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OPPORTUNITIES FOR OPTIMISING MARKETING STRATEGIES THROUGH THE USE OF VIRTUAL REALITY AND AUGMENTED REALITY

OPORTUNITĂȚI DE OPTIMIZARE A STRATEGIILOR DE MARKETING PRIN UTILIZAREA REALITĂȚII VIRTUALE ȘI A REALITĂȚII AUGMENTATE

SUMMARY

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INTRODUCTION

In recent years, rapid advances in technology have significantly transformed the online marketing landscape. With the advent of Augmented Reality (AR) and Virtual Reality (VR), brands have powerful tools at their disposal to enhance customer experiences, engage more with their target audiences and revolutionise their online marketing strategies. The potential impact of these two technologies on the marketing field has attracted substantial attention from companies and researchers.

The aim of this PhD thesis is to investigate the impact of AR and VR on online marketing strategy. The first objective of the research is to assess how augmented reality and virtual reality are perceived and used by consumers. The second objective of this thesis is to determine whether the implementation of these new technologies in marketing strategy has an impact on customer behaviour online. The third objective is to identify and measure how different features of augmented and virtual reality impact and influence the level of purchase intent for products presented using these technologies.

To achieve these objectives, a mixed-methods approach will be used, encompassing both qualitative and quantitative research methods. Through surveys, interviews and experimental studies, valuable information will be gathered to inform the development of theoretical frameworks and practical guidelines for incorporating AR and VR into online marketing strategies.

Integrating AR and VR into online marketing offers a unique opportunity for companies to deliver interactive and personalised experiences to consumers. These technologies have the potential to transform the way products and services are presented and perceived, enabling brands to create engaging and memorable experiences that go beyond traditional marketing approaches. However, the adoption and effective use of AR and VR in marketing strategies requires a thorough understanding of their impact on consumer behaviour, brand perception and overall marketing effectiveness.

Thus, this PhD thesis aims to explore and analyse the impact of AR and VR on online marketing strategy. By investigating the integration, implications and challenges associated with these immersive technologies, this research aims to contribute to our understanding of how AR and VR can shape the future of marketing. By exploring consumer behaviour, brand engagement and marketing effectiveness, this study provides insights and practical recommendations to guide marketers in harnessing the power of AR and VR to improve their online marketing strategies.

PRESENTATION OF THE DOCTORAL THESIS CHAPTERS

The first chapter, entitled **"The state of knowledge in the field of online marketing"**, is devoted to conceptual and methodological aspects of online marketing. It presents the current state of knowledge through a systematic review of the literature, with the aim of identifying the main issues addressed by researchers from the perspective of online marketing, consumer behaviour and the process of marketing strategy formulation, both in the physical and online environment. This chapter concludes by presenting theories on the use of augmented reality and virtual reality and the purpose of these technologies in online marketing strategy.

Online marketing

Ngai (2003) defines online marketing as the process of developing and maintaining a good relationship with customers through online activities that facilitate the exchange of products, services and ideas to meet customer and business needs.

Online marketing has introduced into marketing strategies a number of practices aimed at increasing visibility, generating website traffic, generating leads (prospects) and ultimately converting them into customers. A wide range of tools and activities are available to companies, such as SEO, PPC, content generation, social media marketing, email marketing, influencer marketing and many more.

Companies need to develop skills so they can leverage the capabilities of digital channels to effectively communicate with customers and drive business growth. Online marketing efforts rely on analytics and data measurement to understand customer behaviour, track campaign performance, and optimize marketing strategies for competitive advantage. Thus, the main objectives of using marketing strategies in the online environment, as identified by Pricopoaia, Micu and Susanu (2022), are to reduce costs, streamline promotion, track campaign results, quickly analyse the market and develop close relationships with entities around the brand.

Understanding the new consumer, new technologies and processes is vital for business development in the online environment. Thus, it is important to investigate how consumer behaviour is influenced by these new technologies and how marketers' strategic actions can ensure success in the new conditions.

Consumer behaviour

Ryan and Jones (2009) believe that online marketing is not necessarily about understanding new technologies, but rather about understanding the new consumer. More important than understanding new technologies is understanding how the target audience

uses those technologies and using that understanding to easily reach the potential customer.

Understanding consumer behaviour has been the focus of theorists and companies in recent decades as they investigate how customers respond to different marketing stimuli to initiate and complete a purchase. Kotler and Keller (2011) define consumer behaviour as the science that studies how individuals, groups or organisations purchase products, services, or ideas to satisfy their needs. It is very important for companies to understand the factors that affect potential consumers in their decision-making process. Generally, these factors cannot be controlled by the company itself, but understanding them can give a company a competitive advantage. Kotler (2008) divides these factors as follows: Cultural (buyer culture, social class, subculture), Social (group membership, status, family influence), Personal (lifestyle, economic situation) and Psychological (motivation, perception, knowledge, attitudes). Awareness of the importance of these factors enables companies to identify their potential customers and bring to market products and services that meet their needs.

Companies' power to influence these factors is limited and efforts should be directed towards better understanding them in the context of the target market, so that it is possible to deliver customised products and services that meet customers' needs and desires.

Technological development, increased internet penetration and the digitisation of companies have fostered the emergence of a new type of customer, generically referred to as the 'digital consumer'. This new type of consumer is highly informed, socially active, and mobile. Understanding the behaviour of this new type of customer and how they navigate the purchasing process is vital for today's businesses. Personalisation of marketing efforts and experiences is very important to this new type of customer (Chaffey & Smith, 2008). They value personalised product recommendations and offers and personalised communication based on their preferences, previous purchases and online browsing behaviour. Digital customers are influenced by social networks and online communities. They actively engage in social networks, follow content created by influencers, participate in discussions, and seek recommendations through their digital connections. The social aspect of digital platforms plays a role in shaping their purchasing behaviour.

Formulating online marketing strategy

Strategy is seen as the way in which companies market services and products for which potential customers are willing to pay more than the cost of production. Saloner et. al (2001) issue the theory that in order to deliver extra value to the customer, the company must develop and maintain a competitive advantage in the marketplace.

Competitive advantage refers to a collection of distinctive attributes and valuable resources that empower a company to surpass its rivals and attain exceptional performance within the marketplace. Lin and Chen (2008) are of the opinion that this set consists of attributes and values that cannot be easily copied by competitors. Kotler (2008) defines the concept as an advantage over competitors achieved by delivering high perceived value to the customer through low prices or many benefits that justify a higher price.

The formulation of strategic goals should be in line with the competitive strategies formulated by the company. These strategies are defined by Kotler (2008) as strategies that place a company at an advantage over its competitors and give it the strongest possible strategic advantage. In order to plan these competitive strategies, the company needs to find out as much information as possible about the existing competition in a market or industry using market research methods. Competitor analysis is defined as the process of collecting, analysing and interpreting data about rivals to facilitate managerial decisions (Hatzijordanou et. al, 2019).

The marketing mix (the 4Ps) is a concept introduced by Borden (1964), comprising four elements that are at the heart of marketing strategy. Palmer (2004) sees these elements as marketing tools that help to develop long-term strategy. These elements are product, price, placement and promotion. In the context of online marketing, the 4P concept is adapted to fit the digital environment. The principles of the traditional marketing mix are still relevant, but adjustments and additions are needed in line with the characteristics of the online business environment.

In addition to the four traditional components of the marketing mix, it is important to mention process and people, given the context of online environment. Process refers to the online actions and systems that facilitate a seamless customer experience. It includes aspects such as website navigation, online ordering and payment processes, interactions with customer service, shipping and delivery processes, and post-purchase support (Anjani et.al., 2018).

Optimising these processes is key to delivering a seamless and positive online experience. Staff refers to the people involved in delivering and supporting online marketing efforts. This includes the marketing team, customer service representatives, influencers, bloggers and others who play a role in online interactions and customer engagement. Delivering excellent customer service online and fostering positive relationships with influencers and online partners are crucial aspects of the people element.

By considering the traditional marketing mix and additional elements specific to online marketing, companies can develop effective digital marketing strategies that capitalize on the opportunities presented by the online landscape and meet the needs of

their target audience. In the online environment, marketing strategies need to adapt to the unique characteristics and opportunities presented by digital platforms. This, together with a good understanding of the target audience and internal capabilities can ensure a brand's success online.

In their study, Kannan and Li (2016) highlight two essential elements in marketing crucial for obtaining and sustaining a competitive advantage in the marketplace: brand and customers. Kotler (2008) is of the opinion that the success of a company is dependent on the degree of balance between customer orientation and market orientation (competitors). We can thus conclude that the success of the company is dependent on the balance of the three elements, customers, competitors and brand. This balance can easily be affected by any action of one or more of the three elements. Thus, a simple post from a disgruntled customer or a sabotaging review from the competition can damage even companies with a strong online presence and strategy. Mattke et. al (2019) believe that companies need to use all three types of media to create a positive attitude towards the brand. The types of media mentioned are earned media, earned media and paid media (Mattke et. al. 2019).

