

Cognitive and behavioral consumer responses to augmented reality beautycam features in e-commerce applications

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Abstract

This study examines the impact of augmented reality (AR) BeautyCam features on consumer behavior in e-commerce, focusing on reuse intention and purchase intention. Key influencing factors include system quality and reality congruence, which affect consumer perceptions through media usefulness and choice confidence. Using a quantitative approach, data from 178 respondents were analyzed via Partial Least Squares (PLS) in SMART PLS 3.9.2. The findings confirm that higher system quality and reality congruence enhance media usefulness, while reality congruence and media usefulness strengthen choice confidence, leading to greater reuse and purchase intentions. These results highlight the importance of optimizing AR features to improve user engagement and decision-making. Practical recommendations are provided to help e-commerce platforms enhance AR-based shopping experiences, increasing consumer trust and purchase likelihood.

Keywords: cognitive response, behavioral consumer, augmented reality

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1. Introduction

The current technological advancement is becoming more prevalent and evolving, so utilizing or creating a product is one way that technology may provide added value. In addition to smartphones and the internet, technology is developing further in this day and age, leading to the development of a complex technology called Augmented Reality (AR), which seamlessly integrates digital elements with real-world environments enabling users to virtually try on products before purchasing. Recent market studies project that the AR market will reach \$85 billion by 2025, with a significant portion driven by beauty and retail applications (Singh et al., 2019). Along with the development of technology in e-commerce, it helps potential consumers in making purchasing processes on e-commerce applications.

The generated product becomes an essential component of a system since it is not distinct from other goods that already exist (Miarso, 2004). However, online shopping, particularly for makeup, presents challenges, primarily due to the inability to try products before purchase, leading to potential mismatches in product selection (Nurhadi, 2023). This issue not only leads to financial waste but also affects customer satisfaction and brand trust. Consumers often struggle with color accuracy: makeup shades such as foundation, lipstick, or eyeshadow can appear different in person compared to online images due to lighting, resolution, and screen settings. In terms of product match, finding the right shade or product that complements an individual's skin type, tone, and texture is challenging without the tactile experience of testing in-store. Similarly, in terms of lack of personalization, traditional ecommerce platforms typically provide limited personalization options, leaving customers to rely on reviews or recommendations that may not always match their specific needs. These challenges underscore the need for innovative solutions that can bridge the gap between online shopping and in-store experiences.

With the help of AR, e-commerce can improve user experience and help the potential customer to decide which product they want to buy. For example, the AR-powered virtual tryons allow users to upload photos or use live video to test makeup products on their face in realtime. Consumers can try different lipstick shades, eyeshadow colors, or even foundations, adjusting for various lighting conditions to achieve a more accurate representation of how the products will look in person. By analyzing the user's skin tone, these tools suggest the best product shades and formulations that align with their complexion, improving the likelihood of a successful purchase. These tools can suggest tailored beauty routines or products that best suit the individual skin needs. Similarly, the 360-degree product visualization, AR enables users to view makeup products from every angle and in different settings. This immersive experience helps in making better-informed decisions, as customers can interact with the product as though they were physically present in a store. These services could provide a better user experience in e-commerce apps and helpful for the potential buyer.

