

The Impact of Augmented Reality on Perceived Value and Consumer Buying Intention: A Cross-Cultural Comparison from the Uses and Gratifications Perspective

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ABSTRACT

Augmented reality marketing is becoming increasingly common, but evidence suggests that consumers do not respond in exactly the same way to this marketing channel as they do to traditional digital marketing. This research applied uses and gratifications theory to investigate how augmented reality marketing tools were perceived by consumers in Thailand and the United Kingdom, what effect they had on perceived value and satisfaction of the tool itself and on buying intention for the marketed product. Samples were selected from Thailand ($n = 236$) and the United Kingdom ($n = 202$). A survey was distributed, and responses were analysed in SPSS. The analysis showed that information, entertainment, and novelty positively influenced perceived value, but annoyance did not have a significant effect. Perceived value had a significant effect on satisfaction, but annoyance did not. Finally, perceived value and entertainment had a significant effect on buying intention, but satisfaction did not. The implication for marketers is that information and entertainment are key aspects of augmented reality marketing, but novelty and annoyance are of less importance. Limitations included the range of uses and gratifications and factors in buying intention. Opportunities for further research were suggested.

Keywords: Augmented Reality, Augmented Reality Marketing, Cross-Cultural Marketing, Digital Marketing, Thai Consumers, UK Consumers

ผลกระทบของเทคโนโลยีโลกเสมือนผสานโลกแห่งความจริง ต่อความตั้งใจซื้อของผู้บริโภค : การเปรียบเทียบเชิงวัฒนธรรมในมุมมองของ ทฤษฎีการใช้งานและความพึงพอใจ

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บทคัดย่อ

การตลาดที่ใช้เทคโนโลยีโลกเสมือนผสานโลกแห่งความจริง (Augmented Reality: AR) กำลังเป็นที่นิยมมากขึ้นในยุคดิจิทัล อย่างไรก็ตาม มีหลักฐานบ่งชี้ว่า ผู้บริโภคไม่ได้ตอบสนองต่อช่องทางการตลาดนี้ในแบบเดียวกับการตลาดดิจิทัลแบบดั้งเดิม การศึกษานี้ประยุกต์ใช้ทฤษฎีการใช้งานและความพึงพอใจ (Uses and Gratifications Theory) เพื่อสำรวจมุมมองของผู้บริโภคชาวไทยและชาวสหราชอาณาจักรต่อเครื่องมือการตลาดที่ใช้เทคโนโลยี AR และตรวจสอบผลกระทบต่อการรับรู้คุณค่า (Perceived Value) ความพึงพอใจ (Satisfaction) และความตั้งใจซื้อผลิตภัณฑ์ที่ผู้ทำการตลาดการศึกษาดำเนินการผ่านการเก็บข้อมูลจากกลุ่มตัวอย่างในประเทศไทย ($n = 236$) และสหราชอาณาจักร ($n = 202$) โดยใช้แบบสอบถามและวิเคราะห์ข้อมูลด้วยโปรแกรม SPSS ผลการวิเคราะห์พบว่า องค์ประกอบด้านข้อมูล (Information) ความบันเทิง (Entertainment) และความแปลกใหม่ (Novelty) มีผลเชิงบวกอย่างมีนัยสำคัญต่อการรับรู้คุณค่า ในขณะที่ความรู้สึกไม่พึงพอใจ (Annoyance) ไม่มีผลเชิงนัยสำคัญต่อการรับรู้คุณค่า นอกจากนี้ การรับรู้คุณค่ายังส่งผลเชิงบวกต่อความพึงพอใจ ในขณะที่ความรู้สึกไม่พึงพอใจไม่ได้ส่งผลต่อความพึงพอใจเช่นกัน สำหรับความตั้งใจซื้อ ผลการศึกษาชี้ให้เห็นว่า การรับรู้คุณค่าและความบันเทิงมีผลเชิงบวกต่อความตั้งใจซื้อ ในขณะที่ความพึงพอใจไม่มีผลโดยตรงต่อความตั้งใจซื้อ ข้อเสนอแนะสำหรับนักการตลาดคือ ควรมุ่งเน้นการสร้างข้อมูลและความบันเทิงในแคมเปญการตลาด AR ในขณะที่ความแปลกใหม่และความรู้สึกไม่พึงพอใจอาจมีความสำคัญน้อยกว่า ข้อจำกัดของการศึกษานี้รวมถึงกรอบแนวคิดของทฤษฎีการใช้งานและความพึงพอใจที่ใช้ และปัจจัยอื่น ๆ ที่อาจมีผลต่อความตั้งใจซื้อ ทั้งนี้ ยังมีโอกาสสำหรับการวิจัยเพิ่มเติมเพื่อขยายประเด็นดังกล่าวในอนาคต

คำสำคัญ : เทคโนโลยีโลกเสมือนผสานโลกแห่งความจริง การตลาดด้วยเทคโนโลยีโลกเสมือนผสานโลกแห่งความจริง การตลาดข้ามวัฒนธรรม การตลาดดิจิทัล ผู้บริโภคชาวไทย ผู้บริโภคชาวสหราชอาณาจักร

INTRODUCTION

Augmented reality (AR) is a relatively novel type of mixed reality, in which information is transmitted to individuals through a combination of the real world and the virtual world (Mealy, 2018). Unlike the more intensive virtual reality (VR), there are several different ways that AR can be implemented, for example using projectors and proximity sensors in an enclosed space or using tags which are triggered by the user's mobile phone in non-enclosed spaces (Mealy, 2018). Given its flexibility and utility for both marketers and consumers, AR marketing is increasingly adopted as a strategic communication channel for branding, consumer engagement, and loyalty retention (Caboni & Hagberg, 2019; Rauschnabel, Babin, tom Dieck, Krey, & Jung, 2022). Rauschnabel et al. (2022) have pointed out that the use of AR is fundamentally different from traditional digital marketing practices, as AR technologies offer the opportunity to affect individual perceptions of reality. Therefore, it is worth considering how consumers respond to the use of AR marketing by firms.



