JSEG

JOURNAL OF SMART ECONOMIC GROWTH

www.jseg.ro ISSN: 2537-141X Volume 8, Number 1, Year 2023

ENHANCING MARKETING STRATEGIES WITH AUGMENTED REALITY: AN EMPIRICAL STUDY ON CONSUMER CHOICE

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Abstract: *With the rapid advancement of technology, Augmented Reality has emerged as a promising tool for transforming traditional marketing approaches and engaging consumers in immersive and interactive experiences This article presents an empirical study aimed at exploring the impact of augmented reality (AR) on consumer choice and its potential for enhancing marketing strategies. By comparing the choices made by participants when viewing couches in both traditional web-based formats and AR-enhanced experiences, the research explores the impact of AR on consumer perceptions, engagement, and decision-making. The practical implications of this study are relevant for marketers seeking to leverage AR technology to optimize their marketing strategies. By understanding the differential impact of AR experiences on various demographic groups, marketers can tailor their campaigns to effectively engage specific consumer segments. Additionally, insights gained from consumer choice patterns can inform product development and marketing efforts.*

JEL classification: M31

Key words: augmented reality, marketing, consumer choice

1. INTRODUCTION

The rapid advancement of technology has brought about numerous changes in traditional marketing approaches. One such technology is Augmented Reality, which developed as a promising instrument for transforming marketing strategies and engaging consumers in immersive and interactive experiences (Scholz & Smith, 2016). AR technology

offers marketers the ability to create innovative and engaging campaigns that are accessible to consumers through their smartphones or other mobile devices (Jacob-John & Ching, 2019).

This article presents an empirical study aimed at analyzing the impact of AR on customer choice and its potential for enhancing marketing strategies.

The main objective of this study is to investigate the differential effects of traditional web-based formats and AR-enhanced experiences on consumer decision-making in the context of couch selection. By comparing the choices made by participants, the study sheds light on how AR can influence consumer behavior and guide marketing efforts. By gaining insights into the differential impact of AR experiences on various demographic groups, marketers can tailor their campaigns to effectively engage specific consumer segments, enabling businesses to create experiences that align with consumer preferences and maximize market appeal.

Through an exploration of the influence of AR on consumer choice and its potential for enhancing marketing strategies, this article contributes to the literature on the intersection of technology and consumer behavior. This research provides valuable insights that can guide marketers in harnessing the power of AR to deliver impactful and engaging experiences to their target audiences.

2. THE BENEFITS OF IMPLEMENTING AUGMENTED REALITY IN MARKETING STRATEGY

Augmented reality (AR) is a new technology that combines virtual elements with the real environment, creating new, interactive experiences for users (Vinci et.al., 2020). The concept of augmented reality has its roots in Sutherland's (1965) research on "The Ultimate Display", which explored the potential of computer-generated graphics to enhance human perception. Since then, AR has evolved considerably, with advancements in computer processing power, graphics rendering, and the miniaturization of hardware, making it more accessible and practical for a wide range of applications.

AR technology utilizes various mediums, including mobile devices, smart glasses, or headsets, to deliver the augmented experience (Yavuz et.al., 2021). By overlaying digital information onto physical objects or spaces, AR provides users with an enriched and interactive experience that create synergy between the real and virtual worlds (Barhorst et.al., 2021).

Augmented reality has gained significant attention across various industries, including gaming, education, healthcare, and marketing. The applications of augmented reality are vast and span across multiple industries. In gaming, AR empowers users to engage with virtual objects or characters within their real environment, creating immersive and interactive gaming experiences (Bueno et.al., 2020). In education, AR can enhance learning by providing visualizations, simulations, and interactive content that augment textbooks or classroom instruction (Garzón et.al., 2019). In healthcare, AR is utilized for surgical planning, medical training, and patient education (Viglialoro et.al., 2021).