Throughout the year 2024, from January to March, there was a more than 401.6 million visits per month to the e-commerce application in Indonesia (Ahidat, 2024). In response to the growing use of e-commerce platforms, the BeautyCam feature, utilizing AR technology was launched to facilitate choosing make-up products. While AR in e-commerce has been extensively studied, existing research primarily focuses on its general effects on consumer engagement, trust, and purchase behavior (Javornik, 2016; Kowalczuk et al., 2021). However, limited studies specifically examine the role of BeautyCam features in influencing cognitive and behavioral consumer responses within e-commerce platforms. Most prior studies emphasize AR's technological aspects or adoption rates (Poushneh, 2018; Pantano et al., 2017) but do not comprehensively analyze the psychological mechanisms-such as choice confidence and media usefulness-that drive purchase and reuse intentions. Therefore, this study was conducted to determine the determining reuse intention and purchase intention. The purpose of this study is six-fold: 1) to analyze the influence of system quality on media usefulness; 2) to analyze the influence of reality congruence on media usefulness; 3) to analyze the influence of reality congruence on choice confidence; 4) to analyze the influence of media usefulness on choice confidence; 5) to analyze the influence of media usefulness on reuse intention; and 6) to analyze the influence of choice confidence on purchase intention. By applying Technology Acceptance Model (TAM) and Media Richness Theory, this research offers a structured framework for understanding how AR-driven interactivity, realism, and system efficiency enhance the online shopping experience. Moreover, given the rapid growth of beauty e-commerce in Indonesia, where 66% of women purchase makeup online (Gunawan et al., 2024), it is crucial to explore how BeautyCam features impact consumer trust and purchasing behavior in this market.

This study aims to prove the following hypotheses:

H1: There is a positive and significant influence of system quality on the media usefulness.

H2: There is a positive and significant influence of reality congruence on the media usefulness.

H3: There is a positive and significant influence of reality congruence on the choice confidence.

H4: There is a positive and significant influence of media usefulness on the choice confidence.

H5: There is a positive and significant influence of media usefulness on the reuse intention.

H6: There is a positive and significant influence of choice confidence on the purchase intention.

2. Literature Review

2.1. Theoretical Framework

This study is grounded on the Technology Acceptance Model (TAM) (Davis, 1989), the Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1986), and Media Richness Theory (Daft & Lengel, 1986) to explain how AR BeautyCam features influence consumer behavior in e-commerce applications. The TAM suggests that consumers' perceived usefulness and ease of use of AR technology significantly affect their intention to reuse and purchase. In this context, Media Usefulness and System Quality align with TAM's core constructs, indicating that a seamless and informative AR experience can drive higher consumer engagement. Additionally, the ELM explains how choice confidence influences purchase intention through different levels of cognitive processing. When AR provides realistic product visualizations, consumers engage in central route processing, carefully evaluating product details before making a decision. Conversely, visually appealing AR features may trigger peripheral route processing, where decisions are based on external cues rather than deep cognitive engagement.

Furthermore, Media Richness Theory emphasizes the role of reality congruence in enhancing information clarity and reducing uncertainty in online shopping. Since online consumers cannot physically test beauty products, AR's ability to provide high-quality, lifelike representations of products strengthens consumer trust and confidence, ultimately increasing purchase likelihood. By integrating these theoretical perspectives, this study provides a comprehensive understanding of how AR features shape consumer cognitive and behavioral responses in e-commerce applications.

2.2. Augmented Reality Characteristics

AR is a technology that emerges as an interactive and relevant tool in the marketing environment, increasingly utilized in the retail sector and often developed in smartphone applications (Javornik, 2016). AR is a technology that enables computer-generated virtual images to display physical objects accurately in real-time. Unlike virtual reality (VR), where users are fully immersed in a virtual environment, AR allows users to interact with the virtual world by overlaying computer-generated elements onto real-world objects seamlessly (Zhou et al., 2018). AR is an interactive technology that modifies the physical environment with overlaid virtual elements (Carmigniani et al., 2011).

System quality. System quality represents the quality of information system processing itself, encompassing software and data components, and serves as a measure of how well the system performs technically (Gorla et al., 2010). There is the relevance between technical and functional quality for mobile online stores (Yim et al., 2017). High system quality is necessary to ensure the flawless functionality of product presentations and is a crucial factor in shaping the user experience. System quality can be divided into 9 attributes: ease of use, ease of learning, user needs, system features, system accuracy, flexibility, sophistication, integration, and customization (Gable & Sedera, 2004). It implies that when providing services to users, they can use the system easily, comfortably, and securely without technical issues (Zhang & Kim, 2021).