Figure 1: The Maybelline Thailand #SpreadGoodVibes AR marketing campaign, one of the first campaigns in Thailand

Source: Prance-Miles (2020)

Studies have suggested that Thai consumers may be heavily dismissive of digital advertising and marketing efforts in different channels. One study has shown that video advertising has to use popular music and be novel and engaging to draw consumers in; even then, they will skip the advertisement if it interrupts a video stream (Amnuaypholwivat & Piyathatsanan, 2021). Social media users are prone

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to annoyance with social media-based marketing, especially if it triggers a notification they cannot avoid (as happens on Line, though not on Facebook) (Wangsiriwet & Methamorn, 2019). Furthermore, advertisements can be inadvertently offensive to consumers, even if they are not advertising offensive products or services (Rakrachakarn, 2018). These studies suggest that, overall, Thai consumers may be resistant to traditional digital marketing. However, consumer brand engagement, which is influenced by the credibility, informativeness, entertainment value, and information access of the marketing effort, can offset the effects of the digital marketing (Supotthamjaree & Srinaruewan, 2021). Given that AR marketing is distinct in many ways from traditional forms of digital marketing (Rauschnabel et al., 2022), there is the possibility that Thai consumers may respond differently to AR marketing than they do to traditional forms of marketing – but this is not assured.

There have been some studies which have investigated Thai consumer responses to AR marketing. One recent study investigated intention to use the metaverse (AR and VR immersive online environments), showing that the characteristics of the technology itself, social media marketing, and consumer engagement influenced the intention to use the technology (Sritong, Sawangproh, & Teangsompong, 2024). A cross-cultural study in Southeast Asia found that consumers in Thailand, Vietnam and Indonesia, were influenced by technological readiness, optimism, and innovativeness influenced the perception of AR-based try-on technology, while perceived usefulness, enjoyment and perceived fit influenced attitudes toward technology (Yang & Kim, 2024). These studies suggest there is some cultural variation in the acceptance of AR. They also suggest that there are specific uses (e.g., clothing fitting and technology characteristics) and gratifications (e.g., enjoyment) which consumers have for AR technology. However, there is still little insight into questions like how acceptance of AR technology influences the consumer's purchase intentions for AR-marketed products and to what extent there is cross-cultural variation in this response.

Another area where knowledge of AR marketing is limited is the extent to which consumers from different cultures respond similarly (or differently). There have been some studies which have suggested a cultural basis for how AR marketing is implemented. For example, a cross-cultural study suggested that in collectivist countries (like Thailand) AR marketing content tends to allow users to become a part of the content, while in individualistic countries (like the United Kingdom), users are allowed to manipulate the content (Feng & Mueller, 2019). Consumers' long-term orientation may also play a role in AR adoption (Jung, Tom Dieck, Lee, & Chung, 2020). Each of these dimensions can be considered from both an individual and a cultural perspective (Hofstede, Hofstede, & Minkov, 2010). However, there have been very few cross-cultural studies which have compared either the use of AR marketing or its perception by consumers to date (Javeed, Rasool, & Pathania, 2024). By comparing Thailand and the United Kingdom, this research contributes to a better understanding of the impact of culture on how AR marketing is perceived. As can be seen in Figure 1, Thailand and the United Kingdom differ significantly on most cultural dimensions (with the exception of long-term orientation)

(The Culture Factor, 2024). This makes these two countries a useful pair of comparison cultures to investigate how culture may affect consumer perceptions of AR marketing.

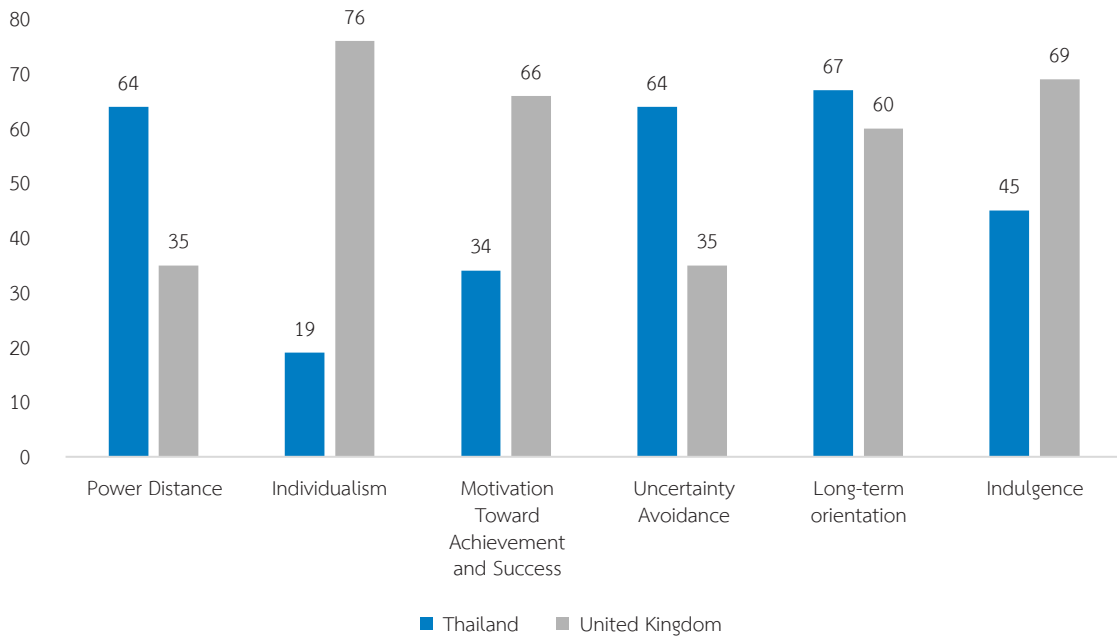


Figure 2: Comparison of cultural dimensions between Thailand and the United Kingdom

Data Source: The Culture Factor (2024) Country comparison tool.

The objective of this research was to conduct a cross-cultural comparison of consumer attitudes and response to AR marketing, using uses and gratifications theory and associated factors of perceived value, entertainment, novelty, and annoyance. The study surveyed consumers in Thailand and the UK to provide a cross-cultural perspective on AR marketing and its effectiveness.