In the modern business landscape, digital marketing presents companies with the chance to search for, identify, and reach potential customers based on their preferences and interests. Understanding their needs and generating a close relationship with them can lead to the implementation of strategies that increase customer satisfaction levels, on which a company's success in the online environment depends (Yuan and Wu, 2008).

Augmented reality

Augmented reality (AR) is defined as an advanced form of virtual reality (Bulearcă & Tamarjan, 2010). It is defined as a form of technology that combines the real environment with computer-generated images to augment or enrich that environment (Virtual Reality Blog, 2009). Augmented reality (AR) enhances the experience of reality by superimposing computer-generated content on the real world, such as photographs, movies or 3D models. To create an interactive and immersive experience, it combines parts of the real world with digital items.

In the realm of digital marketing, augmented reality (AR) has emerged as an interactive tool (Wang, 2021). By seamlessly blending the physical environment with virtual elements, such as images and real-time information, AR opens avenues for delivering content to consumers. Consequently, it holds the potential to revolutionize consumer behaviour, encompassing activities like product and information search (Javornik, 2016). As the adoption of AR has grown in recent years, understanding its impact on consumer psychology has become essential. This technology represents a valuable means of

enhancement, particularly reshaping consumers' online purchasing habits and brand strategies (Kim and Peterson, 2017).

Augmented reality marketing refers to the integration of AR technology into marketing campaigns to provide interactive and immersive experiences. Through mobile devices, smart glasses or other AR-enabled platforms, consumers can engage with virtual content overlaid on the real world. Augmented reality marketing offers unique opportunities to showcase products, provide personalized experiences, and drive consumer engagement with the brand (Cruz et.al., 2019).

Augmented reality marketing transforms the traditional consumer experience by providing consumers with a dynamic and interactive platform. The technology allows consumers to view products in real time and in their own environment, building a bridge between imagination and reality. Consumers can practically test products and experience them in ways that traditional marketing cannot replicate. This increased engagement leads to increased brand loyalty, customer satisfaction and ultimately higher conversion rates (Vilkina & Klimovets, 2019).

Augmented reality marketing offers the opportunity to create personalized and targeted campaigns. Using user data and preferences, brands can offer personalised AR experiences that align with individual tastes and needs (Pozharliev, 2021). This level of personalization increases customer satisfaction and increases the likelihood of conversion. In addition, AR marketing enables real-time data collection, allowing brands to gain valuable insights into consumer behaviour, preferences and trends. AR interfaces can adapt to user preferences and behaviours, providing a personalised and intuitive experience. AR experiences can be triggered based on a user's real-time location (Sweeney, 2013). Using geolocation technology, brands can deliver AR content when users are near a specific location, such as a store, event venue or landmark. This targeted approach allows brands to offer location-specific information, promotions, or engaging experiences that increase user engagement with the environment (Erra & Capece, 2019). Contextual and location-based marketing, using augmented reality, gives brands the opportunity to offer personalized and relevant experiences that align with the user's physical environment. By leveraging geolocation, contextual overlays, localized offerings, and dynamic content, brands can increase user engagement, drive in-store traffic, and create memorable interactions that strengthen the brand-consumer relationship (Massa & Ladhari, 2023).

Integrating augmented reality into packaging design and print advertising allows customers to interact with virtual representations of products. By scanning a product's packaging or a newspaper advertisement with a mobile device, users can unlock virtual content, such as 3D models, animations or videos, which provide an enhanced visual representation of the product (Vilkina & Klimovets, 2019). This interactive visualization allows customers to explore product features, customization options, or even see the

product in action, fostering a deeper understanding and connection with the brand. By overlaying digital content on physical packaging or print ads, companies can provide product details, instructions for use, customer reviews or links to related resources (Fernandez et. al., 2023). This information allows customers to make more informed purchasing decisions, improving the overall brand experience.

Generating emotional connection is an important aspect of immersive augmented reality experiences. Using AR technology, brands can create experiences that evoke emotions, resonate with users and establish a deeper connection with the brand or its products (Kourouthanassis et.al., 2015). AR provides users with a multi-sensory experience, stimulating sight, hearing and even sense. AR experiences can facilitate social interactions, allowing users to share their experiences with others. By incorporating multi-use features or social sharing capabilities, immersive AR experiences can foster a sense of community and emotional connection between users (Sung, 2021).

By incorporating augmented reality technology and gamification principles, SMEs can create engaging and interactive marketing experiences that engage customers, promote brand loyalty, and foster desired actions (Spais et.al., 2022). The combination of entertainment, competition, rewards and educational elements in AR marketing gamification makes it an effective strategy to stand out in a crowded marketplace and foster meaningful connections with customers. Gamification provides a unique opportunity to present brand identity and messaging in an interactive and memorable way (Lee & Jin, 2019). By challenging users, offering rewards or incentives, and creating competitive elements, AR gamification keeps customers interested and motivated to interact with the brand and its offerings (Alsawaier, 2018). Gamification experiences are highly shareable on social media platforms, boosting organic sharing and virality. Users are eager to share their achievements, scores or experiences in games with friends and followers, amplifying brand exposure and generating user-created content (Al-Zyoud, 2021).

Augmented reality can act as a bridge between physical and digital sales channels, creating experiences that blend the two mediums. Using AR, brands can offer customers seamless interactions, enhance product experiences and create a unified brand presence across physical and digital touchpoints (Minh, 2020). This integration increases customer engagement, boosts brand loyalty and business growth. Augmented reality can be integrated across various channels such as mobile apps, websites, social media platforms and physical locations. By delivering consistent experiences across these channels, brands can create a seamless customer experience. This integration creates a bridge between physical and digital channels, ensuring a seamless transition and continuity of customer experience (Rashid et.al., 2015).

In conclusion, the major benefits of augmented reality from a marketing perspective can be summarized as follows:

1.*Generating emotional customer engagement*. AR provides interactive experiences that captivate and emotionally engage *customers.*

2.*Visualization* and physical experience of the product. AR provides customers with the opportunity to explore and interact with products in a virtual setting, enabling them to gain a first-hand experience before committing to a purchase. This immersive visualization feature empowers customers to make well-informed buying choices, subsequently leading to a decrease in product returns and negative feedback.

3.*Differentiate from competitors*. Incorporating AR into marketing strategies differentiates brands from competitors and creates an attractive unique selling proposition. Using innovative technology, brands can position themselves as forward-thinking, customer-centric and leaders in their industry. AR experiences can create a lasting impression on customers and boost brand loyalty.

4.*Gamification and experiential marketing*. AR lends itself well to creating gamification and experiential marketing strategies. Brands can create AR-based games, challenges or treasure hunts that stimulate customer participation and promote brand loyalty. These interactive experiences build positive associations around the brand, encourage social sharing and generate a viral environment around the brand.

5.*Interactive product education*. AR can be a valuable tool for educating customers about complex products or services. Through interactive overlays and animations, AR experiences can provide step-by-step instructions, product information or troubleshooting guides. This engaging education not only enhances customer relationships but also encourages positive brand perception.

Implementing augmented reality in marketing can present several challenges, including high implementation costs (Baron, 2021), lack of expertise to manage the technology (Chandukala et. al., 2022), resource shortages, and lack of management buy-in. Implementing AR requires technical expertise and resources. Developing applications, creating 3D models, integrating AR with existing systems and ensuring compatibility across different devices and platforms can be complex and time consuming. A skilled development team or experienced external partners are needed to overcome these technical challenges (Kumari & Polke, 2019). Implementing AR can be costly, especially for SMEs with limited resources and budgets. Application development, content creation, investment in hardware or software, and ongoing maintenance can require generous budgets. Brands need to educate and encourage users to adopt AR by providing clear instructions, demonstrations and incentives to overcome these barriers to adoption (Paulo et.al., 2018).

Virtual reality

Serano et.al. (2013) define virtual reality as a computer-based technology that makes it possible to simulate a real environment in which the user can experience the sensation of being "physically" present. The aim of virtual reality is to provide a realistic and immersive experience that can transport users to virtual worlds or recreate real-world places.

Virtual reality has applications in various fields and industries. In gaming, VR allows players to access and explore virtual worlds, providing a more immersive and interactive gaming experience (Thompson et. al., 2021). In education, VR can transport students to historical events (Taranilla et. al, 2022), scientific simulations (Makransky et. al, 2019) or immersive language learning environments (Peixoto, 2021).

Virtual reality has significant implications for online marketing, allowing brands to create immersive and engaging experiences for their customers by allowing them to explore products, services or locations virtually. Virtual showrooms, virtual trial experiences and virtual tours are examples of how VR can be used to enhance online marketing strategies. Jung et. al. (2016) are of the opinion that VR technology delivers value to customers, improves their lives, so companies and advertisers need to reach them through these means to identify new opportunities to deliver greater perceived value to consumers and tailor the message to their preferences.

