relevance, interview participants were recruited online based on criteria aligned with the key characteristics of Gen Z beauty consumers, defined as those born between 1995 and 2010 (Francis & Hoefel, 2018; Von Soest, 2022). Generation Z was chosen as the target population due to their tech-savviness and propensity to engage with VR in shopping, as identified in reports and literature. Participants completed a pre-recruitment questionnaire (see Appendix 2) to confirm their eligibility, and only those who responded affirmatively to both questions were included in the sample.

The study of the consumers' group employed mixed methodologies. First, qualitative data was collected via observation while participants navigated an exemplary virtual beauty brand store. This was followed by individual interviews, which allowed for the collection of both actual behavioral data and subjective impressions from participants (Saunders et al., 2009).

During the observation procedure, participants received a link to an existing VS of the globally renowned beauty brand Laura Mercier, which they explored independently. Their behavior was documented using screen recording, capturing aspects such as the use of different store functions, click paths, and time spent in various sections of the store. The study's external validity is enhanced by utilizing a market-relevant application, as participants interact with a realistic, authentic platform, thereby providing an authentic foundation for analyzing consumer perception and avoiding potential biases (Lynch, 1982). Using an established VS allows for realistic conditions, ensuring findings apply to real market practices. (Burke, 2017). To ensure that external factors did not influence participants' interactions, the following measures were implemented: All participants received the same link to the VS and identical instructions. No further guidance was provided during store exploration (Lynch, 1982).

Moreover, to allow for comfortable exploration, participants' interaction data was anonymized, thus ensuring that no personal information was processed (Burke, 2017; Saunders et al., 2009).

After exploring the store, participants took part in semi-structured interviews to discuss usability, VR features, emotional responses, purchase decisions, brand perception, and overall concept perception. These interviews provided deeper insights beyond observation, ensuring a holistic approach that captures diverse perspectives. The samples included five industry experts (E) and 15 consumers (C), aligning with previous research that suggests this range is sufficient to achieve thematic saturation while allowing for in-depth analysis of key themes and issues (Hennink et al., 2016).

In total, the data collected comprised 2 hours, 3 minutes, and 21 seconds of interview material from industry experts and approximately 5 hours, 13 minutes, and 2 seconds of material from the consumer observations and interviews.

### **3.3 Data Analysis**

The observational data was analyzed to identify user behavior and preferred functions within the VS (Saunders et al., 2009). Kuckartz's qualitative content analysis method guided the data analysis of the interviews. This approach enables a more flexible and comprehensive analysis

of the interview transcripts, ensuring that predefined concepts and emerging themes are captured effectively (Kuckartz, 2019; Kuckartz & Radiker, 2023).

The method emphasizes an iterative process of creating categories and codes, forming the foundation of qualitative data analysis. Categories for both samples were developed through concept-driven (deductive) and data-driven (inductive) approaches to establish a structured coding framework. The analysis began with organizing, reviewing, translating (when needed), and anonymizing interview transcripts to gain familiarity with the content, forming the basis for deeper analysis using MaxQDA for software-supported coding.

The first coding cycle, deductive in nature, involved assigning segments of the transcripts to pre-developed general categories, which provided a framework for structuring the analysis. These categories were then reviewed and refined as needed. Subcategories were derived inductively from the data, enabling the identification of emergent patterns and integration of theoretical frameworks. This process culminated in the creation of up to three hierarchical coding levels, providing a structured yet detailed framework for analysis (see Appendix 3 and Appendix 4).

Finally, a category-based analysis was conducted using thematic analysis techniques. This approach aims to uncover patterns within each category. Due to the exploratory nature of this research, numerous insights across various areas were obtained. Findings from a slight majority (60% or 3 experts and 53,33% or 8 consumers) are highlighted as key and discussed in detail in the findings chapter. Less frequent insights are mentioned in full detail in the appendix.

## **4. Findings**

### **4.1 Expert Interviews**

This study involved interviews with five experts selected for their professional experience with AR and VR technologies and the beauty industry. Detailed profiles are provided in Appendix 5. The analysis identified five expert data categories within a three-level system, including six overarching categories and subcategories (see Appendix 3). For clarity, the coding table was split by category into Appendix 6 - Appendix 10, summarizing categories and findings.

#### **4.1.1 Definition**

A key finding from the category *definition* is that VR and AR are not clearly distinguishable in practical applications (see Appendix 6). Experts see VR as encompassing AR. One expert stated that VR connects “the physical world with the digital world” (E4). In contrast, AR is primarily

seen as a tool bridging online and offline shopping, offering personalization and convenience by “alienating pictures or recordings so that something is shown differently than it is in reality” (E2). These technologies are relatively new to the beauty market, having only gained traction in the past “two years” (E3).

The analysis reveals three key features of VR and AR: *immersion* (80%), *realism* (60%), and *interactivity* (40%). These features were identified based on keyword mentions and their associated discussions in the interviews (see Appendix 11).

Immersion is characterized as a “connection between the physical and the digital world” (E4). Its value lies in creating seamless integrations, with one expert emphasizing “how easy is it and how seamless does it integrate into the existing commerce experience” (E4), while another highlighted the “fusion of O+O” which stands for online + offline that transforms experiences into something “special” (E1). Next, realism ensures virtual elements appear authentic and believable, with one expert noting, “I can see that I would have blonde hair in a very natural way [...] almost photographic” (E2). However, challenges remain, such as “the problem of realism and accuracy” (E3) in virtual trials. Lastly, interactivity (f2) enhances UX, brand perception, and consumer appeal

The analysis of the **industries** sub-category, based on keyword frequency from the interviews, reveals eCommerce & Retail as the most referenced with 48 mentions, beauty followed with 35 mentions both by all experts highlighting their relevance to AR and VR. Meanwhile, 40% of experts in this context also discussed fashion (see Appendix 12).

#### **4.1.2 Market Insights**

The findings of the category *market insights*, summarized in Appendix 7, are presented hierarchically, delving into specific subcategories and sub-subcategories.

VR/AR enhances the **consumer journey** across awareness, consideration, and conversion. **Awareness** was identified as the phase most positively impacted by VR/AR, with 80% of experts highlighting its significance (see Appendix 13). They attract consumer interest by offering novel, engaging experiences. One expert explained that “Awareness, as long as it is perceived as new and special” (E2), is a key driver of consumer attention. AI and interactive elements also create clear entry points. As one expert noted, “We advertise it with a small pop-up that draws attention to the AR, guiding those unsure where to start their customer journey” (E1).

In the **consideration** phase (60%), VTOs enhance consumer confidence by enabling digital product evaluation. This is especially valuable for direct-to-consumer (D2C) websites but also supports non-D2C brands. One expert elaborated, "For Maybelline, we don't have a D2C website, so it's more about brand and product discovery" (E5).

**Motivations for adopting** VR/AR technologies primarily reflect their ability to enhance brand perception and awareness, identified by 80% of experts as the main driver (see Appendix 14). As one expert noted, "it's more about brands, brand perception, brand consideration as well" (E5). VR/AR tools enable brands to create engaging experiences that strengthen consumer connections to their identity and products. Another expert emphasized, "Brands want to ultimately engage with the audience. So, there's the kind of awareness piece as the first and foremost" (E4). The brand-level impact of VR/AR is often prioritized over other metrics, as highlighted by one expert: "in the specific case of the virtual pop-up, it was more the brand level" (E2). While *performance* and *competition* can be factors in VR implementation, they do not emerge as primary motivators (f2).

Several key market and consumer needs influence the decision to adopt VR and AR technologies (see Appendix 15).

The need to enhance *services* was the most frequently cited driver, with experts emphasizing the importance of diagnostic tools and virtual advisors. These tools personalize recommendations, simplify decisions, and build trust. As one expert noted, "It's about providing customer service with increasing correctness" (E2).

Furthermore, eCommerce integration (60%) emerged as another key need, with VR/AR addressing the challenges of online shopping, particularly for products requiring sensory engagement and evaluation, because, as one expert noted, "eCommerce means, especially for makeup, that it is not possible to test colors. [&] That does not work online. That means I have a huge hurdle, especially with new products" (E2). VTOs simulate this in-person experience, reducing hurdles and adding valuable touchpoints for brands.

The ability of VR/AR technologies to enhance **competitive positioning** emerged as a significant theme (see Appendix 16). Experts highlighted their role in strengthening brand differentiation and aligning with global trends.

**Enhanced brand perception & differentiation** (80%) is a result of VR/AR helping brands stand out in price-driven online markets. These tools offer a USP by providing personalized and engaging experiences. One expert noted, “it's really a cool factor and it's definitely a plus for a brand [...], it helps to keep your brands top of mind” (E4). Another emphasized the importance of differentiation, stating, “online in particular is very, very price-driven, [&]. I would see [it as] the top 1 differentiating feature” (E1). Furthermore, it allows brands to align with global trends and consumer expectations. As one expert explained, “if a brand doesn't use it, there is a problem. They're not in the trend. So, the brand is not trendy” (E3). By integrating VR/AR, brands can elevate their image and position themselves as innovators.

The analysis of VR/AR applications revealed significant variation in their effectiveness across **beauty product categories** (see Appendix 17). This variation underscores the need to tailor VR/AR strategies to specific product categories.

#### **4.1.3 Application of AR & VR**

The category *application of AR & VR* explores how these technologies are utilized within the beauty industry to create interactive, immersive experiences and enhance brand engagement. The aspect of service tools has been mentioned 23 times by 80% of the experts, emphasizing their significance in this context (see Appendix 18). The findings presented here are based on insights from Appendix 8.

AR is primarily implemented as a service tool with two dominant applications: **VTOs** and **diagnostics**. These tools facilitate seamless and personalized customer experiences, combining functionality and engagement.

**VTOs** are “the most common form of application” (E2) in beauty and are highlighted as tools that improve brand perception and loyalty by offering immersive experiences that “take uncertainties” (E2) and “reduce product dissatisfaction” (E3). Experts emphasize their dual purpose of enhancing “brand perception” (E4) while helping customers make informed decisions by trying products virtually, saving time and effort. VTOs let users compare products “side by side on your face” (E4), reducing decision-making time and dissatisfaction by allowing quick experimentation with multiple options. However, the quality of VTO experiences is crucial. Poor implementations can harm brand perception, as it has “an adverse effect” (E4). For success, VTOs must be user-friendly, reliable, and accessible.

AR- and AI-powered *diagnostic tools* are another significant application, offering personalized skincare recommendations based on real-time analysis. Tools like Kiehl's Skin Scanner combine AI and AR to enhance credibility and accuracy. Trust is essential because "if that trust is robust enough, validated by countless successful cases, you wouldn't need to visit the pharmacist at all. You could handle everything from home." (E2). In addition to their convenience, digital diagnostics offer privacy, addressing sensitive topics like skincare. As "users may prefer the privacy and expertise of a digital consultant" (E2) to an actual person. This application highlights AR's role in bridging the gap between traditional in-person services and digital convenience.

For VR, two primary application themes are revealed: virtual worlds or stores within gaming environments and VR on a brand-built platform.

First, brands are integrating into virtual platforms like Roblox to engage users and boost brand awareness, transforming traditional retail models by establishing virtual stores for digital purchases. For instance, Adidas has a flagship store on Roblox, described as "the home of Adidas on the platform" (E4), where players buy virtual fashion items for their avatars. These avatars act as "walking billboards for the brand within Roblox" (E4), boosting exposure to the platform's massive audience of 355 million monthly users. This approach introduces new monetization opportunities. These virtual ecosystems combine entertainment and shopping, allowing users to "interact, shop, and engage socially" (E4), reflecting a shift in retail strategies that blend engagement with revenue generation.

Secondly, the concept of *VS* is explored; examples include Lancôme, Kiehl's, and Armani beauty, with mixed results and opinions (E1, E2, E5). Also referred to as "digital pop-ups" (E2), this concept can serve as a (temporary) online environment designed to offer brand-specific experiences. According to insights obtained from the interviews, VS are currently in an experimental phase. All experts described VS as cost-intensive and dependent on technology that is not yet fully mature. Some emphasized that the underlying technology needs further development to be adapted more widely and were rather skeptical about the current success of such initiatives. Others were more optimistic, seeing the technology as promising and seeing significant investment potential. They argue that by investing in this technology, promising opportunities for consumer activation can be created.

#### **4.1.4 Benefits of Implementation**

The analysis of the *benefits of implementation* category organizes fragmented insights into ex-

plicit sub-categories, highlighting consumer- and brand-level advantages aligned with the research question. The findings, detailed in Appendix 3, Appendix 9, Appendix 19, and Appendix

20, offer a clearer understanding of how VR/AR tools generate value across multiple dimensions.

Starting on the **consumer level** (100%), the most frequently mentioned benefit revolves around *enhancing the shopping experience* (100%). VR-AR bridges online and offline shopping, providing consumers with a seamless and immersive journey. One expert highlighted, “these tools bridge both online and offline experiences, allowing for a seamless buying journey” (E5).

Similarly, VTOs and immersive experiences reduce hesitation associated with online shopping by streamlining decision-making (E4).

VR/AR were also recognized for their ability to deliver *personalized recommendations* (100%), which resonate with modern consumer preferences. It “helps with personalization, and this is [&] what consumers are looking for” (E5). Personalization through AR also supports brands in refining strategies by leveraging data because “AR tools collect valuable customer data, including preferences, behavioral patterns, and enable brands to refine their strategy” (E3), which can be used cross-functionally.

Another benefit is the *reduction of uncertainties* (60%). AR tools provide clarity for consumers by enabling them to test and evaluate products online before purchasing. As one expert pointed out, “it takes uncertainties [...] It tells you if this is the right shade or whether what cream fits you” (E2). Additionally, VTOs “minimize the risk of product dissatisfaction” (E3) because of the option to try it on beforehand.

At the **brand level** (100%), experts identified several key benefits (g3). First, VR/AR tools enhance a *brand's visibility & awareness* (80%) by offering interactive experiences that keep the brand top of mind for consumers. “it's definitely a plus for a brand to implement virtual and augmented reality, as it helps to keep your brand top of mind” (E5). In gaming environments, avatars can act as brand ambassadors, with players engaging in branded spaces such as virtual Adidas shops to browse and purchase items for their avatars, effectively turning them into “walking billboards for the brand” (E4). Additionally, virtual experiences yield higher consumer engagement levels, with average interaction times ranging from 5 to 10 minutes<sup>4</sup> far exceeding platforms like TikTok, where user attention typically lasts only 15-30 seconds (E4). This longer engagement translates into more active consumer-brand interactions.

Furthermore, “VR and AR bridge the gap between online and offline shopping by offering a unified experience across websites, apps, and in-store environment” (E3). Therefore, allowing for *seamless O+O integration* (80%). This hybrid approach addresses evolving customer preferences for both digital and in-person experiences.

Experts noted VR/AR tools *differentiate* (60%) brands by creating distinct experiences. Because “in the end, it's really a competitive advantage versus other brands which are not able financially to implement such tools. (E5). Similarly, creating distinctive consumer experiences can set brands apart. For example, “a wide range of services, anchored by such beauty consultants, creates a unique selling proposition” (E2).

Further, there is a noticeable enhancement in *loyalty* (60%). A “VR pop-up store also, it's a really great thing they can create an exclusive brand experience. They're driving traffic and also brand loyalty” (E3). Also, the use of AR tools such as the VTO or skin diagnostic tools leads to consumers being “much more loyal” (E1).

Lastly, VR/AR offers brands “highly relevant data” (E2) and *data insights* (60%), enabling refinement of product strategies, tailoring offerings, and informing future innovations. This data-driven approach aligns with consumer needs, enhances strategic decision-making, and maintains market competitiveness. This is, as one expert added, “amazing when it comes to performance in the digital world (E5).

#### **4.1.5 Challenges for Implementation**

The *challenges for implementation* category explore the risks and obstacles associated with adopting VR/AR technologies, addressing RQ2 through a comprehensive integration of previous codes and new insights. The findings from Appendix 10 and Appendix 8, and Appendix 21 provide a detailed framework for understanding challenges at multiple levels. These challenges are organized into four key subcategories (g3).

The **UX & adoption** sub-category (100%) emerged as one of the most significant challenges.

The most frequently mentioned challenge within this category centers around the *quality of the UX* (80%). Experts emphasized that poor UX design could harm the brand's reputation. As one expert explained, “if the quality of the VTO experience is poor, it could negatively impact the perceived quality of your brand” (E5). Additionally, ensuring an accurate representation of colors, diagnosis services, and calibration was described as a persistent challenge. High-speed

internet and advanced hardware requirements were also cited as critical factors, with one expert noting, "any technical failure can disrupt the customer experience and harm the brand reputation" (E3).

Second, *ease of use* (60%) is a pivotal factor for driving adoption, particularly among less tech-savvy users. Complex interfaces can alienate potential users. "this tech is nothing that has yet really been learned, nothing intuitive" (E2). Another stressed the need to make solutions accessible to a broad audience, stating, "it needs to be easy to adopt that's my biggest concern that people will just kind of disregard it" (E4). Simplifying the adoption process and reducing complexity are viewed as essential to overcoming this challenge.

The third most mentioned concern is *accessibility* (60%), ranging from technological to social barriers. The technology must be actively advertised, as customers often "don't come across this technology organically" (E1). Device dependency is another key issue, with one expert explaining that "not all customers have access to necessary devices" (E3). Ensuring broader accessibility requires significant investments in both technology and awareness initiatives.

This is followed by *customer hesitation of adoption* which stems from the perceived complexity of interfaces as "very complex interfaces can deter users, and especially those who are less in tech" (E3). The need to integrate seamlessly into existing commerce experiences and that it should "complement it, rather than kind of add[ing] an extra layer of friction to the to the sales journey" (E4) is emphasized. Therefore, ensuring that the technology is perceived as beneficial rather than burdensome is critical for encouraging adoption.

The second most mentioned subcategory *costs & resources* (80%) consolidates the financial and organizational challenges of VR/AR implementation.

First, *high costs* (80%) present a significant financial challenge for implementing VR/AR technologies. Brands face substantial upfront investments, including development, implementation, and maintenance expenses. One expert explained, "first is the cost. You need to invest a lot in developing and maintaining VR and AR, [&] just the basic technical requirements. So, you need a lot of investment in technology, in software, and skilled personnel" (E3). Another highlighted that the technology is "simply too expensive and not yet mature enough" (E1).

Concerns about return on investment (ROI) also emerge, with one expert stating, "if you don't add a physical store or a physical experience into it, it's not worth it. It's a lot of investment for

nothing” (E3). Another expert observed that consumers might engage superficially, such as using incentives like discount codes, without fully interacting with the immersive experience, reducing its intended value (E1) and increasing costs.

Beyond costs, implementing VR/AR technologies also demands a plethora of *resources* (60%), including skilled personnel, organizational effort, and compliance with legal requirements, particularly for customer data. These time-intensive processes burden brands, as the technology is not "buy-and-plug" (E5) but demands substantial investment in expertise, strategy, and visuals (E3). Integration with internal processes adds further challenges, such as lengthy IT security checks, described as "very, very time-consuming" (E1).

Next, **strategic and operational challenges** (80%) emerged as a key subcategory, but its sub-subcategories, concerning *traffic & conversion*, *potential cannibalization*, and *post-implementation strategies*, didn't reach the threshold of g3.

The **technology** subcategory (60%) highlights a key challenge: *implementation complexity* (g3). It overlaps with "UX & Adoption" sharing themes like "Realism & Accuracy" (f2) and "UX Quality," emphasizing the need for credible virtual interactions and seamless technical integration. Issues such as "Ease of Use" and "Customer Hesitation" are closely linked to these technological challenges (see Appendix 22 and Appendix 23).

Despite this, adopting VR/AR is a challenging process, requiring a well-structured strategy, high-quality visuals, and specialized teams. The technology is described as "still very difficult to develop" (E3) due to its immaturity and execution complexity, which often results in low traffic and conversions, further straining resources (E1).

**Data & privacy concerns** (60%) include the challenge of *data protection*, and the importance of safeguarding consumer data collected via AR/VR tools. Concerns revolve around ensuring compliance with privacy regulations and managing customer trust in how data is used. Data breaches or mishandling are identified as risks that could erode confidence in the brand and technology (E3, E5).

Lastly, the risk to **brand perception** (60%) sub-category highlights the risk of technical failures, such as malfunctions or bugs in AR/VR systems for brands. One expert noted that "the risk that I see a bit at the moment is, of course, if the technology simply doesn't work so well, i.e., if it's buggy and so on, and we're in the luxury sector and as soon as the technology doesn't

work and is super bad, we naturally lose confidence in it" (E1). Furthermore, it was emphasized that "if the quality of the VTO experience is poor, it could negatively impact the perceived quality of your brand" (E5). A correlation between the sub-category of UX & Adoption and the UX's Quality factor is highlighted, with two overlaps, as highlighted in Appendix 22.

## **4.2 Consumer Observation and Interviews**

The study included n=15, predominantly young adults aged 17-32. The majority (60%) had no prior experience with VS (see Appendix 24 and Appendix 27). Most participants were students, reflecting a tech-savvy but varied audience with limited exposure to VR environments. Additional demographic details are available in Appendix 24 -Appendix 26.

The overview of coding categories discussed within this chapter can be found in Appendix 4.

### **4.2.1 Observation**

Based on the observation findings, a diverse usage pattern of features across participants (C1-C15) was observed. First, regarding the usage of interactive features, participants showed varied engagement with features like gamification, quizzes, and brand information, with gamification being the most popular, with n=12 interacting with it. VTO had the least interaction, with only n=5 actively trying it (Appendix 28). Furthermore, participants' interaction varied significantly regarding touchpoints and time spent. The average number of touchpoints was 22.8, while the average time spent was 9 minutes 20 seconds (see Appendix 29 and Appendix 30). These findings show variability in engagement, reflecting diverse user preferences.

### **4.2.2 Perception of Experience**

The section explores emotional and cognitive responses from interviews, analyzing categories from the coded consumer data set that reflect participants' opinions and reactions to the VS experience.

First, the category of *emotional response to experience* includes the segments from the consumer interviews that describe the emotional feeling and the general perception of the experience the participants had during the observation phase of the study. The data behind the following category can be derived from Appendix 31 and Appendix 32.