Literature Review

Culture and Cultural Dimensions

As this research is a cross-cultural comparison, it is useful to understand what cultural differences there are between Thailand and the United Kingdom. The cultural dimensions perspective (Hofstede et al., 2010) is used here to compare the two countries. The cultural dimensions perspective argues that there are cultural tendencies and underlying shared values and beliefs that can differentiate individuals in one culture from those in another, with cultures varying to different extents in these values (Hofstede et al., 2010). A comparison between Thailand and the United Kingdom was provided in the introduction. As can be seen, there are some sharp differences. According to the power distance indicator, Thailand is a more strongly hierarchical country than the UK (The Culture Factor, 2024). At

the same time, it is also much more collectivist (according to the individualism scale) and oriented toward nurturing and caring rather than achievement and access (according to the motivation scale). Thailand has stronger uncertainty avoidance and higher levels of restraint compared to the UK. Thus, although individual personalities and preferences ultimately govern people's actions (Hofstede et al., 2010), it can be expected that there may be sharp differences between these two countries in some respects.

Perceived Value

The concept of perceived value (or customer-perceived value) has been at the heart of marketing research since the 1990s, but a true definition of the concept was slow to emerge (Sánchez-Fernández & Iniesta-Bonillo, 2007). Sánchez-Fernández and Iniesta-Bonillo (2007) pointed out that perceived value is not related to moral value, but rather to the economic and hedonic value consumers receive from a potential purchase. Because perceived value is a complex and very individual and subjective perception, it can be difficult to define or to measure with accuracy (Chang & Dibb, 2012). Broadly speaking, however, perceived value can be defined as what the customer perceives they have received, compared to what they gave (Chang & Dibb, 2012). This can be utilitarian value (the usefulness of the item itself), hedonic value (the enjoyment the customer receives), or symbolic value (the impact on social status or other symbolic meanings), among others. In this research, perceived value is viewed as what customers are seeking in their purchases.

Uses and Gratifications Theory

Uses and gratifications theory (U>) is a mass communications theory which is intended to explain how and why people access and accept different types of media channels (Liu, 2015). The basic tenet of U> is that individuals actively choose to engage with (or reject) media channels based on their perception of what the channel offers, rather than being a passive and receptive audience (Ibáñez-Sánchez, Orús, & Flavián, 2022). Audience perceptions can be categorized with respect to functional value (uses) and hedonic value (gratifications) (Ibáñez-Sánchez et al., 2022). However, the exact nature of these uses and gratifications depends on the communication channel, which in this research is AR marketing.

While U> had its roots in mid-20th century social science, it experienced a renaissance during the late 1990s, as the introduction of the Internet significantly increased individuals' exposure to a wide variety of media channels, including social media (Ruggiero, 2000). Digital media channels are distinct from traditional mass media channels, which is where U> originated, in several different ways (Liu, 2015). Digital media is interactive, meaning that individuals can control the extent to which they engage with it; it is asynchronous, meaning that users engage with the media at different times and places outside the control of the marketer; and it is demassified, meaning that it is not broadcast, but

instead carefully targeted to individuals (Liu, 2015). It can be difficult to distinguish the uses and gratifications afforded by different digital platforms, due to the increasingly complex and individualized digital landscape (Pelletier, Krallman, Adams, & Hancock, 2020). At the same time, AR marketing may have distinct uses and gratifications, in keeping with its distinct nature (Rauschnabel et al., 2022). Specific uses and gratifications for AR-based tools could include entertainment and novelty (Ibáñez-Sánchez et al., 2022), or information seeking (Schleußinger, Hansen, & Ramberg, 2023). However, consumers could also be inhibited from using AR-based tools due to annoyance, for example due to over-stimulation or poorly designed environments (Poushneh & Vasquez-Parraga, 2017). These factors are investigated as factors in the perceived value of AR marketing.

Information

One of the central motivations for marketers to use AR marketing strategies is to provide information to consumers to build brand identities and convince consumers to try products (Rauschnabel et al., 2022; Tan, Chandukala, & Reddy, 2022). In general, AR is acknowledged as a tool which users can employ for immersive information seeking; it allows users to view virtual information situated in a real-world environment, which can provide unique viewpoints for the user (Schleußinger et al., 2023). The information seeking motivation can be seen in studies of AR marketing applications. For example, adoption of 3D virtual fitting technologies, which allow users to ‘try on’ fashion while shopping online, is influenced by perceived fit of the clothing (Yang & Kim, 2024). In other words, consumers who are seeking out information about the fit of clothing are motivated to adopt AR fitting technology. A study from Egypt similarly supports the importance of information in the acceptance of AR marketing (Negm, 2024). This study also focused on AR marketing in online shopping. Authors showed that the informativeness of the technology caused users to develop a positive attitude toward the utilitarian value of AR marketing (Negm, 2024). Another study, conducted in the UK, found that information seeking influenced the perceived value of AR marketing in both high-immersion and low-immersion setting (tom Dieck, Cranmer, Prim, & Bamford, 2023). Although the exact paths between these factors varied depending on the immersion level, these findings support the relationship between information seeking and perceived value (tom Dieck et al., 2023). In short, consumers who are motivated by information seeking are likely to influence the perceived value of AR marketing, as stated in the first hypothesis:

Hypothesis 1: Consumers’ perception of information value positively affects their perceived value of AR marketing.

Entertainment

Marketers also use AR marketing to entertain and intrigue consumers through games, puzzles, and other mechanisms to increase their intellectual and emotional engagement and encourage identification with the brand and product or service (Rauschnabel et al., 2022; Tan et al., 2022). Several studies on AR have shown that AR-based tools are viewed by users as highly entertaining. For example,

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a study on AR-based video and photo filters on social media sites showed that a primary motivation for their use was that users were entertained by them (Ibáñez-Sánchez et al., 2022). While there were also utilitarian, social, and personal value perceptions for the technology, the hedonic (entertainment) value was a predominant factor in acceptance (Ibáñez-Sánchez et al., 2022). Another study on AR marketing in the context of retail user experience showed that there were several aspects of hedonic value that influenced technology acceptance, including the stimulation provided by the AR tool and identification with the tool (Poushneh & Vasquez-Parraga, 2017). Additionally, this hedonic value had a direct influence on willingness to buy the marketed product. Another study of AR-enabled online shopping showed that enjoyment influenced outcomes, although this influence was mainly felt in high-immersion environments (tom Dieck et al., 2023). Furthermore, a study in Egypt showed that hedonic value (or enjoyment of the tool) influenced buying intentions for the marketed product (Negm, 2024). In summary, the perceived entertainment value of the AR marketing effort is likely to influence perceived value, as stated in hypothesis 2. It may also have a direct influence on purchase intention for the product, as stated in hypothesis 3.

