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The Augmented Reality Experience and the Purchase Intention of Pakistan's Millennials When it Comes to Retail Shopping

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ABSTRACT

Augmented Reality is a type of immersive technology that provides the user with a high level of sensory input, whether in terms of quality or quantity. The study will observe and identify research concerns about the impact of optimism, innovativeness, discomfort, and insecurity on purchase intention, as well as the mediating role of personal opinions towards Augmented Reality (AR) user experience. This study seeks to evaluate the impact of consumer personality traits on purchasing behavior in the context of electronic equipment in Lahore, Pakistan, with a focus on generation Y. This study will use a deductive approach and will be based on the positivist research philosophy. Based on the Technology Readiness Model and the Theory of Planned Behavior. This research will use a quantitative survey method and cross-sectional research to collect data from a specific point in time. The study will collect data using convenience sampling, which is a non-probability sampling technique. The study will take an experience-based method, followed by a survey, in which participants will be exposed to AR environments and a structured questionnaire will be used to gage their responses. The data will be gathered from 370 respondents and analysis will be done using IBM SPSS Statistics 29 for descriptive statistics and SmartPLS 4.0 for route analysis to investigate indirect correlations.

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1. Introduction

Immersive technology is a new medium that blends reality and computer-generated content to provide multi-dimensional experience in addition to what standard media can offer. Standard practices are not enough anymore (Suh & Prophet, 2018). Customers only want companies that can surprise and delight them carte blanche. It is also considered to be a key differentiator from competitors and contributes to its ability to achieve the top end of margins (Butt, Ahmad, Muzaffar, Ali, & Shafique, 2022). Landscape of Innovation in augmented and virtual reality through AR/VR technology disrupting industries like Retail sector, real estate etc. as the toughest competition exists to grab a client they can. Most of this tendency comes from the nature of trying to differentiate its games in the industry and provide unique experiences (Xiong, Hsiang, He, Zhan, & Wu, 2021). The other way round, the social media platforms have been getting on to this as well with Facebook coming up with Mobile Augmented Reality (MAR). The team set up an Oculus social hub, where people who want to play games with other such crazy folks can not only interact, but do it when wearing their headset (Sun, 2019). This evolution is illustrative of a broad and rapidly growing demand for immersive technologies spanning industries, changing how businesses engage with customers and conduct business. As per report Hetu (2022) published Gartner, this report addresses the complex global retail landscape characterized by changing consumers, instability in market conditions and digital technology (Zou & Cheshmehzangi, 2022). According to Moyer (2021), companies must cater to the "everything consumer" who demands a seamless combination of online and in-person buying

experiences. This demands the efficiency and convenience that technology provides, as well as the personalized touch that comes from human engagement. This dual approach allows clients to have the best of both worlds: the speed and accessibility of digital platforms, combined with the individualized care of face-to-face connection. According to a PWC (2023) poll, shoppers who plan to spend more time in physical stores over the next six months want more technological elements in such businesses. A sizable proportion, 34%, want in-store entertainment, while 30% prefer immersive digital experiences. These include the ability to evaluate new products using AR via QR code scans and virtual reality (VR) headsets.

AR is emerging as an important innovation in immersive technology, particularly in the advertising industry. It is gradually being integrated into consumer marketing initiatives, which are mostly designed for smartphone applications. AR has unlocked new possibilities for content delivery by connecting the material environment with the digital world in real-time, providing audiences with a creative and dynamic approach to interact with marketing content (Cao, Zheng, Jia, & Liu, 2020). As demand for AR grows, marketers must understand the technology's tremendous impact on customers. It is particularly important for developing methods that positively affect consumers' purchase intentions, resulting in more favorable market outcomes (Yadav & Pavlou, 2014). The full potential of this immersive technology in the consumer sector is still being explored. Despite the critical need for additional research, advertisers and marketers are extremely excited about the prospects and potential of Augmented Reality Marketing (ARM) (Kazmi, Ahmed, Soomro, Hashem E, Akhtar, & Parmar, 2021). As indicated by Sushereba, Militello, Wolf, and Patterson (2021), AR advertising campaigns sparked a competitive race among companies and advertisers to capture customers' attention and capitalize on innovative potential, highlighting the growing interest in AR in advertising.

