

The 7th International Conference on Economics and Social Sciences
**Exploring Global Perspectives:
The Future of Economics and Social Sciences**
June 13-14, 2024
Bucharest University of Economic Studies, Romania

**Hedonic and Utilitarian Motivations
of Social AR Filters Usage**

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DOI: 10.24818/ICESS/2024/087

Abstract

This research paper studies whether social media users have both utilitarian and hedonic motivations to use AR filters. The Technology Acceptance Model extended with perceived enjoyment is used as the theoretical framework to analyse user acceptance and usage of AR technology on social media. The questionnaires were distributed to a sample of social media users (n=186) to acquire data regarding hedonic motivation and utilitarian motivation behind the usage of AR filters. More specifically, data about perceived usefulness, perceived ease of use, and perceived enjoyment were acquired. In the end, the data was analysed to understand what is the relationship between these concepts and what is their impact on actual usage. The results of this study provide insights into the motivations that lie behind the usage of social AR filters, which can be useful for AR filter developers and academic researchers who study the implications of emerging technologies on social media. It will also provide information for the advertisers who are interested in using AR filters as a marketing tool.

Keywords: technology acceptance model, AR filters, social media.

JEL Classification: M30, M31.

1. Introduction

Social augmented reality (AR) filters represent a feature of social media platforms such as Snapchat, Facebook, Instagram, and TikTok. This feature enables users to enhance photos and videos in real time with superimposed virtual elements over the real environment. Depending on the platform they are used on, AR filters

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are also commonly known as AR lenses or effects. As the number of available filters grows and their user base expands, the way people interact with them becomes more diversified as well. For some users, filters are primarily a handy content creation tool, whereas for others, they are a feature used mainly for fun and entertainment. Understanding users' motivations and behaviours regarding AR filters is increasingly important, yet studies often lack a unified view.

TAM is one of the most widely used models to study the usage of AR-based systems. Depending on the focus of their studies, researchers categorised different augmented reality technologies as either utilitarian or hedonic. The same applies in the case of social media AR filters. Although both motivations have been researched separately, there is a limited number of studies that integrate both views in a holistic approach.

The current article aims to research both the hedonic and utilitarian motivations behind the usage of social AR filters, therefore demonstrating they are actually what the academic literature calls dual technologies or dual systems (Ernst et al., 2015; Chesney, 2006).

2. Background Literature

2.1 Technology Acceptance Model

To understand the usage behaviour of AR filters on social media, the study is based on the Technology Acceptance Model (TAM), which is one of the most commonly used theoretical models for user acceptance and usage of technology systems (Davis, 1989). According to the TAM model, the Behavioural Intention to Use a technology is primarily predicted by two factors: Perceived Usefulness and Perceived Ease of Use, which are labelled as extrinsic motivations. The theory also states that there is a positive direct link between Behavioural Intention to Use and Actual System Usage. Furthermore, the Behavioural Intention to Use fully mediates the Actual System Use.

Many studies researching entertainment-oriented systems integrated Perceived Enjoyment in TAM. This extended version was proposed by van der Heijden (2004) and was replicated by other scholars on several hedonic systems, including on social network sites (Ernst et al., 2015) or AR-based mobile apps (Oyman et al., 2022). TAM was also used to investigate the motivations for using dual technologies. For example, Kim and Forsythe (2007) found that a virtual try-on, a technology very similar to AR filters, has both functional and hedonic roles for individuals, although a stronger relation between the hedonic motivation and the attitude towards using the virtualisation system was identified.

Similarly, another study investigated the acceptance of four AR apps (Rese et al., 2017). The results found that both Perceived Usefulness and Perceived Enjoyment are predictors of intention to use. Perceived Usefulness was determined by the fact that AR technology provided more information about the product's characteristics, which ultimately reduced confusion and helped in the process of making an informed choice. On the other hand, Perceived Enjoyment was associated mainly with self-expression.

2.2 Hedonic and Utilitarian Motivations to Use Social Media AR Filters

Different types of virtual elements can be employed in AR filters, depending on their purpose. Some are for beautification, others for comedic effects, while others can be used to test products, such as makeup or sunglasses. Some are even mixing these types, to appeal to a more general public. Previous research focused either on analysing AR filters as entertainment products, underlining their hedonic characteristics (Ibáñez-Sánchez et al., 2022) or as marketing tools, mainly highlighting their utilitarian characteristics (Yim et al., 2017; Flavián et al., 2021).

The role of AR in supporting customers in product evaluation and ultimately, in having a positive effect on purchase intentions (Hilken et al., 2017), comes from the intrinsic characteristics of AR, specifically real-time interactivity and visual nature. The interactivity of AR filters primarily determines their usefulness, while aesthetic qualities make them enjoyable to use.