Hypothesis 2: Consumers' perception of entertainment value positively affects their perceived value of AR marketing.

Hypothesis 3: Consumers' perception of entertainment value positively affects their buying intention for the marketed products.

Novelty

Novelty refers to the extent to which AR marketing (or any form of technology) is an experience individual have not encountered previously (Hopp & Gangadharbatla, 2016). Novelty has been shown to have an effect on perceptions of AR because it breaks the psychological distance between the user and technology, allowing them to engage with it fully for the first time and stimulating intellectual curiosity and engagement (Talukdar & Yu, 2024).

Novelty is typically highest at the first point where users encounter a technology like AR, and diminishes with time and experience in the technology (Hopp & Gangadharbatla, 2016). In other words, technology becomes less compelling as users encounter it more (Talukdar & Yu, 2024).

There is evidence that novelty has a positive effect on attitudes toward AR. An early experimental study showed that exposure time for AR advertising was negatively associated with attitude, meaning that consumer attitudes became poorer as they were more exposed to the technology (Hopp & Gangadharbatla, 2016). A study on AR shopping technologies showed that novelty had a positive influence on attitudes such as immersion and presence in both high-immersion and low-immersion settings (tom Dieck et al., 2023). Novelty may also be associated with trendiness, which can increase positive attitudes toward AR technology (Ibáñez-Sánchez et al., 2022). A recent study in India also

supported the role of novelty in perceived value of AR marketing technology (Attri, Roy, & Choudhary, 2024). This study investigated in-store AR marketing. The findings showed that the novelty of the technology had a positive effect on the perceived hedonic value of the technology (Attri et al., 2024). In summary, there is evidence that novelty is positively associated with attitudes such as perceived value of AR marketing. This relationship is proposed in Hypothesis 4.

Hypothesis 4: Consumers' perception of novelty positively affects their perceived value of AR marketing.

Annoyance

In the context of marketing and advertising, annoyance refers to a negative attitude toward a given advertising or marketing campaign, often caused by excessive exposure or targeting or underlying dislike or disapproval of the subject matter (Todri, Ghose, & Singh, 2020). As Todri et al. (2020) have pointed out, online marketing requires targeting and repetition, meaning that marketers must carefully balance exposure with consumer annoyance. In traditional digital marketing, consumers are passively exposed to marketing campaigns, but they can use tools like ad blockers to minimize or even eliminate their exposure (Brinson & Britt, 2021). In the context of AR marketing, consumers have even more control, as they can simply refuse to engage with the AR component of marketing (Rauschnabel et al., 2022). Therefore, it could be expected that annoyance would have a negative effect on the perceived value of AR marketing.

Most of the research on annoyance with AR has focused on physical annoyance with the tool itself, for example with the visual display quality (e.g., Duan et al., 2022), rather than consumer annoyance with AR as a marketing channel. However, there are some studies which have suggested that annoyance can have a negative impact on consumer attitudes toward AR marketing. One of these studies shows that consumer annoyance are one of the factors that can contribute to dissatisfaction with AR tools, as well as their perception of its value (Poushneh & Vasquez, 2017). Other studies have suggested that annoyance and negative perceptions may have a negative impact on perceptions of AR value, although these have not been investigated in detail (Negm, 2024; Tan et al., 2022; tom Dieck et al., 2023). Therefore, in order to contribute to understanding of the role of consumer annoyance in AR marketing, the fifth hypothesis is proposed as follows.

Hypothesis 5: Consumers' annoyance negatively affects their perceived value of AR marketing.

Hypothesis 6: Consumers' annoyance negatively affects their satisfaction with AR marketing.

Perceived Value of AR marketing and User Satisfaction

User satisfaction can be briefly defined as the extent to which users believe that the AR tool has delivered on its promise, for example ease of use, information, entertainment, and others (Poushneh & Vasquez, 2017; Poushneh & Vasquez-Parraga, 2017). Consumers may often experience dissatisfaction

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with AR marketing due to a gap between what they expect and what they experience (Poushneh & Vasquez, 2017). The perceived hedonic and utilitarian value of AR has been associated with user satisfaction in previous studies. One of these studies, conducted as a retail experiment, showed that the perceived hedonic and utilitarian values of AR had a direct effect on user satisfaction (Poushneh & Vasquez-Parraga, 2017). Another study of immersive AR showed that immersive AR contributes to user satisfaction, as it is perceived as being higher information value (utilitarian value) and entertainment value (hedonic value) (Talukdar & Yu, 2024). Another study investigated usability (a specific aspect of the utilitarian value of AR marketing tools) as a factor in user satisfaction (Ferreira et al., 2020). This study showed that overall usability influenced user satisfaction, supporting this relationship. However, there are some limitations on the research; for example, no studies were identified which compared the cross-cultural differences in this perception, which could be investigated here. In summary, there is some evidence that the perceived value of AR marketing will have a positive influence on user satisfaction, but this relationship has not been investigated fully. Therefore, the effect of perceived value of AR marketing on user satisfaction is the basis for hypothesis 7:

Hypothesis 7: Perceived value of AR marketing positively influences user satisfaction with the technology.

Perceived Value, Satisfaction and Purchase Intention

The next relationship investigated is between the perceived value of AR marketing and purchase intention for the product. The purchase intention, which can be defined as a deliberate decision to purchase a particular product or brand, results from a large number of individual factors and immediate decision processes (Erawan, 2021). Several studies have suggested that AR marketing can have an effect on purchase intention for the marketed product. One of these studies suggested that AR marketing develops the perceived value of the product, contributing to the purchase intention (Negm, 2024). Another study suggested that AR marketing has a direct effect on sales, especially for expensive products and less popular and mass appealing brands (Tan et al., 2022). Another study found that utilitarian value had a direct effect on purchase intention, although hedonic value did not have this effect (Attri et al., 2024). In short, there are several possible routes by which AR marketing could influence purchase intention, but there is no consensus route or factor through which AR marketing contributes to purchase intention. This research focuses on perceived value of AR marketing as a causal factor for purchase intention, as expressed in hypothesis 8.

Hypothesis 8: Perceived value of AR marketing positively influences purchase intention for the marketed product/service.