Interactive marketing experiences involve actively engaging consumers in the marketing process, allowing them to interact, participate and create content with the brand. These experiences are designed to be engaging, memorable and personalised, fostering a deeper connection between brand and consumer (Smilansky, 2017).

With the development of the online environment and social platforms, consumers have become more influential and possess greater power in their relationship with brands. They can actively seek information, express opinions and interact with brands on their own terms (Tkaczyk, 2016). Interactive experiences take this power into account and give consumers the opportunity to have a voice, make choices and shape their own experiences. Consumers are looking for authentic and meaningful interactions with brands. They are less receptive to passive advertising and more interested in interacting with brands that align with their values and offer interactive, memorable experiences. Interactive marketing allows brands to create experiences that resonate with consumers and foster deeper engagement and emotional connections (Lim et. al., 2022).

Interactive experiences allow brands to deliver personalised content tailored to individual preferences. By allowing consumers to interact with content, make choices and provide feedback, brands can gather valuable data and insights that can be used to deliver more relevant marketing experiences.

One of the key strengths of virtual reality marketing is its ability to bring consumers into a brand's story. VR experiences create a sense of presence and emotional connection, allowing users to become active participants rather than passive observers (Flavian et.al., 2021). This increased level of engagement fosters greater brand awareness and loyalty. The integration of virtual reality into live events has revolutionised the way brands deliver immersive brand experiences. Using VR technology, brands can transport event attendees into virtual worlds, creating unforgettable and immersive experiences (Guerra et.al., 2015). Attendees can be transported in a virtual way to immersive concerts, art galleries or theatre experiences. Brands can collaborate with artists to create virtual experiences that complement their brand message or evoke specific emotions. Virtual performances offer a sense of exclusivity and allow participants to engage with entertainment in innovative ways.

Virtual reality marketing offers a high level of personalization, allowing brands to tailor experiences based on individual preferences and target audience demographics (Violante et.al., 2019). By gathering data about user behaviour in virtual environments, marketers can analyse patterns and deliver targeted content. This personalization not only increases user satisfaction, but also improves the relevance and effectiveness of marketing campaigns. The ability to present personalized offers improves the overall user experience, increasing the likelihood of conversion and long-term brand loyalty (Tawira and Ivanov, 2023).

Virtual reality provides valuable insights into user behaviour, preferences, emotional responses and performance metrics of marketing campaigns. Analysing data collected with VR helps brands optimise experiences, personalise offers and create more engaging and effective marketing campaigns. The data-driven approach empowers brands to make informed decisions, increase user satisfaction and achieve their marketing goals (Elboudali et.al., 2020). User interactions are captured, with this data helping to generate insights into user behaviour, preferences and engagement levels, allowing brands to optimise user experiences and decide on design changes. The VR temperature map tracks and visualizes the areas or objects that receive the most attention from users. By analysing this data, brands gain insight into the most attractive elements in the virtual environment, allowing for optimised placement of information, design layouts and product displays. VR devices can collect biometric data such as heart rate, pupil dilation or skin changes, providing insights into users' emotional states, engagement levels or stress levels (Xu et.al., 2021). Thus, VR helps companies understand user reactions, evaluate the effectiveness of marketing campaigns, and assess user preferences based on emotional responses.

By analysing the available literature we can identify the main benefits of implementing virtual reality in marketing strategy as follows:

1.*Boost engagement*. Virtual reality provides immersive and interactive experiences that captivate and engage customers. It thus enables brands to create memorable and impactful interactions, resulting in better attention capture and long-lasting memories.

2.*Improved product visualization*. Virtual reality allows customers to view products in realistic, three-dimensional environments. It provides a realistic and detailed representation, allowing customers to better understand product features, functionality and benefits.

3.*Removing physical barriers*. VR removes physical limitations such as geographical distance or store availability. Customers can virtually explore products, showrooms or destinations, giving them access to a wider range of options and increasing convenience in the buying process.

4.*Differentiate from competitors*. Customers can interact with products, explore options and personalise their experiences, resulting in a more engaging and personalised marketing approach. In this way, brands can differentiate themselves from competitors, building a special image.

5.*Brand loyalty*. Virtual reality provides a memorable experience for customers, leading to increased customer satisfaction and loyalty. By offering immersive and personalised interactions, brands can build stronger connections with customers and boost long-term loyalty. VR experiences can generate valuable data and insights into customer preferences, behaviours and engagement levels. Brands can use this data to refine their marketing strategies, personalise offerings and improve the overall customer experience.

Thus, virtual reality offers significant opportunities for marketing strategies, but there are many challenges that organisations can face when implementing this new technology.

Developing and implementing VR experiences can be costly (Yung & Khoo, 2019). The technical requirements and capabilities, software, content creation, and maintenance of VR require significant investment. Small businesses or organizations with limited budgets may find it difficult to allocate resources to virtual reality marketing initiatives. On the other hand, VR experiences require dedicated and end-user-side equipment, which can limit accessibility for potential customers (Manis & Choi, 2019). Reaching a wide audience can be challenging if customers do not have access to VR devices or are hesitant to try the technology. Keeping up with these technological advancements and ensuring compatibility between different VR platforms can be a challenge for companies, requiring continuous learning and adaptation.

The second chapter, **"Analysis of the evolving digital environment and new technologies applications in online marketing"**, presents statistics on the different dimensions of the digital environment, including the development of the internet, social media platforms, the growing use of mobile devices and the emergence of virtual reality and augmented reality. Each of these elements presents unique opportunities and challenges for companies, shaping how brands connect with consumers, deliver personalised experiences and build relationships.

Today's business environment is characterised by high dynamism and competitiveness and is continuously influenced by global technological developments. In recent years, entire industries and companies have been forced to reorganise, with digitisation offering multiple opportunities but also threats to incumbents, while opening up new markets for entrepreneurs and investors. The Internet has revolutionized the business landscape, fundamentally changing the way companies operate and conduct their operations by providing them with efficient (cost and time-efficient), instant and easy ways to communicate with customers, investors, suppliers and other economic agents around the world (Hoffman, 2000).

Augmented reality has been seen as an opportunity by many large companies and other institutions to interact with their target markets. This chapter presents examples of the use of augmented reality in marketing strategy, illustrating modules of implementation of this technology by companies such as IKEA, Sephora, Nike, Coca-Cola and BMW. Similarly, brands in various industries have used virtual reality to create immersive and memorable experiences, increase brand awareness and differentiate themselves in the marketplace. Using VR technology, these brands have successfully captured the attention of their target audiences and delivered unique and compelling interactions. Chapter two of this thesis presents examples of virtual reality implementations by IKEA, Marriot, Jaguar, Samsung and TheNorthFace. These examples highlight how brands in various industries have used virtual and augmented reality to create immersive and memorable experiences, increase engagement around the brand and differentiate themselves in the marketplace.

Chapter three is entitled **"Exploratory research regarding the way in which augmented reality and virtual reality are perceived and used by the customers"** and is based on qualitative research aimed at discovering, evaluating and presenting how customers perceive these two new technologies and how they can influence, through their implementation at the marketing strategy level, the competitiveness and success of a brand.

The research objectives are:

General objective

- OB1. Identify the technologies used by customers in the online environment.

Augmented Reality

- OB2. To analyse technology recognition, perceived benefits and usage of augmented reality.

- OB3. Assess augmented reality as a potential source of competitive advantage.

Virtual reality

- OB4. Analysis of technology recognition, perceived benefits and usage of virtual reality.

- OB5. Assess virtual reality as a potential source of competitive advantage.

The research hypotheses are:

- H1: Integrating augmented reality technology into marketing strategy benefits the user in the purchase process.

- H2: Augmented reality can be a source of competitive advantage for companies implementing this technology in their marketing strategy.

- H3: Integrating virtual reality technology into marketing strategy benefits the user in the purchasing process.

- H4: Virtual reality can be a source of competitive advantage for companies implementing this technology in their marketing strategy.

To address the research questions, data was collected through individual in-depth interviews. The interview guide was used as a research tool to achieve the objectives. Given the exploratory nature of this research, twenty individual interviews were conducted with people who had varying levels of previous experience with the technologies studied. Although small, such sample sizes used in qualitative research were considered appropriate for investigating emerging concepts (Van Esch, 2013).

During the interview, respondents first described how they use technology in order to make a purchase, both in the online and traditional purchasing environments. The interview continued with a section on augmented reality. First, respondents watched a video showing how RayBan is implementing augmented reality, namely the „Virtual Try-On" app. After watching this video, the purpose of the interview was to identify if the respondent is familiar with this technology, if they have used it so far, what is their opinion about the use of this technology in the online environment but also in traditional stores and for the purchase of which product categories they would use this technology. The interview continued by exploring the psychological dimensions of this technology, with respondents identifying its utilitarian and hedonic values. The augmented reality section concludes with

a scenario question, in which the respondent is asked whether the presence of the technology at the time of purchase is likely to lead them to complete the purchase.