Interviews highlighted 11 subcategories of emotional responses, with **exploration** (80%) and **fun/cool/positive** (73,33%) being the most frequent. Participants praised the store's exploratory nature, saying, "It added a little motivation to explore every corner and check everything out" (C11) and its novelty: "It was fun, especially with the gamification aspects and videos" (C4).

Eight participants found the experience “helpful” for product guidance and decision-making, while **immersion** (53,55%) highlighted its sense of presence: "It felt immersive; like you're actually there walking around the store" (C14).

Participants also evaluated the experience from a technical perspective, focusing on perceptions of the VS's interactive features and their impact on brand perception (see Appendix 33 and Appendix 34).

As previously discussed, the interactive features of the VS were widely appreciated, particularly the gamification elements, quizzes, and the VTO feature.

Although less used, the VTO feature was the most discussed (93.33%) and is described as innovative but not always reliable. Participants appreciated its potential but noted issues with lighting and accuracy: "it's a nice-to-have feature, but it doesn't really help with decision-making yet" (C10). Despite these limitations, participants recognized its potential to guide pre-purchase decisions.

Many participants also enjoyed the **gamified elements** (66.67%), such as the scavenger hunt for items unlocking a discount. This feature was described as engaging and motivating, with one participant noting, "the 15% discount was a good motivator" (C12). However, some expressed concerns about the difficulty of finding all items. One participant said, “don't make it too hard to give the 15%” (C15), as too high difficulty can backfire and result in dissatisfaction.

**Quizzes** (66.67%) added an engaging and personalized element to the shopping experience. Participants valued the tailored recommendations delivered in a fun and efficient way. For instance, one participant noted, "the quiz allowed me to customize a scent that might suit me" (C13).

Findings also highlight the importance of **incentivization** (53.55%) in engaging participants. Features like time-limited discounts and gamified tasks, such as collecting items for a 15% discount, were both motivating and enjoyable. One participant remarked, “I just enjoyed the challenge of finding them all. And I did, so I got the 15% discount” (C3).

Most interviewees (73,33%) reported that their experience with the VS positively impacted their perception of the brand in different ways (see Appendix 35).

### 4.2.3 General Perception

Transitioning from the specific experience to broader principles, the integration of AR tools within a VE, such as a VS, is explored (see Appendix 36).

The general perception of VS among participants is largely positive. Many acknowledge the innovation and exploratory aspects of the concept. However, opinions diverged regarding its practicality and potential as a mainstream shopping channel.

First, many participants appreciated the immersive nature of VS and its ability to showcase aesthetics and brand values in ways that traditional online stores or physical spaces cannot. One participant stated that “this kind of interactive experience builds a connection with the brand and makes people more likely to engage with it” (C11). Another one found that “it’s a great way to introduce a brand and its products, especially to someone unfamiliar with them” (C5). Another highlighted the exploratory nature of VS, noting, “It’s more exploratory compared to a traditional online store” (C3). Similarly, others found the experience more engaging than websites, as it feels more personal and allows for browsing like in a physical store (C8).

Despite its advantages, VS was seen as lacking the sensory richness of physical stores. One participant remarked, “in a physical store, you get a lot more sensory impressions.” (C4). Additionally, some participants preferred traditional online shopping for its efficiency, with one participant commenting, “for brands I already know, though, [&] I’d prefer a traditional website for quicker shopping” (C10). Others noted that, while entertaining, it may become tedious for goal-oriented shoppers as “there’s a lot of distraction [&] that you don’t need if you just want to shop efficiently. But for browsing, it’s more appealing and technically interesting” (C9).

The integration of AR/VTOs within the VS was perceived as a bridge between online and offline shopping, providing a solution to the barrier of product testing. Participants viewed the tool as exploratory and supplementary rather than central to purchase decisions. As one participant remarked, “it’s more of a nice-to-have. I don’t think it’s crucial for a purchase” (C15). However, many recognized the potential value of AR/VTOs as a preliminary step in the shopping journey, particularly for trying products virtually without visiting physical stores. Within the beauty context, participants highlighted their usefulness, especially for products like makeup, with one noting that they are “useful for makeup products, especially if you’re unsure about colors and don’t want to buy blindly” (C11).

While participants appreciated the innovation and potential of AR/VTOs but expressed concerns about accuracy and realism, particularly for beauty applications. Issues like lighting, camera quality, and personal application techniques were noted as limitations (C7, C8). While VTOs were seen as useful for providing a general idea of product appearance, they were not considered a replacement for real-life trials, with one participant stating, “I wouldn’t rely on it 100%” (C9). Overall, participants agreed on VS’s potential, particularly for “the beauty area, where you can use a VS as an additional contact point for familiarization with the product and representation of the brand” (C15).

#### 4.2.3 Benefits

The *benefits* category summarizes the advantages of Virtual Stores (VS) as reported by participants, capturing specific elements and perspectives as outlined in Appendix 37 and Appendix 38.

To begin with, **immersive experience** emerged as the most frequently discussed subcategory (100%), driven by two key aspects. **Informational depth** (86.67%) enriched the experience with detailed product information, brand history, and insights, which participants found helpful and engaging (C6, C1). **Emotional and sensory engagement** (80%) was enhanced by the VS’s appealing design and interactive features, such as fragrance quizzes and speaking avatars, making exploration enjoyable and fostering deeper connections (C7).

Next, **strengthened brand perception** (93.33%) reveals the VS’s effectiveness in reinforcing the consumer-to-brand connection, as demonstrated through four key subcategories.

First, **enhanced shopping experience** (93.33%), describing the perception of a unique blend of online and physical shopping experiences. One participant observes, “It felt like a mix between a traditional store and an online one, offering more information in a shorter time” (C7). Second, **differentiation** (66.67%) which emphasizes how the VS’s design and features set it apart from conventional retail options. One participant reflected, “the aesthetic of the brand came through differently here; it gave me a better sense of what the brand wants to convey” (C13). Thirdly, **gamification & incentives** (60%) enhanced brand perception by engaging participants through interactive features like scavenger hunts and discounts. As one participant explained, “the 15% discount was a great motivator; it made me consider buying” (C8).

Finally, **purchase decision support** (93.33%) emerged as a key subcategory, highlighting the VS’s ability and value for product exploration and support in decision-making. One participant

shared, “the quizzes and recommendations helped me discover new products and understand what might suit me” (C5). This is further supported by the **impact of purchase decision** category, where only 20% of participants indicated that the virtual experience would not influence their purchase intentions (see Appendix 39 and Appendix 40).

#### 4.2.4 Challenges

The challenges identified highlight key factors that detracted from usability and satisfaction in the VS experience, revealing obstacles that hindered engagement despite its innovative approach to product exploration. Key findings are detailed below, with a comprehensive summary in Appendix 41 and corresponding frequencies in Appendix 42.

*First, technical limitations* are the most significant challenge, with **73.33%** reporting issues across two distinct sub-subcategories:

To start, challenges *within brand control* (60%) included glitches, outdated features, and a lack of optimization as recurring frustrations by participants. One participant noted, “the VTO didn’t show a noticeable difference” (C2). Others pointed out that “there was a promotion for a free sample, but it wasn’t available anymore” (C9). Additionally, the need for better visual quality was raised, with one participant stating, “the visuals could be more polished” (C12).

Secondly, challenges **outside brand control** were less frequently mentioned (f7), mostly related to poor internet connectivity and device performance.

The distinction between issues within and outside the brand's control is critical. Brands can enhance UX by improving internal factors like feature accuracy and visual enhancements and mitigate external limitations like internet speed and device compatibility.

Second, *limitations in product interactions* (53.33%) include barriers such as lighting and camera quality, which affect the effectiveness of VTOs. One participant highlighted, “it’s tricky because lighting and camera quality can distort the match”, and added, “you can try things on virtually, but you can’t feel or smell the products” (C8). These challenges underscore the difficulty VS faces in providing accurate and realistic product representations and overlap with “Preference for Physical Stores” (see Appendix 43), suggesting a correlation.

Building on this, participants expressed a **preference for physical stores** (53,33%), which was also linked to the challenge of limited product interaction in a virtual setting. It highlights the difficulty VS faces in replicating sensory experiences. For instance, “in a physical store, you

can test them directly on your skin to feel how they work” (C4). Another challenge is the inability to “smell products” (C6) online. These insights emphasize the limitations of VE in delivering the sensory engagement that physical stores naturally provide.

## **5. Discussion**

The definitions of VR and AR vary across academia and expert perspectives. In academia, the concepts of VR and AR are clearly separated and summarized under the term XR. However, expert interviews reveal the term VR is used more broadly, and the definitions for AR fall under VR tools. This inconsistency highlights the fluidity of these concepts in practice and underscores the need for standardization as these technologies evolve.

Immersion, the mental and physical engagement in VEs, is central to VR and closely tied to telepresence, which emphasizes immersion, interactivity, and realism (Cowan et al., 2023; Baker et al., 2019; Guttentag, 2010). Expert interviews consistently identified these elements as key features of VR and AR, and a perspective echoed in consumer interviews, particularly regarding virtual shopping experiences.

The literature highlights how immersion and telepresence foster exploration and deepen user engagement, driving positive brand perception and emotional connections (De Regt et al., 2021; Balaji et al., 2024). Aligning with experts who described immersion as a key feature (see Appendix 6) and with consumer findings confirming immersion as a key benefit, evident in their exploratory behaviors (see Appendix 38). The most frequently mentioned attribute was a feeling of exploration and discovery (see Appendix 32). Consumers also highlighted their experience with the VS as an immersive experience that allows for the enjoyment of a shopping environment without the barriers of physical store visits, contributing to a positive perception of the brand. The experience and features were also compelling enough to entice potential repeat visits or promote brand exploration and discovery. This connects to Jiang and Benbasat’s (2004) finding that immersive experiences boost shopping intentions. These findings affirm immersion reduces psychological distance and strengthens brand connections (De Regt et al., 2021).

However, immersion does not always result in decision-making satisfaction, which is a constraint. AR tools offer exploratory experiences but lack the sensory input from physical examinations, limiting their potential to replace in-person shopping. Similarly, a VS provides surface-level immersion but often lacks the depth of telepresence. The theory describes the ideal UX as a state of deep engagement and absorption, where individuals are fully immersed in and

focused on their activity (Han et al., 2020). A promising future approach could involve giving users engaging and entertaining tasks during their shopping journey. This idea is supported by consumer interviews, where the gamified task was widely appreciated for adding engagement. Such activities could contribute to the immersive factor by promoting a state of flow tied to positive emotions (Cowan et al., 2020).

Building on this, realism is crucial for AR's effectiveness in showcasing real-world environments (Wu et al., 2021; Baker et al., 2019). Realism also enhances telepresence, as users feel more present when the digital environment closely resembles reality (Balaji et al., 2024). Yet, both expert insights and consumer feedback underscore the challenges in achieving this. Limitations in lighting, color representation, and overall accuracy were frequently cited as barriers to trust and usability.

While some product categories demonstrated accuracy, others, like foundation, light makeup, and perfume, were found to lack the sensory and visual precision of in-store try-ons. This inability to replicate the precision of in-store trials poses a significant gap between theoretical expectations and practical realities. It highlights the need for ongoing technological advancements to bridge discrepancies and build consumer trust in these applications.

Lastly, interactivity is central to telepresence and immersion theories, as it fosters engagement and gives users a sense of control over their experiences (Xi et al., 2024b; Guttentag, 2010). The literature suggests that interactivity enhances consumer satisfaction, decision-making, and emotional connections to brands (De Regt et al., 2021).

This is consistent with expert interviews, where interactivity was described as a key driver of engagement. Tools like VTOs allow consumers to interact with products in personalized ways, making the experience more memorable. Consumers also appreciated AR tools' playful and exploratory nature, which encouraged brand discovery and aligned with Barnes et al.'s (2014) finding that interactive virtual experiences deepen engagement.

However, some participants found interactivity distracting when they were focused on finding specific products. High-knowledge consumers prefer straightforward, fact-based content that does not require extensive sensory engagement, as they are already equipped to make informed decisions (Cowan et al., 2020). This tension highlights the necessity for brands to balance interactive elements with utilitarian design.

The literature and the results of the qualitative research have produced a list of benefits associated with implementing and combining VR and AR for beauty brands. Addressing RQ1, the following section explores the overlapping advantages identified across all three sources. A prominent benefit of AR/VR technologies is their ability to elevate the shopping experience by combining personalization, efficiency, and immersive engagement. Experts emphasize that VR and AR tools enhance the shopping journey by offering personalized and interactive experiences. They allow customers to explore products seamlessly, test suitability, and experiment with styles and colors, thereby making the process more engaging and efficient. Incorporating AR tools into VE creates the ability to bridge online and offline channels and, hence, creates a hybrid shopping journey that aligns with evolving consumer expectations as well as the aim for O+O integration within the industry. Consumers reaffirmed these benefits. The VS and its inherent features allowed customers quick access to important information while also promoting exploration. A VS is seen as a more engaging alternative to typical online shopping, with interactive components that enhance their experience and increase trust in product decisions. Evidence shows AR overlays improve decisions and engagement (Flavián et al., 2019; Martínez-Navarro et al., 2018). Such tools allow consumers to feel more involved in the process, making it more efficient and enjoyable. Together, these insights highlight how AR/VR creates a personalized, seamless, and efficient shopping experience that enhances consumer satisfaction and strengthens their confidence in online purchases.

AR applications are crucial in boosting consumer confidence by addressing purchase uncertainty, a persistent challenge in eCommerce, and reducing return rates. Experts emphasize that tools like VTOs help overcome hesitation by enabling online product suitability assessments, such as shade and color matching. By aligning purchases with consumer expectations, these tools minimize dissatisfaction and returns. Consumers similarly noted that VTOs increased their confidence in choosing products like lipsticks and eyeshadows, though concerns about quality and accuracy limited their reliability. Despite these challenges, VTOs were appreciated for narrowing options and aiding informed decisions.

This aligns with literature showing that AR tools reduce purchase risk and uncertainty while fostering confident decision-making (Hilken et al., 2021; Flavián et al., 2019). Collectively, these findings highlight how AR/VR technologies reduce hesitation, align consumer expectations, and minimize returns, benefiting both consumers and brands.

Moreover, personalization is a key advantage of AR/VR technologies, enabling stronger consumer connections by considering individual preferences. Experts highlight tools like VTOs

and skin diagnostics for delivering tailored recommendations that boost engagement. These personalized experiences enhance satisfaction and shift consumers from passive viewing to active participation. Consumers confirmed these benefits, valuing features like fragrance quizzes and personalized suggestions, simplifying product exploration, and guiding choices. However, some noted a preference for accessing such tools on websites, suggesting an opportunity for cross-platform integration. The literature supports these findings, showing that personalized AR/VR interactions build trust, improve decision-making, and encourage repeat brand engagement (Chakraborty et al., 2024; Cowan et al., 2020; Hoyer et al., 2020; Mishra et al., 2020).

In addition, AR/VR technologies allow firms to gather valuable customer data, such as preferences and behavioral patterns. Experts emphasized that this data can refine product strategies, tailor offerings, and inform innovation. By tracking user interactions, brands can better align with consumer expectations, improve strategic decisions, and maintain a competitive edge (see Appendix 9).

VR technologies go beyond passive online browsing by actively engaging consumers through immersive and interactive experiences. Experts highlight tools like VTOs for fostering deeper interaction, while playful features like gamification encourage active participation, boosting engagement and conversion rates. Consumers enjoyed elements like fragrance quizzes, scavenger hunts, and discounts, which motivated exploration and product discovery, making the experience enjoyable and memorable (see Appendix 37). The literature supports these findings, showing that immersive technologies enhance consumer interaction, foster telepresence, and deepen emotional engagement (Baker et al., 2019; Xi et al., 2024b). Experiences like virtual stores (VS) are especially effective for low-knowledge consumers, helping them better understand products and brand narratives (Cowan et al., 2020). This aligns with expert insights emphasizing that VR and AR technologies enhance the early stages of the consumer journey (see Appendix 7).

Moreover, VR provides beauty brands with a powerful differentiation tool in competitive online markets by delivering unique, innovative experiences. These technologies enhance a brand's "cool factor" with interactive, personalized features, boosting visibility and positioning brands as innovators. Expert interviews also highlighted their role in fostering customer loyalty. For consumers, the immersive features of a VS stood out as key differentiators, creating memorable experiences that strengthened brand identity and appeal. This perspective aligns with the fact that AR and VR foster positive brand attitudes and emotional connections through immersive,

engaging experiences (Puntoni, 2023; Alzayat & Lee, 2021). Higher levels of initial trust have been found to enhance long-term commitment, leading to deeper and more consistent interactions within VE (Chakraborty et al., 2024). These technologies allow brands to create a USP that appeals particularly to younger, experience-driven consumers.

Finally, AR/VR technologies positively influence purchase decisions by supporting product exploration and building consumer trust. VTOs provide clarity and confidence in purchase decisions. Discounts and incentives further motivate purchases, as stated by the experts. The consumers shared similar insights, reporting that VTOs and quizzes within the VS supported their decision-making by facilitating the search for a suitable product. While they found these tools valuable for exploration, some still preferred physical stores for final decisions. The literature highlights AR/VR's ability to boost purchase intentions by creating exploratory and engaging experiences that reduce uncertainty and encourage spending (Cowan & Ketron, 2018; Martínez-Navarro et al., 2018).

Despite their promise, AR/VR technologies face significant barriers to implementation. In response to RQ2, insights from experts, consumers, and literature reveal overlapping concerns regarding UX quality, accessibility barriers, high implementation costs, sensory limitations, and technical reliability (see Appendix 10 and Appendix 41).

From a brand perspective, delivering a seamless and intuitive UX remains a significant challenge for AR/VR. VR must be user-friendly, visually appealing, and technically reliable, while AR tools often suffer from poor color calibration, feature inaccuracies, and non-intuitive navigation, which diminish consumer trust. Accessibility barriers for older or less tech-savvy audiences and complex interfaces further limit adoption. To address low organic engagement, active promotion and incentives are crucial to drive interaction.

Consumers echo these concerns, citing the lack of discoverability of virtual stores (VS). Without specific marketing efforts, users unfamiliar with a brand are unlikely to engage. Participants also noted navigation difficulties, layout confusion, and slow performance, making VS feel time-intensive compared to physical or traditional online stores. The literature supports these findings, highlighting how AR's overly interactive features can distract consumers seeking quick, practical shopping experiences (Grewal et al., 2017). Moreover, VR's inability to replicate tactile sensations limits its effectiveness in sensory-dependent industries like beauty (Hoyer et al., 2020; Hilken et al., 2021).

Another key challenge is the financial and human resources required for AR/VR technologies. From a financial perspective, AR/VR technologies demand significant investments in infrastructure, compliance, and incentivization strategies. Experts noted that complex workflows often delay AR/VR projects, while consumers indicated that incentives such as discounts were crucial for motivating interaction with virtual tools. This suggests that innovation alone may not justify costs without clear ROI.

Technological challenges are divided into those within and outside the brand's control. Brand-controlled issues, such as bugs and poor navigation, can be proactively addressed and resolved. However, limitations outside the brand's control, like reliance on high-speed internet and advanced devices, increase the risk of technical failures that disrupt customer experiences. While these external risks can be mitigated, they cannot always be fully prevented.

According to the literature, AR/VR technology limitations frequently lead to differences between user expectations and actual performance (Wu et al., 2021). Usability issues such as poor lighting, camera quality, and device limitations further hinder effectiveness, particularly for accurate product representations (Xi et al., 2024a; Xi et al., 2024b).

Furthermore, replicating realistic and accurate product experiences is challenging, especially in industries like beauty that rely heavily on sensory interactions. Enhancing virtual tools' accuracy, realism, and reliability is essential for building trust and improving user satisfaction. Experts emphasize that inaccuracies, such as unrealistic VTOs, undermine trust and user confidence. Reliability issues, including poor portrayal and hardware or software failures, further damage the tools' credibility.

Consumers noted that while VS provide helpful product overviews, they cannot replicate the sensory experiences of physical shopping. For makeup products like lipstick or foundation, participants highlighted limitations caused by lighting, texture, and camera quality, making the tools feel less reliable than in-person interactions. Similarly, the literature identifies usability barriers, such as poor lighting and device constraints, as significant challenges to accurate AR/VR representations (Xi et al., 2024a; Xi et al., 2024b). While AR tools help reduce uncertainty in purchase decisions, their reliance on digital overlays often limits their ability to convey realistic representations (Hilken et al., 2021).

The integration of VR further poses scalability challenges. Experts emphasize that driving traffic to VS incurs additional costs, as digital initiatives “live from traffic” (E2). When traffic is

not organic but paid, extra expenses arise, with some experts suggesting the need for incentivization through discounts to drive both engagement and conversion. However, a critical concern noted by experts is whether incentives truly enhance the experience or simply attract users seeking a discount code; as one expert put it: “Some people were just looking for the discount code, and you don't know whether it was really the experience at the end” (E1).

From the consumer perspective, accessibility and adoption are key challenges, as VR is often seen as immature, unreliable, and unintuitive. Issues like glitches, poor UX, and the time-intensive nature of VS raise doubts about their scalability and ROI in their current state. In contrast, AR tools offer greater standalone potential, enhancing personalization, reducing purchase uncertainty, and improving the shopping experience, particularly for new or low-knowledge consumers. With features like VTOs and quizzes, AR provides immediate, cost-effective benefits that prioritize convenience and usability.

The findings from expert interviews and consumer observations strongly support the literature's claims regarding the benefits of AR/VR, including enhanced engagement, decision-making, and brand perception. However, the discussions also reveal critical gaps in realism, accessibility, and usability, which impede broader adoption.

## **6. Conclusion**

This study explored AR-VR potential in beauty, focusing on integrating AR's established functionalities into VR-driven VE such as VS. While AR has proven effective in reducing purchase uncertainty and providing tailored recommendations through VTOs and diagnostics, VR remains underutilized despite its potential for creating immersive consumer experiences. This research bridges the gap by examining how AR-VR integration could redefine digital retail strategies, enhancing consumer engagement and brand differentiation.