Finally, satisfaction is investigated as a factor in purchase intention. Customer satisfaction with products and services is in general a contributing factor to buying intention (Erawan, 2021). However, the effect of satisfaction with marketing activities on buying intention for the marketed product or

service is less clear. This study explores this relationship in order to contribute novel information to the literature in the final hypothesis:

Hypothesis 9: Satisfaction with AR marketing positively influences purchase intention for the marketed product/service.

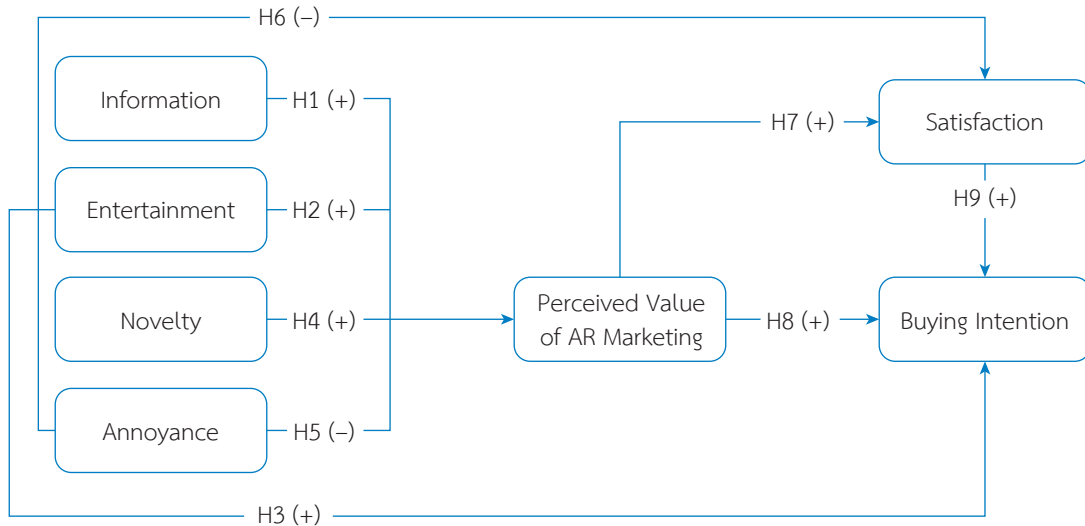


Figure 3: Conceptual framework of the study

Methodology

Sample Selection and Data Collection

The population of interest was consumers (aged 18 and over) in the United Kingdom and in Thailand who have encountered an AR app or tool while shopping online. A priori power analysis indicated that the minimum sample size for the most complex analysis required a minimum sample size of 110 members. The minimum sample was set to 200 members per country, to ensure that the sample was adequate in size and likely to be more representative. The actual sample size was slightly larger for Thailand ($n = 236$) than for the UK ($n = 202$), but this was not large enough to make a significant difference in the sample size groups.

The sample was selected using non-probability online sampling, which was used because there was no way to establish a bounded population or conduct random sampling, as is frequently the case in consumer studies (Chaudhuri, 2019). Non-probability online sampling does carry risks, including non-response bias and the potential for non-representative samples (Chaudhuri, 2019). This was considered as part of the sample design, but as this is a very broad study of general consumer behaviour, it was considered acceptable.

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The survey announcement was distributed across country-specific consumer groups on Facebook. A Google Forms survey was constructed to collect data. The initial screen included survey information and a consent form. A brief explanation of AR, followed by screening questions, including “what country do you reside in now?”, “how old are you?” and “have you encountered an AR app while shopping online, for example an app which allowed you to “try on” glasses, makeup, or clothes, or which showed you placement of furniture in your actual living space?” were on the second screen. If respondents completed the consent form and passed screening questions, the survey was then displayed.

Research Instrument

Table 1 summarizes the research instrument developed for the study. Items were measured using a five-point Likert scale, as five-point to seven-point scales have been shown to provide adequate differentiation without overwhelming respondents (Joshi, Kale, Chandel, & Pal, 2015). All Likert items were adapted from prior studies which used similar variables. In addition to the Likert items, respondent demographics (age and gender) were collected from all respondents.

The item-objective congruence (IOC) approach (Turner & Carlson, 2003) was used to assess content validity of the scales. A panel of 5 experts was asked to rate whether an item belonged to the proposed theoretical construct (1: item belongs; 0: unsure; –1 item does not belong). Scores were averaged and a mean of 0.70 or higher was used to indicate consensus. Through three rounds of evaluation, average agreement rose from 72.2% to 95.4%, indicating adequate content validity. Following data collection, Cronbach’s alpha was also used to check internal consistency of the scales ($\alpha \geq .700$) (Bonett & Wright, 2015). As Table 1 shows, all variable scales were above the minimum threshold, but did not reach above .950, which can indicate redundant items (Brown, 2015). Therefore, the preliminary internal consistency of the scales was considered to be suitable.

Table 1: Research instrument

Variable	Items	Source/Adapted from	α
Information	ARI1. The AR app provided me all the information I wanted about the product. ARI2. It was easy to find information on the AR app. ARI3. I was able to find multiple types of information on the AR app.	Schleußinger et al. (2023)	.789
Entertainment	ENT1. Shopping with the AR app is fun for its own sake. ENT2. Shopping with the AR app is enjoyable. ENT3. Shopping with the AR app is exciting.	Yang & Kim (2024)	.779

Table 1: Research instrument (Cont.)