Reality congruence. According to Kowalczuk et al. (2021), reality congruence is the alignment of quality between virtual elements and real products. If the presentation of the product is of poor quality, or the size is not suitable, blurry, inaccurate, or unrealistic, it will not create value for customers. Reality congruence is crucial in eliciting positive consumer responses to the product. To achieve good reality congruence, it is necessary to develop an aesthetically-based item (Pantano et al., 2017). In the study of Zeng et al. (2023), the role of reality congruence in virtual shopping experiences enhanced consumer satisfaction and brand trust by making AR experiences more lifelike; AR systems that align with user expectations increase perceived value and purchase intention. High-quality AR, where digital and physical elements seamlessly integrate, boosts emotional engagement and fosters long-term consumer-brand relationships. Aligning the product image in AR technology by portraying a more accurate depiction will enhance the consumer's process of imagining the product and assist them in making purchasing decisions more confidently (Hernández-Serrano et al., 2021).

2.3. Cognitive Response

Cognitive response involves the audience actively engaging in the information acceptance process by evaluating the received information based on prior knowledge and attitudes, ultimately leading to attitude changes (Belch & Belch, 2003). The cognitive response process occurs when users can accept a message and then connect it with their beliefs, knowledge, and attitudes towards the message content. Whether virtual or direct, experiences with a product lead to the same brand attitude and purchase intention. However, virtual experiences provide a better brand knowledge (cognitive response) compared to direct experiences (Daugherty et al., 2008).

Media usefulness. Media usefulness encompasses the extent to which users believe that AR enhances the shopping experience by facilitating product search, evaluation, and quality assessment while reducing effort and time (Kowalczuk, 2018). It reflects how effectively and efficiently consumers can search for and obtain the necessary information to facilitate the evaluation and purchase decision of a product (Kim & Forsythe, 2008). It also serves as cognitive satisfaction that influences the user's intention to use the media (Rauschnabel, 2018) and encourages consumers to actively participate in more efficient processing of information messages, enhancing the quality of the consumer's search experience. Consequently, this increases the perceived media usefulness in the shopping and purchasing decision experience (van Noort et al., 2012).

Choice confidence. Choice confidence is what consumers feel after combining media that allows them to reach the best decision (Flavián et al., 2016). According to Andrews (2013), choice confidence reflects the clarity with which consumers understand their preferences and the extent to which these preferences are believed to be correct. A better product depiction will assist consumers in making purchasing decisions more confidently (Hernández-Serrano et al., 2021). In online purchases, consumers usually have to base their product choices on less information compared to buying in physical stores, where they can physically experience the offered products (Poushneh, 2018). Liking a product, stemming from interactions in the virtual world, can enhance confidence in decision-making, supported by the feeling-as-information theory (Schwarz, 2012).

2.4. Behavioral Response

Consumer behavior is the study of how individuals, groups, and organizations select, purchase, use, and dispose of goods, services, ideas, or experiences to satisfy their needs and desires (Kotler & Keller, 2016). It involves the purchasing unit and exchange processes such as acquisition, consumption, and disposal of goods, services, experiences, and ideas (Mowen & Minor, 2012). It explains how individuals make decisions to allocate their resources (time, money, and effort) to the goods offered by marketers (Mothersbaugh & Hawkins, 2010).

Reuse intention. Reuse intention is the consumer's willingness to continue using products or services from the same company (Rezaei & Amin, 2013)., referring to customer preferences when using a service, directly leading to recommending it to friends and relatives (Choi & Sun, 2016). It is associated with the personal decision to repeatedly purchase products and services from the same business, taking into account the current consumer situation (Hellier et al., 2003). It is typically used to measure actions or intentions that an individual may take with the purpose of predicting the likelihood of someone deciding to continue or not to use a system in the future. Empirical evidence of Yilmaz and Ari (2017) on the relationship between service quality, image, satisfaction, complaints, and reuse intention showed a significant influence of service quality and corporate image on customer satisfaction, leading to consumer loyalty.

