




Augmented Reality for XYZ Perfume Brand: Enhancing Promotional Experiences through User-Centered Design

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Abstract. Current technological developments affect various aspects of life, including the marketing strategy of a product. As digital marketing becomes increasingly immersive and innovative, consumers continue to be captivated and experience things differently. One of the local perfumes, let's call it XYZ perfume, is attempting to use augmented reality (AR) in the development of their perfume promotion to create an interactive and personalised experience. Using a user-centered design (UCD) approach, this study explains the formation of the media. The results of the study indicate that using promotional cards integrated with augmented reality to create a new experience and maintain brand consistency is effective. The findings contribute to knowledge regarding the effective use of augmented reality in the promotional media segment of XYZ perfume and offer new insights for other brands in the same product category regarding the use of digital technology to engage their target audience.

Keywords: Augmented Reality, User-Centered Design, Promotion, Brand.

1 Introduction

A variety of promotional strategies were employed to promote the products that an industry produces. Diverse types of businesses, from retail to multinational corporations, rely on advertising to help sell their products [1]. Experiential marketing is one of the most cutting-edge strategic marketing communication approaches [2]–[5]. This strategy has recently gained prominence as a result of the significant increase in leisure-driven, experiential consumers over the past few years [6]. Customers are encouraged to engage with products and brands through a variety of sensory [3], [7]. Modern consumers are inundated with advertisements and promotional materials, making it difficult for traditional marketing strategies to captivate their attention and interest. Consequently, there is a growing interest in utilising emerging technologies to create distinctive and immersive brand experiences. All technological advancements have demonstrated their existence in the domains of industry and marketing, resulting in the emergence of new waves [8]. Businesses are currently implementing computer technology into their promotional media to make them more engaging, innovative, and interactive. Promotion is essential to the advancement of trading businesses because it facilitates their interaction and communication with their target audience. Integrated Marketing

Communication (IMC) refers to this method, which entails diverse marketing efforts and interactions [9]. Moreover, using Digital Technology and Information and Communication Technology (ICT), the IMC program has been improved [10]. The proper use of Augmented reality (AR) technology to enhance marketing initiatives and create engaging digital experiences provides businesses with new opportunities to engage consumers with product information [11]. It is also regarded as a catalyst for brand innovation [12]. Augmented reality has the potential to help brands communicate with their target audience in novel and engaging ways [13]. By incorporating AR features into promotional materials, brands can create interactive experiences that capture consumers' attention and leave an enduring impression [14]. In this instance, print media is one of the promotional media models developed in the form of adding artificial intelligence to a promotional card, which is regarded as an ideal platform for utilizing this technology.

In this case the use of AI in the media promotion of a perfume product offers a different and interesting experience in promoting a perfume brand. However, the visualization of scents in AR presents a challenge that needs to be overcome. This research explores various approaches to representing fragrances digitally, considering factors such as visual cues, animations, and interactive elements to create an immersive and realistic experience. In addition to scent visualization, the design of the user interface (UI) plays a crucial role in ensuring a seamless and intuitive interaction between the user and the AR promotional medium [15]. To establish a strong brand presence, it is essential to integrate brand elements effectively within the AR experiences [16], [17]. This includes incorporating the brand's visual identity, messaging, and storytelling elements to create a cohesive and memorable promotional medium. Strategies for seamless integration of brand elements will be explored to maintain consistency and enhance brand recognition among consumers.

This research focuses on the utilization of AR as a promotional medium for XYZ Perfume Brand, a local Indonesian brand. By narrowing down the scope to a specific brand, namely the XYZ brand, this research aims to provide a more focused and detailed analysis. XYZ Perfume Brand is a new entrant in the local Indonesian market, currently in the development stage and in need of effective digital promotional media. Recognizing the challenges associated with designing an AR-based digital media, the User-Centered Design (UCD) method is proposed as an approach to creating a compelling AR promotional medium. The UCD approach offers a lot of leeway, it's crucial that designers pay attention to users' wants and needs at every stage [18]. It involves iterative stages that allow for continuous refinement and improvement based on user feedback [18], [19]. Using a UCD approach, the promotional AR medium for XYZ Perfume Brand can be designed to satisfy the preferences and expectations of the target audience. While previous studies have explored the benefits and effectiveness of AR in marketing [13], [20], there is a research gap when it comes to applying the UCD methodology to the design and development of AR-enhanced promotional cards. The UCD approach, with its focus on understanding user needs and preferences, plays a crucial role in ensuring that the final AR content is user-friendly, intuitive, and aligns with the target audience's expectations.