The third section of the interview is the identification of key points related to virtual reality. Respondents watched a video showing this technology implemented by the company Ikea (Virtual Reality Store). This section followed the same structure as the section on augmented reality. The interview ended with short questions to obtain demographic data. The data was analysed by the author using the content analysis table (Spiggle, 1994)

The first section of the interview aims to introduce the respondent to the general topic of the research, namely the use of technology to navigate the steps in the process of purchasing a product or service. This section consists of the first three questions in the interview guide and addresses objective number 1 - Identifying technologies used by customers in the online environment.

Most respondents consider themselves to be familiar with using technology both online and in physical stores to streamline the purchasing process. Even if they plan to complete the sales process in the traditional, physical store environment, respondents are researching information in advance and generating a narrow set of options using technology in the online environment. Reading reviews about the products in the choice set is considered an important step by respondents. In the online environment, they seek information provided by real people who have purchased and tested the products, and the information received in this way is considered more objective than that received from the manufacturer.

Respondents identified the benefits of using augmented reality predominantly for online purchases: virtual testing of products, generating a pleasant experience during use, streamlining the process of searching for product information. Augmented reality is seen as a technology that can streamline the purchasing process for certain types of products. Furniture and clothing are seen as the products for which the majority of respondents would use augmented reality in the purchasing process. Accessories and interior and exterior decoration follow in the top preferences. Cosmetics and electronics are also mentioned by respondents. Respondents generally perceive augmented reality as a useful technology that can benefit them when purchasing a product or service. The majority of respondents would choose the shop that offers them the image of the product they want in augmented reality. They believe that it would make their shopping experience more interesting, bring them closer to the product and the final purchase, and give them greater confidence in the quality of the purchase. With this in mind, the implementation of augmented reality can offer companies the opportunity to differentiate themselves in the market, attract new customers, develop their brand and thus gain competitive advantage.

In view of the above, hypotheses 1 and 2 have been confirmed. Thus, the implementation of augmented reality in marketing and sales strategy produces beneficial effects for users during the purchase process. Thus, it generates a closer relationship between the company and the customer which can be a source of competitive advantage for firms implementing this strategy.

Questions 12, 13 and 14 in the interview guide were used to check whether respondents are familiar with virtual reality technology, what their attitudes towards this technology are and in what contexts they would be willing to use it to streamline the purchasing process.

In contrast to the responses received in relation to the usefulness of augmented reality, respondents' opinions show that virtual reality has benefits for both online and in-store purchases. Immersion, information, orientation and the possibility of personalisation are the main benefits of virtual reality identified by respondents. Furniture items are identified by the majority of respondents as a product category where the use of virtual reality can benefit the consumer. Decorations/building materials are mentioned by 8 respondents, followed by real estate transactions which are mentioned by 7 respondents. Clothing and accessories were identified by 5 respondents each. The top of the list of preferences ends with the purchase of cars and event services, each of these categories being mentioned by 3 respondents.

The majority of respondents would like to purchase the product offered by the shop that gives them access to virtual reality. Reasons for this choice include the possibility to view a more realistic representation of the product before purchase, the preview of the result, the possibilities of personalisation. Two respondents consider access to virtual reality as a plus but do not consider access to this technology as a deciding factor for completing the purchase.

Given this, the implementation of virtual reality can provide companies with an opportunity to build closer relationships with customers, communicate more effectively with them, build customer loyalty and thus gain revenue growth and competitive advantage.

Thus, hypotheses 3 and 4 can be confirmed. Virtual reality is considered to be an attractive technology that delivers benefits to users in the shopping process by bringing them into different environments without the need to travel. The novelty and hedonic nature of this technology can be a source of competitive advantage for companies implementing this technology.

From the analysis of the collected data, it was observed that potential users have a generally positive attitude towards the technologies brought forward, being able to identify the potential benefits that virtual and augmented reality can present during the purchasing process. There was also a willingness to use and try these new technologies in the future.

Given the newness of these two technologies, it is necessary to investigate in the future whether the willingness of potential customers to use them is a permanent feature or just a consequence of newness, and whether this willingness will decrease in intensity in the future.

Chapter four **"Quantitative research regarding augmented reality and virtual reality implementation in online marketing"** examines the impact that the implementation of virtual reality or augmented reality has on digital marketing strategies, consumer behaviour and purchase intent. The quantitative research presented in this chapter is a continuation of the qualitative research presented in the previous chapter, using its findings and results to formulate objectives and hypotheses. Thus, this research focuses on online furniture purchases and how AR and VR can influence the online performance of companies in this sector.

To achieve the objectives, this section has been structured in two parts. The first part consists of conducting two marketing experiments to study consumer behaviour and assess purchase intention. The two experiments were conducted concurrently and use the same control group. For respondents in the first experiment, the augmented reality treatment was applied and for respondents in the second experiment, the virtual reality treatment was applied. For the second part of this chapter, the survey was used to study users' perceptions of the different features of the two technologies and their effects on purchase intention. Respondents from the two experimental groups participated in this survey, and questions related to this section were asked to the respondents after the completion of the experimental section. In the survey-based survey respondents were asked about different features of augmented or virtual reality, depending on which experimental group they were assigned to. Data were collected via an online questionnaire that incorporated both the experimental and the survey part of the survey.

In order to collect data, a link to access the questionnaire was created for each group of respondents, resulting in three links (common control group, augmented reality experimental group and virtual reality experimental group). These three internal links were used to program the external link that was sent to respondents via social media platforms. This link was programmed to redirect, in a totally random way, the respondents to one of the three study groups. The functionality of the link and the implementation of the random assignment algorithm was tested multiple times before data collection began. This ensured the necessity of the post-test control group research design, i.e. random allocation of respondents (Ferguson, 2016). The experimental part of the research has a total sample of 233 respondents and the second part, the survey-based survey, has a sample of 200 respondents. These sample sizes are considered to be sufficient to produce statistically valid results and conclusions (Mason and Perreault, 1991).

Marketing experiments regarding the effect of AR/VR implementation on online consumer behaviour

The first part of the research is represented by two marketing experiments to study the effects of augmented reality and virtual reality implementation on online furniture purchasing behaviour. A post-test research design with a control group and an experimental group was used for each of the two experiments, with the distribution of participants between groups in a randomized way. The same control group was used for both experiments. The experiments were conducted concurrently. The augmented reality treatment was applied to experimental group 1 and the virtual reality treatment to experimental group 2.

Following the literature review presented in Chapter 1 and in line with the results of the qualitative research, the objectives and hypotheses of the marketing experiments were formulated as follows:

Objectives of the marketing experiments

OB1 - Analyse the average level of purchase intention following the implementation of augmented reality.

OB2 - Analysis of the average level of purchase intention following the implementation of virtual reality.

Six sofa variants were selected, hereafter referred to as V1, V2, V3, V4, V5, V6. They were selected to have similar characteristics (design, number of seats, materials) so that differences in characteristics would not influence the results of the research, thus increasing its validity.

At the beginning of the experiment, respondents watched a video showing the six sofa variants in different ways, depending on the group they were assigned to. Variants V1, V2, V3 were presented identically to all respondents, regardless of group. At the beginning of this video, respondents were shown a picture of a laptop with a page of an online furniture shop open in a web browser. After this introduction, the variants were presented in the classic online environment (web browser - online shop). Variants V4, V5, V6, were presented, depending on the group, in a browser (control group), via augmented reality (experimental group 1) or via virtual reality (experimental group 2). The instrument used for data collection is the online questionnaire (Brymann & Bell, 2011). Purchase intention for each couch variant is measured on 7-point Likert scales from 1 - very unlikely to 7 - very likely, this type of question can generate variables that can be considered ordinal and used as such in the research (Gadermann et. al., 2019). Purchase intention for each couch is also measured through a budget allocation exercise. The respondent is allocated a budget of

RON 15,000 which can be partially or fully divided between the preferred variants, each variant costing RON 5,000. Inferential statistics (T-test) were used to test for significant differences between the control and experimental groups and within experimental groups, between the variants viewed in classical mode and those viewed using the tested technology, in terms of purchase intention. Acquisition intention was measured using a 7-point Likert scale. Vieira (2016) concludes that the T-test has statistical validity for data from this type of scale, even if the distribution of the data is not normal. The data were analysed using SPSS software.