Purchase intention. By utilizing purchase intention, the development of new distribution channels can be tested to assist managers in determining whether the idea is viable for further pursuit and identifying the geographical markets and consumer segments to target through the channels (Morwitz et al., 2007; Pavlou, 2003). Purchase intention has been studied in various marketing fields beyond traditional in-store purchases, such as environmentally friendly marketing (Chuah et al., 2016), luxury brand and product marketing (Beuckels & Hudders, 2016), B2B transactions (Wei & Ho, 2019), and most recently, online purchases (Sundström et al., 2019). Empirical evidence showed that consumer intent is an indicator of the extent to which consumers are willing to engage in a particular behavior. According to Kotler and Armstrong (2016), purchase intention in the evaluation stage signifies a consumer's interest in purchasing a liked brand's product. The lack of intent to purchase online is one of the primary obstacles to the development of e-commerce (He et al., 2008).

Research framework



3. Methodology

3.1. Research Design

The research design is a plan outlining the systematic and directed approach to collecting, processing, and analyzing data so that the research can be conducted efficiently and effectively in line with the research objectives (Moh Pabundu Tika, 2015). In this research, the researcher employs a quantitative research method based on positivism (concrete data), where the research data consists of numerical values measured using statistics as a tool for analysis, addressing the researched problem to draw conclusions (Sugiyono, 2018).

3.2. Participants

The sampling technique used is non-probability sampling, which does not provide an opportunity for each member of the population to participate in filling out the questionnaire. Non-probability is used in qualitative research studies, the main purpose of which is to gain insight or in-depth understanding of a particular phenomenon, rather than to make broad statistical generalizations. Purposive sampling is employed in this study. A sample is a portion of the population consisting of a number of elements selected from the population (Sekaran & Bougie, 2016). The sample is expected to represent a significant portion of the designated population. The selection of the sample is based on the number of indicators in the questions posed, multiplied by 5. In this study, there are 27 question indicators, resulting in a sample size

of 135 respondents. Participants in this study have the following criteria: 1) minimum age of 17 years, 2) have the e-commerce application and accessed it in the last 3 months, and 3) have used the BeautyCam feature in the e-commerce application. All the participants have Indonesian citizenship.

3.3. Research Instruments

The study employed a researcher-developed online survey questionnaire utilizing a 5point Likert scale where participants responded to statements ranging from "strongly disagree" to "strongly agree." The questionnaire was subjected to content validity checks and expert review for face validity. The survey instrument accurately measured the intended theoretical constructs based on the construct validity.

3.4. Data Analysis

The data collection method used is a survey, conducted by distributing questionnaires online through the use of the Google Forms application. This research utilized the Partial Least Squares (PLS) through the SMART PLS 3.9.2 program. PLS-SEM, also known as Path Modeling with Partial Least Squares, is primarily used for theory development in exploratory research (Hair et al., 2014). The PLS path model consists of two elements. First, the structural model (inner model) illustrates the relationships (paths) between constructs. Second, the measurement model (outer model) of constructs displays the relationships between constructs and indicator variables.

3.5. Ethical Consideration

This study adheres to rigorous ethical standards outlined by the American Association of Public Opinion Research (AAPOR) in Fisher (2020). In order to ensure the confidentiality and informed consent, gathered data were securely stored; personal information is kept separate from responses. Similarly, the voluntary nature of participation without coercion was highly emphasized where participants were treated ethically, and well-informed about the study's voluntary nature and their right to withdraw.

4. Findings and Discussion

4.1. Outer Model

Analyzing this measurement model, commonly referred to as the outer model, aims to identify the correlations between existing indicators and each variable using convergent validity tests, discriminant validity tests, and reliability tests. One initial step is to determine the Average Variance Extracted (AVE) value, which, according to Ghozali and Latan (2015:74), should be above 0.5 to be considered valid.