The UCD methodology drives the creation process throughout the study, ensuring that user wants, and preferences are incorporated at each stage. This method contributes to improving the usability, user experience, and effectiveness of AR-enhanced promotional cards. By using this methodical approach, brands can generate AR content that meets the expectations of their target audience and provides a seamless integration of physical and digital marketing channels. This research seeks to provide significant insights and practical assistance for brands interested in integrating AR technology in their promotional efforts by looking into the process of developing AR content using the UCD methodology. Brands can design and deploy AR-enhanced promotional cards that effectively engage their audience and drive brand awareness and loyalty by understanding the strengths, limits, and best practices of the UCD methodology in the context of AR content development.

2 Research Method

This research uses a mixed-methods approach that combines qualitative and user-centered design (UCD) methods to investigate and create augmented reality (AR)-based promotional media with an emphasis on UCD principles. The research begins with an exploratory phase to obtain a comprehensive understanding of the preferences, needs, and expectations of the target audience concerning AR promotional media. This phase employs qualitative data collection techniques, such as interviews, focus groups, and surveys, to gain insight into user preferences, attitudes, and behaviors in relation to AR experiences. The UCD method is implemented throughout the design and development process, with an emphasis on user participation and feedback. UCD involves iterative cycles of design, evaluation, and refinement based on user feedback to ensure that the final AR promotional media meets the requirements and expectations of the target audience.

Using a mixed-methods research strategy, this study aims to develop an effective and user-centered augmented reality (AR) promotional medium by gaining a comprehension of user preferences, expectations, and experiences. The findings will contribute to the fields of augmented reality (AR) marketing and user-centered design (UCD) by providing insights and guidelines for the design of engaging AR experiences in promotional campaigns.

The UCD approach aims to create products that are both extremely useful and accessible to potential users [21]. It fosters a strong designer-user relationship, facilitating precise design and manufacturing processes that are timely and aligned with user preferences. UCD includes four distinct phases, as depicted in Figure 1. The initial step is Comprehending the Usage Context. During this phase, the designer collects data pertaining to prospective users to acquire a thorough comprehension of user attitudes. This information is crucial to the design process's development. In the second stage, User Requirements are specified. Here, the designer determines the requirements of the consumers. Understanding these user requirements helps to direct the design process. Design Solutions, the third stage, consists of multiple phases. It begins with concept development, continues with prototyping, and concludes with the final design of the AR

media. The final step is evaluating the design results, preferably using actual users for the usability evaluation. By adhering to the UCD methodology and utilizing these evaluation techniques, the research endeavours to produce more valid and accurate findings. This exhaustive and iterative process ensures that the application's final design satisfies the identified user requirements and is consistent with their preferences.

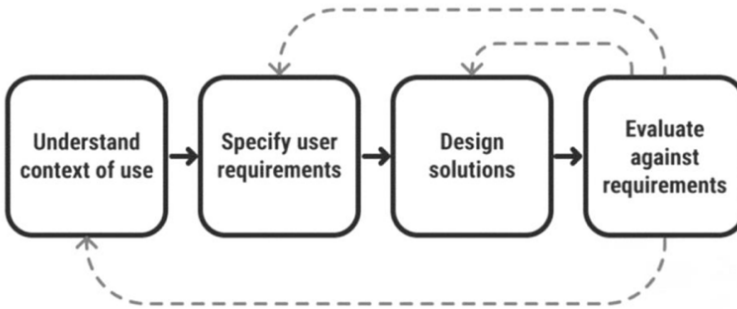


Fig. 1. The four stages of the process in UCD [Source: <https://www.interaction-design.org/literature/topics/user-centered-design>]

3 Result and Discussion

Based on the findings of previous research studies, the use of digital promotional media has been shown to be highly appealing to audiences [22], as it provides them with an engaging platform to explore and learn more about the product or brand [9], [22]. This sentiment was further supported by the results of our data analysis, which included interviews, focus group discussions, and surveys.