Variable	Items	Source/Adapted from	α
Novelty	NOV1. I have little experience with AR technology. NOV2. I have not used AR technology in a marketing context before. NOV3. AR technology is new to me.	Hopp & Gangadharbatla (2016)	.941
Annoyance	ANN1. I found the AR app intrusive. ANN2. The AR app annoyed me. ANN3. The AR app was missing things I wanted.	De Masi & Wac (2022)	.855
Perceived Value	PV1. The AR app is useful to me. PV2. The AR app helped me do some things I had to do. PV3. The AR app was fun. PV4. The AR app was a cool experience.	Sweeney & Soutar (2001)	.781
Satisfaction	SAT1. Overall, I am satisfied with the AR app. SAT2. Using this app was a satisfying experience. SAT3. Experiencing this app was pleasurable.	Poushneh & Vasquez (2017)	.846
Buying Intention	BI1. I would buy the product advertised through the AR app. BI2. Next time I need one of the products advertised through the AR app, I would consider this one. BI3. I will consider the brand marketed through the AR app.	Erawan (2021)	.883

Data Analysis

Analysis was conducted in SPSS. Descriptive statistics were calculated for each item, including mean and standard deviation (for Likert items) and frequency distributions (for demographic information). The hypotheses were tested using linear regression, which was selected because it is ideal for modelling causal relationships (Thrane, 2020). As there were two to four independent variables for each of the dependent variables (perceived value of AR marketing, user satisfaction, and buying intention), the multiple linear regression approach was used, as it models outcomes of multiple predictors more accurately (Thrane, 2020). Hypotheses were evaluated using the t-tests for each coefficient ($p < .05$), indicating that there was less than 5% chance of random error being associated with the results. Strength of coefficients was evaluated based on standard rules of thumb ($B < .300$ = weak; $B = .300$ to $.500$ = moderate; $B > .500$ = strong) (Hair, Babin, Black, & Anderson, 2019). Additionally, the overall fit of

the regression was evaluated using the r-squared value, which represents the proportion of variance in the dependent variable associated with variance in the independent variables (Hair et al., 2019).

Findings and Discussion

Sample Profile

The minimum sample for each country group was n = 200 members. The actual Thai sample (n = 236) was slightly larger than the actual UK sample (n = 202). However, a chi-square test indicated this was not a significant difference from a uniform divide between the two groups ($\chi^2 = 2.639$, $p = .104$). There were approximately even distributions between male (48.6%) and female (48.9%) respondents, with a small number selecting other/prefer not to say (2.5%). Age ranges were divided between 18 to 25 years (22.6%); 26–35 years (27.2%); 36 to 45 years (23.1%); and 45+ years (27.2%). This actually suggests that younger participants (aged 18 to 35) were overrepresented compared to older respondents. Table 2 compares frequencies for gender and age between the UK and Thailand.

Table 2: Summary of demographics

	Full Sample	Thailand	United Kingdom
Gender			
Female	214	116	98
Male	213	114	99
Other/Prefer not to say	11	6	5
Age			
18–25	99	54	45
26–35	119	65	54
36–45	101	50	51
46+	119	67	52

Descriptive Statistics

Descriptive statistics for Likert variables are summarized in Table 3. These items are interpreted using the original intervals of agreement for the Likert items, which were: strongly disagree (1); disagree (2); neutral (3); agree (4); and strongly agree (5). These intervals were adjusted to account for the potential mean range (1 to 5) by dividing the range by the number of points (Sullivan & Artino, 2013). This calculation yielded a range of 0.80 points. Therefore, the interpretations are based on the following

ranges: strongly disagree (1.00 to 1.79); disagree (1.80 to 2.59); neutral (2.60 to 3.39); agree (3.40 to 4.19); and strongly agree (4.20 to 5.00). As the results show, participants were not on average either highly positive or highly negative about any of the responses, with most means falling within the neutral category or the agree category for interpretation. This indicated that on average, respondents felt positively, but not highly positively, about the AR marketing app's features, satisfaction, and outcomes. Annoyance and perceived value were perceived as neutral.

There was also a question about whether there were significant mean differences on these items between the two country-level sub-samples. This question was evaluated using an independent samples t-test, also shown in Table 3. As this shows, there were no significant mean differences between the Thai and UK groups on any of the individual items. Therefore, on average Thai and UK consumers had approximately the same attitudes towards AR marketing apps they had encountered.

Table 3: Summary of descriptive statistics

	Mean	S.D.	Interpretation	t	p(t)
ARI1	3.99	0.955	Agree	0.973	.331
ARI2	4.00	0.973	Agree	0.000	1.000
ARI3	4.01	0.948	Agree	0.186	.853
ENT1	3.46	0.941	Agree	-0.438	.662
ENT2	3.46	0.939	Agree	0.173	.863
ENT3	3.42	0.981	Agree	-0.021	.983
NOV1	4.05	0.985	Agree	0.254	.800
NOV2	4.05	0.978	Agree	0.361	.718
NOV3	4.09	0.978	Agree	0.729	.466
ANN1	2.63	0.646	Neutral	-1.133	.258
ANN2	2.60	0.619	Neutral	0.676	.499
ANN3	2.62	0.647	Neutral	-1.052	.294
PV1	2.99	0.963	Neutral	-1.034	.302
PV2	3.03	0.967	Neutral	-0.298	.766
PV3	2.99	0.963	Neutral	0.459	.646
PV4	2.98	0.951	Neutral	0.791	.429
SAT1	4.03	0.962	Agree	-0.506	.613
SAT2	4.00	0.960	Agree	-0.345	.730
SAT3	4.00	0.910	Agree	-0.324	.746

Table 3: Summary of descriptive statistics (Cont.)

	Mean	S.D.	Interpretation	<i>t</i>	p(<i>t</i>)
BI1	4.01	0.959	Agree	1.385	.167
BI2	4.01	0.959	Agree	1.385	.167
BI3	4.06	0.932	Agree	0.260	.795

Regression Tests

Factors in Perceived Value

The first set of regression tests investigated four potential factors in perceived value for the AR marketing app. Results are summarized in Table 3. This model was only weakly predictive, with the *r* square values ranging from .209 (in the Thai sample) to .371 (in the UK sample). This indicates that 20.9% to 37.1% of variance in perceived value can be contributed to variance in the predictors. While the model was better fitted in the UK sub-sample, this is still only a weakly predictive model, suggesting there are other factors in perceived value for the app.

Effects of the predictive variables were similar across the three samples. In the full sample, information ($\beta = 0.280$, $p < .001$), entertainment ($\beta = 0.178$, $p < .001$), and novelty ($\beta = 0.144$, $p < .001$) all had positive and significant effects ($< .05$). However, annoyance ($\beta = -0.094$, $p = .084$) was negative as predicted within the conceptual framework, but was not significant at $p < .04$. Similar results were shown in the Thailand and United Kingdom sub-samples, with information, entertainment, and novelty having significant positive effects on perceived value but annoyance having a negative but non-significant effect. As summarized in Table 6, these findings support H1, H2, and H4, but do not support H5. When comparing between countries, there are some differences in the magnitude of unstandardized coefficients, but these are not large enough to suggest a substantially different relationship between countries. This suggests that the effects of information, entertainment, novelty, and annoyance of AR marketing are consistent between Thai and British consumers.