Table 1

AVE score for each variable

Variable	Average Variance Extracted (AVE)
System Quality (X1)	0.716
Reality Congruence (X2)	0.601
Media Usefulness (Y1)	0.627
Choice Confidence (Y2)	0.674
Reuse Intention (Y3)	0.682
Purchase Intention (Y4)	0.596

The convergence validity can be observed through the correlation between the values of existing indicators and the values of each latent variable. Scores for this correlation are expected to be ≥ 0.7 . Good convergence validity is achieved when the loading factor values are ≥ 0.6 for exploratory research and ≥ 0.7 for confirmatory research. Table 2 presents the results of outer loadings scores in this study, as follows:

Table 2

Outer loading score for each used indicator

Variable	Indicator	Outer Loadings
	SQ1	0.856
	SQ2	0.716
System Quality (V1)	SQ3	0.764
System Quanty (X1)	SQ4	0.768
	SQ5	0.750
	SQ6	0.856
	RC1	0.827
	RC2	0.815
Reality Congruence (X2)	RC3	0.837
	RC4	0.792
	RC5	0.832
	MU1	0.833
	MU2	0.735
Media Usefulness (Y1)	MU3	0.784
	MU4	0.783
	MU5	0.736

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Variable	Indicator	Outer Loadings
	CC1	0.857
Choice Confidence (Y2)	CC2	0.807
	CC3	0.873
Reuse Intention (Y3)	RI1	0.768
	RI2	0.855
	RI3	0.852
Purchase Intention (Y4)	PI1	0.865
	PI2	0.799
	PI3	0.704

The discriminant validity test is conducted to measure the presence of a difference, ensuring that each set of indicators used to test variables should have a higher correlation with their respective variables than with other variables. Discriminant validity can be observed from the cross-loading values of each variable and is considered to meet the criteria if the values are ≥ 0.7 . Table 3 presents the results of cross-loading in this study, as follows:

Table 3

Cross-loading factor

	CC	MU	PI	RC	RI	SQ
CC1	0.857	0.692	0.577	0.738	0.622	0.734
CC2	0.807	0.617	0.483	0.572	0.573	0.522
CC3	0.873	0.734	0.571	0.747	0.693	0.747
MU1	0.724	0.833	0.539	0.650	0.711	0.660
MU2	0.589	0.735	0.403	0.567	0.653	0.587
MU3	0.662	0.784	0.524	0.608	0.686	0.577
MU4	0.573	0.783	0.450	0.564	0.584	0.585
MU5	0.564	0.736	0.376	0.546	0.584	0.553
PI1	0.606	0.529	0.865	0.546	0.522	0.586
PI2	0.477	0.449	0.799	0.480	0.491	0.505
PI3	0.430	0.430	0.704	0.461	0.384	0.462
RC1	0.741	0.685	0.555	0.827	0.650	0.727
RC2	0.645	0.607	0.563	0.815	0.545	0.648
RC3	0.623	0.594	0.430	0.837	0.539	0.660
RC4	0.650	0.590	0.522	0.792	0.506	0.728
RC5	0.682	0.632	0.497	0.832	0.531	0.691
RI1	0.588	0.653	0.353	0.511	0.768	0.489
RI2	0.634	0.667	0.532	0.587	0.855	0.587
RI3	0.628	0.741	0.572	0.580	0.852	0.630
SQ1	0.641	0.638	0.574	0.708	0.545	0.856
SQ2	0.527	0.572	0.437	0.524	0.520	0.716
SQ3	0.664	0.552	0.484	0.720	0.502	0.764
SQ4	0.708	0.610	0.544	0.694	0.545	0.768
SQ5	0.539	0.579	0.490	0.603	0.556	0.750

Note: Cross-loading in each indicator is highlighted in bold as a distinguishing factor.

The cross-loading scores present that the indicators have met the requirements for discriminant validity, as each indicator has a value of ≥ 0.7 , and the correlation between each indicator and its respective variable is higher than the correlation with other variables.

The calculations that can be used to test structural reliability are Cronbach's alpha and composite reliability. If the composite reliability is greater than 0.7 and Cronbach's alpha is greater than 0.6, the testing criteria are considered met, indicating that the structure can be deemed reliable. The comprehensive results of the composite reliability and Cronbach's alpha are shown in table 4.

The Cronbach's alpha scores for each variable yield scores ≥ 0.6 , and the composite reliability is ≥ 0.7 . This indicates that the constructs in this study are reliable and can be considered dependable in measuring their respective variables.