The findings underscore the potential of AR-VR integration to create hybrid shopping journeys that seamlessly bridge the O+O divide. AR's strengths in personalization, decision-making support, and reducing purchase uncertainty, when combined with VR's ability to foster immersion and deeper consumer connections, present compelling opportunities for innovation. However, challenges persist. Technical immaturity, high financial and resource demands, and sensory limitations, especially for products reliant on physical interaction, remain critical barriers. Additionally, unclear ROI and the need for strategic promotional efforts to drive consumer traffic complicate widespread adoption. Despite these challenges, AR-VR hybridization presents unique opportunities to enhance consumer experiences and build brand loyalty. Achieving

success requires consumer-focused design, strategic financial planning, and alignment with brand objectives, enabling brands to lead in digital shopping innovation by addressing current limitations.

Integrating AR-VR in the beauty industry offers important theoretical and practical implications. From a theoretical perspective, this combination addresses gaps in research by demonstrating how AR's interactive elements and VR's immersive environments can work together to enhance consumer engagement and confidence in decision-making. This hybrid model deepens our understanding of digital sensory experiences in retail and provides a strong foundation for further exploration.

Practically, the rising consumer interest in these technologies presents beauty brands with a clear opportunity to innovate. Brands must prioritize thoughtful and high-quality implementation to fully capitalize on this potential. Superficial or poorly executed integrations could harm trust and damage brand reputation. However, AR and VR can build stronger connections with consumers, differentiate brands in a crowded market, and create lasting loyalty when done well. By tapping into consumers' curiosity and desire for immersive experiences while maintaining a focus on usability and functionality, AR-VR integration becomes a powerful tool for shaping the future of digital beauty retail.

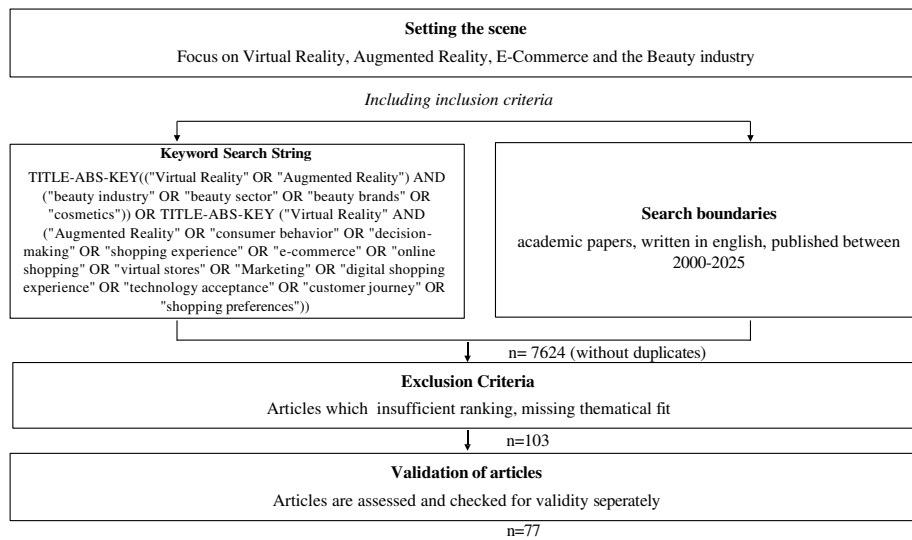
This study acknowledges several limitations inherent to its design. The reliance on qualitative methods and a small, homogenous sample of young and female students limits the generalizability of the findings. Due to the research scope, it was not feasible to explore all generations comprehensively, making Generation Z a logical focus. Future research could address this by incorporating more diverse samples across age, gender, and socioeconomic backgrounds.

Furthermore, using a preexisting VS from a well-known beauty brand ensured realistic conditions and market relevance (Burke, 2017), but it also introduced biases tied to the specific platform's design and functionality. Therefore, the findings reflect the features of this particular VS and may not generalize to other AR/VR implementations. Future studies could explore multiple VEs across varied brands or develop standardized VS platforms for comparative analysis.

Finally, while the qualitative approach yielded preliminary insights, it lacked the robustness of quantitative validation. Future research could adopt mixed-method or longitudinal approaches to measuring the long-term impacts of AR-VR integration on consumer behavior, satisfaction,

and brand loyalty. Exploring financial metrics and cost-effectiveness would also provide valuable insights into the strategic potential of AR and VR in retail.

# Appendix



## Appendix 1: Flowchart of the systematic Search Process (Adapted from: Wang & Chugh, 2014)

### Questionnaire

1. Have you purchased at least one beauty product such as makeup, skincare, or fragrance within the last three months?
2. Do you know the names of at least three of the below-mentioned beauty brands?



## Appendix 2: Pre-Recruitment Questionnaire Consumer Interviews

Category	Subcategory	Sub-Subcategory
Definitions	Conceptual Definitions	VR
		AR
	Key Features	Immersion
		Realism
		Interactivity
	Industries	eCommerce & Retail
		Beauty
		Fashion Tech
		Gaming
Market Insights	Consumer Journey	Consumer Goods
		Awareness
		Consideration
	Implementation Motivation	Conversion
		Brand
		Performance
	Driving Needs	Competition
		O+O and Rise of eCommerce
		Need for Innovation
	Impact on Competitive Positioning	Service
		Increasing Market Competition
		Expanding Market Reach/ Global Accessibility
		Early Adoption/First Mover Advantage
		Enhanced Brand Perception & Differentiation
	Product Categories	Make Up
Haircolor		
Skincare		
Nailpolish		
Perfume		
Tech Application/Use	VR	Virtual Store
	AR	Gaming
		VTOs
		Diagnosis Tool
Benefits of Implementation	Consumer Benefits	Enhanced (Shopping) Experience
		Personalization & Customization
		Reduced Uncertainty
		Active Consumer Interaction/Engagement
	Brand Benefits	Increased Visibility & Awareness
		Seamless Online + Offline Integration
		Differentiation & Competitive Advantage
		Brand Loyalty/Connection
		Data Collection & Insights
		Reduced Returns
		Higher Shopping Basket Values/Sales Driver
		Higher Engagement
		Market Reach
		Cost-Effectiveness
		Sustainability
Challenges	UX & Adoption	UX Quality
		Ease of Use
		Accessibility
		Customer Hesitation of Adoption
		Width of Audience
	Cost & Resources	High Costs
		Resource Requirements
		Smaller Brand Disadvantage
	Strategic & Operational Challenges	Traffic & Conversion Issues
		Cannibalization Risks
		Lack of Post-Implementation Strategy
	Market Challenges	Limited Audience Appeal
		Niche/Product Limitations
	Technology	Implementation Complexity
		Realism & Accuracy
Data & Privacy Concerns	Reliability Issues	
	Data Protection	
Risks to Brand & Perception	Legal Risks	

Appendix 3: Category Coding Overview 3 Expert Interviews

Category	Subcategory	Sub-Subcategory
First Time VS	Yes	
	Unsure	
	No	
Prior Brand Knowledge	Familiar	
	Unfamiliar	
	Relatively Familiar	
Emotional Response to Experience	Exploration	
	Fun/Cool/Positive	
	Helpful	
	Immersion	
	Something New	
	Overwhelmed	
	Video Game	
	Luxurious	
	Comforting	
	Neutral	
Experience	Interactive Features	VTO
		Gamification
		Quizzes
		Incentivization
		Avatar
		Brand Introduction
		Products
	Recommendations	
	Change in Brand Perception	Video Wall
		Positive
No Change		
General Concept Perception	AR/VTO	
	VR/VS	
Benefits	Immersive Experience	Informational Depth
		Emotional & Sensory Engagement
	Strengthened Brand Perception	Enhanced (Shopping) Experience
		Differentiation
		Gamification & Incentives
	Purchase Decision Support	Memory Retention/Brand Affinity
Convenience & Accessibility	Time Efficiency	
	Location Independence	
Personalization	Barrier Reduction	
Challenges	Technical Limitations	Within Brand Control
		Outside Brand Control
	Limitations in Product Interactions	
	Preference for Physical Stores	
	Time Intense for Quick Purchases	
	Lack of Familiarity with Virtual Shopping	
	Overwhelming Visual Elements	
	Incentivization Focus	
Privacy Concerns		
Impact on Purchase Decision	Accessibility	
	Positive but conditional	
	Positive	
	None	

Appendix 4: Category Coding Overview - Consumer Interviews

Code	Professional Title	Industry Focus	Professional Background
E1	Head of E-Business Kiehl's	Beauty & Cosmetics	E1 serves as the Head of e-Business at "Brand A," overseeing the company's online store and managing partnerships with pure players like Flaconi and marketplaces such as Amazon. E1's professional experience includes involvement in innovative technologies such as virtual reality (VR) and artificial intelligence (AI) tools aimed at enhancing the online shopping experience.
E2	Senior Website and Digital Services Manager at a leading beauty industry company	Beauty & Cosmetics	E2 serves as a Corporate Senior Websites and Services Manager for a leading global beauty company, overseeing the advancement of digital services across the DACH region. In contrast to market-specific roles, E2 operates at a corporate level, coordinating and supporting regional brand teams..
E3	Digital Marketing Manager at a global beauty brand	Beauty & Cosmetics	E3 has experience working as a Digital Marketing Manager for a global beauty brand. Prior to this role, E3 worked as a Communication Manager, where they gained direct experience implementing VR technologies in communication strategies, though in a non-beauty market.
E4	Brand Strategist for Digital Platforms	Gaming, Digital Fashion, Virtual Retail	E4 specializes in integrating brands into gaming platforms like Fortnite and Roblox, leveraging user-generated content (UGC) ecosystems to connect brands with Gen Z and Gen Alpha audiences. With a focus on digital fashion and immersive virtual experiences, E4 collaborates with major global brands to create innovative virtual environments and products that resonate with younger, digitally engaged demographics.
E5	Digital Activation Manager for Maybelline	Beauty & Cosmetics	E5 is responsible for digital activation at Maybelline, a L'Oréal Group brand, focusing on virtual tools and services that enhance the consumer shopping experience. With a background in beauty tech, E5 works on bridging technology and consumer needs to deliver innovative and personalized solutions across digital platforms.

*Appendix 5: Expert Professional Background*

Category	Definitions			
Sub-Category	Conceptual Definitions	Key Features		
Sub-Sub-Category		Immersion	Realism	Interactivity
E1	VR and AR as the fusion of online and offline experiences, emphasizing that virtual reality begins when technology creates a unique, enhanced experience. However, not all AI-driven tools, such as chatbots, qualify as VR since they lack the immersive quality required to deliver a truly special experience.	VR as the fusion of online and offline experiences, where virtual reality begins when technology is introduced to create unique and distinctive interactions. They note that while tools like AI-powered chatbots are used, these do not qualify as virtual reality due to their lack of immersive qualities. Overall, the definition emphasizes the integration of digital and physical elements to create a cohesive and		
E2	VR and AR as tools for simulating reality using digital technology, either by immersing users in 3D virtual environments through devices like VR glasses or by altering images to present a modified yet highly realistic version of reality. An example in beauty tech includes virtually changing hairstyles or hair colors, where the alterations appear natural and nearly photographic in quality.	Immersion as a key feature involves simulating reality through digital technology. This can be achieved by fully immersing users in a 3D virtual environment using devices like VR glasses or by modifying images or recordings to present a transformed yet engaging version of reality, as often seen in beauty tech applications.	Realism is highlighted as a key feature, with the ability to present altered visuals, such as changing hair color or hairstyle, in a way that appears highly natural and authentic, resembling a photographic quality.	
E3	VR and AR as tools for creating immersive and interactive customer experiences without requiring physical interaction, particularly in the e-commerce and beauty sectors. While the technology is relatively new, with significant growth over the past two years, its adoption remains limited due to the high investment and technical expertise required for implementation. Early use was more prevalent in the tech industry than in beauty, but now brands like Fenty Beauty utilize filters to enhance personalization and customization. Despite progress, not all brands have adopted these tools, as seen with examples like Shiseido, highlighting the need for advanced technology and strategic investment.	Using virtual experiences to immerse the customer into a new experience, to create immersive and interactive experience without a physical approach. This is completely into the e-commerce and e-trade spot.	realism as a key feature is challenged by technical complexities and accuracy issues. While these technologies aim to provide realistic experiences, virtual trials sometimes fail to accurately represent how products will appear in reality, which can deter users, particularly those less familiar with advanced technology.	Virtual experiences are being utilized in e-commerce and e-trade to create immersive and interactive experiences for customers. This innovative approach, which allows customers to try on products, is considered the first tool of the art in the beauty market.
E4	VR as a bridge between the physical and digital worlds, enabling seamless integration of digital elements into real-life experiences. This concept is exemplified through applications like digital try-ons, such as trying on glasses virtually without visiting a store. VR is heavily utilized in areas like digital fashion and gaming, where it enhances consumer experiences by creating immersive and interactive environments.	The connection between the physical and digital worlds, seamlessly integrating digital elements into real-life experiences. This is particularly impactful in gaming and commerce, where creating immersive experiences for consumers relies on how easily and seamlessly these technologies integrate into existing systems, enhancing rather than complicating the user experience.		
E5	VR and AR as a connection between the physical and digital worlds, achieved by seamlessly integrating digital elements into real-life experiences.			This adds value in terms of enhancing brand perception and creating a more interactive experience.
<b>CATEGORY SUMMARY</b>	VR and AR are defined as the fusion of online and offline experiences, creating unique and enhanced interactions through the integration of digital elements into real-life settings. They simulate reality using digital tools, such as 3D virtual environments via VR glasses or by altering images to produce realistic yet modified representations, as seen in beauty tech applications like virtual hairstyle changes. These technologies are valued for their ability to provide immersive and interactive customer experiences without physical interaction, particularly in e-commerce, beauty, digital fashion, and gaming. While adoption has grown in recent years, the implementation remains limited due to the high investment and technical expertise required, with examples like Fenty Beauty highlighting progress in personalization and customization, while others like Shiseido have yet to adopt these tools. Overall, VR and AR act as a bridge between the physical and digital worlds, enhancing customer engagement through seamless integration.	Immersion, as a key feature of VR, is characterized by the seamless integration of digital and physical elements to create cohesive and distinctive experiences. It involves simulating reality through digital technology, either by fully immersing users in 3D virtual environments via VR glasses or by modifying images and recordings to present transformed, engaging versions of reality, as seen in beauty tech applications. Immersive experiences are particularly impactful in gaming and e-commerce, where they enhance consumer interactions by integrating seamlessly into existing systems without adding complexity. Unlike AI-powered tools like chatbots, which lack the immersive quality, VR begins when technology creates truly unique and engaging interactions.	Realism is a key feature of VR, emphasizing the ability to present altered visuals, such as changing hairstyles or hair colors, with highly natural and authentic results resembling photographic quality. However, achieving realism is challenged by technical complexities and accuracy issues, as virtual trials may not always reflect how products will appear in reality. These discrepancies can deter users, particularly those who are less familiar with advanced technology, highlighting the need for refinement to enhance user trust and adoption.	Interactivity in VR is highlighted as a key feature that enhances customer experiences by enabling immersive and engaging virtual interactions, particularly in e-commerce and e-trade. Tools like virtual try-ons are seen as groundbreaking innovations in the beauty market, offering customers the ability to test products virtually. These interactive experiences add significant value by enhancing brand perception and fostering stronger customer engagement.

Appendix 6: Expert Analysis Grid - Definitions

Category	Consumer Journey				Market Insights		Driving Needs		Impact on Competitive Positioning						
Sub-Category	Awareness	Consideration	Conversion	Brand	Implementation	Motivation	Competition	O-Q and Rise of eCommerce	Need for Innovation	Service	Increasing Market Competition	Expanding Market Reach Global Accessibility	Enhanced Brand Perception & Differentiation	Early Adoption/First Mover Advantage	
E1	At the start of the customer journey, AR/VR enhances the experience by guiding users who may not know where to begin. For example, pop-ups on websites can draw attention to AR features, helping customers navigate their journey effectively.			VR/AR is more brand-motivated because its implementation often focuses on enhancing brand image and providing unique experiences to boost visibility and engagement. The input highlights that in certain stages, the primary goal was to position the brand innovatively, focusing on metrics like user engagement to justify the investment. However, in times of tighter budgets, the emphasis shifts to ensuring that VR/AR applications deliver tangible brand-related value, indicating that brand image remains a central motivation for its use, even in a cost-conscious environment.				While VR/AR was initially implemented more for brand image and online engagement, there is now a greater need to justify its use by delivering measurable outcomes. As eCommerce grows, VR/AR bridges online and offline experiences, providing practical tools that enhance the customer journey and offer value beyond brand perception, making it a necessary investment in a more budget-conscious environment.						It allows brands to stand out in a highly competitive, price-driven online landscape. By leveraging unique experiences such as virtual tools, brands create a distinct identity that sets them apart from competitors. These technologies act as a USP, helping brands not only reinforce their image but also attract and retain customers by offering something innovative and exclusive compared to standard price-driven retail strategies.	
E2	Awareness can be enhanced as long as it is perceived as new and special.	AR/VR plays a significant role in the consideration phase of the customer journey, serving as a conversion driver by introducing positive elements that support decision-making and strengthen customer confidence during this stage.	VR/AR is also a conversion driver. Because it contributes positively to and during the consideration phase.	VR/AR is more brand-motivated because its applications, such as virtual pop-ups, are primarily designed to enhance brand-level objectives rather than driving direct performance. As noted, while certain tools may address both brand and performance goals, the impact on brand perception and awareness is consistently stronger, making it the dominant motivation for implementing these technologies.			VS can be more performance-motivated when they directly impact sales and performance by offering exclusive products or models available only in virtual spaces for example. This exclusivity would incentivize customer engagement and drive purchase behavior, tying the use of VR/AR to measurable performance outcomes rather than solely enhancing brand perception.		AR/VR address key limitations of online shopping, particularly for products like makeup. The inability to physically test colors online presents a significant hurdle for consumers, especially when purchasing new shades. VR/AR bridges this gap by replicating the in-store experience, enabling consumers to virtually try on products, thus overcoming barriers specific to eCommerce and enhancing the overall shopping journey.	COVID-19 and the corresponding strict guidelines pressured companies to find a new way to reach consumers without being able to go shopping in stores. This drove the need to further improve online shopping.			The implementation of VR/AR addresses a need for enhanced services by providing tools like the Skin Scanner, which offer personalized and convenient solutions. This technology enables users to upload a photo and receive tailored recommendations for their skin type and skincare routine, simplifying decision-making and adding a value-added service that enhances the customer experience.		
E3	The use of VR/AR as a tool is strategy is crucial for building an entire customer journey, ensuring awareness and a clear customer journey statement, rather than just a trendy trend.	The use of VR/AR as a tool is strategy is crucial for building an entire customer journey.	Virtual tools, such as try-ons and tutorials, are essential in building a customer journey and boosting engagement and conversion rates. These tools are easy to use on phones, making them easy to integrate with brands. VR pop-up stores can also create exclusive brand experiences, making them a valuable tool in the overall strategy.				Brands feel pressured to adopt VR/AR technologies to keep up with competitors rather than due to direct customer demand. In Western markets, customer interest in VR/AR is relatively low compared to Asia, where such technologies are more prevalent. As a result, brands adopt VR/AR to stay relevant, maintain a competitive edge, and avoid being perceived as outdated or "not trendy."		e captivates customers by offering something new and visually impressive. The novelty of VR and AR sparks interest and engagement, as customers are drawn to brands using innovative tools that create exciting and unique experiences. This sense of curiosity and fascination makes innovation a key motivator for implementing these technologies.	AR/VR offers tools that enhance personalization and customization for customers. By tailoring experiences and recommendations to individual preferences, VR/AR tools address service gaps, improve customer satisfaction, and provide a value, making service improvement a key driver for their implementation.			Brands feel compelled to adopt these technologies to remain relevant and "trendy," in Western markets, the push to implement VR/AR is driven more by competitive pressure than by direct customer demand. Brands risk being perceived as outdated or irrelevant if they do not keep up with competitors who are leveraging VR/AR, thereby intensifying competition within the industry.		
E4	So there's the awareness component first and foremost.			VR/AR appears to be more brand-motivated based on the input because it emphasizes creating unique experiences to engage audiences and drive awareness as a primary objective. Brands use VR/AR as a marketing tool to reach broader audiences, often integrating into existing experiences or leveraging subtle, similar to influencer marketing. Additionally, the strategy of digitizing free items as "walking billboards" highlights a focus on increasing brand visibility and awareness rather than solely on direct consumer sales or performance metrics.			In the example of Addis, it has a performance motivation as well because the implementation of VR/AR focuses on monetizing virtual goods. By creating and selling a high volume of digital items, Addis leverages these technologies to generate revenue. Although profit margins per item are lower, the strategy relies on reaching diverse audiences and selling large quantities of virtual products to achieve significant financial outcomes.						The implementation of VR/AR increases market competition in the beauty market by enabling any brand to reach a global audience through e-commerce platforms. This accessibility allows more brands to promote and sell their products, intensifying competition as they all vie for consumer attention. Additionally, VR/AR tools, such as personalized VTOs and product customization, provide unique advantages for early adopters who can master the digital ecosystem. These brands are better positioned to leverage the future of the market. However, it also increases the competitive pressure as more brands enter the global playing field.		
E5		The phase of consideration is enhanced by VTOs, as some brands, like Maybelline, do not have a DCC website, limiting the ability to purchase directly. However, for others, having a click-to-buy option on the website can help convince customers to try on products before making a purchase, enhancing the overall experience and potential for a successful purchase.		It is more brand-motivated because it primarily focuses on enhancing brand perception and consideration, particularly for brands like Maybelline that lack direct-to-consumer (DCC) websites. These technologies are used as tools to familiarize customers with the brand and its products rather than directly driving sales. While for brands with DCC options, VR/AR can support conversions, the primary emphasis remains on building brand awareness and offering a compelling experience to strengthen the overall brand-consumer relationship.			Competition motivates the implementation of VR/AR as brands feel pressured to adopt these technologies to keep pace with competitors rather than responding to direct customer demand. In Western markets, where customer interest in VR/AR is relatively low compared to Asia, brands use these tools to remain relevant, maintain a competitive edge, and avoid being perceived as outdated or "not trendy."		It provides unique and valuable customer experiences, such as product trials and VTOs, that are both helpful and engaging. These services not only enhance the customer journey by offering something playful and distinctive but also keep the brand top-of-mind by delivering experiences that are not easily available elsewhere. Such tools are effective at influencing and convincing consumers.				Creating unique, engaging, and memorable experiences sets brands apart from competitors. VTOs and other interactive features help customers become more familiar with the brand and its products, even for brands without direct-to-consumer (DCC) websites. These tools provide a "cool factor" that keeps the brand top-of-mind by offering playful and helpful services that are not widely available, thus reinforcing a brand's unique identity. Additionally, VR/AR creates a clear competitive advantage for brands that can financially invest in these technologies, positioning them ahead of competitors who lack the resources to adopt similar innovations.		
CATEGORY SUMMARY	AR/VR enhances the awareness phase of the customer journey by effectively guiding users and drawing attention to key features. Tools like the website pop-ups help customers navigate and engage with AR/VR elements early on. Awareness is heightened when these technologies are perceived as innovative and special, making them essential strategic tools for building a clear and impactful customer journey rather than being used as short-term trends.	AR/VR significantly enhances the consideration phase of the customer journey by aiding in decision-making for brands without DCC websites, such as Maybelline, by familiarizing customers with products. For brands with click-to-buy options, these tools further streamline the process, converting customers to purchase. Additionally, VR pop-up stores create exclusive brand experiences, adding value to the overall strategy. This strategic use of AR/VR ensures a more complete and effective customer journey.	AR/VR serves as a key conversion driver by positively influencing customer decisions during the consideration phase. Virtual tools like try-ons and tutorials enhance engagement and boost conversion rates by providing easy-to-use and interactive experiences on mobile devices. Additionally, VR pop-up stores create exclusive brand experiences, adding value to the overall strategy. This strategic use of AR/VR ensures a more complete and effective customer journey.	The implementation of VR/AR is predominantly brand-motivated, focusing on enhancing brand perception, visibility, and engagement through unique and innovative experiences. Applications such as virtual pop-ups and interactive tools are designed to strengthen brand-level objectives, emphasizing awareness and consideration rather than direct sales. These technologies are used as marketing tools to reach broader audiences, often integrating into existing strategies or leveraging influencer-like approaches, such as distributing free items to increase visibility. Even under budget constraints, the primary goal remains to deliver tangible brand-related value, highlighting the central role of brand image in driving VR/AR adoption.	VR/AR can be performance-motivated when its implementation directly impacts sales and measurable outcomes. Examples include offering exclusive products or models available only in virtual spaces, which incentivize customer engagement and drive purchase behavior. In the case of Addis, VR/AR is used to monetize virtual goods by creating and selling large quantities of digital items. Although profit margins per item are lower, this strategy focuses on reaching diverse audiences and achieving significant revenue through high sales volumes, tying the use of VR/AR to concrete financial results.	Competition motivates the implementation of VR/AR as brands feel pressured to adopt these technologies to keep pace with competitors rather than responding to direct customer demand. In Western markets, where customer interest in VR/AR is relatively low compared to Asia, brands use these tools to remain relevant, maintain a competitive edge, and avoid being perceived as outdated or "not trendy."	The rise of eCommerce has driven the need for VR/AR technologies to bridge the gap between online and offline experiences, offering practical tools that enhance the customer journey. These technologies address key limitations of online shopping, such as the inability to test products like makeup, by replicating in-store experiences through VTOs. While initially focused on brand image and engagement, VR/AR now plays a critical role in overcoming eCommerce barriers and delivering measurable outcomes.	The need for innovation drives the implementation of VR/AR, as these technologies captivate consumers by offering novel and visually impressive experiences. The COVID-19 pandemic further accelerated this demand, pressing companies to enhance online shopping as in-store access became limited. The novelty of VR/AR sparks curiosity and engagement, positioning these tools as essential for creating unique and exciting consumer interactions that differentiate brands in a competitive market.	The implementation of VR/AR technologies addresses a critical need for enhanced services by providing tools like diagnostic instruments and skin scanners. These solutions deliver personalized and convenient experiences, such as tailored recommendations for skincare routines, which simplify decision-making and improve customer satisfaction. These services, often integrated with traditional roles like pharmacy consultations, bring an increasing degree of accuracy, comparison possibilities, and scalability that exceed physical counterparts. The convergence of offline and digital services ensures evolving relevance, positioning VR/AR services as a USP, by offering helpful and engaging features like virtual product trials and customizable recommendations. These tools enhance the customer journey and provide unmatched convenience. While these services cannot fully replace in-person experiences for complex needs, they serve as a trusted and adaptable extension of existing expertise, balancing innovation with credibility.	The implementation of VR/AR heightens market competition by enabling brands to remain relevant and "trendy," particularly in Western markets where competitive pressure is high. Brands risk direct customer demand, drive adoption. Brands risk being perceived as outdated if they fail to leverage these technologies, intensifying the need to innovate. Additionally, VR/AR tools expand global accessibility, allowing any brand to reach a global audience via e-commerce platforms. Features such as personalized VTOs and product customization provide early adopters with unique advantages, positioning them as leaders in the evolving digital market. This increased accessibility and differentiation escalate competition as brands compete for consumer attention and relevance.	VR/AR technologies enhance global accessibility by enabling brands to establish an online presence and promote products to audiences worldwide. This digital transformation opens new geographic markets and customer bases, fostering growth and innovation. While brands that adopt these strategies can position themselves as market leaders, the broader accessibility also intensifies competition as more brands enter the global market.	The implementation enhances brand perception and differentiation by offering innovative and exclusive services that traditional channels cannot provide. Virtual tools like try-ons, personalized product advisors, and advanced virtual consultations act as USPs, helping brands create a distinct identity in competitive, price-driven markets. These features deliver real value to consumers through increased accuracy, customization, and interactivity, setting brands apart from their competitors. Early adopters who master the digital ecosystem gain an innovative edge, positioning themselves as leaders. By creating engaging, memorable, and playful experiences, VR/AR tools keep brands top-of-mind and attract customer loyalty. Additionally, these technologies offer a significant competitive advantage for brands with the financial resources, leaving competitors who cannot adopt similar innovations at a disadvantage.	VR/AR provides early adopters in the beauty market with a significant first-mover advantage by allowing them to establish leadership in a rapidly evolving digital ecosystem. Brands that adopt these technologies early can differentiate themselves through innovative features like personalized VTOs and custom product creation, appealing to a broader audience. Early movers gain the ability to refine their strategies and build expertise in leveraging these tools, positioning themselves ahead of competitors who may struggle to catch up, thereby securing a stronger foothold in the increasingly competitive market.		