During the data collection process, interviews were conducted with industry experts in the perfume sector. These interviews provided valuable insights into the current promotional strategies employed by local perfume brands and the potential benefits of incorporating interactive media, such as augmented reality (AR), into their campaigns. Focus group discussions were held with target consumers to gauge their perceptions and preferences regarding different promotional media formats. The discussions revealed a strong inclination towards interactive digital media especially the using of AR media, with participants expressing a desire for more immersive and engaging experiences.

Furthermore, the survey results demonstrated a high level of support for the use of interactive digital media in promotional activities. Approximately 88.6% of respondents indicated that they believed interactive media, such as AR, would enhance their acceptance and engagement with the promotional content. Interestingly, our analysis also revealed that only a limited number of local perfume products have incorporated interactive media, such as AR, into their promotional programs. This finding highlights an opportunity for the XYZ Perfume Brand to differentiate itself from competitors and leverage the benefits of AR in capturing the attention and interest of its target audience [11].

The creation of AR media for the XYZ Perfume Brand is driven by a data-driven approach, leveraging market segmentation information provided by the brand owner. The target audience for the AR media is specifically defined based on various factors. Demographically, the primary target audience consists of individuals within the age range of 22-35 years, with a focus on a unisex approach to cater to both male and female consumers. Additionally, the target audience belongs to the middle and upper social strata, reflecting their purchasing power and potential interest in luxury products. Geographically, the target audience resides in major cities across Indonesia, with a specific emphasis on the capital city, Jakarta. Given its status as a significant urban center, Jakarta offers a concentrated market with a large consumer base and a vibrant retail industry. Moreover, from the psychographic, the target audience comprises individuals who have a genuine affinity for perfume and beauty products. These individuals are characterized by their interest in digital media and technology, indicating a propensity for engaging with innovative promotional approaches such as AR. Understanding the psychographic profile of the target audience helps tailor the AR media to resonate with their preferences and interests.

The research focused on the solution design stage following the initial steps of understanding context and specifying requirements. The objective was to develop an effective media tool for promoting a brand, keeping in mind the brand story, and aiming to convey a clean and dynamic impression. The findings of the research revealed the concept of a promotional card with specific dimensions of 5.5 x 9 cm can be seen on Fig. 2.



Fig. 2. The promotion card design

Moreover, the first stage of the process involves the creation of a locator, which serves as a reference point for a 3D object in augmented reality. The locator is a designed card image that acts as an embossed point for AR recognition. This allows the AR software to identify and track the promotional card accurately. The process continues with the animation and movement of objects, specifically perfume bottles, as required. The animation is generated using Autodesk Maya (Fig. 3), a renowned application for 3D modelling and animation. Through manipulations of position and rotation,

the desired movement and behavior of the objects are achieved. The resulting animations are compiled into a folder, containing files in the FBX format that encapsulates the animated object movements. This folder is then converted into a compressed file format, such as ZIP or RAR, for easy storage and transfer.