Table 4: Factors in perceived value of AR marketing apps

	Model 1: Full Sample	Model 2: Thailand	Model 3: United Kingdom
<i>Intercept</i>	1.438***	1.647***	1.247***
Information	0.280***	0.202** (.001)	0.356***
Entertainment	0.178***	0.169** (.004)	0.194** (.002)
Novelty	0.144***	0.134** (.007)	0.164** (.002)
Annoyance	-0.094 (.084)	-0.065 (.387)	-0.145 (.072)
<i>R squared</i>	.279	.209	.371
<i>F</i>	42.0***	15.2***	29.1***

Dependent variable: Perceived value

Note: * $p < .05$; ** $p < .01$; *** $p < .001$

Factors in Satisfaction

Two factors were investigated as factors in satisfaction with the AR marketing app, including annoyance and perceived value. The results are summarized in Table 4. These models were weakly predictive according to the r squared values, which ranged from .119 in the Thai sample to .203 in the UK sample.

In the full sample, annoyance had a negative but non-significant effect on satisfaction ($\beta = -0.005$, $p = .938$). However, perceived value had a significant and positive effect on satisfaction ($\beta = 0.438$, $p < .001$). The effects were similar in the Thai and UK samples. In both of these samples, the effect of annoyance was negative but non-significant, while perceived value had a moderate positive effect. Once again, the effect was stronger in the UK sample than in the Thai sample. These findings support H7, but do not support H6. The findings also point to the factors identified potentially being more effective at identifying effects in the UK sample than the Thai sample.

Table 5: Factors in satisfaction with AR marketing apps

	Model 1: Full Sample	Model 2: Thailand	Model 3: United Kingdom
<i>Intercept</i>	1.715***	1.786	1.668***
Annoyance	-0.005 (.938)	-0.0134 (.878)	-0.031 (.747)
Perceived Value	0.438***	0.392***	0.482***
<i>R squared</i>	.157	.119	.203
<i>F</i>	40.4***	15.7***	25.3***

Dependent variable: Satisfaction

Note: *** $p < .001$

Factors in Buying Intention

The final regression model investigated factors in buying intention, including entertainment, perceived value, and satisfaction. Results are summarized in Table 5. The models were only weakly fitted, with r square values ranging from 0.173 for the full sample to 0.180 for the Thai sample. This indicates that the three predictors predicted between 17.3% and 18% of the variance in buying intention.

The regression coefficients for the full sample show that entertainment ($\beta = 0.215$, $p < .001$), perceived value ($\beta = 0.255$, $p < .001$), and satisfaction ($\beta = 0.123$, $p < .016$) have significant and positive effects on the buying intention for the marketed product/service itself. These findings support Hypotheses 3, 8, and 9 respectively. However, results were slightly different in the sub-samples. While entertainment and perceived value were both significant and positive in Thailand and the UK, satisfaction did not have a significant effect in the smaller samples. This suggests that the effect of satisfaction with the AR app on buying intention for the marketed product is marginal, as indicated by its weak effect within the main sample.

Table 6: Factors in buying intention for marketed products

	Model 1: Full Sample	Model 2: Thailand	Model 3: United Kingdom
<i>Intercept</i>	1.260***	1.267***	1.278***
Entertainment	0.215***	0.264***	0.147 (0.068)
Perceived Value	0.255***	0.212** (.007)	0.308***
Satisfaction	0.123* (.016)	0.129 (.060)	0.112 (0.141)
<i>R squared</i>	.173	.180	.174
<i>F</i>	30.20***	16.9***	13.9***

Dependent variable: Buying intention

Note: * $p < .05$; ** $p < .01$; *** $p < .001$

Hypothesis Outcomes

Hypothesis test outcomes are summarized in Table 6. As the table shows, H1, H2, H3, H4, H7, and H8 were fully supported. H5 and H6 were not supported. H9 was supported in the full sample, but not the country-level sub-samples.

Table 7: Summary of hypothesis test outcomes

Hypothesis	Relationship	Outcome
H1	Information → Perceived Value	Supported
H2	Entertainment → Perceived Value	Supported
H3	Entertainment → Buying Intention	Supported
H4	Novelty → Perceived Value	Supported
H5	Annoyance → Perceived Value	Not Supported
H6	Annoyance → Satisfaction	Not Supported
H7	Perceived Value → Satisfaction	Supported
H8	Perceived Value → Buying Intention	Supported
H9	Satisfaction → Buying Intention	Partially supported

Discussion

The findings of this study showed that information, entertainment and novelty positively influenced perceived value; while annoyance had a negative effect, it was not significant. The findings regarding information, entertainment, and novelty were as expected given prior studies (Attri et al., 2024; Hopp & Gangadharbatla, 2016; Ibáñez-Sánchez et al., 2022; Negm, 2024; Poushneh & Vasquez-Parraga, 2017; Talukdar & Yu, 2024; tom Dieck et al., 2023; Yang & Kim, 2024). However, it should be noted that these factors will not remain stable throughout a user's experience. In particular, while users of all experience levels may find information and entertainment value with AR marketing, the effect of novelty is likely to wear off as consumers gain experience (Hopp & Gangadharbatla, 2016; Talukdar & Yu, 2024). This is important because it implies that while early movers in AR marketing may benefit from the novelty effect, as AR marketing becomes more commonplace this effect will fade. Therefore, marketers should not rely on the novelty effect, but instead should focus on providing information and entertainment. There were some country-level differences as well, with information having a significant effect on perceived value in the United Kingdom, but not in Thailand. This could be related to cultural differences, as it has been shown that individuals from collectivist cultures like Thailand may respond differently to AR marketing previously (Feng & Mueller, 2019). However, this is an issue that needs to be investigated more fully. Furthermore, entertainment and novelty only had a significant effect in the full sample, not in the individual country groups. The most likely explanation for this is the non-representative sampling approach, as a larger sample drawn from two countries may be less prone to biased results (Chaudhuri, 2019).