In marketing, AR offers a unique opportunity to bridge the gap between traditional advertising and immersive experiences, enabling brands to engage consumers in novel and interactive ways (Barhorst et.al., 2021). AR can enhance consumers' perceived value of a product by providing them with a more realistic and interactive experience. This can result in increased brand awareness, customer loyalty, and purchase intentions (Haumer et.al., 2020). The interactive and immersive nature of AR fosters positive brand associations, leaving a lasting impression on consumers and increasing brand recall.

AR can enhance customer engagement by offering them a more personalized and interactive experience. By overlaying virtual content onto physical products or environments, marketers can provide consumers with a deeper understanding of a product's features, allow them to visualize how it fits into their lives, and create memorable brand interactions (Sung et.al., 2022).

Augmented reality enables brands to tell captivating stories and convey their brand narrative in a highly interactive and immersive manner. By incorporating AR elements into advertising campaigns or product packaging, brands can create dynamic narratives that resonate with consumers on an emotional level (Rauschnabel, 2022). AR-driven storytelling facilitates close brand-customer connections, resulting in stronger brand loyalty and long-term customer relationships (Chen, 2022).

Scholars have examined the impact of AR on consumers' buying decision-making processes. AR experiences facilitate a more informed decision-making process by providing consumers with realistic product representations, enabling virtual try-on experiences, and facilitating comparisons between different options (Qin et.al., 2021). This information-rich

environment contributes to increased confidence in purchase decisions and reduces perceived purchase risk.

AR experiences can facilitate social interactions and influence consumer decision-making through recommendations and social sharing (Miller et.al., 2019). Consumers can share their AR experiences with others, seek recommendations from friends or influencers, and receive real-time feedback. Social influence and peer recommendations play a crucial role in shaping consumer choices (Argo & Dahl, 2020), and AR amplifies the social aspect by enabling shared experiences and social validation. By offering unique and shareable experiences, AR campaigns can go viral on social media platforms, reaching a broader audience and enhancing brand visibility (Sung, 2021).

AR experiences provide valuable data and insights into consumer behavior. By analyzing user interactions within AR applications, marketers can gain a deeper understanding of consumer preferences, engagement patterns, and purchasing decisions (Alimamy & Gnoth, 2022). This allows brands to refine their campaigns, tailor offerings, and deliver more relevant and personalized experiences.

In summary, augmented reality has an important impact on the consumer decision-making process by enhancing product visualization, providing experiential engagement, offering an information-rich environment, reducing perceived risk, fostering emotional connections, and incorporating social influence. By leveraging AR technology, brands can effectively influence consumer perceptions, facilitate informed decision-making, and ultimately drive consumer choices towards their products or services.

3. METHODOLOGY

To address the main objective, the research utilized an online, survey-based questionnaire to gather data from participants, aiming to examine the differential effects of AR-enhanced experiences compared to traditional web-based formats.

At the beginning of the survey, the respondents were shown a video with six different couches, selected to have similar characteristics in terms of design, building materials and number of seats. The first three variants (named V1, V2 and V3) were presented in a classic, web-browser way (IKEA's official website) whereas the last three variants (V4, V5 and V6) were presented through IKEA's AR powered application, named IKEA Place (Ikea, 2023).

Before each set of couches there was an intro showing the used application (web-browser and AR application), without naming the used technology. After viewing the video, the respondents were asked if they have clearly and fully seen and understood the video. If the answer was negative, the respondent was screened out. This research is part of a larger study, so the questionnaire was designed to gather data on multiple dimensions of augmented reality and consumer behavior. The questions that concern this research have investigated the preferred couch variant out of the six (single answer question) and the level of technology recognition level (7-point Likert-scale).

The research employed a non probability sampling technique (convenience sampling), as the survey link was distributed different social media platforms (Facebook, LinkedIn), randomly gathering 106 responses. Out of these, 6 were screened out. The final sample is N=100, this being considered enough for drawing statistical valid conclusions (Mason & Perreault, 1991). The final sample consists of 49 female and 51 male respondents, aged between 21 and 73 years old. Ethical guidelines were followed throughout the research process. Participant anonymity and data protection were ensured by assigning unique identifiers to each participant and securely storing the collected data.