HYPOTHESIS 1: Implementation of augmented reality leads to an increase in the level of purchase intention for products

Analysis of the resulting data showed an increase in purchase intent for items presented in the augmented reality environment, with the difference in means being statistically significant in each case. Thus, purchase intention for V4 increased by 0.77 points, from 4 (neutral) to 4.77, towards a relatively likely purchase. For V5, purchase intention increased from 3.76 to 4.93 points, with a difference of 1.17 points mediated by the change in product viewing environment. Thus, from a relatively unlikely purchase, V5 has moved to a relatively likely average purchase. The largest increase in average purchase intention was recorded for V6, which increased from 3.36 points to 5.16 points, with an average increase of 1.8 points between the two groups. Thus, hypothesis 1 can be confirmed, concluding that the implementation of augmented reality has a positive effect on purchase intention. By studying the differences of the three means, which in the case of the control group were in the neutral or even negative zone of the scale (below 4) and which had significant increases for the experimental group, it can be considered that augmented reality acts as a convincing factor in the completion of the transaction.

This conclusion is also supported by the average total score of the three variants presented in two different ways (point D in the data analysis). Thus, products presented using augmented reality show an average purchase intention of 4.96 points compared to their presentation in the classic mode (web browser) which is 3.7 points, thus identifying an average increase of 1.26 points generated by the implementation of augmented reality. It can be observed, as in the case of the individual study of the variants V4,V5 and V6, a significant change in purchase intention, influenced in a positive way by the implementation of augmented reality, from the negative area of the scale towards a possible purchase.

Studying the evolution of purchase intention for V1, V2 and V3, variants presented in the classic (browser) environment for respondents of both groups, is important for understanding the impact that AR implementation has on the level of sales across the

product portfolio. Thus, purchase intention for V1 decreased by 0.78 points and for V2 and V3 by about 1 point. At the grouping level (point E presented in the data analysis), a statistically significant average decrease from 4.23 points to 3.32 points (0.91 points) in purchase intention was observed for the first three variants. It is important to note that following the application of the experimental treatment (viewing products with augmented reality), a trend of a decrease below the ,,neutral" level of purchase intention is observed for products presented in the classical mode. Thus, companies need to effectively manage the implementation of augmented reality in their marketing strategy according to the characteristics of the target market in order to balance the benefits of this technology with the risks involved. Thus, companies can implement augmented reality for their entire product portfolio, aiming to increase overall sales, or they can segment the market and apply different marketing strategies according to the characteristics of each segment.

HYPOTHESIS 2: The implementation of augmented reality leads to an increase in the amount of money spent on the purchase of products presented using this technology.

These trends observed for the average purchase intention are also confirmed by the average budget allocation. In its study, significant differences are observed for V1, V2, V3, V5 and V6. For the first three variants, the amount allocated is significantly higher for the control group, those not exposed to the technology (treatment). These three variants have an average decrease of about 1740 RON in the budget allocated to the experimental group. Considering the significant differences in the allocated budget for V5 and V6, we can see that respondents allocate about 2200 RON more money for the variants presented in augmented reality.

It can also be seen that the average level of budget allocation is 10.000 RON for both groups of respondents. Thus, each respondent, regardless of group, allocated budget for 2 variants. Corroborated with the above observations, it can be concluded that the implementation of augmented reality generates an increase in revenue for products presented using this technology, thus confirming hypothesis number 2. However, this increase leads to a decrease in expenditure for the variants presented in the traditional way. It is therefore important that future research identifies the impact on total revenue and the strategic way of implementing the technology to maximise profit and ROI.

In conclusion, as demonstrated in point F of the data analysis, respondents exposed to the treatment (visualization using augmented reality technology), tend to prefer products presented using the technology. The implementation of augmented reality has a positive impact on purchase intention, as consumers are attracted to the variants presented with the technology, leading to an increase in revenue for these variants.

HYPOTHESIS 3: The implementation of virtual reality leads to an increase in the level of purchase intention for products.

Analysis of the resulting data showed an increase in purchase intention for two of the items presented in the virtual reality environment, with the difference in means being statistically significant for these. Thus, the purchase intention for V5 increased by 1.04 points, from 3.76 (below neutral) to 4.80, towards a relatively likely purchase. For V6, purchase intention increased from 3.36 to 5.10 points, with a difference of 1.736 points mediated by the change in product viewing environment. Thus, from a relatively unlikely purchase, V6 has reached an average likely purchase. Variant 4 increased by 0.61 points, but the difference is not statistically significant, as the variant is still in the neutral range of purchase intention.

The average total score of the three variants presented in two different ways (point D in the data analysis) is another indicator of the effectiveness of VR implementation. Thus, products presented using virtual reality show an average purchase intention of 4.84 points compared to their presentation in the classic mode (web browser) which is 3.7 points, thus identifying an average increase of 1.13 points generated by the implementation of virtual reality. This difference is statistically significant and demonstrates that virtual reality can generate a higher purchase intention for products in the portfolio presented using this technology.

As in the case of AR, the evolution of purchase intention was investigated for V1, V2 and V3, variants presented in the classic environment (browser) for respondents of both groups. Thus, the purchase intention for V1 decreased by 0.53 points, for V2 by 0.65 points and for V3 by approximately 0.58 points. These differences are not statistically significant at the singular level, with a p-value above 0.05 in each case. However, at the group level (point E presented in the data analysis), there was a statistically significant average decrease from 4.23 points to 3.64 points (0.59 points) in purchase intention for the first three variants. This decrease is smaller than for AR (0.59 vs. 0.91), it can thus be concluded that the impact of VR is smaller than that of AR on the portfolio of products presented in the classical way. However, the recommendations for balancing the portfolio in line with the characteristics of the identified market segments remain valid for VR.

In conclusion, in experimental group 2, it can be observed that following the application of the treatment (viewing products using virtual reality) there is a tendency for an increase in average purchase intention generated by the use of virtual reality as part of the online marketing strategy.

HYPOTHESIS 4: The implementation of virtual reality leads to an increase in the amount spent on purchasing products presented using this technology.

The trends observed for average purchase intention are also confirmed by the average budget allocation. The average amounts budgeted for the six sofa variants are statistically significantly different. For the first three variants, the amount allocated is significantly higher for the control group, amounts allocated by respondents who were not exposed to the technology. These three variants have an average decrease of about 1670 RON in budget allocated in the case of the experimental group. Considering the significant differences in the budget allocated to V4, V5 and V6, we can see that respondents allocate about 1700 RON more money to the variants presented in virtual reality.

Similar to the case of the experimental group 1, it can be observed that the average budget allocation level is about 10.000 RON for both groups of respondents. We can thus conclude that the implementation of virtual reality generates an increase in revenue for products presented using this technology, thus confirming hypothesis number 4. Similar to the implementation of augmented reality, this increase leads however to a decrease in expenditure for the variants presented in the classic way. It is therefore important that future research identifies the impact on total revenue and how the technology is strategically implemented to maximise profit and ROI.

In conclusion, as demonstrated in point F of the data analysis, respondents exposed to the treatment (visualization using virtual reality technology), tend to prefer products presented using the technology. The implementation of virtual reality has a positive impact on purchase intention, as consumers are attracted to the variants presented with technology, leading to an increase in revenue for these variants.

The hypotheses of this research have been confirmed, with the study demonstrating that the implementation of new technologies within the online marketing strategy can positively influence consumer purchase intent and generate increased sales for these companies. Significant increases in the average level of purchase intent and budget allocated to variants presented using new technologies were found for both augmented reality and virtual reality. The results suggest that AR and VR create a more engaging and immersive experience compared to traditional browser-based viewing. By providing a realistic and interactive environment, the two technologies allow customers to view products in a more immersive way. This increased engagement likely contributes to the increased purchase intent observed in the experimental groups.

For both technologies, the data show that an increase in purchase intention and in the budget allocated to variants purchased with the technology leads to a decrease in these indicators for variants that are presented in a traditional way. This creates a need for market segmentation. Companies need to identify specific customer segments that are

more likely to adopt these technologies and tailor marketing efforts accordingly. This enables the propagation of targeted messages and personalised experiences that respond to the preferences of tech-savvy customers, while meeting the needs of those who prefer products in traditional environments. Close monitoring of market response and customer feedback is important for portfolio balancing. The impact of AR and VR initiatives on existing product sales and customer preferences needs to be regularly assessed. Based on the information obtained, necessary adjustments can be made to marketing strategies, product offerings or communication approaches to minimise sales imbalance effects. Companies need to properly analyse their product portfolio, the cost of implementing these technologies and make decisions in a way that minimises risk and maximises profit.

Experimental results suggest that brands in the mobile industry can use augmented reality and virtual reality as innovative marketing strategies to increase customer engagement, boost sales and differentiate themselves in a competitive market. By adopting these technologies, companies can offer a unique and memorable shopping experience that aligns with the evolving expectations and preferences of modern consumers. By using these technologies, companies can differentiate themselves from competitors who rely solely on traditional browsing experiences. The ability to offer enhanced and interactive experiences through AR and VR can attract and engage customers, ultimately leading to a higher likelihood of purchase.