1.1. Research GAP

In today's competitive retail environment, retailers must find unique ways to connect with customers and offer a significant value proposition to achieve success (Grewal & Roggeveen, 2020). Technology integrates offline and online channels, reinforcing physical stores' role. However, it should be seen as a tool to enhance customer experience and influence shopping decisions. Mobile connectivity allows consumers to shop anytime, anywhere, leading to rapid expansion in mobile commerce. As online proficiency increases, in-store experiences need reinvention for a broader shopping journey (Chiu, Ho, Yu, Liu, & Mo, 2021). Pakistan's growing consumer market is hindered by marketers and advertisers not fully utilizing technology to enhance product visibility and influence shopping decisions (Kazmi et al., 2021). The primary reason for marketers' limitations is the lack of academic research and data that can guide them in adopting the latest strategies and technologies (Dankwa, 2021). As a result, there is a clear need for additional study to investigate the impact of in-store technological features such as AR on the customer's purchasing process, particularly how AR acts as a mediator in inspiring and influencing customer purchase intentions. AR technology in retail is under investigation, with further research needed to understand consumer personality traits and how they influence shopping intentions in online environments (Butt et al., 2022). Cognitive innovativeness improves ARM attraction, but a comprehensive framework for the role of innovativeness, along with optimism is required to measure their integrative effects on purchase intentions (Faqih, 2022; Lin, 2017; Suh & Prophet, 2018). The study of consumer behavior can be further expanded by including other variables (for example, attitudes to AR). such as attitudes towards AR (Butt et al., 2022). To examine these aspects of relationships between Technology Readiness Index Model (TRI) and purchase intention, and how personality traits such as innovativeness, optimism, discomfort, and insecurity impact consumer behavior, future studies would be necessary (Jarrar, Awobamise, & Sellos, 2020; Srivastava, Dasgupta, Ray, Bala, & Chakraborty, 2021). Considering this, retailers can move their AR mobile experiences to something that would actually help in visualizing the utilities of their products - either by integrating the AR capabilities into their current mobile apps or creating new ones for it (Saleem, Kamarudin, Shoaib, & Nasar, 2022). The current research gap within ARM remains one that could be addressed through the further exploration based on actual user behavior data and additional, possibly richer mobile application stimuli (during purchase intentions) (Chopdar & Balakrishnan, 2020). This thus confirms the importance of further research on AR user personality traits such as innovativeness and optimism, deriving their direct influence upon purchasing intentions and mediated by relative technologies like AR.

1.2. Scope and Significance of Study

The study will substantially contribute to illuminating the consumer electronics market factors that determinate their purchase intentions. They also have a detailed review of the many steps between advertising and purchase, including motivations behind buying decisions and forces working on these factors, with AR playing a role as well. This study would apply TRI with Theory of Planned Behavior by pursuing relationship among personality traits with consumer behavior for buying electronic equipment (provided) with focus specifically to optimism and innovativeness and AR; in Pakistan. The results of this study would provide new perspectives for marketing scholars and stakeholders who were concerned related to AR in product marketing and advertising issues. It enables better consumer insights; faster decision making and fosters more depth in consumer intelligence- especially in the retail domain.