The integration of AR filters into social media platforms aims to provide users with new expressive tools and enhance their online image and identity (Muntinga et al., 2011). They also facilitate social connectedness by enabling virtual sharing and communication. All these are examples of utilitarian characteristics that can have an impact on users' perceptions.

As for the hedonic side, numerous studies validated that entertainment and enjoyment are linked with AR-based systems, as they represent a strong predictor for the use of technology. Playfulness is one hedonic motivation that was found to be a strong predictor of social media usage (Barnett & Wood, 2012), and it is very likely transferred to social AR filters as well.

3. Research Questions

The TAM model postulates several determinants of a person's attitude toward technology use. The first determinant is perceived usefulness (PU), which refers to the degree to which using the technology will improve the user's performance or satisfy their needs. The second determinant is perceived ease of use (PEOU), which refers to the degree to which a technology is perceived as easy or difficult. A more recent addition to the TAM model is the perceived enjoyment construct (PE) (Davis et al., 1992), which refers to the extent to which the activity of using the technology is perceived to provide reinforcement in its own right, apart from any performance consequences that may be anticipated.

Overall, the determinants of the TAM model suggest that the actual use of a technology is influenced by their perceptions of its usefulness, ease of use, and enjoyment. In the case of social media AR filters, users may be motivated to use filters for utilitarian purposes, such as improving the appearance and quality of their content, as well as for hedonic purposes, such as expressing their creativity and having fun.

In his research, van der Heijden (2004) found a positive relation between perceived ease of use and perceived usefulness, as well as between perceived ease of use and perceived enjoyment. Another study (Sun & Zhang, 2006) focused on the causal direction between perceived enjoyment and perceived ease of use and found

that PE → PEOU is more significant than PEOU → PE. In this one, the hypothesis was tested for utilitarian systems, but we believe that for mixed (dual) technologies the causal direction might be different. By putting together all the information above, the following hypotheses were developed:

H1: Perceived ease of use has a positive influence over perceived usefulness.

H2: Perceived ease of use has a positive influence over perceived enjoyment.

The users' desire for entertainment can influence how useful the technology appears to be to them. Research conducted on AR-based technologies showed that the more the user values entertainment and emotional satisfaction, the more likely they are to engage in cognitive processing when using the technology, and the more useful they will perceive it to be (Holdack et al., 2020). Therefore, we also added the following hypothesis:

H3: Perceived enjoyment has a positive influence over perceived usefulness.

According to the Technology Acceptance Model (TAM) theoretical framework, perceived usefulness and perceived ease of use play a crucial role in shaping people's attitudes and intentions towards adopting and using technology. Ultimately, they determine whether individuals will embrace and actively engage with the technology or not, as they weigh the benefits and the perceived ease to incorporate it into their daily lives. Many other authors replicated the work of Davis with different types of technologies and came to the same findings. For example, Kim and Forsythe (2007) researched product virtualisation technologies and Ernst et al. (2015) tested the link between perceived usefulness, perceived ease of use, and actual system use in the context of social network sites. Taking this into consideration, the next two hypotheses are stated as follows:

H4: Perceived usefulness has a positive influence in determining the actual usage of social media AR filters.

H5: Perceived ease of use has a positive influence in determining the actual usage of social media AR filters.

Researching the hedonic and utilitarian motivations of social network sites, Ernst et al. (2015) found that perceived enjoyment directly influences the actual use of dual technologies. Similarly, Kim and Forsythe (2007) concluded that perceived enjoyment is a factor that ultimately determines the use of hedonic and dual systems, by researching virtualisation systems. For that, we hypothesise the following:

H6: Perceived enjoyment has a positive influence in determining the actual usage of social media AR filters.

4. Research Methods

Using a survey administered on the web, the TAM model extended with the construct of Perceived Enjoyment was tested. The participants were required to have had previous experience with social AR filters to be eligible for the study, regardless of the social media platform they use. All constructs and scales employed were adapted from previously validated scales in scholarly work to suit the specific context of social AR filters. These adaptations were necessary to capture the unique aspects of AR filter usage, and involved a rigorous process to ensure their validity and reliability. The statements used for Actual System Use, Perceived

Usefulness, Perceived Ease of Use and Perceived Enjoyment are included in the Appendix section.

For Perceived Usefulness, the scale from Venkatesh et al. (2002) was adapted by incorporating items specific to social media AR filters, as suggested by Bostănică et al. (2023). Seven items were included in the final survey for this construct. The items for Perceived Ease of Use were also adapted from Venkatesh et al. (2002). Many other researchers, including van der Heijden (2004), successfully tested the Perceived Usefulness scale for hedonic systems. Five items were included in the final research instrument. Similarly, six items were used to measure Perceived Enjoyment. Initially developed by Venkatesh et al. (2002) and tested by researchers such as Kim and Forsythe (2007) and Holdack et al. (2020), the six statements included underwent slight wording changes to match the topic of the study. A single item was employed to investigate the frequency with which individuals utilise AR filters on social media platforms to assess the construct of Actual System Use.