Survey-based investigation for the identification and measurement of the influence of AR/VR characteristics on buying intention

The second part of the research is the survey-based survey with a quantitative approach that aims to identify and measure the influence of different features of augmented and virtual reality on the intention to use these technologies and the intention to purchase products. It is important to note that this section measures the influence of the features identified in the qualitative research presented above. In line with the theoretical basis and the results of the qualitative research presented above, the objectives and hypotheses of the survey-based investigation were formulated.

Survey objectives are:

OB1 - Identify correlations between the perceived level of augmented reality features and the level of purchase intention of the tested products.

OB2 - To identify correlations between the perceived level of virtual reality features and the level of purchase intention of the products tested.

OB3 - Formulation of the influence diagram to implement augmented reality in the marketing strategy.

OB4 - Formulation of the influencing diagram to implement augmented reality in the marketing strategy.

Following the data analysis (calculation of Spearman correlation coefficients and regressions according to the constructed research model) it was concluded that augmented reality, in the context of its implementation in online marketing strategy, should be viewed from two points of view. Thus, companies need to understand this technology as a strategic marketing tool for gaining competitive advantage but also as a new technology with all its intrinsic characteristics. Research has shown the increasing importance of the level of information perceived by customers and the level of perceived interactivity. These two variables have an impact on the level of spatial presence generated by augmented reality and on the intention to use and recommend this technology in the future. It is thus important for brands implementing these technologies to build augmented environments that provide users with a broad palette of information of interest in a clear, concise, detailed and engaging way. The features of products or services promoted using augmented reality need to be well defined so that they can be understood effectively and quickly by the user. Apps must also have a high level of interactivity, the user must feel in control and be confident that the information provided is created for them. By ensuring these things, the impact on the sense of presence provided by augmented reality will be developed. The user will thus feel much closer to the product, which they have the ability to bring close to them, in their own environment. In turn, the level of presence influences the user's purchase intention. The closer the user is to the desired product, bringing it into their personal environment, the more they feel they know and identify with it, increasing the chances of completing the purchase. The regression equation shows a large influence of perceived presence level on purchase intention. However, the latter is also influenced by the user's level of familiarity with the technology. Thus, companies must also promote the technology itself to increase familiarity and thus increase sales.

Understanding augmented reality in terms of its technological character through the TAM (Technology Acceptance Model) is equally important. The research results are consistent with the literature, demonstrating that a high level of perceived usefulness and perception of technology as easy to use generates increased interest in using and recommending it in the future. Perceived level of information and perceived level of interactivity also influence intention to use technology in general. This demonstrates the importance of generating these feelings to ensure the successful implementation of technology in the marketing strategy.

Intention to use technology is a predictor of purchase intention in the online environment generated by augmented reality. Thus, the implementation of technology in

the marketing strategy must generate increased interest and provide tangible benefits to users in the online environment.

Similar to the study of augmented reality, the holistic approach is important for virtual reality when implementing this technology in online marketing strategy. Companies need to implement this strategy in such a way that its features produce the best effects for the brand. The research resulted in the influence diagram that shows how factors adjacent to virtual reality can influence the successful implementation of this technology in the marketing strategy.

The literature demonstrates the importance of information for online purchases. As presented above, the online customer wants to be informed in a personalised and efficient way. Thus, in order to build a virtual environment that produces benefits for users, companies need to ensure that technology enables users to find out information in a clear, concise and enjoyable way. It has been observed that the perceived level of information has an impact on the level of trust in the technology, and therefore on the likelihood of completing the transaction in the virtual environment. Another variable influencing the level of perceived trust is the power of the technology to transport the user into another world (immersion). The data analysis showed little power of immersion on trust levels. However, this feature was retained in the resulting model because, due to technical limitations, the level of immersion experienced by respondents was not high. It is plausible to assume that in case of using virtual reality devices (VR headsets) this perceived degree will be higher and will influence in a more representative way the purchase intention.

Researchers in the field demonstrate that the implementation of virtual reality technology can generate significant costs for brands and users. It is therefore important that companies also aim to increase the use and recommendation of this technology. Data analysis has shown that the intention to use virtual reality is influenced by the perceived usefulness and ease of use of this technology. Thus, users want this technology to benefit them, make their daily activities easier and not make it difficult to use. It is important for companies to build attractive, user-friendly, user-centric virtual environments to encourage the use of technology. The level of trust and immersion also determines the usability of the technology. This is because the user has to invest in a virtual reality device, and this investment requires justification from a utilitarian or hedonic point of view. The level of familiarity with the technology is not found in the final influence schema for VR, as this research determines that there is no statistically significant correlation between this level and average purchase intention, which contrasts with the case of augmented reality implementation. The average level of familiarity with virtual reality technology was 5.33 points, compared to 4.92 points for augmented reality. It can thus be assumed that the level of familiarity with the technology no longer directly influences purchase intention once the user exceeds a certain level of technology knowledge, use and acceptance in the

purchase process. However, future research needs to further study this relationship to identify whether the outcome of this research can be extended to other product categories and whether this relationship is dependent on the learning curve specific to new technologies. The data analysis showed that the intention to use virtual reality can predict the level of purchase intention. However, this happens to a lesser extent than for augmented reality. The small degree of influence can however be explained by the limiting conditions of the present research.

Chapter five presents **"Final conclusions, proposals and future research directions".** The research findings highlight the importance of incorporating augmented and virtual reality into marketing strategies. This study highlights the positive impact of these technologies on the purchase intention of online customers, focusing on the key factors that contribute to the successful implementation of these technologies, formulating the influence schemes for the two technologies. These factors are presented in the diagram below:

Marketing factors

Augmented Reality
- Information
- Interactivity
- Presence

Virtual Reality
- Information
- Trust
- Immersion

Purchase intention for the products marketed through AR/VR.

Technological factors (TAM)

- Future usage intention
- Perceived utility
- Ease of use

Personal experience

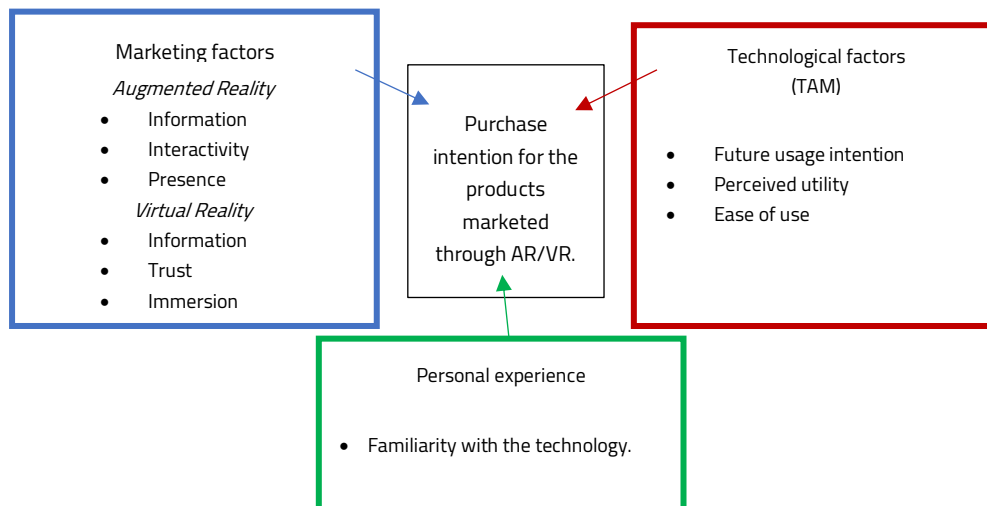- Familiarity with the technology.

Fig 1 Factors influencing the success of AR/VR implementation in marketing strategy

The study provides an overview of various theories and concepts related to online marketing, consumer behaviour, online marketing strategy formulation and the impact of new technologies on it. The analysis of different online marketing tools and channels (social media, websites, SEO, email marketing) highlights their importance in developing relationships with target audiences in the digital age. Understanding consumer behaviour in both traditional and online environments gives companies a better insight into the factors influencing purchasing decisions and the dynamics of consumer interactions online. This enables companies to make informed decisions about choosing online marketing strategies to achieve their goals. Finally, the analysis of new technologies (augmented and virtual reality) has highlighted their potential to improve the customer experience and open new avenues for innovative marketing campaigns. Overall, this literature review chapter in

the field of online marketing provides a comprehensive theoretical basis for the research conducted.

The exploratory research presented in chapter three highlights the growing importance of AR and VR as effective tools for improving the purchasing process. The aim of the research was to discover, evaluate and present customer perceptions of these technologies and how they can influence the success of a brand through their implementation in marketing strategy. The study revealed a generally positive attitude of potential users towards AR and VR, with respondents being able to identify the potential benefits of the technologies in the purchasing process. There was also a willingness to use and try these technologies in the future.