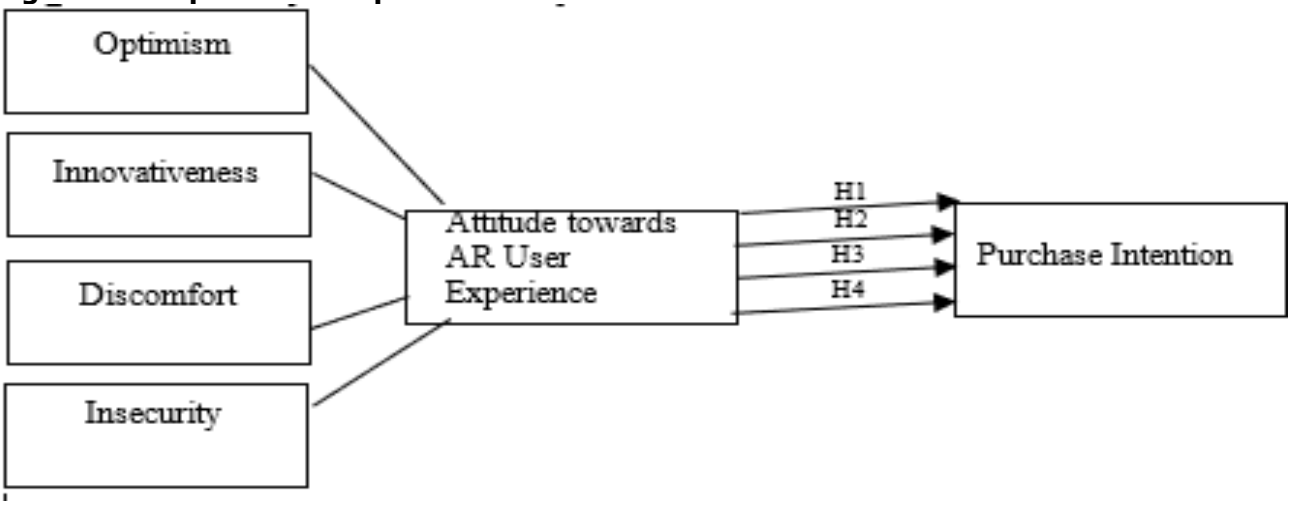
Additionally, this study would examine how the innovativeness, optimism, discomfort and insecurity of consumers conforms with their buying decisions (because they may be influenced by sociodemographic factors). The study will analyze how Augmented Reality Mediation affects user experience, enabling marketing to shape campaigns more effectively, technologists to fine-tune user engagement and managers to predict consumer purchasing behavior. The aim of this study is to investigate the influence of Augmented Reality Marketing (ARM) on purchase intentions with the mediation effects of customers' personality traits in service, marketing context retail sector in Lahore Pakistan. Lahore is the second most populous city in Pakistan and has a large number of electrical apparatus manufacturing being one of the cities main source for employment. The methodology is supported by designs of exploratory kind using questionnaires to collect data, being the study based on time horizon (cross-sectional). These results are designed to permit broad context applicability and generalizability and enable an extensive examination of the user purchase intention on ARM experiences.

2. Proposed Conceptual Framework

The aim of the study is to investigate the interplay between customers' personality (optimism, innovativeness, discomfort, insecurity) and their purchase intention (primary goal), with a special emphasis on how attitudes toward AR user experiences act as mediators as shown in figure 1. This includes various facets of consumer behavior in the retail context and provides a comprehensive structural model examining how personal traits can moderate AR on purchase decisions. The Objectives of the research are given below.

- To examine the extent to which attitude towards AR user experience mediates the relationship between optimism and purchase intention.
- To examine the extent to which attitude towards AR user experience mediates the relationship between innovativeness and purchase intention
- To examine the extent to which attitude towards AR user experience mediates the relationship between discomfort and purchase intention.
- To examine the extent to which attitude towards AR user experience mediates the relationship between insecurity and purchase intention.

Figure 1: Proposed conceptual model



2.1. Hypothesis Development

2.1.1. Optimism & Innovativeness

According to the technological readiness index theory, optimism has an important influence on attitudes towards technology (Walczuch, Lemmink, & Streukens, 2007). Additionally, people who are more optimistic have a lower fear for the negative sides of technology and therefore, people who are open minded tend to be the ones welcoming new tech. They will more quickly embrace emerging technologies because of looking at the better side of it, that is they are easy to use and provide benefits as advantages (Ali, Ullah, Akbar, Akhtar, & Zahid, 2019). The academia has strongly emphasized the relationship of optimism with technology usage intention; thereby, it is the most robust dimension that directly contributes to TRI (Chen & Lin, 2018; Hallikainen, Paesbrugghe, Laukkanen, Rangarajan, & Gabrielsson, 2017). Optimists want more resilient, flexible technology in daily life that leads to positive outcomes and expect new technologies to enable some degree of control over their lives and improve efficiency, (Rahman, Taghizadeh, Ramayah, & Alam, 2017). Ali et al. (2019); Walczuch, Lemmink, and Streukens (2007) reinforcing the role of optimism on influencing expectation attitude and technology adoption, particularly in developing countries like Pakistan, where it plays a crucial role in consumer behavior. Innovativeness is a crucial factor in shaping an attitude towards technology, indicating an individual's willingness to adopt innovative features compared to others (Hassan, 2017). High levels of innovativeness lead to more positive beliefs towards new ideas or technology, regardless of others' experiences (Chao, Reid, & Mavondo, 2012).