4. DATA ANALYSIS AND RESULTS

SPSS software was used to analyze data and draw conclusions from it. The main objective of the study was to determine the effect of embedding AR in the marketing strategy by looking at the decision options of the respondents. Also, the study investigated the respondent's familiarity level with the technology of augmented reality. This section will present a series of crosstabulations in order to analyze the favorite choice based on demographic segments and a T-Test to compare the means of the familiarity level between the groups of those whose favorite version is presented in AR and those who selected the browser-based versions.

Table 1 – The favorite version of the couch (valid n=100)

Viewing method	Variant	Frequency
Web-browser	V1	10
	V2	8
	V3	3
AR applications	V4	15
	V5	29
	V6	35
TOTAL		100

The table above summarize the answers regarding the favorite variant of the couch out of the six shown in the video. V5 and V6, both presented through the augmented reality powered application account for 29%, respectively 35% of the total options. These two top performing variants are followed by V4, also presented through AR. If we are looking at the data from a technological point of view, there is clear evidence that the options shown through AR are the most preferred, accounting for 79% of the responses, in comparison with the tradition online shopping experience (web-browser) which only account for 21%. This suggests that AR implementation can enhance the presentation of the products, bringing them closer to the prospective client and generate a long-lasting impression which may lead to higher levels of sales. In addition, the interactive nature of AR experiences allows consumers to explore and engage with the products in a personalized and self-directed manner. This hands-on approach fosters a sense of ownership and involvement, making consumers more likely to form a deeper connection with the products. As a result, they may be more inclined to make a purchase and become loyal customers.

Table 2 – Crosstabulation of gender and favorite version of the couch (valid n=100)

Viewing method	Variant	Females	Males
Web-browser	V1	5	5
	V2	6	2
	V3	1	2
AR applications	V4	9	6
	V5	14	15
	V6	14	21
TOTAL		49	51

As stated earlier, it is important for the marketers to clearly understand the demographic segments of their target market to adjust the marketing efforts accordingly. Table 2 present the options of the respondents based on their gender. There is a slight tendency for males to choose the products marketed through AR, with 42 males choosing one out of V4, V5 or V6, compared to 37 female respondents.

Table 3 – Crosstabulation of age group and favorite version of the couch (valid n=100)

Viewing method	Variant	18-34	35-54	55+
Web-browser	V1	3	4	3
	V2	4	3	1
	V3	1	0	2
AR applications	V4	5	8	2
	V5	11	16	2
	V6	12	16	7
TOTAL		36	47	17

The table above shows the respondents preferences based on their age group. It can be observed that for the age group 18-34, 78% of the respondents prefer one of the variants in AR. For the second age group, 85% of the respondents express their preference for one of the AR variants, whereas in the oldest age group this percent is lower, 65% stating that their preferred variant is one out of V4, V5 or V6. Even though we can observe that the middle-agers tend a little more to prefer the AR versions, the general view suggest that the products shown in AR are preferred by most people, whatever their age group.

Table 4 – Crosstabulation of familiarity level and favorite version (by group)

Familiarity with AR	**Browser group**	**AR group**
1 – very unfamiliar	4	2
2 – unfamiliar	3	6
3 – relatively unfamiliar	4	1
4 – neutral	2	8
5 – relatively familiar	7	19
6 – familiar	1	24
7 – very familiar	0	19
TOTAL	21	79

The table above presents the crosstabulation between the level of familiarity with AR, measured on a Likert 7-points scale, and the recoded variable of favorite group. This new variable is coded 1 if the preferred version is V1, V2 or V3 (browser versions) and 2 if the preferred version is V4, V5 or V6. To determine if the mean familiarity level is different between browser group and AR group, an independent sample T-test was employed and is summarized below. Vieira (2006) states that data resulted from Likert scales can be used for T-test with statistical value, even though the assumption regarding normal distribution is not met.