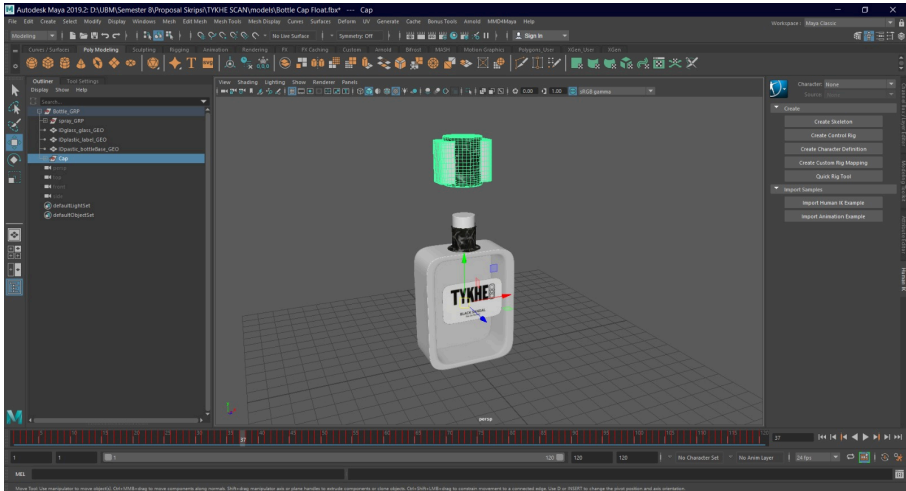


Fig. 3. The animation making process using Autodesk Maya

The subsequent step involves the creation of an augmented reality scene using a website that supports AR creation. In this research, Onirix Studio was utilized as one of the platforms for this purpose. The previously animated files or data objects are uploaded to the Onirix Studio website, making them accessible for use within the AR scene creation process (Fig. 4).

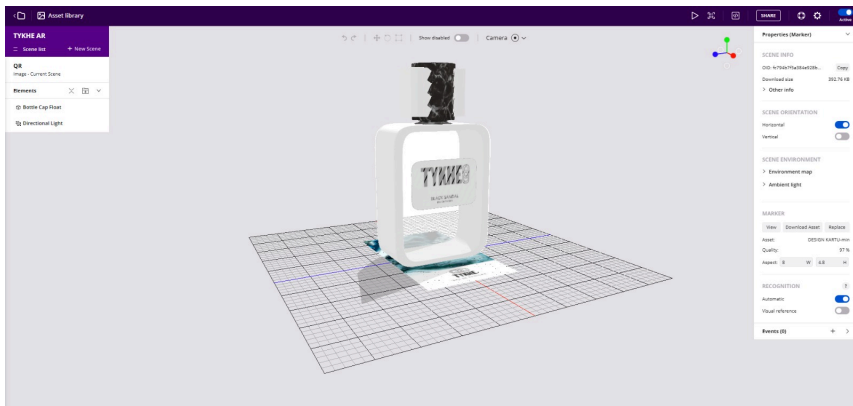


Fig. 4. The creation of an augmented reality scene using a Onirix Studio website that supports AR creation

The scene creation begins with the placement of a locator, along with the primary object positioned above it. The locator serves as a spatial reference point, while the main object represents the focal point of the AR experience. Additionally, special effects are implemented to enhance user interaction. For example, touching the bottle cap of the main object triggers a pre-defined animation, previously created using Autodesk Maya. This dynamic element adds an engaging and interactive aspect to the AR scene.

The final stage of the process involves beta testing the developed AR scene (Fig. 5). This testing phase allows for the evaluation and refinement of the AR experience, ensuring its functionality, usability, and overall effectiveness. In conclusion, the research findings demonstrate a comprehensive and scientific approach to designing and implementing an augmented reality promotional card. The process involves the creation of a locator, animation of objects, development of an AR scene using specialized websites, and the inclusion of interactive elements. Through this systematic methodology, brands can leverage AR technology to deliver captivating and engaging promotional experiences to their audiences.



Fig. 5. The final stage of beta testing of AR scene

The promotional card incorporates augmented reality (AR) features, leveraging QR codes or markers to enable interaction with the brand's products. By scanning the QR code or marker using AR software, users can access immersive 3D promotional content related to the brand. This innovative concept enhances customer engagement and interaction with the promoted product. Furthermore, the augmented reality feature serves as an additional element for both promotional cards. By integrating this feature, the audience can enjoy a more intriguing, memorable, and familiar experience with the brand's offerings. This not only strengthens the brand identity but also establishes a deeper connection between the audience and the product. The research findings demonstrate the potential of the proposed promotional card design with augmented reality. By combining traditional media with emerging technologies, such as AR, brands can create engaging promotional experiences that captivate customers and leave lasting impressions. Implementing this concept can lead to increased customer interaction, improved brand recognition, and enhanced promotional effectiveness.