Category		Tech Application/Use		
Sub-Category	VR			AR
Sub-Sub-Category	Virtual Store	Gaming	VTOs	Diagnosis Tool
E1	<p>Both Lancôme and Kiehl's in the USA attempted to transition their brick-and-mortar experiences into the online world by creating virtual stores. While the initial results showed some success, especially when incentives such as discount codes were offered, the projects were noted to be highly costly and time-consuming. Many users engaged primarily to access the discounts rather than to fully experience the virtual store, raising doubts about the effectiveness of the strategy.</p> <p>Technical limitations also posed challenges, with issues like system lags affecting the overall experience. As a result, the current technology is deemed not mature enough to justify the significant investment required, particularly in a budget-conscious environment. The projects served more as brand image boosters rather than practical tools for driving sales, which would likely be unsustainable under tighter financial constraints.</p> <p>From a consumer perspective, the advisory character of AI and convenience in online shopping were identified as important drivers, with price sensitivity remaining a significant factor. However, the virtual store experience itself is not seen as particularly relevant or appealing to consumers at this stage, as many prefer physical retail for inspiration and engagement. Additionally, VR glasses and similar tools were viewed more as a novelty or entertainment rather than practical shopping tools, with the experience described as more fun-oriented than functional.</p> <p>In the short term, enhancing consulting capabilities online—such as tools to help consumers find their perfect shade—was identified as a feasible goal. Over the long term, achieving full integration between online and offline retail (O+O) was suggested as an ideal direction, where both channels function seamlessly as one and offer complementary experiences. However, skepticism remains about the current value of virtual stores due to technological and consumer readiness challenges.</p>			AR-powered Skin Scanners, are a practical application of AR technology designed to provide personalized skincare recommendations. These tools utilize AI to analyze uploaded photos, identify skin types, and suggest tailored skincare routines, addressing a key challenge for online shoppers who may struggle to find the right products without in-person advice. The iterative development of such tools, as evidenced by the Skin Scanner's progression to version 4, highlights their growing relevance and effectiveness in enhancing the customer experience. This application demonstrates AR's capability to deliver personalized, data-driven solutions in the beauty industry, filling a critical gap in online shopping.
E2	<p>In their previous role, the expert worked on integrating virtual try-on applications into a digital pop-up store, allowing users to walk through the virtual space, test looks, and explore products. While this pop-up functioned as a virtual store and offered both brand-level and performance-level benefits, the focus leaned more heavily on brand impact. Certain products were made exclusively available in the virtual environment, adding a performance element through sales relevance. However, the brand effect ultimately outweighed the performance aspect due to the novelty of the technology at the time, which resulted in limited traffic and engagement.</p> <p>Reflecting on the virtual pop-up experience, the expert noted the complexity and cost intensity of the technology, emphasizing that it remains unfamiliar and unimpressive for many. They also observed that, in their current role, their work focuses more on isolated applications rather than broader implementations like virtual pop-ups.</p>	Artificial and virtual worlds, including avatars, are becoming increasingly relevant, with beauty expected to follow suit and gain similar importance once more established. This relevance stems from the need to create looks and participate in these virtual spaces. While beauty is anticipated to play a significant role, the expert currently sees V/AR as being more focused on providing tools and services that deliver valuable experiences to consumers.	The expert highlights that virtual applications and augmented reality are heavily utilized in the beauty industry, with virtual try-ons being the most common form of application. These tools allow users to try products on their face, hair, or body digitally. They also mentioned integrating virtual try-on applications into a digital pop-up in a previous role. Virtual try-ons are particularly popular for makeup and hair color, emphasizing augmented reality's role in enabling these tools.	Diagnosis tools, such as the skin scanner from Kiehl's, are a significant application of AR technology, particularly in the area of skin analysis. These tools offer detailed insights into skin health and are not limited to facial skin, expanding their utility to other areas. They provide a personalized and private service, addressing consumer preferences for expert advice in a discreet and convenient manner. This highlights the potential of AR-powered diagnosis tools to enhance customer trust and engagement by delivering tailored recommendations and addressing sensitive, personal needs.
E3	VR/AR applications are particularly effective in the e-commerce and e-trade sectors, with virtual try-ons identified as the most impactful feature. While e-stores present a promising approach, their current development appears underwhelming, with no brand having created an exceptional e-store experience thus far. There is a need for greater investment and innovation in this area to advance their potential. Additionally, VR pop-up stores are recognized as valuable tools for creating exclusive and engaging brand experiences.		Virtual try-ons are observed to be one of the most effective VR/AR tools, appreciated for their simplicity and ease of use. They allow users to try products, such as lipsticks, directly on a website or through their phones, making the process accessible and interactive. These tools are widely liked and frequently used, enhancing customer engagement by enabling seamless interaction with brands. Additionally, virtual try-ons help minimize the risk of product dissatisfaction by allowing customers to experiment with products before making a purchase.	
E4	<p>Virtual Shop/experiences are increasingly being adopted by fashion brands such as H&amp;M, Adidas, DKNY, Gucci, and others, offering innovative ways to engage consumers. A notable example is Adidas' virtual e-commerce store on Roblox, which serves as the brand's hub on the platform. Players can browse and purchase virtual items for their avatars, such as jumpers, shoes, and joggers, effectively turning avatars into walking billboards for the brand within Roblox, which boasts 355 million monthly players. This strategy provides immense exposure and is also being extended to other platforms, such as Fortnite.</p> <p>Beyond fashion, the approach has been successfully used in collaborations with non-fashion brands like Chupa Chups. By creating virtual fashion items as part of a promotional campaign, the brand engaged younger audiences who earned free avatar items in exchange for interacting with the brand. This approach not only provides fun and engaging experiences for users but also drives brand visibility and consumer engagement. The success of this strategy is rooted in its ability to integrate seamlessly into existing e-commerce and digital ecosystems.</p>	Platforms like Fortnite and Roblox are leveraged by brands to enter the gaming space and create immersive experiences for consumers. Roblox, described as a virtual world akin to YouTube for gaming, serves as a prominent example of this approach. For instance, a virtual e-commerce store was developed on Roblox for Adidas, acting as the brand's home on the platform. Avatars in these environments become "walking billboards" for brands, showcasing virtual items and increasing brand visibility. With Roblox's 355 million monthly players, the potential exposure is substantial. For Adidas, hundreds of thousands of virtual items are being created to enhance engagement, as immersive experiences in gaming and virtual worlds significantly boost consumer interaction and brand presence.	The expert emphasizes the value of virtual try-ons in the fashion and beauty industries, highlighting their convenience and impact on purchase decisions. Virtual try-ons allow customers to test products like lipsticks, eyeshades, or makeup shades without visiting a store or physically applying the products, saving time and effort. This feature enhances the shopping experience by enabling users to compare multiple products, such as those from L'Oréal and Maybelline, side by side virtually, increasing transparency and simplifying decision-making. The expert underscores the significant marketing potential of virtual try-ons in the digital space, noting their ability to provide an engaging and efficient experience.	However, they stress the importance of ease of adoption and technological quality. Poorly executed virtual try-ons that fail to reflect the real product accurately could have a negative impact on consumer trust and brand perception. Ensuring the reliability and realism of virtual try-ons is crucial to maximizing their benefits and avoiding adverse effects on customer confidence.
E5	<p>Mixed perspectives on the use of virtual stores and similar tools in the beauty market. While virtual stores have been attempted, they have not gained widespread traction, possibly due to consumers' preference for real-world experiences. However, these tools can be highly effective when used strategically, particularly in digital campaigns and at the point of sale. For instance, allowing consumers to explore products digitally on devices like iPads or tablets can bridge online and offline experiences, creating a seamless buying journey. Beyond their practical applications, virtual tools also enhance brand perception, provide interactive experiences, and can be leveraged for both business purposes and consumer engagement.</p> <p>On the other hand, there is skepticism about the future of broader virtual experiences, such as the metaverse, which has yet to deliver on its initial promise as a thriving space for consumers and brands. Similarly, virtual store experiments, such as those implemented by L'Oréal for Lancôme, have been costly without generating proportional returns, leading to doubts about their potential as the next major innovation.</p>		AR as a virtual try-on tool serves dual purposes depending on the brand's strategy. For some brands, it is primarily a branding tool designed to enhance brand perception and loyalty by familiarizing customers with the brand and its products. For others, particularly those with direct-to-consumer (D2C) platforms, it functions as a performance-driven application that directly supports purchase decisions by acting as a persuasive factor in the customer journey. This dual functionality underscores the flexibility of AR in catering to both brand-building and conversion-focused objectives.	
CATEGORY SUMMARY	<p>Virtual stores have been explored as innovative tools in the e-commerce and beauty sectors, offering brands a way to enhance consumer engagement and bridge online and offline experiences. Companies like Lancôme and Kiehl's have attempted to replicate in-store experiences online, often using virtual pop-ups or exclusive virtual environments. While these initiatives showed some success, particularly with incentives like discounts, they have been limited by high costs, technical challenges, and low consumer adoption due to the novelty and complexity of the technology.</p> <p>Brands such as Adidas have demonstrated the potential of virtual stores in platforms like Roblox, where virtual items function as both products and marketing tools, significantly enhancing brand visibility. However, in beauty, broader adoption has been slow, with consumers often preferring physical retail for inspiration and engagement. Virtual stores are more effective when integrated strategically, such as in targeted digital campaigns or at the point of sale using devices like iPads, to create seamless shopping journeys.</p> <p>Currently, virtual stores are seen more as brand-enhancement tools rather than direct performance drivers. Skepticism about their scalability and value persists, as technological and consumer readiness remains a barrier. Over the long term, achieving comprehensive O+O integration and addressing these limitations could unlock greater potential for virtual stores in the retail and beauty industries.</p>	The integration of VR into gaming platforms like Fortnite and Roblox provides brands with opportunities to create immersive experiences and engage consumers in virtual worlds. These platforms enable brands to establish a presence through virtual stores and branded content, as exemplified by Adidas' virtual store on Roblox. In these environments, avatars act as "walking billboards," showcasing branded virtual items and enhancing brand visibility. With Roblox attracting 355 million monthly players, the potential exposure for brands is significant. The creation of virtual items and immersive experiences in gaming not only increases consumer interaction but also solidifies the relevance of VR in this space, with beauty expected to follow suit as the industry becomes more integrated into virtual environments.	VTOs are among the most prevalent and impactful applications of AR in the beauty and fashion industries. They enable customers to digitally test products like lipsticks, makeup shades, hair colors, and glasses, offering a convenient and interactive shopping experience. VTOs enhance customer engagement by simplifying product exploration and comparison, increasing transparency, and minimizing the risk of dissatisfaction by allowing experimentation before purchase.	AR-powered diagnosis tools, such as Skin Scanners, represent a key application of AR technology in the beauty industry. These tools analyze uploaded photos to identify skin types and provide tailored skincare recommendations, bridging the gap for online shoppers who lack in-person advice. Iterative improvements, like the Skin Scanner's progression to version 4, underscore their growing importance in delivering personalized, data-driven solutions.