All the items of the scales were reviewed by experts to ensure that they accurately capture the usage behaviour of AR filters. This expert review process also verified that the wording of each item was clear and appropriate for the context of the study. Also, all items used 5-point Likert scales, ranging from 1 (Strongly disagree) to 5 (Strongly agree), except the item for Actual System Use, which was also a 5-point scale, but the scale labels ranged from 1 (Less than once a month) to 5 (Several times a day). The data collected was analysed in SPSS using descriptive statistics and structural equation modelling.

5. Findings

From an initial sample of 203 eligible participants recruited for this study, 186 remained after data cleaning. This sample is balanced by gender identity, with 99 female, 83 male, and 4 non-binary individuals. The age ranges were represented by young adults aged between 18 and 30 years who are native and represent the target publics of the social media platforms that have integrated

AR filters. The reliability of the scales for the composite constructs regarding perceived usefulness, perceived enjoyment, and perceived ease of use was computed. For this, the Cronbach's alpha coefficient was employed ($p = 0.05$). Cronbach's alpha reliability coefficients were 0.907 for perceived usefulness, 0.911 for enjoyment, and 0.900 for ease of use. Because all results are over 0.8 (Table 1), we conclude that all items in each scale are highly correlated, and the scales are reliable for measuring the constructs of interest.

Table 1. Cronbach alpha for PU, PE and PEOU

Scale	Cronbach's α
Perceived Usefulness	0.907
Perceived Ease of Use	0.900
Perceived Enjoyment	0.911

Source: data analysis conducted by the authors using IBM SPSS Statistics.

Then, exploratory factor analysis was performed on the three composite constructs using principal component analysis with the Promax rotation method. The results can be observed in Table 2. The factor loadings exceeding 0.40 for each construct indicate strong convergent validity, implying that the observed variables are closely related to their respective constructs. This suggests that items such as PU1, PU2, PU3, PU4, PU5, PU6, and PU7 (Factor 1), as well as PE1, PE2, PE3, PE4, PE5, and PE6 (Factor 2), and finally PEOU1, PEOU2, PEOU3, PEOU4, and PEOU5 (Factor 3), are highly correlated with their underlying factors, namely perceived usefulness, perceived enjoyment, and perceived ease of use, respectively. Although PEOU4 exhibits factor loadings across 2 factors (Factor 2 and Factor 3), the item was not removed from the scale, because the cross-construct loadings do not exceed 0.50, which indicates robust discriminant validity.

Table 2. Exploratory factor analysis (values below 0.4 eliminated)

	Factor 1	Factor 2	Factor 3
PU1	0.603		
PU2	0.902		
PU3	0.833		
PU4	0.636		
PU5	0.828		
PU6	0.579		
PU7	0.671		
PE1		0.564	
PE2		0.857	
PE3		0.595	
PE4		0.794	
PE5		0.522	
PE6		0.645	
PEOU1			0.758
PEOU2			0.818
PEOU3			0.804
PEOU4		0.423	0.465
PEOU5			0.868

Source: data analysis conducted by the authors using IBM SPSS Statistics.

Linear regression analyses were conducted to test the hypotheses of the study. The results of these tests are shown in Table 3.

Table 3. Testing hypothesis with linear regression

Regression tests	β	Hypothesis result
Perceived ease of use → Perceived usefulness	0.492	H1: Supported
Perceived ease of use → Perceived enjoyment	0.652	H2: Supported
Perceived enjoyment → Perceived usefulness	0.755	H3: Supported
Perceived usefulness → Actual system use	0.736	H4: Supported
Perceived ease of use → Actual system use	0.380	H5: Supported
Perceived enjoyment → Actual system use	0.530	H6: Supported

Source: data analysis conducted by the authors using IBM SPSS Statistics.

The perceived ease of use moderately influences both the perceived usefulness ($\beta=0.492$) and the perceived enjoyment ($\beta=0.652$), supporting H1 and H2, respectively. Similarly, we found that users who perceive social AR filters as easy to use are moderately likely to use them ($\beta=0.380$), supporting H5. Although the hypotheses are validated, ease of use is the weakest predictor in the model. These results do not necessarily mean that users do not value ease of use when using AR filters. For example, the findings can be explained by the fact that our study sample was constituted of young people under 30 years old who are usually highly technologically literate and familiar with internet-based technologies. This demographic profile creates a tendency for users to navigate and use digital interfaces (such as AR filters) more easily, and therefore, the perceived importance of ease of use is minimised. Also, the ease of use is a variable that usually has high importance in utilitarian systems, minimal importance in hedonic systems, and moderate in dual systems, which can be a strong argument for labelling social media AR filters as a dual technology as well.