Table 5.1 Group statistics

	Preferred version	N	Mean
Familiarity level	Browser group	21	3.3810
	AR group	79	5.3291

Table 5.2 Independend samples T-Test

			Familiarity level	
			Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F		1.066	
	Sig.		.304	
t-test for Equality of Means	t		5.025	4.846
	df		98	30.077
	Significance	One-Sided p	<.001	<.001
		Two-Sided p	.000	.000
	Mean Difference		1.94816	1.94816
	Std. Error Difference		.38771	.40197
	95% Confidence Interval of the Difference	Lower	1.17876	1.12731
		Upper	2.71757	2.76901

Table 5.1 presents the means of the familiarity level for the two groups, as points on a 7-level interval scale (7 = very familiar – 1 – very unfamiliar). The analysis found that the respondents who chose one of the AR-presented variants had statistically higher levels of familiarity with AR technology (5.33 points) compared to those whose favorite variant is one of the browser-based (3.38 points). The T-test above show that there is a statistically significant difference between these two means, $t(98)=5.025$, $p<.001$, $d=1,23$.

Based on these findings it can be concluded that augmented reality could influence the users in the online decision-making process. The data has shown that, when given the choice between traditional way of online browsing for goods and AR-powered shopping application, the customers tend to prefer the products that are presented with the help of this new technology. In regard of demographic segmentation, it was observed that middle-aged men

tend to prefer AR variants a little more than the other segments, but further studies need to employ larger samples to generalize these findings.

It was demonstrated that those who prefer the classic way of browsing for products had lower levels of familiarity with augmented reality in comparison to those who prefer the products presented in AR. This finding is important for marketers, who need to take into account that, when implementing AR in the marketing strategy, they also need to market the technology in order to educate and familiarize the potential future users, maximizing the beneficial impact of this technology on the marketing strategy and performance.

CONCLUSION

AR has been increasingly used in marketing and advertising, as it has the potential to transform traditional marketing approaches and engage consumers in immersive and interactive experiences (Sung, 2021)

The main research objective of this paper was to analyze the effect of embedding augmented reality with the online marketing strategy. It was concluded that AR has the potential for enhancing the marketing strategy by offering tools for attracting and engaging customers in a new and interactive way.

It is important for marketers to conduct thorough market research and understand their target demographic segments to effectively leverage AR in marketing campaigns. By recognizing the preferences, needs, and technological familiarity of different demographic groups, marketers can create tailored AR experiences that resonate with their target audiences, drive engagement, and contribute to the success of their marketing strategies.

It is important to acknowledge the limitations of this study. The research focused specifically on couch viewing experiences, and the findings may not be directly applicable to other product categories or industries. Also, further studies must employ larger samples to be able to generalize the findings regarding the effect of different demographic segments that could provide deeper insights and guide marketers in their targeting efforts.

Future research in this field could explore the long-term effects of AR on consumer behavior and investigate the optimal strategies for integrating AR into broader marketing campaigns. It is important for marketers to gain a deep understanding on how AR impacts the acquisition intention level in the online consumer buying process and how different

characteristics of this new technology can be developed to maximize the benefits of AR for brand success.

This research has theoretical implications regarding the integration of new technologies in online marketing strategy, understanding consumer behavior in AR environments, consumer segmentation and marketing strategy optimization. These theoretical implications contribute to the broader body of knowledge in marketing and provide valuable insights for both academics and practitioners in the field and can be a starting point for further research in the field of AR marketing.

The analysis presented in this article carries significant implications for businesses seeking to integrate augmented reality (AR) into their marketing strategies. This research can be the starting point for evaluating the benefits of AR on different industries and serve as guidance for those seeking to segment their target audience and leverage AR to optimize their marketing strategies and achieve business success. As this research shown, by strategically leveraging AR, businesses can gain a competitive edge, differentiate themselves in the market, and optimize their marketing strategies for long-term success.

In conclusion, this study has demonstrated the transformative potential of augmented reality in marketing, highlighting its ability to engage consumers in immersive and interactive experiences. By understanding the impact of AR on consumer choice and leveraging this knowledge to tailor marketing strategies, businesses can effectively navigate the rapidly evolving digital landscape and connect with their target audience in innovative and compelling ways.

CONFLICTS OF INTEREST AND PLAGIARISM: The authors declare no conflict of interest and plagiarism

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