Appendix 8: Expert Analysis Grid 3 Tech Application/Use

Appendix 9. Expert Analysis Grid 3 Benefits of Implementation

Category	Consumer Benefits					Benefits of Implementation											
	Sub-Category	Enhanced (Shopping) Experience	Personalization & Customization	Reduced Uncertainty	Active Consumer Interaction/Engagement	Increased Visibility & Awareness	Seamless Online + Offline Integration	Differentiation & Competitive Advantage	Brand Loyalty/Connection	Data Collection & Insights	Reduced Returns	Higher Shopping Basket Value/Sales Driver	Higher Engagement	Market Reach	Cost-Effectiveness	Sustainability	
E1		Enhanced shopping experience by offering a consultative approach. Through VR/AR, brands can effectively present their products and provide tailored recommendations, helping consumers understand which products are best suited to their needs. This personalized guidance elevates the shopping experience, making it more informative and engaging for customers.	VR/AR providing personalization and customization lies in its consultative nature. By presenting products in a tailored way and recommending which items are particularly suitable for individual needs, VR/AR tools offer a personalized shopping experience. This benefit helps consumers make more informed decisions, ensuring that the products they choose align closely with their preferences and requirements, thereby enhancing satisfaction and confidence in their purchases.	It reduces uncertainties. By providing tools such as virtual try-ons and product recommendations, AR helps consumers determine if a product, such as the right shade or cream, is suitable for them. This reassurance simplifies the online shopping experience, builds confidence in purchasing decisions, and minimizes	The engagement of customers is significantly increased by the introduction of new tools like try-ons and tutorials. These interactive features, which allow customers to try on products on the website, are considered the first tool of the art in the beauty market. The use-friendly nature of these tools, which are available on mobile devices, makes them easy to interact with the brand, thereby boosting engagement and conversion rates. The innovative nature of these tools has	These tools are particularly relevant in the early stages of the customer journey. They are designed to attract new customers by creating impactful experiences that raise awareness and sometimes even establish entirely new niches. By leveraging VR/AR, brands can effectively capture consumer attention and broaden their reach, making it a strategic tool for building brand awareness.	Seamless integration across platforms because VR and AR bridge the gap between online and offline shopping by offering a unified experience across websites, apps, and in-store environment. So this technology has really helped the brands to adapt to evolving customer preferences for hybrid shopping experience. "Nowadays, you have customers who only buy in-store and other in e-stores. So it creates a bridge between those customers. These two completely different personas. So it helps to create a bridge between them and increase a new strategy and it's more efficient"	By offering advanced comparison possibilities and accurate, data-driven advice that exceeds what traditional settings, like single pharmacies, can provide. VR/AR delivers real added value to consumers. These technologies enable brands to establish a wide range of services, supported by	Consumers who engage with these technologies tend to have higher shopping basket values, suggesting deeper trust and engagement with the brand.			Consumers using these technologies tend to purchase more, often opting for complete routines or multiple products rather than a single item. Additionally, these technologies contribute to increased customer loyalty, further enhancing their long-term value to the brand.					
E2		It delivers added value in the form of real, tangible services. This indicates that consumers perceive VR/AR technologies as more than just tools they see them as services that elevate their shopping journey, offering benefits that go beyond traditional shopping methods.	Tools such as the diagnosis tool offer private and expert-driven experiences. Tools like digital consultants cater to individual needs while respecting consumer preferences for discretion, particularly in addressing personal or sensitive topics.			Increasing number of comparison possibilities. Things even a single pharmacy does not have. There is the expertise, but not the number of cases behind it. So that we are on a path. Where we also achieve accuracy from the advice. Which has not been possible before.	By offering advanced comparison possibilities and accurate, data-driven advice that exceeds what traditional settings, like single pharmacies, can provide. VR/AR delivers real added value to consumers. These technologies enable brands to establish a wide range of services, supported by	From the provider's point of view. Highly relevant data is a benefit.	By enabling consumers to address uncertainties, such as determining if a shade or product is the right fit, AR tools help ensure that purchases align with consumer expectations. This capability minimizes	From a sales point of view. It is a sales driver.							
E3		It makes it more engaging, seamless, and efficient for consumers. Virtual try-ons and tutorials are praised for their ease of use and accessibility, increasing customer engagement and conversion rates by enabling simple interaction with brands through mobile devices. Additionally, VR pop-up stores provide exclusive, memorable brand experiences that foster loyalty and drive traffic. By bridging the gap between online and offline shopping, VR/AR technologies cater to evolving consumer preferences for hybrid experiences, creating a unified journey across websites, apps, and physical stores. This also helps brands connect with different customer personas, such as those who shop exclusively in-store or online, by integrating these experiences into a cohesive strategy.	By collecting and analyzing data from user interactions, AR tools help refine product strategies and create more relevant offerings for consumers. This not only enhances the customer experience by catering to their unique needs but also ensures that future innovations are aligned with their preferences.	Virtual try-ons minimize the risk of product dissatisfaction.	The engagement of customers is significantly increased by the introduction of new tools like try-ons and tutorials. These interactive features, which allow customers to try on products on the website, are considered the first tool of the art in the beauty market. The use-friendly nature of these tools, which are available on mobile devices, makes them easy to interact with the brand, thereby boosting engagement and conversion rates. The innovative nature of these tools has	These tools are particularly relevant in the early stages of the customer journey. They are designed to attract new customers by creating impactful experiences that raise awareness and sometimes even establish entirely new niches. By leveraging VR/AR, brands can effectively capture consumer attention and broaden their reach, making it a strategic tool for building brand awareness.	Seamless integration across platforms because VR and AR bridge the gap between online and offline shopping by offering a unified experience across websites, apps, and in-store environment. So this technology has really helped the brands to adapt to evolving customer preferences for hybrid shopping experience. "Nowadays, you have customers who only buy in-store and other in e-stores. So it creates a bridge between those customers. These two completely different personas. So it helps to create a bridge between them and increase a new strategy and it's more efficient"	VR/AR offers brands the benefit of creating exclusive and memorable experiences, such as VR pop-up stores. These unique experiences not only attract consumer traffic but also foster brand loyalty by strengthening the emotional connection between the brand and its audience. Through such innovative initiatives, brands can differentiate themselves and build lasting relationships with their customers.	AR tools capture valuable customer data, including preferences and behavioral patterns, enabling brands to refine their product strategies and tailor offerings more effectively. Additionally, tracking user interactions provides actionable insights into customer preferences, which can inform future innovations and improve overall strategic decision-making. This data-driven approach allows brands to stay aligned with consumer needs and remain competitive in the market.	Virtual try-ons minimize the risk of product dissatisfaction.	Tools like virtual try-ons and tutorials enable easy and interactive connections between customers and the brand, particularly through mobile devices. This accessibility enhances customer involvement, making it more convenient for users to engage with the brand, thereby boosting both engagement levels and conversion rates.	These tools are particularly effective in the awareness phase of the customer journey, helping brands reach previously untapped audiences and generate interest. By leveraging VR/AR, brands can expand their visibility and attract new customers, thereby	VR pop-up stores create exclusive brand experiences that drive traffic and foster brand loyalty. From a financial perspective, these technologies help reduce costs by lowering return rates, potentially reducing waste and resource usage.	By integrating these technologies, brands can align their operations and marketing strategies with sustainable practices, potentially reducing waste and resource usage.			
E4		VR/AR enhances the shopping experience by addressing key consumer pain points, particularly the hesitation to purchase items online without first trying them. By enabling virtual try-ons for products like lipsticks, glasses, and hats, VR/AR eliminates the need for physical store visits, saving consumers time and effort. It provides a faster and more convenient decision-making process, allowing consumers to test and compare multiple products side-by-side within seconds. Additionally, these tools offer transparency by enabling consumers to evaluate products like L'Oréal and Maybelline side-by-side virtually, fostering confidence in their purchase decisions. Beyond practicality, VR/AR opens up creative possibilities, especially in digital spaces where social norms are less restrictive. This allows consumers to experiment with unique styles and representations of themselves, aligning with their desire for personalization and self-expression.	It allows consumers to try on a wider range of products and tailor items to their preferences. Personalized products is a big element of AR and VR. It allows users to virtual try-ons for products like lipsticks, glasses, and hats, VR/AR eliminates the need for physical store visits, saving consumers time and effort. It provides a faster and more convenient decision-making process, allowing consumers to test and compare multiple products side-by-side within seconds.	By enabling virtual try-ons, these technologies allow consumers to experience how products, such as lipstick shades, glasses, or hats, will look on them before making a purchase. This capability addresses common hesitations associated with online shopping, such as the inability to test products in person. Additionally, VR/AR shortens the decision-making process by eliminating the need to travel to a store or spend extensive time deliberating, allowing consumers to confidently make purchase decisions within minutes. This convenience and reassurance are key advantages for consumers, particularly in driving faster and more confident buying behavior.	There are multiple touchpoints that allow users to feel connected to a brand, engaging with it beyond just viewing or scrolling past posts. Through participation, consumers gain enjoyable, personalized experiences, such as creating avatars, which enhance their representation in virtual environments.	It increases brand visibility and awareness by creating immersive and interactive virtual experiences. In platforms like Roblox, where players can visit branded virtual stores, such as Adidas, and purchase items for their avatars, these avatars effectively act as "walking billboards" within the game. This generates immense exposure, given the vast audience of platforms like Roblox, which boasts 355 million daily players. Additionally, by offering fun and engaging experiences, brands not only capture consumer interest but also enhance their engagement and presence in these virtual environments.	It provides an additional touch point for brands. I think one of the big elements really is obviously the shift to digital and any commerce, right. I think that's where the big, big power is	By leveraging virtual spaces, brands can engage with this demographic in innovative and relevant ways, fostering stronger brand loyalty and building meaningful connections that resonate with their digital-first preferences. This enhanced connection helps brands stay relevant and appealing to a key target audience.		VR provides brands with significantly higher engagement levels due to the immersive and interactive experiences these technologies create. Unlike passive forms of interaction, such as viewing posts, VR/AR enables multiple touchpoints that actively involve consumers, fostering a stronger sense of connection with the brand. Additionally, activities like avatar customization not only enhance consumer enjoyment but also boost brand visibility and engagement.	It enables brands to reach a global audience by making products accessible online at any time, breaking down traditional barriers and broadening the potential customer base, providing a major advantage for commerce-focused strategies.						
E5		These tools bridge both online and offline experiences, allowing for a seamless buying journey.	It helps with personalization and this is definitely what consumers are looking for.		These technologies offer a "cool factor" that attracts attention and positions the brand as innovative. Their playful and helpful nature keeps the brand top-of-mind by delivering unique experiences not widely available elsewhere.	By providing unique, playful, and helpful experiences that are not widely available, these technologies enhance the "cool factor" of a brand and keep it top of mind for consumers. Additionally, VR/AR serves as a clear competitive advantage, particularly for brands with the financial resources to implement these	These technologies help brands gather valuable digital performance data, which can be leveraged to refine strategies, improve decision-making, and enhance overall effectiveness in the digital space.		AR tools like virtual try-ons, help reduce product returns by addressing consumer uncertainties, such as determining if a shade or product is the right fit. By aligning purchases more closely with consumer expectations, these tools minimize dissatisfaction and lower the likelihood of returns, enhancing customer satisfaction and reducing operational costs for brands.	VR/AR technologies provide brands with highly relevant customer data, capturing preferences, behavioral patterns, and digital performance metrics. These insights enable brands to refine product strategies, tailor offerings, and inform future innovations. By tracking user interactions, brands can align more closely with consumer needs, enhance strategic decision-making, and maintain competitiveness in the market. This data-driven approach strengthens the overall effectiveness of digital initiatives.	The implementation of VR/AR technologies acts as a sales driver by encouraging consumers to purchase more, often choosing complete routines or multiple products instead of single items. This behavior not only boosts immediate sales but also fosters increased customer loyalty, enhancing the long-term value to the brand.	Interactive experiences, such as VR/AR technologies, enhance brand engagement by providing immersive and interactive experiences. Tools like virtual try-ons and tutorials facilitate seamless interaction, fostering multiple touchpoints and enhancing consumer involvement. Activities like avatar customization increase brand visibility, resulting in stronger customer connections and higher conversion rates.	The market presence of brands is significantly enhanced by the use of VR/AR technologies, which provide increased visibility and accessibility to untapped audiences, thereby enhancing their global reach and strengthening their commerce strategies.	From a financial perspective, these technologies (VS) help reduce costs by lowering return rates, potentially reducing waste and resource usage.	By integrating these technologies, brands can align their operations and marketing strategies with sustainable practices, potentially reducing waste and resource usage.		
CATEGORY SUMMARY		VR/AR significantly enhances the shopping experience by offering personalized and consultative approaches that address key consumer needs. These technologies provide tailored product recommendations, helping customers identify products best suited to their preferences, and elevate the shopping journey by making it more engaging, informative, and efficient. VTOs are particularly valued as they allow the customer to try the product. This bridges O-O experiences, creating a seamless and hybrid shopping journey. These tools also support creativity and personalization, allowing consumers to experiment with styles and representations, further enhancing their shopping satisfaction.	The introduction of interactive tools, such as virtual try-ons and tutorials, significantly enhances consumer engagement. These user-friendly and mobile-accessible tools enable customers to interact with brands seamlessly, boosting engagement and conversion rates. By offering personalized and enjoyable experiences, such as creating avatars or exploring multiple touchpoints, VR/AR fosters a deeper connection between consumers and brands, moving beyond passive viewing to active participation. This innovative approach positions these tools as pivotal in enhancing consumer interaction in the beauty market.	VR/AR technologies reduce consumer uncertainty by enabling VTOs to offer personalized product recommendations. These tools help consumers determine product suitability, such as selecting the right shade or fit, thereby simplifying the online shopping experience and building confidence in purchasing decisions. By minimizing the risk of dissatisfaction and hesitation, VR/AR tools address common barriers to purchase. Additionally, VR/AR fosters a deeper connection between consumers and brands, moving beyond passive viewing to active participation. This innovative approach positions these tools as pivotal in enhancing consumer interaction in the beauty market.	The introduction of interactive tools and environments enhances consumer engagement. These mobile-accessible tools enable customers to interact with brands seamlessly and from anywhere, boosting engagement and conversion rates. By offering personalized and enjoyable experiences, such as creating avatars or exploring multiple touchpoints, VR/AR fosters a deeper connection between consumers and brands, moving beyond passive viewing to active participation. This innovative approach positions these tools as pivotal in enhancing consumer interaction in the beauty market.	VR/AR technologies significantly enhance brand visibility and awareness by creating impactful and engaging experiences, particularly at the early stages of the customer journey. Features like AI-driven pop-ups and immersive virtual environments guide new customers and first-time visitors, capturing attention and encouraging interaction with the brand. Platforms such as Roblox exemplify this impact, where branded virtual stores like Adidas allow users to purchase items for their avatars, turning them into "walking billboards" that amplify exposure to millions of players. These tools not only broaden the brand's reach but also establish its presence in new niches. The immersive and playful nature of VR/AR acts as a "cool factor," positioning the brand as forward-thinking while keeping it top-of-mind with consumers	VR and AR technologies enable seamless integration across omnichannel platforms by bridging the gap between online and offline shopping experiences. They provide unified interactions across websites, apps, and in-store environments, catering to diverse customer preferences for hybrid shopping models. For instance, concepts like Mister Spex's experiential pop-ups store exemplify how these tools transform physical retail spaces into interactive channels rather than traditional sales points. By offering additional touchpoints and enhanced comparison capabilities, these technologies enable brands to adapt to the evolving digital and e-commerce landscape. They also create a bridge between distinct customer personas, such as those who shop exclusively online or in-store, fostering efficient and inclusive strategies that align with modern consumer behavior. However, the full realization of these benefits depends on the continued maturation of VR/AR technology.	Implementing VR/AR provides brands with a significant opportunity to differentiate themselves and gain competitive advantages in price-driven online markets. These technologies enable the creation of unique, innovative experiences that stand out from standard retail, offering a distinct USP. By offering advanced comparison tools, accurate data-driven advice, and a range of personalized services, VR/AR exceeds the capabilities of traditional online settings. Additionally, VR/AR enhances a brand's "cool factor," keeping it top of mind through playful and engaging experiences not widely available. These tools serve as a competitive advantage for brands with the financial resources to implement them, positioning them	Consumers who engage with these technologies tend to have higher shopping basket values, suggesting deeper trust and engagement with the brand.			Consumers using these technologies tend to purchase more, often opting for complete routines or multiple products rather than a single item. Additionally, these technologies contribute to increased customer loyalty, further enhancing their long-term value to the brand.					

Category	Challenges																
Sub-Category	UX & Adoption					Cost & Resources			Strategic & Operational Challenges			Technology			Data & Privacy Concerns		Risks to Brand & Perception
Sub-Sub-Category	UX Quality	Ease of Use	Accessibility	Customer Hesitation of Adoption	Width of Audience	High Costs	Resource Requirements	Smaller Brand Data/Analytics	Traffic & Conversion Issues	Carrollization Risk	Lack of Post-Implementation Strategy	Implementation Complexity	Realism & Accuracy	Reliability Issues	Data Protection	Legal Risks	
E1		These technologies do not organically generate traffic and attract users. Instead, they require active promotion and advertising to create awareness and drive engagement. The lack of organic discovery means brands must incentivize users, such as encouraging them to visit VR, to ensure the technology is effectively utilized.	Brands must actively incentivize customers to engage with tools and VR. Incentives play a crucial role in advertising the experiences and driving traffic. Suggesting that without clear benefits or rewards, consumers may be reluctant to explore these new experiences.	The technology of VR is described as expensive and not yet mature enough to deliver its full potential. Additionally, there is the risk that significant delay in progress. Additionally, significant portions of these tools must undergo rigorous internal IT security checks, further extending the timeline and complexity of the implementation process.	Projects like the "Skin Scanner" highlight challenges such as navigating complex legal requirements, including obtaining customer permissions (e.g., email collection), which can significantly delay progress. Additionally, internal portions of these tools must undergo rigorous internal IT security checks, further extending the timeline and complexity of the implementation process.	Since consumers do not yet fully adopt and optimize its use, leading to low traffic values. Digital services heavily rely on traffic to succeed, but attempting to reach significant financial investment.	For now, the lack of sufficient technological and legal guidance limits the risk of consumers perceiving from physical retail. However, as the technology matures and becomes more effective, there is potential for emboldening, though it is also viewed as an opportunity for brands to innovate and enhance their overall retail strategy.	The technology is described as not yet fully developed or refined. With technical shortcomings that hinder its effectiveness. Additionally, the high costs associated with implementing VR further complicate adoption, making it less accessible for many brands. The overall complexity of managing such projects adds another layer of difficulty, requiring significant resources, expertise, and effort.	Particularly in sectors like luxury where consumer expectations are high. The technology is buggy or performs poorly, it can lead to a loss of confidence in both the tool and the brand.	Legal compliance, such as obtaining user consent to collect data like email addresses for tools such as the "Skin Scanner," is a time-consuming process. Additionally, regular optimization of data collection measures is required because these tools often handle personal and product-related data. On the company side, there is the concern of potential data protection incidents if legal requirements are not fully met, which could lead to serious consequences for the brand's reputation and operations.	For instance, the "Skin Scanner" project faced prolonged delays due to legal complexities, such as obtaining permission to collect and use customer email addresses to continue their journey. Additionally, there is an inherent risk on the company side that data protection measures may not fully comply with legal requirements, potentially leading to data breaches or privacy incidents. These legal hurdles add significant time, effort, and uncertainty to the process.	One of the key challenges in implementing VRAR is the risk to brand perception. If the technology fails to perform effectively, it reflects the luxury, where brand image is paramount. Buggy or poorly functioning VRAR tools can quickly erode consumer confidence and trust. This highlights the critical importance of ensuring reliable, high-quality technology.					
E2	Brands need to design interfaces that are accessible, user-friendly, and visually appealing while ensuring a seamless and engaging experience. Specific challenges include ensuring natural and accurate representation, such as color calibration, which has historically been difficult, and maintaining authenticity in how features move or appear. For applications like diagnostics, services, the design must balance technical accuracy with user appeal and clarity, addressing both functional and aesthetic requirements to provide a high-quality user experience.	The complexity of experiences, such as color calibration, which has historically been difficult, and maintaining authenticity in how features move or appear. For applications like diagnostics, services, the design must balance technical accuracy with user appeal and clarity, addressing both functional and aesthetic requirements to provide a high-quality user experience.	The tools must be intuitive, user-friendly, and visually appealing to a wide range of users. VRAR applications must also be given in wording and interface design to make them engaging and accessible.	Not all customers have access to the required devices, limiting the reach of these tools. This challenge is particularly pronounced for niche or luxury brands, where the target audience may include older demographics, who are less likely to adopt or interact with advanced technology. Additionally, the complexity of VRAR interfaces can deter users, especially those with less technical proficiency, further limiting the brand's reach and reputation.	It is cost intensive.	While younger, tech-savvy users are more likely to engage with these tools, older demographics, such as those in the luxury market, may find them less intuitive. This is particularly true for applications like diagnostics, where the interface must be both functional and aesthetically pleasing to maintain the brand's reputation.	Developing and maintaining these tools requires a highly skilled team with expertise in technology, strategy, and design to ensure high-quality results and an effective approach. This complexity increases the cost and resource requirements, making it a significant barrier to adoption.	Smaller brands may struggle to compete with larger companies, such as L'Oréal or LVHRT, which have the resources to invest in high-quality technology and user experience. This complexity increases the cost and resource requirements, making it a significant barrier to adoption.	While brands may create visually impressive virtual experiences, such as a stunning virtual display at the "Tower," the absence of a complementary physical pop-up store, undermines the effectiveness of the initiative. Without integrating these elements, the overall experience is perceived as less authentic and less engaging.	Effective implementation of VR in form of VS for example requires a skilled technical team to design and create a robust strategy, ensuring high-quality results and an effective approach. This complexity increases the cost and resource requirements, making it a significant barrier to adoption.	The realism and accuracy of VRAR tools are not always reliable, as virtual representations may fail to reflect how products will appear in real life. This lack of precision can undermine user trust and negatively impact the overall experience. Ensuring consistent, dependable technology is therefore critical.	Users may not fully understand that tools, such as those or VTOs, collect personal data, often including sensitive information like skin scans or identifying features. This lack of awareness poses a risk as sensitive data can be gathered without users' knowledge. Brands must navigate these concerns proactively to ensure compliance with data protection regulations and maintain user trust and transparency.	Some brands may underestimate the legal implications associated with these technologies, which could lead to significant issues in the future. This highlights the importance of ensuring compliance with regulations and proactively managing legal considerations to avoid potential liabilities and reputational damage.	VR and VR rely on high-speed internet connections to function properly. Technical failures can impact customer experiences, leading to frustration and potentially harming the brand's reputation. Proactive management of infrastructure and ensuring reliable VRAR experiences is crucial for maintaining customer trust and engagement.			
E3	One of the main challenges in implementing VRAR lies in ensuring high UX quality, which requires significant technical expertise, resources, and investment. Developing effective tools demands a skilled team to create a solid strategy, visually appealing designs, and a seamless user experience. Additionally, VRAR technologies rely heavily on high-speed internet and advanced hardware, making them susceptible to technical failures that can detract from the customer experience and harm the brand's reputation.	Not all customers have access to the required devices, limiting the reach of these tools. This challenge is particularly pronounced for niche or luxury brands, where the target audience may include older demographics, who are less likely to adopt or interact with advanced technology. Additionally, the complexity of VRAR interfaces can deter users, especially those with less technical proficiency, further limiting the brand's reach and reputation.	Complex interfaces can deter users, especially those with less technical proficiency, further limiting the brand's reach and reputation. Additionally, the complexity of VRAR interfaces can deter users, especially those with less technical proficiency, further limiting the brand's reach and reputation.	While younger, tech-savvy users are more likely to engage with these tools, older demographics, such as those in the luxury market, may find them less intuitive. This is particularly true for applications like diagnostics, where the interface must be both functional and aesthetically pleasing to maintain the brand's reputation.	Developing and maintaining these tools requires a highly skilled team with expertise in technology, strategy, and design to ensure high-quality results and an effective approach. This complexity increases the cost and resource requirements, making it a significant barrier to adoption.	Smaller brands may struggle to compete with larger companies, such as L'Oréal or LVHRT, which have the resources to invest in high-quality technology and user experience. This complexity increases the cost and resource requirements, making it a significant barrier to adoption.	While brands may create visually impressive virtual experiences, such as a stunning virtual display at the "Tower," the absence of a complementary physical pop-up store, undermines the effectiveness of the initiative. Without integrating these elements, the overall experience is perceived as less authentic and less engaging.	Effective implementation of VR in form of VS for example requires a skilled technical team to design and create a robust strategy, ensuring high-quality results and an effective approach. This complexity increases the cost and resource requirements, making it a significant barrier to adoption.	The realism and accuracy of VRAR tools are not always reliable, as virtual representations may fail to reflect how products will appear in real life. This lack of precision can undermine user trust and negatively impact the overall experience. Ensuring consistent, dependable technology is therefore critical.	Users may not fully understand that tools, such as those or VTOs, collect personal data, often including sensitive information like skin scans or identifying features. This lack of awareness poses a risk as sensitive data can be gathered without users' knowledge. Brands must navigate these concerns proactively to ensure compliance with data protection regulations and maintain user trust and transparency.	Some brands may underestimate the legal implications associated with these technologies, which could lead to significant issues in the future. This highlights the importance of ensuring compliance with regulations and proactively managing legal considerations to avoid potential liabilities and reputational damage.	VR and VR rely on high-speed internet connections to function properly. Technical failures can impact customer experiences, leading to frustration and potentially harming the brand's reputation. Proactive management of infrastructure and ensuring reliable VRAR experiences is crucial for maintaining customer trust and engagement.					
E4	A significant challenge in implementing VRAR lies in ensuring the quality of the UX. Specifically, the accuracy and reliability of VTOs are critical for building consumer trust. If the virtual representation of a product, such as glasses, does not align with the physical reality, it can lead to disappointment and a negative perception of the technology. Additionally, ensuring seamless integration between the virtual and physical worlds is essential for creating a cohesive and engaging user experience.	The implementation of VRAR interfaces can deter users, especially those with less technical proficiency, further limiting the brand's reach and reputation. Additionally, the complexity of VRAR interfaces can deter users, especially those with less technical proficiency, further limiting the brand's reach and reputation.	One significant barrier to ensuring the user experience is seamless, intuitive, and easy to integrate into the existing consumer journey. If the technology adds complexity or friction to the sales process, it can deter users, especially those with less technical proficiency, further limiting the brand's reach and reputation.	While these technologies may appear intuitive, they often require a high level of technical proficiency to use effectively. This complexity can deter users, especially those with less technical proficiency, further limiting the brand's reach and reputation.	A significant challenge in implementing VRAR lies in ensuring the quality of the UX. Specifically, the accuracy and reliability of VTOs are critical for building consumer trust. If the virtual representation of a product, such as glasses, does not align with the physical reality, it can lead to disappointment and a negative perception of the technology. Additionally, ensuring seamless integration between the virtual and physical worlds is essential for creating a cohesive and engaging user experience.	The development and maintenance of VRAR tools are resource-intensive, requiring significant time, effort, and investment. This complexity increases the cost and resource requirements, making it a significant barrier to adoption.	Larger, established brands may have the resources to invest in high-quality technology and user experience. This complexity increases the cost and resource requirements, making it a significant barrier to adoption.	The expert suggests that VRAR is a complementary tool rather than a replacement for physical retail. The importance of in-person experiences and engagement cannot be overlooked. Instead, they may serve as a supplementary tool to enhance consumer journeys without disrupting traditional shopping experiences.	Concises involve around low data as collected, managed, and used, emphasizing the need for careful handling to ensure compliance with regulations and maintain consumer trust.	Users may not fully understand that tools, such as those or VTOs, collect personal data, often including sensitive information like skin scans or identifying features. This lack of awareness poses a risk as sensitive data can be gathered without users' knowledge. Brands must navigate these concerns proactively to ensure compliance with data protection regulations and maintain user trust and transparency.	Some brands may underestimate the legal implications associated with these technologies, which could lead to significant issues in the future. This highlights the importance of ensuring compliance with regulations and proactively managing legal considerations to avoid potential liabilities and reputational damage.	VR and VR rely on high-speed internet connections to function properly. Technical failures can impact customer experiences, leading to frustration and potentially harming the brand's reputation. Proactive management of infrastructure and ensuring reliable VRAR experiences is crucial for maintaining customer trust and engagement.					
E5	The design and overall appearance of these tools are essential, as poor-quality experiences can lead to an ineffective VTO. Ensuring a seamless, visually appealing, and reliable user experience is therefore a key factor in successful VRAR implementation.	The design and overall appearance of these tools are essential, as poor-quality experiences can lead to an ineffective VTO. Ensuring a seamless, visually appealing, and reliable user experience is therefore a key factor in successful VRAR implementation.	A significant challenge in implementing VRAR lies in ensuring the quality of the UX. Specifically, the accuracy and reliability of VTOs are critical for building consumer trust. If the virtual representation of a product, such as glasses, does not align with the physical reality, it can lead to disappointment and a negative perception of the technology. Additionally, ensuring seamless integration between the virtual and physical worlds is essential for creating a cohesive and engaging user experience.	While these technologies may appear intuitive, they often require a high level of technical proficiency to use effectively. This complexity can deter users, especially those with less technical proficiency, further limiting the brand's reach and reputation.	The development and maintenance of VRAR tools are resource-intensive, requiring significant time, effort, and investment. This complexity increases the cost and resource requirements, making it a significant barrier to adoption.	Larger, established brands may have the resources to invest in high-quality technology and user experience. This complexity increases the cost and resource requirements, making it a significant barrier to adoption.	The expert suggests that VRAR is a complementary tool rather than a replacement for physical retail. The importance of in-person experiences and engagement cannot be overlooked. Instead, they may serve as a supplementary tool to enhance consumer journeys without disrupting traditional shopping experiences.	Concises involve around low data as collected, managed, and used, emphasizing the need for careful handling to ensure compliance with regulations and maintain consumer trust.	Users may not fully understand that tools, such as those or VTOs, collect personal data, often including sensitive information like skin scans or identifying features. This lack of awareness poses a risk as sensitive data can be gathered without users' knowledge. Brands must navigate these concerns proactively to ensure compliance with data protection regulations and maintain user trust and transparency.	Some brands may underestimate the legal implications associated with these technologies, which could lead to significant issues in the future. This highlights the importance of ensuring compliance with regulations and proactively managing legal considerations to avoid potential liabilities and reputational damage.	VR and VR rely on high-speed internet connections to function properly. Technical failures can impact customer experiences, leading to frustration and potentially harming the brand's reputation. Proactive management of infrastructure and ensuring reliable VRAR experiences is crucial for maintaining customer trust and engagement.						
CATEGORY	Ensuring high UX quality is a critical challenge in implementing VRAR technologies. Brands must create user-friendly, visually appealing, and technically accurate interfaces to provide seamless and engaging experiences. Challenges include ensuring natural and accurate representation, such as color calibration and feature authenticity, and addressing functional requirements like diagnostic services. Poor-quality experiences can lead to user frustration and damage brand reputation. Maintaining high standards of realism and accuracy is essential for successful adoption.	The adoption of VRAR is hindered by their lack of organic traffic, requiring active promotion and advertising to create awareness and drive engagement. The lack of organic discovery means brands must incentivize users, such as encouraging them to visit VR, to ensure the technology is effectively utilized.	Another challenge is ensuring the user experience is seamless, intuitive, and easy to integrate into the existing consumer journey. If the technology adds complexity or friction to the sales process, it can deter users, especially those with less technical proficiency, further limiting the brand's reach and reputation.	The primary challenge is ensuring the user experience is seamless, intuitive, and easy to integrate into the existing consumer journey. If the technology adds complexity or friction to the sales process, it can deter users, especially those with less technical proficiency, further limiting the brand's reach and reputation.	The high costs of developing and maintaining these tools require a highly skilled team with expertise in technology, strategy, and design to ensure high-quality results and an effective approach. This complexity increases the cost and resource requirements, making it a significant barrier to adoption.	The implementation and maintenance of VRAR tools are resource-intensive, requiring significant time, effort, and investment. This complexity increases the cost and resource requirements, making it a significant barrier to adoption.	Larger, established brands may have the resources to invest in high-quality technology and user experience. This complexity increases the cost and resource requirements, making it a significant barrier to adoption.	The expert suggests that VRAR is a complementary tool rather than a replacement for physical retail. The importance of in-person experiences and engagement cannot be overlooked. Instead, they may serve as a supplementary tool to enhance consumer journeys without disrupting traditional shopping experiences.	Concises involve around low data as collected, managed, and used, emphasizing the need for careful handling to ensure compliance with regulations and maintain consumer trust.	Users may not fully understand that tools, such as those or VTOs, collect personal data, often including sensitive information like skin scans or identifying features. This lack of awareness poses a risk as sensitive data can be gathered without users' knowledge. Brands must navigate these concerns proactively to ensure compliance with data protection regulations and maintain user trust and transparency.	Some brands may underestimate the legal implications associated with these technologies, which could lead to significant issues in the future. This highlights the importance of ensuring compliance with regulations and proactively managing legal considerations to avoid potential liabilities and reputational damage.	VR and VR rely on high-speed internet connections to function properly. Technical failures can impact customer experiences, leading to frustration and potentially harming the brand's reputation. Proactive management of infrastructure and ensuring reliable VRAR experiences is crucial for maintaining customer trust and engagement.					