Thus, it is important for companies to understand the impact of implementing these technologies into their marketing strategy, looking at both their influence on purchase intent and the factors that determine the success of incorporating these tools into marketing efforts. The quantitative research presented in chapter four provides empirical evidence and numerical insights into the effects of AR and VR on different aspects of digital marketing, in particular on consumer purchase behaviour. The research focuses specifically on online mobile purchases and explores how the two technologies can influence the online performance of companies operating in this sector. Marketing experiments have shown that the implementation of AR and VR technologies in online marketing strategies can positively influence consumer purchase intent and generate increased sales. Analyses have identified significant increases in purchase intent and budget allocation for variants presented using AR and VR technologies compared to traditional presentation. This indicates the need for market segmentation, with marketing efforts tailored towards customer segments more receptive to the use of these technologies. Careful monitoring of customer feedback is essential for adjusting marketing strategies and minimising the effects on sales. Integrating AR and VR experiences into online platforms can provide a more engaging and realistic interaction with products, leading to a higher likelihood of purchase.

The survey results highlighted the importance of understanding consumer attitudes and perceptions towards AR and VR experiences. By gaining insights into consumer preferences, motivations and concerns about these immersive technologies, companies can tailor their strategies to effectively meet consumer needs and expectations. It is essential that they consider factors such as ease of use, perceived value and other factors outlined in the influence schema when designing AR and VR experiences, as these play a key role in shaping consumer acceptance and adoption of technology.

The findings of this study revealed that incorporating augmented and virtual reality into online marketing strategies provides significant opportunities for companies to create engaging and personalized experiences for consumers. Using these technologies, brands

can transcend traditional marketing approaches and deliver interactive experiences that captivate and resonate with target audiences. The ability to virtually showcase products and services, simulate real-world scenarios, and allow consumers to view and experience offerings in a virtual environment have the potential to increase consumer engagement, influence consumer decision-making processes, and drive brand loyalty.

Research implications for theory development

By synthesising existing knowledge, this paper provides a contextual framework for understanding the role and potential of new technologies in marketing strategy. This structuring of information contributes to the body of knowledge by reinforcing key theories, informing researchers and practitioners about the theoretical underpinnings of successfully implementing virtual and augmented reality in marketing strategy.

The research presented in this thesis demonstrates that AR and VR technologies offer significant implications for the literature on conceptualizing and operationalizing the marketing mix. By integrating these two technologies within the marketing mix, researchers and practitioners can improve understanding and application of key marketing elements (Langaro & Martins, 2020).

Augmented reality and virtual reality are redefining how products are conceptualised and presented to consumers (Hilken et.al., 2022). These technologies provide immersive and interactive experiences, allowing customers to visualise and interact with products in virtual environments. This provides researchers with opportunities to explore the impact of both technologies on design, personalisation and consumer engagement, contributing to the development of product strategy theories.

The integration of AR and VR can influence pricing strategies (Daiker et.al., 2017). Through simulations and virtual experiences, companies can demonstrate added value and justify premium pricing. Thus, theorists can investigate how the two technologies affect consumers' perception of price and willingness to pay, thus enriching theory on price strategy formulation and development.

The two technologies reshape the notion of placement in the marketing mix. Showrooms and virtual experiences allow customers to explore products remotely, expanding distribution channels and global reach (Boletsis & Karahasanovic, 2020). Researchers can delve deeper into the implications of AR and VR on sales strategies, customer experience and the integration of online and offline touchpoints, enriching the theory on placement in the marketing mix.

AR and VR offer innovative ways to promote products and engage customers (Jayawardena, 2023). These technologies enable interactive and personalised marketing campaigns, providing engaging brand experiences. Researchers can explore the

effectiveness of AR and VR in enhancing promotional activities such as advertising, promotions and experiential marketing, contributing to the evolution of promotional strategies.

AR and VR technologies present new insights into the human aspects of the marketing mix, enabling companies to use technology to develop enhanced customer service, virtual consultations and personalised customer experiences. This creates an opportunity for theorists to explore the effects of technologies on customer interactions, employee training and the overall user experience. Doing so can expand knowledge and understanding of the human component of the marketing mix, focusing on the transformative potential of AR and VR in shaping customer relationships and improving marketing strategies.

In conclusion, integrating augmented reality and virtual reality into the marketing mix has profound implications for the body of knowledge. Researchers have the opportunity to explore the transformative potential of these technologies in redefining product experiences, influencing pricing strategies, reshaping distribution channels, improving promotional activities and transforming customer interactions. These implications contribute to the advancement of marketing theory by extending the conceptualisation and operationalisation of the marketing mix in the AR/VR context.

Research implications for business

From the research presented it was concluded that AR and VR technologies continue to evolve and gain popularity and companies can harness the potential to create immersive and engaging experiences for their target audiences. The research results incorporated in this thesis demonstrated that by incorporating AR/VR into their marketing efforts, companies can differentiate themselves in the marketplace, increase brand visibility and drive increases in sales and customer conversion rates. The literature review provides a sound theoretical basis for companies to integrate AR/VR into their marketing strategies, emphasizing the importance of understanding consumer behaviour in both traditional and online environments, as well as strategic considerations for formulating online marketing strategy. By integrating augmented or virtual reality into existing online marketing channels, such as social media, websites or online shops, companies can improve relationships and engagement with consumers.

The research results presented in this thesis provide valuable insights for companies considering the implementation of AR/VR technologies in their marketing strategies. The qualitative research highlights the potential benefits of AR/VR as identified by users, such as creating immersive and interactive experiences. Companies can then focus their marketing efforts on developing these types of experiences that generate

additional value for users. Experimental research demonstrates the positive impact of AR/VR on purchase intent, while survey research identifies key factors influencing the success of implementing these technologies in marketing strategy. It highlights the importance of factors such as user experience, technological compatibility, effective integration with marketing channels, the quality of information conveyed and the level of interactivity and immersion generated. Companies need to consider these factors when planning and executing AR/VR campaigns, ensuring seamless integration and a positive user experience. Companies can leverage these findings to develop effective marketing strategies that leverage the benefits of AR/VR, boosting consumer engagement, improving brand perception and generating increased sales. By adopting AR/VR technologies, companies can position themselves as innovation enablers, delivering unique and memorable experiences to their target audience (Prodea & Constantin, 2023). These implications are detailed in the Marking programme, providing practical information for SMEs looking to implement the two technologies in their marketing strategy.

Marketing programme for implementing AR/VR in the online marketing strategy of SMEs

The marketing programme outlines the strategic approach to implementing technology in the marketing strategies of small and medium-sized enterprises. It is structured in six steps necessary to achieve the objectives. Each step analyses and discusses actions that SMEs can take according to their characteristics.

1. Market analysis:

Before tackling the implementation strategy, it is very important for companies to understand the market dynamics and trends surrounding the adoption of new technologies (Prodea & Constantin, 2023). Research reveals a steady increase in consumer demand for interactive and personalized experiences (Li et.al., 2021).

SMEs can deepen market characteristics in a variety of ways, with the table below outlining practical actions they can take.

Table 1. Market analysis actions

Method	Action	Result
Analysis of competitors' AR/VR strategies	-Testing existing applications in the market. - Analysis of how competitors present their products or services using AR/VR	- Identify unique opportunities. - Define your own niche in the market. - Audience size analysis.

	- Estimating the impact of applications by analysing the number of downloads of existing applications.	
Market research	- Use of surveys. - Conduct focus groups with a representative set of clients.	- Identify target market users' preferences, expectations and attitudes towards AR/VR experiences
Monitoring the AR/VR ecosystem	- Tracking publications. - Attending technology fairs. - Attending specialist conferences.	- Deepening technological developments and advances. - Familiarise yourself with new tools, platforms and technical solutions developed.

2. Formulation of objectives

In order to have a clear vision of the pathway for AR/VR implementation, SMEs need to set SMART objectives.

Depending on how long the SME has been in the market, objectives may aim at different goals. The table below presents the most important objectives, identified from the research presented. By aligning marketing initiatives with these objectives, SMEs can ensure that each step taken contributes to the desired outcomes.

Table 2 Objectives of AR/VR implementation according to the age of the SME

Stage	Objectives	Contribution of AR/RV to achieving the objectives
Start-ups (<1-2 yrs)	- Develop brand visibility and awareness. - Differentiation in the market.	- AR/VR experiences generate interest and increase the chances of brand virality. - Promotes differentiation by highlighting innovation and creativity
Developing SMES (2-5 yrs)	- Increase customer engagement and loyalty. - Expand your target market.	- Immersive experiences increase customer engagement, boost loyalty and increase customer retention. - Technologies can be used to extend the reach of the company by offering virtual experiences that transcend geographical limitations.

	- Improving customer experience. - Develop new ways of presenting and visualising the offer.	- Implementing AR/VR enhances the user experience by generating immersive and personalized experiences. - Interactive presentation of the products or services offered leads to a better understanding of their features and increased sales.
Mature SMRs (+5 yrs)		

3. Identifying audience characteristics

Successful implementation of new technologies depends on understanding the preferences and behaviours of the target audience. SMEs need to conduct in-depth audience analysis to identify specific segments that will resonate with AR/VR experiences. By taking demographic and behavioural data into account, SMEs can tailor their AR/VR campaigns to effectively capture and engage customers.