The findings also showed that perceived value influenced satisfaction with the AR tool. This effect was predicted by several prior studies, which indicated that the perceived value (including utilitarian and hedonic value) of AR marketing tools influenced satisfaction (Ferreira et al., 2020; Poushneh & Vasquez, 2017; Poushneh & Vasquez-Parraga, 2017; Talukdar & Yu, 2024). These prior studies were somewhat limited in that there had not been many studies addressing the topic, and those that had investigated had not directly examined cross-cultural effects. This research did support the findings of prior studies which have investigated this effect, but there are still some more questions that can be investigated. For example, while usability (Ferreira et al., 2020) and hedonic and utilitarian value in general (Poushneh & Vasquez-Parraga, 2017) had been investigated in occasional studies, but has not been evaluated fully. Therefore, there is still room to investigate the effect of perceived value, and different types of perceived value, on user satisfaction with AR marketing tools. However, in practical terms these studies provide adequate evidence to support the need to build perceived value (especially through information and entertainment as discussed above) to promote user satisfaction with AR marketing apps.

Annoyance had a negative but not significant effect on both perceived value and satisfaction. This finding is particularly interesting as it suggests that it may have a different effect than it does in general advertising. Studies have shown that digital marketing that interrupts video streams (Amnuaypholwiwat & Piyathatsanan, 2021), where notifications cannot be avoided (Wangsiriwet & Methamorn, 2019), or where the advertisement itself is offensive (Rakrachakarn, 2018; Todri et al., 2020) can have a significant negative impact on consumer perceptions. However, AR marketing apps are different – consumers can just choose not to engage with it, for example by not using fitting apps (Rauschnabel et al., 2022). Therefore, it is unsurprising that annoyance had a weaker effect on perceived value here, as consumers who were unwilling to engage with the AR app were not forced to by the app structure. This suggests that AR marketing apps could be a valuable tool for marketers who are trying to enhance consumer value perceptions compared to traditional digital marketing, as consumers may have more of a sense of control and therefore be less responsive to feelings of annoyance.

Finally, the study showed that entertainment and perceived value of the AR app influenced buying intention for the product being marketed, although satisfaction did not have a significant effect. These findings were consistent with prior studies on both entertainment (Negm, 2024; tom Dieck et al., 2023) and perceived value (Attri et al., 2024; Negm, 2024; Tan et al., 2022). It is possible that satisfaction with the AR marketing tool did not influence purchase intention because other factors (e.g., suitability of the product for needs) were the main drivers of purchase intention. While the study did not find a significant effect of satisfaction on buying intention, this is in itself useful for marketers as it suggests that targeting perceived value, especially through entertainment, is likely to be more effective than trying to create consumer satisfaction with the AR marketing tool itself. Overall, these findings do support the idea that the experience of using the AR marketing app can influence the consumer's buying intention for a product or service. This helps to justify its use as a marketing tool, not just for general engagement but also to directly influence consumer purchase decisions.

Conclusion and Implications

This study compared the views of Thai and UK based consumers on AR marketing tools, such as those used to allow consumers to “try on” clothing or view consumer products in their own home. While relatively new, AR marketing has become a trend, particularly for online retail, where consumers may not be able to experience the goods without awkward and prolonged processes such as ordering and returning. AR marketing has been theoretically proposed to be different than more traditional forms of online marketing, including social media marketing. The findings of this study support to some extent that this is the case. In particular, the role of information and entertainment in perceived value was substantially higher for both groups than the effect of annoyance, and furthermore annoyance did not affect perceived value significantly. Perceived value influence both satisfaction and buying intention,

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as expected. However, entertainment also had a direct effect on purchase intention, unlike more traditional forms of digital marketing.

The findings have some significant implications for academic theory. They were broadly consistent across Thai and UK consumers, which implies that there may not be significant cross cultural differences between consumers in their perceptions of and response to AR marketing. Furthermore, they show that while AR marketing is similar to other forms of digital marketing, it is not the same and should be considered separately. Therefore, there is a need to conceptualize AR marketing as a distinct marketing communication channel, which should not be lumped in with other forms of digital marketing.

There are also some significant practical implications of the findings. The findings raise awareness of AR marketing and its potential to reach consumers and influence their perceived value and purchase intentions. In particular, the findings showed that information, entertainment, and novelty were the defining characteristics of AR marketing tools which affect consumer perceived value, and ultimately buying intention and satisfaction. Annoyance, on the other hand, was not a significant influence on any of these, perhaps because consumers are more in control of AR marketing than they are of other forms of digital marketing. However, the effect of novelty is likely to be fleeting – as consumers gain more experience with AR marketing, such tools will cease to be novel and will ultimately disappear. Therefore, in order to use AR marketing effectively, marketers cannot rely on novelty – the app or other tool must provide both information and entertainment to create value for the user. Additionally, the marketer needs to consider the cultural context of the application. For example, in Thailand, it may be most appropriate to build awareness of and speed adoption of AR marketing through social influencers, while in the UK interactivity and customization to create a fully personalized experience may be more appropriate. These are only some examples of how culture could influence effective development of AR marketing strategies.

There were some limitations to this research. First, the research only considered a limited number of uses and gratifications that users of AR marketing apps could potentially experience. Furthermore, the research did not investigate a single AR marketing app. Instead, it evaluated users' prior experience with such apps. Therefore, the findings reflect different types of AR apps, different content, an undoubtedly different quality. The adoption of the uses and gratifications theory also limits the findings, as the complexity of this theoretical model may not be enough to cope with a complex digital landscape. Another limitation of this study is that the research did not investigate demographic or experience factors as potential influences on perceived value, satisfaction, and buying intention of products marketed by our apps, for example including them as control variables. Furthermore, the low R-squared values of the models suggest there are potentially many other factors influencing buying intentions. Buying intentions are highly complex, and can be influenced by a range of different factors, both within and outside the control of the consumer. Therefore, arriving at a consistent and predictable model of what exactly influences buying intention is challenging. This study suggests that AR apps used

for marketing can be one of the factors that influence consumers' buying intention, but more research is needed to investigate how these apps influence buying intentions and what other factors may be involved. Therefore, future research, including extending the uses and gratifications model as well as investigating a single app, perhaps through an experimental approach, would be appropriate to enhance the literature. An additional opportunity for future research is the inclusion of additional factors (including demographic, cultural, and experience factors and other consumer factors) to determine the relative importance of AR marketing tools in the formation of buying intention or actual purchase. This would require a more controlled study, for example a natural experiment drawing from actual users of an AR marketing tool.

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