## Appendix 10: Expert Analysis Grid 3 Challenges of Implementation

Code	Frequencies	Mentions	Percentage	Frequencies	Percentage
Immersion	5		45,45	4	80,00
Realism	3		27,27	3	60,00
Interactivity	3		27,27	2	40,00
TOTAL	11		100,00	5	100,00

## Appendix 11: Frequencies Key Features

Code	Frequencies Mentions	Percentage	Frequency Experts	Percentage
E-Commerce & Retail	48	40,34	5	100,00
Beauty	35	29,41	5	100,00
Fashion	19	15,97	3	60,00
Tech	8	6,72	2	40,00
Gaming	8	6,72	1	20,00
Consumer Goods	1	0,84	1	20,00
TOTAL	119	100,00	5	100,00

### *Appendix 12: Frequencies Industry Mentions*

Code	Frequencies Mentions	Percentage	Frequencies Expert	Percentage
Awareness	7	43,75	4	80,00
Consideration	5	31,25	3	60,00
Conversion	4	25,00	2	40,00
TOTAL	16	100,00	5	100,00

### *Appendix 13: Frequencies Consumer Journey Phases*

Code	Frequencies Mentions	Percentage	Frequencies Experts	Percentage
Brand	5	50,00	4	80,00
Performance	2	20,00	2	40,00
Competition	3	30,00	1	20,00
TOTAL	10	100,00	5	100,00

### *Appendix 14: Frequencies Implementation Motivation*

Codes (Driving Needs)	Frequencies	Percentage	Frequencies	Percentage
Service	22	78,57	4	80,00
O+O and Rise of eCommerce	3	10,71	3	60,00
Need for Innovation	3	10,71	2	40,00
TOTAL	28	100,00	5	100,00

### *Appendix 15: Frequencies Driving Needs*

Code	Frequencies Mentions	Percentage	Frequencies Experts	Percentage
Enhanced Brand Perception & Differentiation	8	61,54	4	80,00
Increasing Market Competition	3	23,08	2	40,00
Expanding Market Reach/ Global Accessibility	1	7,69	1	20,00
Early Adoption/First Mover Advanatage	1	7,69	1	20,00
TOTAL	13	100,00	5	100,00

### *Appendix 16: Frequencies Impact on Competitive Positioning*

Code	Frequencies Mentions	Percentage	Frequencies Experts	Percentage
Makeup	7	41,18	4	80,00
Haircolor	3	17,65	3	60,00
Perfume	3	17,65	1	20,00
Skincare	3	17,65	2	40,00
Nailpolish	1	5,88	1	20,00
TOTAL	17	100,00	5	100,00

### *Appendix 17: Frequencies Product Categories*

	Frequencies Mentions	Percentages	Frequencies Experts	Percentages
Service Tool	23	100,00	4	80,00

### *Appendix 18: Frequencies Term Service*

Categories	Sub-Categories	Benefits	Consumer Benefits	Brand Benefits
<b>Market Insights</b>		<b>7</b>	<b>0</b>	<b>11</b>
Market Insights	Consumer Journey	2	0	9
Market Insights	Product Categories	0	0	0
Market Insights	Implementation Motivation	0	0	0
Market Insights	Impact on Competitive Positioning	1	0	0
Market Insights	Driving Needs	4	0	2
<b>Tech Application/Use</b>		<b>2</b>	<b>0</b>	<b>0</b>

### Appendix 19: Category Relationship 3 Overlap Benefits

Code	Frequencies Mentions	Percentages	Frequencies Experts	Percentages
Enhanced (Shopping) Experience	14	20,59	5	100,00
Personalization & Customization	5	7,35	5	100,00
Reduced Uncertainty	6	8,82	3	60,00
Active Consumer Interaction/Engagement	7	10,29	2	40,00
<b>Consumer Benefits</b>	<b>32</b>	<b>47,06</b>	<b>5</b>	<b>100,00</b>
Increased Visibility & Awareness	6	8,82	4	80,00
Seamless Online + Offline Integration	5	7,35	4	80,00
Differentiation & Competitive Advantage	5	7,35	3	60,00
Brand Loyalty/Connection	3	4,41	3	60,00
Data Collection & Insights	3	4,41	3	60,00
Reduced Returns	3	4,41	2	40,00
Higher Shopping Basket Values/Sales Driver	3	4,41	2	40,00
Higher Engagement	3	4,41	2	40,00
Market Reach	2	2,94	2	40,00
Cost-Effectiveness	2	2,94	2	40,00
Sustainability	1	1,47	1	20,00
<b>Brand Benefits</b>	<b>36</b>	<b>52,94</b>	<b>5</b>	<b>100,00</b>
<b>TOTAL</b>	<b>68</b>	<b>100,00</b>	<b>5</b>	<b>100,00</b>

### Appendix 20: Frequencies Benefits

Codes	Frequencies Mentions	Percentage	Frequencies Experts	Percentage
UX Quality	7	10,94	4	80,00
Ease of Use	5	7,81	3	60,00
Accessibility	4	6,25	3	60,00
Customer Hesitation of Adoption	4	6,25	3	60,00
Width of Audience	2	3,13	2	40,00
<b>= UX &amp; Adoption</b>	<b>22</b>	<b>34,38</b>	<b>5</b>	<b>100,00</b>
High Costs	8	12,50	4	80,00
Resource Requirements	5	7,81	3	60,00
Smaller Brand Disadvantage	2	3,13	2	40,00
<b>= Cost &amp; Resources</b>	<b>15</b>	<b>23,44</b>	<b>4</b>	<b>80,00</b>
Traffic & Conversion Issues	3	4,69	2	40,00
Cannibalization Risks	2	3,13	2	40,00
Lack of Post-Implementation Strategy	2	3,13	1	20,00
<b>= Strategic &amp; Operational Challenges</b>	<b>7</b>	<b>10,94</b>	<b>4</b>	<b>80,00</b>
Implementation Complexity	5	7,81	3	60,00
Realism & Accuracy	2	3,13	2	40,00
Reliability Issues	2	3,13	2	40,00
<b>= Technology</b>	<b>9</b>	<b>14,06</b>	<b>3</b>	<b>60,00</b>
Data Protection	5	7,81	3	60,00
Legal Risks	3	4,69	2	40,00
<b>= Data &amp; Privacy Concerns</b>	<b>8</b>	<b>12,50</b>	<b>3</b>	<b>60,00</b>
<b>Risks to Brand &amp; Perception</b>	<b>3</b>	<b>4,69</b>	<b>3</b>	<b>60,00</b>
<b>TOTAL</b>	<b>64</b>	<b>100,00</b>	<b>5</b>	<b>100,00</b>

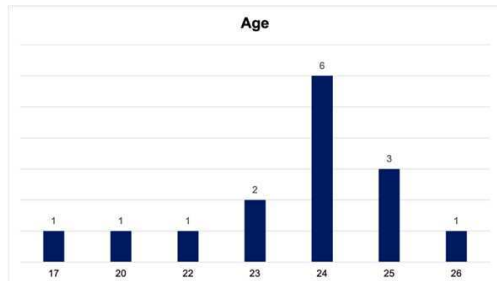
### Appendix 21: Frequencies Challenges & Risks

Code	Risks to Brand & Perception	Technology
<b>UX &amp; Adoption</b>	<b>2</b>	<b>4</b>
UX & Adoption > Width of Audience	0	0
UX & Adoption > UX Quality	2	2
UX & Adoption > Customer Hesitation of Adoption	0	1
UX & Adoption > Ease of Use	0	1
UX & Adoption > Accessibility	0	0

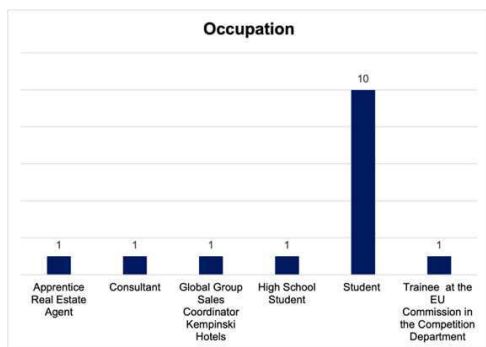
### Appendix 22: Category Relationship 3 Overlap UX x Risks to Brand Perception x Technology

Code	Risks to Brand & Perception	UX & Adoption
<b>Technology</b>	<b>1</b>	<b>4</b>
Technology > Realism & Accuracy	0	3
Technology > Reliability Issues	1	0
Technology > Implementation Complexity	0	1

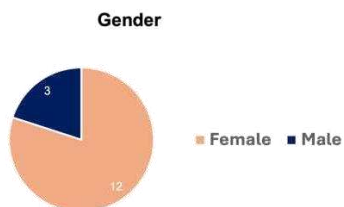
Appendix 23: Category Relationship - Overlap Technology x Risks to Brand Perception x UX



Appendix 24: Consumer Demographic - Distribution by Age



Appendix 25: Consumer Demographic - Distribution by Occupation



Appendix 26: Consumer Demographic - Distribution by Gender

Code	Frequencies Mentions	Percentages	Frequencies Participa	Percentages
Yes	9	60,00	9	60,00
No	4	26,67	4	26,67
Unsure	2	13,33	2	13,33
TOTAL	15	100,00	15	100,00

Appendix 27: Frequencies First Time VR/VS

Participant	VTO	Quizzes	Avatar	Gamification + Incentive	Incentive	Brand Info
C1		yes	yes	yes	yes	yes
C2	yes	yes		yes	yes	yes
C3		yes	yes	yes	yes	
C4		yes	yes	yes	yes	yes
C5	yes	yes		yes		yes
C6		yes		yes	yes	yes
C7	yes	yes	yes	yes		yes
C8			yes	yes		yes
C9	yes				yes	
C10						yes
C11		yes	yes	yes	yes	yes
C12		yes		yes		
C13		yes		yes		yes
C14						
C15	yes	yes	yes	yes	yes	yes
TOTAL	5	11	7	12	8	11

*Appendix 28: Observation Use of Features*



Appendix 29: VS Journey C1-C15 (left to right)

Participant	Touchpoints (P)	Time Spent	Interview Duration	TOTAL
C1	27	08:01	14:05	
C2	22	09:03	11:44	
C3	22	08:14	15:08	
C4	27	06:08	15:21	
C5	19	11:20	11:06	
C6	17	07:05	14:46	
C7	45	16:20	16:15	
C8	32	10:37	08:53	
C9	11	04:33	13:18	
C10	13	11:00	08:12	
C11	29	12:45	11:17	
C12	7	03:50	09:39	
C13	20	06:00	12:22	
C14	14	09:06	10:52	
C15	37	16:02	22:02	
<b>TOTAL</b>	<b>342</b>	<b>02:20:04</b>	<b>02:52:58</b>	<b>05:13:02</b>