In addition to the identified opportunities and benefits of using augmented reality (AR) technology for brand promotion, it is crucial to acknowledge the design problem inherent in this approach. The integration of AR into promotional strategies presents

unique challenges that need to be addressed effectively. One such challenge is ensuring a seamless and intuitive interaction between the user and the AR promotional medium, which requires careful attention to user interface design and usability considerations. By recognizing the design problem as another facet of the opportunity to leverage technology in brand promotion, brands can strategically address these challenges and optimize the effectiveness of their AR experiences.

4 Conclusion

In conclusion, the research conducted focused on the design and implementation of a promotional card with augmented reality (AR) features, employing the User-Centered Design (UCD) methodology. The findings of the research provide valuable insights into the systematic and user-centric approach involved in creating an immersive AR experience for brand promotion. By adopting the UCD methodology, the research ensured that the design process prioritized the needs, preferences, and expectations of the target audience. The stages of understanding context and specifying requirements allowed for a comprehensive understanding of the target audience, their motivations, and their interaction preferences with promotional materials.

The research findings showcased the effectiveness of using a promotional card as a media object that visually aligns with the brand's story, emphasizing a clean and dynamic impression. The incorporation of AR technology through QR codes or markers on the card enabled the display of 3D promotional content from the brand's products, enhancing customer interaction and engagement. Furthermore, the research highlighted the additional benefits of AR features, not only as an innovative promotional tool but also as an extension of the brand's identity. By integrating AR into the brand identity card and promotional card, the audience can enjoy a more interesting, memorable, and familiar experience with the product or service being promoted. Through the UCD methodology, the research also outlines the detailed process of creating the AR experience, including the creation of a locator, animation of objects using Autodesk Maya, development of the AR scene using platforms like Onirix Studio, and the inclusion of interactive elements for enhanced user engagement. By following the principles of UCD, brands can ensure that the AR promotional card design and implementation are user-friendly, intuitive, and align with the expectations and preferences of the target audience. This user-centric approach fosters a stronger connection between the brand and its audience, leading to increased brand recognition, improved customer satisfaction, and ultimately, greater success in promotional campaigns.

The research findings have significant implications for brands aiming to increase customer interaction and engagement with their products or services. By incorporating augmented reality features into promotional cards, brands can provide a unique and immersive experience that captures the attention of the audience and encourages active participation. This can lead to increased customer engagement, improved brand recognition, and ultimately, enhanced promotional effectiveness. Additionally, the research highlights the integration of traditional print media with digital technology. By com-

binning physical promotional cards with augmented reality features, brands can effectively bridge the gap between offline and online marketing channels. This integration allows for a seamless and cohesive brand experience, where customers can transition from the physical card to the digital augmented reality content, creating a multichannel marketing approach.

The limitation of the research is that it may have focused on a specific brand or media. The findings and conclusions drawn from the research may not be generalized to other brands or different types of media objects. The effectiveness and feasibility of implementing augmented reality in promotional cards could vary depending on the specific brand, industry, target audience and context. Therefore, caution should be exercised when applying the research findings to other brands or media objects. Furthermore, the research may have limitations in terms of resources and scope. The availability of technical expertise, software, and equipment could have impacted the extent and complexity of the AR implementation. The research may have focused on specific aspects of AR, such as animation and interactive elements, while other relevant factors, such as user interface design or user feedback integration, may have been overlooked. Expanding the scope of the research and considering a broader range of factors can provide a more comprehensive understanding of the challenges and opportunities in implementing AR in promotional cards.

It is important to acknowledge these limitations to ensure that the research findings are interpreted and applied appropriately. Future studies can build upon these limitations by incorporating larger and more diverse samples, examining a broader range of brands and media objects, considering the evolving technological landscape, and addressing additional factors that contribute to the success of AR-enhanced promotional strategies.

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