According to Huang and Liao (2015) early adopters are highly innovative and seek out the important aspects of cutting edge technology to fulfil their jobs and meet their desire for cognitive innovation. Previous research suggested that customers' innovativeness has a comparable impact on purchase intention. According to Ström, Vendel, and Bredican (2014), individuals with a high level of innate innovativeness are more likely to take the initiative to experiment with new technologies in terms of technology adoption. As a result, they were among the first to adjust compared to others, and the contemporary literate had similar ideas. For example, people with innate newness qualities have a significant link with purchase intention and use of new products (Al-Jundi, Shuhaiber, & Augustine, 2019; Hasan & Arif, 2018). Based on past empirical investigations and theoretical support, it is hypothesized that contributors have a beneficial impact on ARM and purchase intention. Therefore, the following hypothesis are proposed:

H1: Attitude towards AR User experience mediates the relationship between optimism and purchase intention
H2: Attitude towards AR User experience mediates the relationship between innovativeness and purchase intention

2.1.2. Discomfort & Insecurity

Discomfort is a feeling of a lack of control over technology, which can lead to a negative perception of its usefulness (Parasuraman & Colby, 2015). It is known that people who feel discomfort around technology have lower PEOU, but their perception of the usefulness of technology might not be lower or higher (Kuo, Liu, & Ma, 2013). Discomfort has been found to negatively impact consumers' attitudes towards adopting new technologies, with discomfort having a significant negative effect on shopping intention when combined with negative information (Blut & Wang, 2020; Prodanova, San-Martín, & Jimenez, 2021). Insecurity concerns also impede tech acceptance fearing attitude (TRI). Less secure people tend to have lower faith in new technological solutions, they must know for certain that a new technology is reliable before using it (Parasuraman & Colby, 2015). Again, this produces some element of risk attached to cutting-edge tech. This creates a sense of risk associated with the use of cutting-edge technology, leading to an increase in the prevalence of insecurity. People with higher levels of insecurity have less confidence in their ability to use products like digital alarm clocks, and the TRI Model provides conclusive evidence that consumers' concerns about their personal safety act as a barrier to their adoption of new technology. Insecure individuals are more likely to anticipate that technology will lead them to harm than it will lead them to benefit (Chen & Lin, 2018; Kuo, Liu, & Ma, 2013; Rahman et al., 2017). In conclusion, discomfort and insecurity are key factors in shaping consumers' attitudes towards new technology adoption. Understanding these factors can help businesses better understand and address the challenges faced by consumers in adopting new technologies.

H3: Attitude towards AR User experience mediates the relationship between discomfort and purchase intention.
H4: Attitude towards AR User experience mediates the relationship between insecurity and purchase intention.

3. Methodology

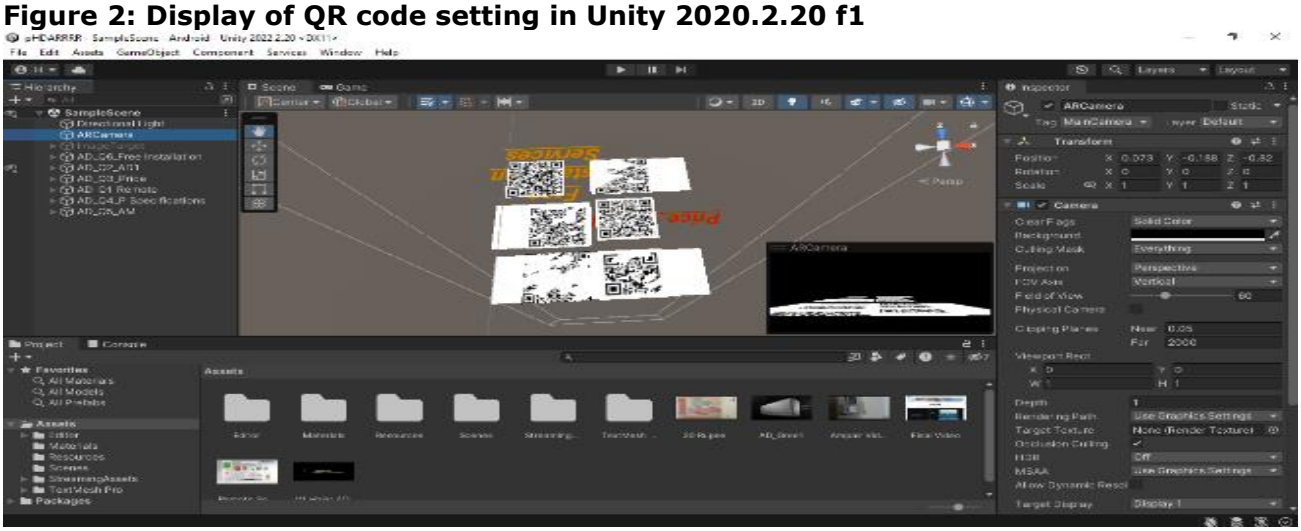
This research will undertake in light of the available literature, using a positivistic approa ch, and existing theories have been used to construct hypotheses (Saunders, 2009). The study explores ARM in information systems, focusing on the popular philosophy of positivism, and its connection to business studies and social science, specifically in marketing. This study will use a deductive approach, focusing on expanding the current framework in a different setting. It builds on previous literature and theories to develop a hypothesis. The conceptual model is designed from Technology Readiness Index Models, incorporating previous studies on ARM. It is crucial to connect the current research approach with the previous research philosophy. This study employs a quantitative method, aligning with the positivist research philosophy, to test, confirm, or disprove the hypothesis using statistical methods, ensuring better accuracy and generalizability to a larger population. This study will be carried out using an experience approach followed by survey, the participants will be exposed to an augmented reality environment via mobile applications under the researcher's supervision. The participants will then complete a standardized questionnaire survey to assess their response to ARM and investigate the previously indicated independent and dependent variables.