*Appendix 30: Consumer Observation & Interview Data*

Category		Emotional Responses to Experience										
Sub-Category	Exploration	Fun/Cool/Positive	Helpful	Immersion	Something New	Overhead	Video Game	Luxurious	Comforting	Neutral	Unrealistic	
C1	Appreciated the ability to gain an overview and delve into details, such as using quizzes like the Fragrance Finder or engaging in VTOs. While the visuals were occasionally overwhelming, the experience was described as enjoyable and exploratory.			The experience was perceived as immersive, with the Parisian atmosphere and street view in the first room enhancing its upscale feel. It was seen as luxurious and elegant, which could typically deter some people from visiting physical stores. However, the virtual format minimized this barrier while still delivering a high-end experience, allowing enjoyment even when not dressed up, thus enhancing the participants' perception of the brand.			At times, the experience felt overwhelming due to the excessive visuals, such as glitter animations and movements. While still enjoyable to explore, it was visually intense, especially in areas like the first room with glitter and the "now" highlights in the second room. A slight reduction in these elements could improve the experience.		The Parisian vibe and the view of the street in the first room made it feel even more upscale. It felt luxurious and elegant, which might discourage some people from visiting physical stores. The virtual experience, at the time of the experience the participant was sick and not dressed up, but stated that the VS made it possible to still enjoy the luxury experience. And it elevated also the perception of the brand.			
C2	These tools are enjoyable for exploration but lack reliability for purchase decisions, particularly with makeup, where returns are difficult. They are useful for browsing the product range rather than committing to a purchase.			The experience was seen as immersive, providing a fun novelty that encouraged engagement.								
C3	Found the experience engaging and curiosity-driven, highlighting its exploratory nature. Unlike traditional online stores focused on specific products, the VS encouraged discovery and the exploration of additional items of interest.	Expressed that while quizzes may not be as definitive as in-store testing, they found them enjoyable and helpful in narrowing down options, making the experience engaging and positively influencing their decision-making process.		Each room offered a distinct atmosphere. The contrast between the cramped first room, the inviting second room, and the unique third room with a glass wall created a sense of intrigue, encouraging further exploration.								
C4	They felt this experience was unique because it offered multiple rooms to explore, providing a greater sense of discovery than what was encountered before.	Found the experience enjoyable and engaging, highlighting the fun elements (particularly the interactive features and videos).	The experience was seen as helpful, particularly for making online beauty product purchases easier. The participant had prior experience with similar tools and found them useful, although they preferred not to wait without makeup on. Overall, the tools were viewed as cool and beneficial, especially for those lacking additional information from social media or other sources.	Overall, it was described as an engaging and enjoyable experience.								
C5	Exploring the brand and its products in this way is exciting. For instance, virtual makeup trials during events like Black Friday could influence purchasing decisions for high-end cosmetics, such as lipsticks. It offers a clear sense of the search key features and encourages exploration and discovery.	The enjoyable aspect played a significant role in their experience.			I felt new and assembled a video game, which was perceived as cool.		The experience felt new and assembled a video game, which was viewed as cool.					
C6	Previously aware of the brand, but hadn't explored its products in depth, particularly in multi-brand stores. Found this approach a suitable way to familiarize with the brand before visiting a physical store.		The experience was seen as a helpful starting point, though VS are still considered to be in the early stages, and the participant would not rely on them alone to make a purchase decision.	The VTO feature was seen as the most engaging and interesting, providing a strong sense of immersion, as it provided the feeling of actually trying something on.								
C7	Their emotional response reflects optimism and curiosity, indicating that they believe exploration would lead them to discover what they were seeking.	Described the experience as enjoyable, especially as it resembled a shopping experience with the ability to browse. It was also mentioned that the overall atmosphere felt fun.	The visual representation and interactive features, such as the lipstick try-on tool, were both enjoyable and useful. The quiz was appreciated for saving time, as it allowed for quick answers to find the ideal product without extensive searching.	The experience was seen as more immersive than traditional online shopping, depending on one's approach. When viewed as a substitute for in-person browsing, it provided a pleasant experience. The visual representation and interactive features contributed to an engaging and dynamic environment, which was appreciated.				The experience evoked memories of old point-and-click video games, from the early 2000s, similar to those played at the age of 10.				Overall the experience did not leave a strong impression, as it was not particularly memorable.
C8	The participant expressed that the VS fostered curiosity and motivation to thoroughly explore the space, leading them to engage longer and encouraging product discovery. However, they also suggested including a quick access menu for users who prefer direct navigation over exploration.	Described it as fun because it was something new.			Stated that it was good and fun specifically because it was something new.							
C9	The experience was considered more enjoyable, as it resembled a shopping experience with the ability to browse. It was viewed as a cool and different, with participants appreciating the store's design.		The experience was seen as helpful for discovering unfamiliar brands, providing an opportunity to explore products and learn more about the brand.									
C10	Valued the opportunity to discover unfamiliar brands and explore their products, gaining insight into the brand.	The experience was perceived as very cool and worth having. The ability to click on each product and read detailed information, such as ingredients and attributes like vegan or fragrance-free, was particularly appreciated and considered a valuable feature.									Some aspects of the experience were perceived as unrealistic, particularly the car window eyeshadow station, which felt out of place in a real-life setting. It was still considered cool, the content features were seen as unnecessary for future use and unrealistic.	
C11	Enjoyed exploring the features, found the experience engaging, and felt a strengthened connection to the brand, encouraging further exploration.	The experience was enjoyable, with the exploration of features being particularly fun. It was described as pleasant and modern, offering the freedom to explore at one's own pace, similar to a physical store but without the interruptions from salespeople. The fragrance quiz was especially enjoyable and led to an added benefit in the cart. The speaking character that explained a product was seen as cool and engaging.	The try-on feature was seen as practical and useful, offering an alternative to physically trying on products, particularly in situations where it's difficult to test items like makeup colors in-store. It was noted that if the technology is accurate and realistic, it could influence purchasing decisions, especially by helping users determine whether a product, like makeup, matches their skin tone. While the feature may require significant development, it has the potential to be a helpful tool for brands, especially for visually trying on clothing and makeup products.	The experience was seen as more interactive than simply visiting a website, offering a memorable and engaging encounter. It made the brand more memorable and motivated further exploration, such as visiting the store or checking out the fragrance in person.	Initially, the experience felt overwhelming due to its larger size, but over time, they were able to navigate with ease.							
C12	Participant expressed a desire for more exploration but noted challenges due to connectivity issues. They indicated that incentives like games or discounts could enhance their willingness to explore further. Their level of exploration also depends on whether the product is something they wish to purchase quickly or take time to explore in depth.	The experience was perceived as cool and exciting, offering the opportunity to connect to crowds or waiting. It was enjoyable to have the complete freedom to explore the room and collect them. Overall, the experience was considered relaxing, and the participant expressed a willingness to try again.	The helpfulness of the experience is seen as dependent on the accuracy of the feedback. When elements like location and correct dimensions are present, VTOs are considered useful.									
C13	The participant, initially skeptical, found the experience to be unexpectedly premium and aligned with the brand's values. They appreciated the smooth, intuitive navigation and suggested an engaging and innovative way to explore the product range, despite not being a gamer. Their reasons highlight a shift from skepticism to appreciation, emphasizing the appeal of exploration and brand discovery.	The perfume quiz was viewed as a cool and engaging experience, offering a unique way to customize a scent. While the participant appreciated the insight it provided into products and brand values, they expressed a preference for engaging with such features online rather than in-store. They recognized the potential of this concept for other brands but noted they don't typically engage with gamified experiences.						Stated that it felt like a game and added that they would rather visit their customers' store than be incentivized to explore the gaming aspects.				It was perceived as more focused on gamification, which did not strongly resonate due to a preference for quick and clear information when considering premium products. While the store was appreciated as visually appealing, it was not seen as having a lasting impact.
C14	Honestly, I found it good. I generally like things that are interactive, and I thought it was nice, though I was great, especially when you were "walking" toward the store and the Eiffel Tower was there. I love Paris, so I found that amazing. It felt like I was in Disneyland but actually in a Parisian store. Yes, on Snapchat. They had something similar where you could try on things like lipsticks. It was like, like using a filter. I think my mom would like it too, though my dad might say, "It's just drop online or go to the store." But for younger people, it's exciting, combines technology with something new and different. I think most young people would find it cool.		It allowed for better decision-making, such as determining if a lipstick suits one's skin tone or if an eyeshadow complements eye color, rather than making a purchase without any guidance.	The experience was regarded as highly innovative, with the interactive elements being particularly enjoyable. The feeling of "walking" toward the store and encountering the Eiffel Tower created a strong sense of being in Paris, which was especially appreciated due to a love for the city. The store's design was admired for its simplicity and Parisian atmosphere, evoking the feel of an actual Parisian store. Overall, the experience was deeply engaging and nothing detracted from it.	The experience was seen as something new, as it was similar to a more immersive activity but felt entirely different in a private setting.							
C15	Participants valued the VS's exploratory nature, enjoying tools like the Fragrance Finder and VTOs to explore product details. Despite some visual overwhelm, the experience was generally seen as enjoyable and curiosity-driven, offering a sense of discovery not typically found in traditional online stores. While the tools were helpful for browsing, they were less reliable for immediate purchase decisions, particularly for makeup. The experience fostered a strong emotional connection with the brand, with users feeling familiar and motivated to explore further. Some suggested adding features like a quick-access menu for easier navigation. Overall, participants appreciated the opportunity to discover and familiarize themselves with brands, and saw the experience as an exciting and innovative way to engage with products.	Participants consistently described the VS experience as enjoyable, engaging and fun. Tools like the VTO and quizzes were seen as beneficial, especially for discovering new brands and testing products like makeup without physical application. While the technology is still developing, features like the virtual lipstick trial were appreciated for helping users determine product suitability, such as matching makeup to skin tone. The experience was viewed as a useful starting point, offering quick insights and time-saving options, though it's not yet reliable enough to solely depend on for purchase decisions. The effectiveness of the tools was seen as contingent on their accuracy and realism, with participants noting that VTOs could greatly aid decision-making if they provide accurate feedback. Additionally, a clear store layout graphic was mentioned as potentially helpful for better navigation.	The VS was perceived as highly immersive, with features like the Parisian atmosphere and street view in the first room enhancing its upscale and elegant feel. This immersive experience allowed users to enjoy a high-end shopping environment without the barriers of physical store visits, contributing to a positive perception of the brand. The unique design of each room, including the contrast between the cramped, inviting, and glass-walled rooms, sparked curiosity and encouraged further exploration. The VTO feature was particularly noted for its immersion, providing a strong sense of being in Paris. Compared to traditional online shopping, the VS offered a more dynamic and engaging experience, with visual and interactive elements creating a memorable encounter. Participants also appreciated the ability to explore products and learn more about the brand, providing a fun novelty that encouraged engagement.	Participants found the VS experience exciting and immersive, describing it as something fresh and unique. It was often compared to a video game, which contributed to its cool and appealing nature. The experience was valued for offering a new way to discover brands and products, especially in contrast to traditional shopping. For some, a fast and innovative and engaging, particularly for younger generations who are less inclined to visit physical stores. The tech, creative approach, combining online and offline shopping, was seen as an exciting alternative to traditional retail. However, there was concern that the experience could become too artificial and disengaging, leading to a loss of interest if not balanced properly.	Participants found the VS experience overwhelming at times, particularly due to excessive visuals like glitter animations and movement, especially in areas like the first and second rooms. While still enjoyable to explore, it was visually intense, especially in areas like the first room with glitter and the "now" highlights in the second room. A slight reduction in these elements could improve the experience. Additionally, the presence of unnecessary objects, which aren't typically needed for shopping, contributed to feelings of overwhelm. The large size of the store was initially daunting, but some participants were able to navigate through the experience over time. However, there was concern that the experience could become too artificial and disengaging, leading to a loss of interest if not balanced properly.	Participants found the VS experience conveyed a strong sense of luxury, enhanced by elements like the Parisian vibe and the view of the street in the first room, which made it feel upscale and elegant. This atmosphere allowed participants to enjoy a luxury experience without the typical barriers of physical stores. Even when not feeling their best, participants still found the VS to provide an elevated sense of sophistication, boosting their perception of the brand. Overall, the experience made the brand feel more premium and sophisticated, exceeding expectations and reinforcing a luxurious emotional connection.	The VS was described as both classic and comforting, particularly because it could be experienced from home. The combination of classic and modern design created a familiar and welcoming atmosphere. The Parisian vibe associated with the brand contributed to this sense of comfort, evoking positive and reassuring emotional responses.	The VS experience did not leave a strong impression, as it was not particularly memorable. While the store was appreciated as visually appealing, it was not seen as having a lasting impact. Participants noted that the focus on gamification did not resonate with them, as they preferred quick and clear information when considering premium products. They considered it unnecessary and impractical for future use.				

Appendix 31: Consumer Analysis Grid 3 Emotional Response to Experience

Codes	Frequencies Mentions	Percentages	Frequencies Participants	Percentages
Exploration	27	25,23	12	80,00
Fun/Cool/Positive	28	26,17	11	73,33
Helpful	12	11,21	8	53,33
Immersion	11	10,28	8	53,33
Something New	8	7,48	7	46,67
Overwhelmed	7	6,54	4	26,67
Video Game	4	3,74	4	26,67
Luxurious	3	2,80	3	20,00
Comforting	2	1,87	2	13,33
Neutral	2	1,87	2	13,33
Unrealistic	3	2,80	1	6,67
TOTAL	107	100,00	15	100,00

*Appendix 32: Frequencies Emotional Response to Experience*

Category	Experience									
Sub-Category	Interactive Features									
Sub-Sub-Category	Definition	Outcomes	Incentivization	Auxiliary	Brand Introduction	Products	Recommendations	Video Wall		
C1	The VTO feature was used for gamification aspect of the experience. Finding fun to complete tasks, such as collecting items in different rooms. While the primary motivation wasn't the discount connected to it, but it did add an extra incentive.	The participant enjoyed the gamification aspect of the experience. Finding fun to complete tasks, such as collecting items in different rooms. While the primary motivation wasn't the discount connected to it, but it did add an extra incentive.	The participant enjoyed the challenge of collecting the few powder jars, focusing more on the challenge of completing the task rather than the relevance of the products. Successfully completing led to a 15% discount, which was a motivating factor.	The participant enjoyed the challenge of collecting the few powder jars, viewing it as a fun activity rather than focusing on whether the products were personally relevant. The 15% discount was appreciated as a bonus, and they felt discounts are particularly effective for expensive items, as a 15% discount on a VTO product can significantly influence purchasing decisions.	The participant found the avatar's audio introduction to be impressive and thought it was very cool and detailed.	The participant appreciated the introduction to the brand's story, particularly the opportunity to learn about the people behind the brand and their values, which they thought was a nice touch in the first room.				
C2	The VTO feature was tested with several products, but the participant noted that the results were not very noticeable. The limited visibility, possibly due to the lighting in the room, and the brand's focus on lighter, more natural makeup might have contributed to the lack of dramatic differences in the VTO results.	The quiz asked more specific questions for example about fragrance preferences, which the participant usually does not think about. Therefore, it was perceived as useful.	With so many product variations, quizzes can help narrow down options. Even if it's not as effective as leading in a store, it's a feature that can guide decisions.	The participant was disappointed when the samples were no longer available by the end. Despite this, they acknowledged that online shopping can occur in physical stores. Initially, they explored the store out of curiosity, but once they realized collecting items led to a discount, they became more motivated to continue. The gamified aspects, including the discount code, made a lasting impression and would encourage them to return to the website, making it more memorable than a traditional shopping experience.	The participant deemed the initial avatar introduction lengthy and suggested a shorter one, while also suggesting the inclusion of a virtual shop assistant or chatbot.				Stated that they liked the integrated video.	
C3	Open and curious to try it and compare the accuracy against trying it in person.	Participant enjoyed the gamification aspect of collecting the few powder jars, focusing more on the challenge of completing the task rather than the relevance of the products. Successfully completing led to a 15% discount, which was a motivating factor.	With so many product variations, quizzes can help narrow down options. Even if it's not as effective as leading in a store, it's a feature that can guide decisions.	The participant enjoyed the challenge of collecting the few powder jars, viewing it as a fun activity rather than focusing on whether the products were personally relevant. The 15% discount was appreciated as a bonus, and they felt discounts are particularly effective for expensive items, as a 15% discount on a VTO product can significantly influence purchasing decisions.	The participant was appreciated for creating a physical store-like atmosphere by providing explanations, similar to the role of an in-store assistant.					
C4	The VTO feature was seen as a cool option, allowing users to try products using their face. Although the participant did not see it in this instance, they expressed a general willingness to try similar tools, such as those for virtual glasses or hair. They also mentioned that these tools could potentially influence purchasing decisions, particularly for high-end cosmetics, as it would help them feel more confident in choosing products.	The participant enjoyed the gamification features, such as collecting points to earn a prize, which initially exploring out of curiosity, they became more motivated to continue once they realized the discount was tied to their progress. The gamified elements, including videos, made the experience fun and memorable, leaving a stronger impression compared to traditional websites. The participant indicated that the gamification aspect would encourage them to return to the site.	The quiz is a good addition.	They were disappointed when the samples were no longer available by the end. Despite this, they acknowledged that online shopping can occur in physical stores. Initially, they explored the store out of curiosity, but once they realized collecting items led to a discount, they became more motivated to continue. The gamified aspects, including the discount code, made a lasting impression and would encourage them to return to the website, making it more memorable than a traditional shopping experience.	The participant deemed the initial avatar introduction lengthy and suggested a shorter one, while also suggesting the inclusion of a virtual shop assistant or chatbot.				Stated that they liked the integrated video.	
C5	The VTO feature for makeup was appreciated, with the participant noting that it enhanced the experience of exploring products. They suggested that this feature could potentially influence purchasing decisions, particularly for high-end cosmetics, as it would help them feel more confident in choosing products.	The gamified feature of collecting powder jars like a scavenger hunt. While the participant didn't manage to find all the jars, they felt that their competitive side would have driven them to complete the collection if they had stayed longer, even more so than the 15% discount incentive. The fun aspect was also a significant motivator in the experience.	The 15% discount would motivate the participant to collect all the jars if they were considering a purchase, although the enjoyable aspect of the experience was the stronger factor.		It was interesting to learn about the brand's background.					
C6	The VTO feature was highlighted as the most engaging and interactive aspect of the experience, providing a sense of ownership and control. The participant noted that this feature was particularly useful for those who are unsure about their skin tone or have sensitive skin. They also mentioned that this feature could potentially influence purchasing decisions, particularly for high-end cosmetics, as it would help them feel more confident in choosing products.	The participant felt the quiz was brief and interactive, focusing mainly on scent preferences and intensity. They suggested it could have included more questions but understood the limitations, especially if there were a limited number of fragrance samples available.	The participant felt the quiz was brief and interactive, focusing mainly on scent preferences and intensity. They suggested it could have included more questions but understood the limitations, especially if there were a limited number of fragrance samples available.	If they were planning to make a purchase and had the opportunity to collect the items for a discount, they likely would have been motivated to do so. They also mentioned an incentive of a free sample at the end, but it was unavailable as it had sold out.	The participant encouraged the avatar, but chose not to engage with it.	The VTO was centered on Laura Mercier, providing information about the founder and an overview of their products. This helped the participant gain a better understanding of the brand's offerings and what might be suitable for them.	The VTO was centered on Laura Mercier, providing information about the founder and an overview of their products. This helped the participant gain a better understanding of the brand's offerings and what might be suitable for them.	The concept of look recommendations in the VTO was positively mentioned.		
C7	The VTO feature was used for gamification aspect of the experience. Finding fun to complete tasks, such as collecting items in different rooms. While the primary motivation wasn't the discount connected to it, but it did add an extra incentive.	The participant appreciated the playful approach of the gamified feature, but found it frustrating to find only 2 out of 4 discounted jars. Despite not intending to purchase, they appreciated the playful nature of the feature. They suggested that all discounted jars should be easily accessible or visible.	The quiz was appreciated for its convenience, as the participant preferred answering questions to searching for products themselves. It was seen as a helpful way to find the perfect product.	If they were planning to make a purchase and had the opportunity to collect the items for a discount, they likely would have been motivated to do so. They also mentioned an incentive of a free sample at the end, but it was unavailable as it had sold out.	The participant encouraged the avatar, but chose not to engage with it.	The information about the founder and brand history was found to be interesting and covered expertly.			The participant noticed a video in the bathroom section, though they were unsure of its purpose, but found it to be something to watch.	
C8	The VTO feature allowed for trying products, but it lacks sensory aspects like touch and smell. For items like foundation, lighting and camera quality can affect the accuracy of the match, but products like eyeshadow and lipstick, it can still influence the purchase decision.	The gamification elements were viewed as a fun addition, providing additional motivation to explore all areas of the VTO and check out everything they could see. The participant noted that this feature could potentially influence purchasing decisions, particularly for high-end cosmetics, as it would help them feel more confident in choosing products.							The participant appreciated the videos available for viewing, as they provided additional information.	
C9	The VTO feature was seen as offering a fun and interactive experience, though it was noted that the bar effect, lighting, and camera quality were not as good as in physical stores. While it wasn't quite the same as using a physical mirror in a beauty store, the feature allowed for a quick product view, similar to browsing a regular online store. Familiarity with the brand could influence the decision to use the feature, as it provided more confidence in the products compared to standard online shopping. The try-on tool was appreciated for offering a general sense of how products might look on the user, though some individual items, like purple eyeshadow, appeared odd when used with minimal makeup. Overall, the feature was considered a helpful addition, but not fully relied upon for decision-making.	The participant noticed a game offering 15% off experience, though it was noted that the bar effect, lighting, and camera quality were not as good as in physical stores. While it wasn't quite the same as using a physical mirror in a beauty store, the feature allowed for a quick product view, similar to browsing a regular online store. Familiarity with the brand could influence the decision to use the feature, as it provided more confidence in the products compared to standard online shopping. The try-on tool was appreciated for offering a general sense of how products might look on the user, though some individual items, like purple eyeshadow, appeared odd when used with minimal makeup. Overall, the feature was considered a helpful addition, but not fully relied upon for decision-making.	The participant noticed a game offering 15% discount but chose not to play as they weren't planning to buy anything. While the game seemed engaging for those intending to make a purchase, the time spent on the game was not as long as they would have liked, and suggested that such offers should be removed once expired. The promotion had been available, but it would have encouraged them to make a purchase.							
C10	The VTO feature was seen as a useful addition, allowing users to visualize how products, like lipstick, would look. However, it was also noted as somewhat unrealistic, with the experience of feeling as authentic as trying products in person. While it was appreciated as a nice-to-have feature, it was not seen as a significant aid in decision-making at this stage.	The participant found the quizzes and 'scavenger hunt' to be fun and engaging, providing a sense of accomplishment and excitement. They appreciated the interactive elements, like collecting floating compact, and participating in the VTO. The participant noted that gamification, especially with incentives like discounts, could encourage further exploration, depending on the product and store features. The level of interest in the product, whether it's something they want to buy quickly or explore more, would also influence their engagement.	The participant found the experience engaging, particularly with the floating compact and the 15% discount, which served as a strong motivator. They noted that incentives, such as discounts or engaging games, could encourage further exploration, depending on the product and available features. However, if they already knew what product they wanted, they wouldn't visit a VTO unless there was a clear discount involved.			The participant appreciated the ability to click on each product and access detailed information, such as ingredients. They found it particularly valuable to know products were vegan or fragrance-free, considering this feature to be a cool and useful aspect of the experience.	The participant appreciated the ability to click on each product and access detailed information, such as ingredients. They found it particularly valuable to know products were vegan or fragrance-free, considering this feature to be a cool and useful aspect of the experience.	The participant appreciated the look recommendations, such as Paris Day and New York Night, where product routines were showcased, enhancing the interactive experience.		
C11	The VTO feature was seen as practical and useful, especially for products like makeup, where trying on different colors is not always possible in physical stores. While the 'First Your Perfect Match' feature was initially surprising due to its accuracy, the participant appreciated its innovative approach. However, the camera had to be positioned at a specific distance to ensure accurate results. The feature was considered a valuable tool if the technology is accurate, as it can influence purchase decisions, build connection with the brand, and provide an alternative to in-store experiences where trying on items may not be feasible.	The participant enjoyed the gamification aspect of the quiz, finding it fun and led them to add an item to their cart.	The participant valued interactive quizzes, as it allowed for customization of a scent, something they typically wouldn't buy without smelling first. However, they noted that they wouldn't visit the VTO specifically for this feature and would prefer user quiz quizzes directly on a website.			The participant found the learning more about the founder and the brand's history helped connect them to the brand and made them feel more intimate.			The participant appreciated the ability to click on each product and access detailed information, such as ingredients. They found it particularly valuable to know products were vegan or fragrance-free, considering this feature to be a cool and useful aspect of the experience.	
C12	It really depends on how accurate the feedback is. For example, with facial mapping, the accuracy and dimensions are correct, it's very helpful for designing a room. But with makeup, it's tricky because of undertones and other factors that might not come across realistically. I wouldn't rely on it as much for makeup.	The participant found the quizzes and 'scavenger hunt' to be fun and engaging, providing a sense of accomplishment and excitement. They appreciated the interactive elements, like collecting floating compact, and participating in the VTO. The participant noted that gamification, especially with incentives like discounts, could encourage further exploration, depending on the product and store features. The level of interest in the product, whether it's something they want to buy quickly or explore more, would also influence their engagement.	The participant found the experience engaging, particularly with the floating compact and the 15% discount, which served as a strong motivator. They noted that incentives, such as discounts or engaging games, could encourage further exploration, depending on the product and available features. However, if they already knew what product they wanted, they wouldn't visit a VTO unless there was a clear discount involved.			The participant appreciated the ability to click on each product and access detailed information, such as ingredients. They found it particularly valuable to know products were vegan or fragrance-free, considering this feature to be a cool and useful aspect of the experience.				
C13	The participant used VTO apps, such as MyBella's, and while not particularly interested in high-end makeup, they explored the technology out of curiosity rather than with the intention to make a purchase.	The participant noted that gamification would motivate them to visit the VTO if there were clear incentives, such as a discount or a specific product they wanted to purchase. They also noted that gamification and other interactive features, such as quizzes, could encourage further exploration, depending on the product and store features. The level of interest in the product, whether it's something they want to buy quickly or explore more, would also influence their engagement.	The participant expressed that time-limited offers and incentives in quizzes, they would visit the VTO primarily for the incentive to explore the product range. They also noted the store appealing for conveying the brand's identity, but would only visit for fun if there was a discount or if they had time to spend in person.			The recommendation feature of the perfume quiz was highly appreciated, as it suggested a product based on the user's preferences, despite their preference for smelling the product before purchasing.				
C14	The participant used VTO features on Snapchat, where they could try on products like lipstick. They found it enjoyable, similar to using a filter, and appreciated how it helped determine if products like lipstick or eyeshadow suited their features, offering a more informed decision-making process than purchasing without trying.	The participant noted that gamification would motivate them to visit the VTO if there were clear incentives, such as a discount or a specific product they wanted to purchase. They also noted that gamification and other interactive features, such as quizzes, could encourage further exploration, depending on the product and store features. The level of interest in the product, whether it's something they want to buy quickly or explore more, would also influence their engagement.	The participant expressed that time-limited offers and incentives in quizzes, they would visit the VTO primarily for the incentive to explore the product range. They also noted the store appealing for conveying the brand's identity, but would only visit for fun if there was a discount or if they had time to spend in person.			The participant appreciated the feature where digital or products immediately displayed available colors. The option to order directly was seen as a great convenience, though they felt it was more effective in this format.				
C15	They viewed VTOs as a 'nice-to-have' rather than a critical tool for making purchases, as they value the tactile experience of products. The participant felt that current technology isn't advanced enough to accurately replicate the real-world look and feel of products. However, they saw potential in using VTOs as a way to gather initial information, such as exploring products virtually before visiting a store in person.	The participant noted that gamification would motivate them to visit the VTO if there were clear incentives, such as a discount or a specific product they wanted to purchase. They also noted that gamification and other interactive features, such as quizzes, could encourage further exploration, depending on the product and store features. The level of interest in the product, whether it's something they want to buy quickly or explore more, would also influence their engagement.	The participant expressed that time-limited offers and incentives in quizzes, they would visit the VTO primarily for the incentive to explore the product range. They also noted the store appealing for conveying the brand's identity, but would only visit for fun if there was a discount or if they had time to spend in person.			The presentation of the products and the level of detail in the product descriptions were appreciated. They noted that the product, though initially not their first choice, was logical with the product description appearing immediately upon selection. The overall implementation was seen as both technically and visually well executed.				
CATEGORY SUMMARY	Participants found the VTO feature engaging and useful for exploring products like lipstick and eyeshadow but noted limitations in accuracy, such as lighting, camera quality, and the natural result of certain products, like foundation. While it's a helpful starting point, it lacked realism and sensory elements, making physical stores preferable for final decisions. They viewed VTOs as a 'nice-to-have' rather than essential for purchase decisions. Familiarity with the brand increased confidence in its use, though the technology's convenience reduced full reliance.	Participants found the VTO feature engaging and useful for exploring products like lipstick and eyeshadow but noted limitations in accuracy, such as lighting, camera quality, and the natural result of certain products, like foundation. While it's a helpful starting point, it lacked realism and sensory elements, making physical stores preferable for final decisions. 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They viewed VTOs as a 'nice-to-have' rather than essential for purchase decisions. Familiarity with the brand increased confidence in its use, though the technology's convenience reduced full reliance.	Participants found the VTO feature engaging and useful for exploring products like lipstick and eyeshadow but noted limitations in accuracy, such as lighting, camera quality, and the natural result of certain products, like foundation. While it's a helpful starting point, it lacked realism and sensory elements, making physical stores preferable for final decisions. They viewed VTOs as a 'nice-to-have' rather than essential for purchase decisions. Familiarity with the brand increased confidence in its use, though the technology's convenience reduced full reliance.	