Next, perceived enjoyment strongly predicts perceived usefulness ($\beta=0.755$), confirming H3. Users who find AR filters enjoyable are highly likely to also perceive them as useful tools, suggesting that hedonic experiences positively influence utilitarian perceptions.

The robust influence of perceived usefulness on actual usage ($\beta=0.736$) supports H4. This can be attributed to the pragmatic value proposition that these filters offer to users. Perceived usefulness encapsulates the extent to which individuals perceive AR filters as instrumental tools for enhancing their social media interactions, augmenting self-expression, or facilitating communication. Given the utility-driven nature of social media engagement, users are inherently predisposed to prioritise functionalities that contribute tangibly to their online experiences.

Conversely, the moderate influence of perceived enjoyment on actual usage, which confirms H6 ($\beta=0.530$), reflects the nuanced interplay between hedonic gratification and utilitarian considerations within the context of AR filter usage. While perceived enjoyment pertains to the subjective pleasure derived from using AR filters, its impact on actual usage is tempered by the pragmatic imperatives that underpin social media engagement.

6. Conclusions

By focusing on the interplay between the utilitarian and hedonic motivation behind AR filters, the study contributes insights into the social dynamics of AR filters usage and can explain a user's behavior on social media. The research is also a very strong theoretical contribution by extending TAM with perceived enjoyment.

The weak influence of perceived ease of use on both perceived usefulness and perceived enjoyment thus underscores the nuanced nature of relationships between user experience and technology adoption. The importance of ease of use prevails; however, this relatively weak impact may suggest that other factors, such as perceived enjoyment, exert a stronger influence on user perceptions and behaviors.

The demographic profile of the study sample, being mainly composed of digitally native individuals, gives ever more reason that regard be exercised for the characteristics of users and their technological literacy to estimate the role of perceived ease of use in the formation of user preferences and adoption decisions.

The strength of perceived enjoyment as a predictor for perceived usefulness points out that these hedonic experiences can strongly affect and enhance the perception of the utilitarian value of AR filters. At the same time, perceived enjoyment in itself only made a moderate contribution to actual usage. This means, although "enjoyable" hedonic experiences are important for user engagement and satisfaction, the influence on real use might well be moderated by real-world pragmatic considerations.

This spread is from performance to pertinence and applicability. The practical value proposition of AR filters is evinced by the powerful influence that perceived usefulness exerts on actual usage, emphasizing their role instrumentally in improving social media interaction and one's self-expression. This research emphasizes the importance of features for AR filters that can respond well to the real needs and practical goals set by the user—improving social interaction, boosting communication, or enhancing content production. Developers can provide more value to users by emphasizing the tangibility of the benefits brought by their AR filters and therefore they can make more robust the utility and then a deeper willingness to adopt and use the AR filters, increasing developers' engagement among the target audiences.

Further, the research should strive to considerably extend this TAM framework, by adding theoretical constructs that could lead to having a well prediction on the usage of social media AR filters, such as social influence or visual appeal.

The results of this study provide a start point for future research and development of user acceptance theories in the context of social media and augmented reality, as the field of digital interaction continues to change.

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Appendix

This appendix contains the statements of the scales used in the survey.

Table A1. Research items

Actual system use	How often do you use AR filters on social media?
Perceived usefulness	I use filters to increase the overall quality of my photos and videos.
	I use AR filters to create content for my social networks more efficiently.
	I use AR filters to create content more appealing to the people in my social networks.
	The content created with AR filters increases the engagement rate on my posts.
	AR filters help me better communicate what I want to my social networks.
	Using social media AR filters allows me to test and evaluate products. (e.g. make-up, sunglasses, travel destinations)
	I consider that AR filters are useful to me.
Perceived ease of use	My interaction with AR filters is clear and understandable.
	Interacting with AR filters does not require a lot of mental effort.
	It is easy for me to learn how to use new AR filters.
	I find it easy to share my photos and videos created with AR filters on my social networks.
	I find AR filters to be easy to use.
Perceived Enjoyment	I have fun using AR filters.
	I find the use of AR filters entertaining.
	I use AR filters to express my creativity.
	I find the use of AR filters enjoyable.
	I use AR filters to express my personal identity.
	Using AR filters is an agreeable way of passing time.

Source: Venkatesh et al. (2002); van der Heijden (2004); Bostănică et al. (2023); Kim & Forsythe (2007); Holdack et al. (2020).