Because this is quantitative research that involves statistical procedures, a questionnaire was employed as the research strategy. Cross-sectional studies gather information over a single period, studying factors' effects. Most educational studies in social sciences are cross-sectional due to limited time (Goebert & Greenhalgh, 2020). A cross-sectional method is a suitable choice for this research as it doesn't consume a lot of time and resources as compared to a longitudinal study. A research population refers to a group of people or objects, while a sample is a subset of the population, used in a positivist study (Collis & Hussey, 2014). This research will focus on the population of Lahore, Pakistan, specifically Generation Y (Millennials) born between 1980 and 2000 (Brosdahl & Carpenter, 2011; Muskat, Muskat, Zehrer, & Johns, 2013). This study will focus on Generation Y (Millennials), who are quick adopters of technology and use gadgets regularly (Bolton et al., 2013; Immordino-Yang, Christodoulou, & Singh, 2012). They rely on communication tools for staying connected with family and friends (Ameen & Hameed, 2018). They are knowledgeable about technology and adept at developing innovative responses to technological challenges (Coates, 2017). The data will be collected from male and female household members, who are primary buyers and users of electronic products and appliances.

3.1. Experimental Design

To evaluate the conceptual framework, an AR application is developed utilizing the TRI model. The program employs an interaction marker-based approach to recognize specified items such as QR codes. A virtual object is presented relative to the marker's position, allowing you to control its position. The application was created with Unity 2020.2.20 f1 software for Android 8 and above, as seen in figure 2.

Figure 2: Display of QR code setting in Unity 2020.2.20 f1



The study used the Vuforia 10.15 engine for AR QR code image tracking in electronic appliances, notably GREE's Polar Series Air Conditioner. Advertisements were displayed using six QR codes, which included informative movies, energy conservation tutorials, and AC Remote functions. Android phones were used to scan the QR codes, which revealed the AC's pricing and free installation service. Figure 3 demonstrates how AR technology efficiently displays the AC's capabilities and benefits.

Figure 3: GREE polar series AC Invertor AR Advertisement

The study will collect data through convenience sampling approaches i.e. the shopping mall intercept strategy. The primary goal is to study the casual link between constructs using a non-probability sampling method. The KC and Morgan table (Chuan & Penyelidikan, 2006) is used to calculate sample size, with 370 being the suitable number. The statistical program SmartPLS was used to investigate relationships. Initially the data was analyzed in SPSS to carry out the descriptive statistics.

4. Discussion and Conclusion

In conclusion, the existing literature lacks a suitable framework for examining the interplay of TRI, Attitude and Purchase intention within the electronic retail sector of Pakistan. This study will address this gap by introducing a comprehensive framework, emphasizing the intricate relationships among Optimism, Innovativeness, Discomfort and Insecurity with Purchase Intention, with particular emphasis on the mediating role of attitude towards AR User Experience. This study's expected outcome will allow other researchers interested in exploring ARM to assess the customers' process of purchasing and how variables like TRI variables affect their decision making. The evaluation of ARM on user experience studied in this research will enable the marketers and technology providers to easily identify the significant features of ARM, which can help create a positive effect on user experience consequently, leading to purchase intention. Marketers may formulate and adopt new marketing strategies and measure their marketing performance by a positive or negative impact on customer's purchase intention. This study will guide a technologist to identify the stimuli in the form of features. This will help them incorporate only those features in their devices or gadgets that have a positive influence on user experience.

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