The table below shows, based on the research in this paper, the actions SMEs can take based on audience behavioural patterns, categorised according to Assael's (1987) matrix.

Table 3 Marketing actions by type of customer behaviour

Type of customer behaviour	Marketing actions
Complex behaviour	- Develop immersive product presentations or virtual showrooms that allow consumers to explore and compare different product options. - Organise interactive product or service demonstrations to help consumers understand complex features and functionality. - Creating virtual tours that simulate real-life usage scenarios to give consumers a realistic product experience.
Dissonance-reducing behaviour	- Create "virtual test drive" experiences to help consumers visualise how to use the product before making a purchase. - Creating AR/VR content that features customer testimonials or reviews, providing reassurance to potential buyers. - Creating virtual user manuals or tutorials that provide step-by-step instructions for using the product effectively and addressing common concerns.

Habitual buying behaviour	- Integrate gamification elements into the AR/VR experience, such as interactive challenges, rewards or prizes to engage consumers and encourage them to explore the offer. - Showcasing AR/VR innovations or various product updates that can capture shoppers' attention and prompt them to consider alternative options. - Creating interactive stories that highlight the brand's unique values, history or innovations to differentiate from competitors and drive changes in habitual buying patterns.
Variety seeking behaviour	- Launch limited-time AR/VR experiences or exclusive content that creates a sense of urgency and exclusivity, encouraging consumers to explore and engage with the brand. - Creating AR filters for social platforms that allow consumers to customize their virtual experiences, providing a sense of personalization and variety. - Collaborating with influencers to create AR/VR content that highlights unique brand features or limited edition offerings, satisfying the desire for novelty.

4. Formulation and execution of the AR/RV implementation strategy

To ensure successful implementation, SMEs need to define their strategy based on the marketing objectives and target audience preferences formulated and identified in the previous steps. By identifying technology use cases and key experiences, SMEs can create a roadmap for implementation that outlines the platforms and technologies that will be used.

As a result of the research, applicable marketing actions by SMEs were determined for each component of the marketing mix. These actions are presented in the table below.

Table 4 Actions at the level of marketing mix components

Marketing mix component	Marketing action
Product	- Create 3D product displays that allow customers to virtually examine and manipulate the product from different angles.

	- Development of virtual product customisation tools that allow customers to change product design, colour or features in real time.
Price	- Offer exclusive AR/VR content or experiences as an extra feature for premium priced products, creating a perception of added value.
Place	- Develop virtual stores or online platforms in AR/RV that allow customers to browse and buy products conveniently from their own home. - Collaboration with commerce platforms or companies in complementary industries (a lighting company can collaborate with a real estate developer to generate joint virtual reality experiences to showcase its products in virtual showcases of newly built buildings). - Using location-based augmented reality experiences to redirect foot traffic to physical stores and enhance the in-store shopping experience.
Promotion	- Develop interactive AR/VR ads or campaigns that allow customers to interact with the brand and its products in a memorable way. - Working with influencers or brand ambassadors to create AR/VR content that showcases product or service features, benefits or reviews. - Organising virtual events or live-streamed experiences using AR/VR technology to create a sense of exclusivity and excitement around the brand.

Strategic approaches to technology choice and content generation differ Depending on the nature of the business and the objectives formulated, SMEs may choose to implement augmented reality or virtual reality or to create a synergy between these two technologies. The tables below show the proposed technology implementations resulting from the research according to the SME's business.

Table 5 Marketing actions by business sector - Augmented reality

Business sector	Marketing action
Retail	- Develop an AR app or integrate AR content into an existing app to generate an immersive shopping experience and give customers the opportunity to virtually sample the product.

Online retail	- Integration of 3D models and 360 degree view of products on the website to promote product features.
Tourism	- Create location-specific augmented reality guides or apps that provide interactive information about sights, restaurants and attractions. - Offer special discounts or incentives for visitors who interact with AR content.
Restaurants	- Develop an augmented reality menu app that allows customers to view 3D models of dishes or provide additional information about ingredients and nutritional content. - Collaborate with influencers or bloggers to create AR content that showcases unique recipes or cooking techniques.
Education	- Collaborate with educational institutions or e-learning platforms to develop AR-based materials or applications. - Developing AR compatible textbooks or workbooks that provide interactive content.
Museums	- Develop an AR-capable app that enhances the visitor experience by providing additional information or virtual reconstructions of exhibits. - Applying gamification principles by organising an AR-based treasure hunt or organising interactive games in the museum.

Table 6 presents marketing actions for incorporating virtual reality into the marketing strategy according to the SME's business focus, in line with the research findings presented.

Table 6 Marketing actions by business sector - Virtual reality

Business sector	Marketing actions
Tourism	- Develop virtual tours of popular travel destinations. - Working with travel agencies or online booking platforms to integrate VR experiences into their websites or apps. - Hosting VR booths or at trade fairs, exhibitions or other events to showcase destinations and attract potential customers...
Real estate	- Create virtual tours of portfolio properties. - Working with property listing platforms to offer VR experiences as part of the property listing.

	- Organising virtual open house events where potential buyers can participate in immersive property tours.
Automotive	- Creating virtual test-drive experiences using VR technology, allowing customers to explore different car models and features.
Events	- Developing VR experiences that showcase event venues, allowing potential guests to virtually explore the spaces and get more information about the atmosphere and layout of the facilities.
Education	- Collaborate with educational institutions or e-learning platforms to develop VR content for immersive learning experiences. - Developing VR-based training programmes or simulations for industries such as healthcare, engineering or aviation.
Media and entertainment	- Create VR experiences to promote films, concerts or PC games. - Organising live events or interactive VR-based experiences with influencers or content creators.

5. Promotion and distribution of AR/VR content

To ensure awareness and uptake of AR/VR experiences, SMEs need to implement a robust marketing campaign. Using online marketing channels and tools, SMEs can generate excitement and drive traffic to newly created experiences.

Using influencers, industry partnerships (generating joint experiences with companies in complementary industries) and communication efforts will amplify the impact of AR/VR campaigns. In addition, incorporating sharing and recommendation mechanisms into experiences will encourage users to share these experiences with other users and attract more participants.

6. Measuring and analysing results

Measuring the results of AR/VR marketing initiatives is important for continuous optimisation and ROI evaluation. SMEs need to define Key Performance Indicators (KPIs) that align with their objectives.

Key KPIs identified in the research include conversion rates and ROI analysis, turnover, AR/VR experience interaction rates, social media shares and user satisfaction levels. By using analytics tools, SMEs can track user interaction, behaviour and feedback across AR/VR experiences, gaining valuable insights to refine future campaigns.

With careful planning, appropriate content creation, effective promotion and measurement, SMEs can harness the full potential of AR/VR implementation and ensure success in the online business environment.

The paper concludes with chapter six, **"Personal Contributions"**, which is followed by a general bibliography and appendices. The main personal contributions made during the preparation of this thesis are:

- Comprehensive review of the online marketing literature, digital marketing strategies and new emerging technologies impacting these strategies.
- Presentation of the characteristics of consumer behaviour and how it is influenced by developments in the digital domain.
- Conduct qualitative research to identify user attitudes towards augmented reality and virtual reality, the benefits and drawbacks of implementing these technologies in online marketing strategy.
- Conduct marketing experiments to demonstrate the benefits of using the two technologies in the marketing strategy and their impact on online purchase intent.
- Conducting a survey-based survey to quantify the influences of different factors on the success of implementing the two technologies in the marketing strategy.
- Holistic approach to augmented and virtual reality, in terms of marketing tools and as a technology, to ensure effective implementation in marketing strategy.
- Developing theoretical frameworks and practical guidelines to help marketers effectively integrate AR/VR into their online marketing strategies. Influencing frameworks that can be used by companies to effectively implement technologies in their marketing strategy have been constructed.
- A marketing plan, based on the research findings, was developed containing the necessary steps to implement AR/VR in the marketing strategy of SMEs.
- Dissemination of research results at international conferences and publication in peer-reviewed journals.

The research can be extended to study the impact of these two technologies on the purchasing process of other types of products, as demonstrated in the qualitative research presented. It is important to identify industry-specific challenges, opportunities and best practices for integrating AR and VR into marketing strategies in these areas. Analysis of the long-term effects of implementing AR and VR in marketing strategy is an important point in the detailed understanding of the topic. The influence model for implementing augmented or virtual reality in marketing strategy can be enriched by investigating the influence of organisational factors such as resources, capabilities and managerial support and determining how these factors interact and contribute to the effective integration of AR and VR in marketing initiatives. In order to gain a comprehensive view of the process of implementing AR or VR in marketing strategy, it is necessary to investigate the barriers that prevent or slow down the widespread adoption of AR and VR and develop strategies to overcome them.