*Appendix 33: Consumer Analysis Grid 3 Experience*

Code	Frequencies Mentions	Percentages	Frequencies Participants	Percentages
VTO	36	31,03	14	93,33
Gamification	21	18,10	10	66,67
Quizzes	12	10,34	10	66,67
Incentivization	22	18,97	8	53,33
Avatar	7	6,03	6	40,00
Brand Introduction	5	4,31	5	33,33
Products	5	4,31	5	33,33
Recommendations	4	3,45	4	26,67
Video Wall	4	3,45	4	26,67
TOTAL	116	100,00	15	100,00

*Appendix 34: Frequencies Interactive Features*

Code	Frequencies Mentions	Percentages	Frequencies Participants	Percentages
Positive	14	93,33	8	53,33
No Change	1	6,67	1	6,67
Negative	0	0,00	0	0,00
TOTAL	15	100,00	9	100,00

*Appendix 35: Frequencies Impact on Brand Perception*

Category Sub-Category Sub-Sub-Category	General Concept Perception	
	AR/VTO	VR/VS
C1		
C2	These tools are fun gadgets for exploration.	Prefers going to a physical store.
C3		The participant views VS as more exploratory than traditional online stores, where the focus is typically on a specific product. They expressed interest in trying VS again, as they offer the opportunity to discover additional items of product.
C4		Overall, it is different and they were pleasantly surprised. While acknowledging that a physical store provides more sensory input, they still considered the VS experience to be cool.
C5		VS as an excellent way to introduce a brand and its products, particularly for those unfamiliar with them. They appreciate the opportunity to explore and get an overview of the brand's highlights. However, they would still prefer to visit a physical store to test products before making a purchase, especially for high-end brands. Despite this, the interactive and engaging nature of the VS made the experience enjoyable.
C6		VS as a valuable way to explore a brand before visiting a physical store, allowing for product discovery in the comfort and privacy of home. While they acknowledge the potential of VS to assist in purchase decisions, they feel that most VS are still in the early stages and are not yet sufficient for making final purchase choices. However, they see VS as a useful starting point in the buying process.
C7	The participant expressed a general lack of enthusiasm for AR/VTO features, finding them often artificial and inaccurate. They highlighted that, particularly with makeup, the personal application process makes a significant difference, which these tools cannot replicate. As a result, they viewed these features as more of a "nice to have"	In the specific case of the VS from the experience, it did not appeal to them due to a lack of interest in the product. However, they acknowledged the potential of VS for other types of products, such as clothing.
C8	The participant expressed that while AR/VTOs can be challenging for products like foundation due to issues with lighting and camera quality, they would consider using them as a factor in their purchase decision for products like eyeshadow or lipstick.	VS are seen as a more personal alternative to traditional websites, providing a better sense of a brand's aesthetic compared to the clean, minimalistic displays on standard online platforms. While VR/VS allows for virtual product trials, it does not offer the tactile or sensory experiences of a physical store. The technology is considered a promising option, though current limitations, such as slow loading times and navigation difficulties, may hinder
C9	The participant viewed AR/VTOs as a fun feature, offering a general idea of how products might look with their skin tone or face. They found it interesting to see full looks applied but noted that certain products, like purple eyeshadow, appeared odd when used with a bare face. Despite this, they appreciated the overall look feature, though they wouldn't rely on it completely.	A VS is more enjoyable for browsing, as it offers a fun and engaging shopping experience, with an appealing and technically interesting environment. However, when searching for a specific product, the extra features can be distracting and hinder efficient shopping. While the experience is more engaging than a standard online store, it involves unnecessary elements that aren't needed for focused shopping. The participant also mentioned feeling a bit odd navigating from home, but appreciated the video game-like vibes, which added to the fun.
C10	The VTO is a useful feature, particularly for seeing how a lipstick looks on the lips, but still finds them unrealistic compared to applying lipstick in person. They did not try it in this instance but noted that, generally, such features don't feel as authentic. While considered a nice-to-have feature.	The VS concept is interesting and enjoyable to experience, particularly appreciating the beautiful design and setup. However, they felt some aspects of the experience were unrealistic and expressed that they wouldn't necessarily use it in the future. While they would still prefer a traditional website for faster shopping, they see VS as valuable for discovering unfamiliar brands, as it allows for deeper exploration of products and brands. For brands they already know, they would likely opt for a more practical website experience.
C11	The participant found the "Find Your Perfect Match" feature practical and helpful, especially for trying makeup colors virtually when testing isn't always possible in physical stores. They acknowledged its potential to influence purchase decisions if the technology is realistic and accurate, particularly for matching shades to skin tones without needing assistance. However, they hesitated to grant camera access, finding it unexpectedly personal, as they were unprepared for it and unfamiliar with the feature. Despite initial reluctance, they viewed it as a useful and	The VS experience is perceived as pleasant and modern, appreciating the ability to browse at their own pace without the pressure of salespeople, similar to a physical store. They viewed the concept as innovative and practical, acknowledging that while it likely requires significant effort to create, it could become easier for brands to implement over time. The participant sees it as especially useful for clothing and makeup, where VTOs could help customers make more informed choices. They believe the interactive experience fosters a connection with the
C12	For example, Ikea lets you see furniture in your space. I think L'Oréal might have had something similar for trying on makeup. It really depends on how accurate the feedback is. For example, with furniture, if it looks realistic and the dimensions are correct, it's very helpful for designing a room. But with makeup, it's trickier because of undertones and other factors that might not come across realistically. I wouldn't rely on it as much for makeup.	Frustration arose from internet issues, particularly as not all features were accessible. Despite this, the experience was still considered cool, and the participant expressed willingness to try it again. However, they indicated that if they already had a specific product in mind, they wouldn't be inclined to visit a VS unless discounts were offered.
C13	AR/VTOs are viewed more as a technology curiosity rather than a tool for shopping, having tried similar apps (like Maybelline's) without the intention to purchase, especially since they aren't particularly interested in high-end makeup.	The participant, initially skeptical, found the VS to be a more engaging and premium-feeling alternative to a regular website. They appreciated how it conveyed the brand's values, such as quality and elegance, and provided smooth, clear navigation. While they acknowledged its potential for exploring product ranges and its suitability for other brands, they preferred quick, direct information when looking at premium products. Gamification did not
C14	The participant viewed AR/VTOs positively, describing them as fun, similar to using a filter on Snapchat. They appreciated how these features, such as trying on lipstick or eyeshadow, helped determine whether products suited their skin tone or eye color, making the decision-making process easier and more informed than purchasing without trying.	The participant expressed a strong preference for VS over traditional shopping, citing frustration with crowded, chaotic in-person shopping experiences. While they still feel something is missing with online shopping, they found the VS to be a good blend of both, offering the convenience of avoiding physical crowds while providing a more engaging experience than a basic website. The participant also noted that the experience was enjoyable enough that they might have made a purchase if they encountered it privately. They believe this concept, which is creative and distinct from traditional online shopping, would appeal especially to younger generations who prefer alternatives to in-person shopping.
C15	The participant views AR/VTO technology as a "nice to have" feature rather than a crucial factor in making a purchase. They believe it doesn't yet provide an accurate representation of products, especially for items that rely on tactile sensations or a specific look and feel. The participant feels that the technology is not yet advanced enough to realistically portray how things would appear in real life. While they don't see AR/VTO as a key decision-making tool, they acknowledge its potential as a helpful introduction to products, such as providing initial information or direction before visiting a physical store.	VS are more of a secondary option rather than a primary channel, largely due to the current lack of widespread adoption. They prefer websites for their clear overview and ease of navigation, especially using filters to quickly find relevant products. VS are seen as a nice-to-have additional touchpoint, particularly for familiarizing oneself with products or experiencing a brand, especially in categories like beauty. However, they emphasize that VS are not yet a go-to choice and that traditional online or physical stores remain the preferred options. They also note that a seamless technical experience is essential for VS to become more relevant.
<b>CATEGORY SUMMARY</b>	<p>The primary perception of AR/VTO tools is fun and novelty, with participants viewing them as engaging and interactive, similar to social media filters. However, they face limitations such as accuracy issues, product-specific concerns, and an authenticity gap. Physical application is seen as superior for making final decisions, indicating that the technology is not a substitute for real-world experiences.</p> <p>Utility and "nice-to-have" factors are considered useful for initial exploration or pre-purchase insights, but they are not yet integral to shopping habits due to technological limitations. Privacy and personal space concerns arise from camera access, which may deter usage. Brand engagement is seen as a way to increase brand interaction and accessibility, particularly for users hesitant to seek in-store assistance or test products physically.</p> <p>AR/VTO tools do contribute to purchase decisions for specific products, especially when perceived as accurate, helping mitigate uncertainties for colors and styles users may hesitate to try in physical stores. The technology is valued for its cross-industry applications, such as furniture visualization by IKEA, showing how accuracy can elevate consumer trust and reliance.</p>	<p>VS (VS) are viewed as an exploratory and engaging alternative to physical stores, offering a gamified, visually appealing shopping experience that allows users to browse and explore products at their own pace. They are seen as valuable tools for brand discovery and product exploration, particularly for unfamiliar brands, providing a sense of the brand's identity and aesthetic. However, traditional websites are seen as quicker and more practical for brands.</p> <p>Technical issues such as slow loading times, navigation difficulties, and occasional internet problems hinder the shopping experience. VS are perceived as lacking realism, particularly in the absence of tactile feedback and true-to-life representations. Efficiency concerns also arise, making traditional websites preferable for quick and targeted product searches.</p> <p>Despite these challenges, participants acknowledge the potential of VS to bridge the gap between physical and online shopping, particularly in categories like clothing and makeup. The immersive and interactive environment of VS creates a stronger emotional connection with the brand, enhancing engagement and fostering a sense of premium quality. Gamified elements and brand-focused storytelling in VS provide an opportunity for brands to stand out, especially for younger, tech-savvy generations.</p>

## Appendix 36: Consumer Analysis Grid - General Concept Perception



Codes	Frequencies Mentions	Percentages	Frequencies Participants	Percentages
Informational Depth	18	10,78	13	86,67
Emotional & Sensory Engagemen	31	18,56	12	80,00
<b>= Immersive Experience</b>	<b>49</b>	<b>29,34</b>	<b>15</b>	<b>100,00</b>
Enhanced (Shopping) Experience	33	19,76	14	93,33
Differentiation	19	11,38	10	66,67
Gamification & Incentives	14	8,38	9	60,00
Memory Retention/Brand Affinity	8	4,79	5	33,33
<b>= Strengthened Brand Perception</b>	<b>74</b>	<b>44,31</b>	<b>14</b>	<b>93,33</b>
<b>Purchase Decision Support</b>	<b>25</b>	<b>14,97</b>	<b>14</b>	<b>93,33</b>
Time Efficiency	4	2,40	4	26,67
Location Independance	6	3,59	4	26,67
Barrier Reduction	4	2,40	3	20,00
<b>= Convenience &amp; Accessibility</b>	<b>14</b>	<b>8,38</b>	<b>5</b>	<b>33,33</b>
<b>Personalization</b>	<b>5</b>	<b>2,99</b>	<b>4</b>	<b>26,67</b>
<b>TOTAL</b>	<b>167</b>	<b>100,00</b>	<b>15</b>	<b>100,00</b>

*Appendix 38: Frequencies Benefits - Consumer Interviews*

Category	Impact on Purchase Decision			
	Sub-Category	Positive but conditional	Positive	None
C1		If they had a specific product in mind, like their popular setting powder, but weren't planning to purchase it immediately, this type of experience could influence their decision. Interacting with the virtual store and exploring the items might have a greater impact on their intent to buy compared to a traditional store.		
C2		The experience was useful for exploring the product range, but it didn't have a strong impact on the decision to make a purchase.		They wouldn't rely on the virtual experience to make a purchase decision, particularly with makeup, since returns are more complicated compared to items like clothing.
C3			They consider discounts to be relevant, particularly for expensive items. A 15% discount on a ~100 product would be significant enough to impact their purchase decision.	
C4			They find these tools (VTO) generally appealing, having used similar ones before, such as for trying on glasses with Mr. Spex. While they didn't use it today due to not wearing makeup, they believe such tools can make purchasing beauty products online easier, especially when there is limited information from social media or other sources. Overall, the experience has a positive impact on their decision-making process.	
C5			The VTO, particularly for makeup, could have a positive impact on purchase decisions. For instance, while exploring options during events like Black Friday and considering high-end cosmetics, the ability to virtually try on makeup might encourage a purchase, such as a lipstick or similar product.	
C6		If they were already familiar with the brand and knew they liked the quality of its products, the VTO experience could influence them to make a purchase for a specific item.		At the moment, they would prefer to visit a physical store to confirm how well a product matches their skin tone and evaluate its texture before making a purchase.
C7				
C8		If someone is already planning to make a purchase, the virtual store helps keep them engaged longer, allowing them to discover more products as they explore, compared to just browsing categories on a website. While it can be tricky for products like foundation due to lighting and camera quality, for items like eyeshadow or lipstick, the virtual store experience can positively influence their purchase decision.	The participant stated that the virtual experience could definitely influence their purchase decisions.	
C9		The game offering 15% off seemed like a fun option for those planning to make a purchase, but it didn't catch their attention as they weren't intending to buy anything. Without the intention to purchase, the game had little impact on their decision.		
C10		The VTO is a valuable feature, but it doesn't yet play a significant role in influencing the decision-making process.		
C11			The fragrance quiz had a positive impact, as it was enjoyable and led to the addition of an item to the cart.	
C12			The quiz for perfume scents was a nice touch that encouraged them to add items to the cart.	
C13		The experience has a positive but conditional effect on the purchase decisions. If there is a clear intention to buy and an incentive, such as a discount, they would be more likely to make a purchase. However, without a specific product in mind or significant discounts (above 15%), they wouldn't spend time on the virtual store. While the store offers a good sense of the brand and its products, they are more likely to visit for incentives or to explore the range, rather than for casual browsing.		
C14			The ability to see all available colors for products immediately and order directly had a positive impact on the purchase decision, making it an enticing experience. The participant felt it helped with decision-making, such as determining if a lipstick suits their skin tone or if eyeshadow works with their eye color. The experience was engaging and stood out from traditional websites or crowded stores, leading them to consider making a purchase. If they had encountered this experience on their own, they likely would have bought something due to its uniqueness and appeal.	
C15		The experience had a positive but conditional effect on the purchase decision. While the process itself, including wallet handling and payment, was smooth and well-executed, the participant, not being the primary target group due to the lack of men's products, wouldn't make a purchase for themselves. They viewed the virtual store as a nice-to-have feature rather than a crucial purchasing tool. The technology was seen as not yet fully capable of replicating the tactile experience necessary for certain products, particularly when it comes to how they would look or feel in reality. However, tools like the fragrance finder did provide a helpful starting point, guiding users toward products before visiting the physical store.	The virtual store can serve as a helpful introduction to a purchase, allowing them to gather initial information when they don't have time for a full shopping experience, such as in the evening, potentially influencing their buying decision later.	The VTO would not influence the purchase decision due to inconsistencies in appearances and limited knowledge and functionality, which prevent it from being a decisive factor.
<b>CATEGORY SUMMARY</b>		The virtual store positively influences purchase decisions when users have a specific product in mind, like a setting powder, but has less impact without a clear intent to buy. It's useful for exploring product ranges but doesn't strongly drive purchases. Familiarity with the brand, VTOs, and incentives, like discounts, can encourage purchases, especially for items like eyeshadow or lipstick. However, concerns like lighting and camera quality reduce the effectiveness of VTOs for products like foundation. The store is mainly used for exploration or incentives, rather than casual browsing, and it's seen as a helpful tool for product discovery rather than a key factor in making a purchase.	Discounts, especially on expensive items, were seen as a key factor in influencing purchase decisions. Participants found VTO tools appealing, especially for makeup, making online beauty purchases easier. The fragrance quiz and instant color options also had a positive impact, encouraging users to add items to their cart. The virtual store's interactive features made the experience more engaging, helping users make informed decisions and increasing the likelihood of a purchase. Overall, the experience served as a helpful introduction to products, influencing future buying decisions.	Participants expressed that they would not rely on the virtual store experience to make a purchase decision, particularly for makeup, due to the challenges of returns and the need to confirm product suitability in person. They preferred visiting a physical store to assess factors like skin tone matching and texture before committing to a purchase. Additionally, inconsistencies in product appearances and limited knowledge or functionality of the VTO prevented it from being a decisive factor in the purchase decision.

### Appendix 39: Consumer Analysis Grid - Impact on Purchasing Decision

Code	Frequencies	Mentions	Percentages	Frequencies	Participants	Percentages
Positive but conditional	13		48,28	8		53,33
Positive	11		37,93	8		53,33
None	4		13,79	3		20,00
<b>TOTAL</b>	<b>29</b>		<b>100,00</b>	<b>15</b>		<b>100,00</b>

### Appendix 40: Frequencies Impact on Purchase Decision

Category	Sub-Category	Technical Limitations	Challenges	Limitations in Product Interactions	Preference for Physical Stores	Time Intense for Quick Purchases	Lack of Familiarity with Virtual Shopping	Overwhelming Visual Elements	Interconnection Focus	Privacy Concerns	Accessibility
	Within Brand Control	Outside Brand Control									
C1											
C2											
C3											
C4											
C5											
C6											
C7											
C8											
C9											
C10											
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Codes	Frequencies Mentions	Percentages	Frequencies Participants	Percentages
Within Brand Control	24	15,89	9	60,00
Outside Brand Control	10	6,62	7	46,67
<b>= Technical Limitations</b>	<b>34</b>	<b>22,52</b>	<b>11</b>	<b>73,33</b>
<b>Limitations in Product Interactions</b>	<b>11</b>	<b>7,28</b>	<b>8</b>	<b>53,33</b>
<b>Preference for Physical Stores</b>	<b>10</b>	<b>6,62</b>	<b>8</b>	<b>53,33</b>
<b>Lack of Familiarity with Virtual Shopping</b>	<b>9</b>	<b>5,96</b>	<b>5</b>	<b>33,33</b>
<b>Time Intense for Quick Purchases</b>	<b>9</b>	<b>5,96</b>	<b>5</b>	<b>33,33</b>
<b>Overwhelming Visual Elements</b>	<b>9</b>	<b>5,96</b>	<b>4</b>	<b>26,67</b>
<b>Incentivication Focus</b>	<b>2</b>	<b>1,32</b>	<b>2</b>	<b>13,33</b>
<b>Privacy Concerns</b>	<b>2</b>	<b>1,32</b>	<b>1</b>	<b>6,67</b>
<b>Accessibility</b>	<b>1</b>	<b>0,66</b>	<b>1</b>	<b>6,67</b>
<b>TOTAL</b>	<b>151</b>	<b>100,00</b>	<b>15</b>	<b>100,00</b>

### Appendix 42: Frequencies Challenges - Consumer Interviews

Codesystem	Accessibility	Incentivication Focus	Privacy Concerns	Time Intense for Quick Purchases	Outside Brand Control	Within Brand Control	Lack of Familiarity with	Overwhelming Visual Elements	Preference for Physical Stores	Limitations in Product
Challenges > Accessibility	-	0	0	0	0	0	1	0	0	0
Challenges > Incentivication Focus	0	-	0	0	0	0	0	0	0	0
Challenges > Privacy Concerns	0	0	-	0	0	0	0	0	0	0
Challenges > Time Intense for Quick Purchases	0	0	0	-	0	0	1	2	0	0
Challenges > Technical Limitations > Outside Brand Control	0	0	0	0	-	2	0	0	1	0
Challenges > Technical Limitations > Within Brand Control	0	0	0	0	2	-	2	0	1	3
Challenges > Lack of Familiarity with Virtual Shopping	1	0	0	1	0	2	-	1	1	0
Challenges > Overwhelming Visual Elements	0	0	0	2	0	0	1	-	0	0
Challenges > Preference for Physical Stores	0	0	0	0	1	1	1	0	-	4
Challenges > Limitations in Product Interactions	0	0	0	0	0	3	0	0	4	-

### Appendix 43: Category Relationship 3 Overlap Challenge x Challenge

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