Table 4

Cronbach's alpha and composite reliability for each variables

Variable	Cronbach's Alpha	Composite Reliability
Choice Confidence	0.802	0.883
Media Usefulness	0.833	0.882
Purchase Intention	0.702	0.834
Reality Congruence	0.879	0.912
Reuse Intention	0.766	0.865
System Quality	0.829	0.880

4.2. Inner Model

Analyzing the structural model, commonly referred to as the inner model, aims to establish the existence of cause-and-effect correlations (whether direct or not) among each latent variable through the scores of R-square. The R-square test is conducted to determine the extent of the influence on the dependent latent variable by the independent latent variable. The model is considered strong if the R-square score is 0.75, moderate if it is 0.50, and weak if it is 0.25. Table 5 presents the results of the R-square scores in this study.

Table 5

R-Square score

Variable	R-Square	
Choice Confidence	0.750	
Media Usefulness	0.631	
Purchase Intention	0.416	
Reuse Intention	0.695	

The R-square scores for the variable "choice confidence" is 0.750, indicating that 75.0% represents the percentage of influence from reality congruence and media usefulness on choice confidence. Social Cognitive Theory (Bandura, 1986) asserts that confidence in decision-making is influenced by one's ability to obtain relevant and trustworthy information. The high R² value suggests that consumers' confidence in their choices is heavily shaped by the perceived congruence of the information with their lived experiences and the media's usefulness in aiding their decision process. With 25% unexplained variance, there may be other factors influencing choice confidence, such as personal experiences, emotional reactions, or peer influence, which Bandura and Ajzen (1991) in the Theory of Planned Behavior emphasize as affecting the decision-making process. The impact of the choice confidence variable can be considered moderate by reality congruence and media usefulness, while the percentage of influence from other variables (25.0%) is not elaborated in this study.

Additionally, the R-square score for the variable "media usefulness" is 0.631, signifying that 63.1% represents the percentage of influence from system quality and reality congruence on media usefulness. The impact of the media usefulness variable can be considered moderate by system quality and reality congruence, while the percentage of influence from other variables (36.9%) is not detailed in this study. Media Richness Theory (Daft & Lengel, 1986) suggests that richer media (those that align well with consumers' real-world experiences) increase the perceived usefulness of the information provided. The combination of system quality and reality congruence enhances the platform's media richness, thus making the content more useful to consumers. The unexplained 36.9% could be influenced by external factors such as social influence, the credibility of media sources, or emotional factors (as discussed in Venkatesh et al., 2003) that affect how useful the media is perceived by the user.

The R-square score for the variable "purchase intention" is 0.416, indicating that 41.6% represents the percentage of influence from choice confidence on purchase intention. The impact of the purchase intention variable can be considered small by choice confidence, while the percentage of influence from other variables (58.4%) is not specified in this study. Elaboration Likelihood Model (Petty & Cacioppo, 1986) asserts that purchase decisions are affected by two routes: the central route (involving deep processing, such as confidence in choice) and the peripheral route (involving external cues such as brand, price, and social influence). Choice confidence may primarily affect the central route, while the peripheral

route, influenced by factors like promotions, price, or peer reviews, could explain the remaining influence. The unexplained 58.4% variance suggests that additional variables like peer influence (Mangold et al., 2017), social proof, or emotional reactions to the product (e.g., hedonic consumption) could play a substantial role in shaping purchase intention. Recent studies emphasize the importance of emotional marketing in influencing purchase decisions (Shankar et al., 2020).

Lastly, the R-square score for the variable "reuse intention" is 0.695, stating that 69.5% represents the percentage of influence from media usefulness on reuse intention. The impact of the reuse intention variable can be considered moderate by media usefulness, while the percentage of influence from other variables (30.5%) is not explained in this study. Technology Acceptance Model (Venkatesh & Davis, 2000) proposes that users' perceived usefulness directly influences their intention to continue using technology. The moderate influence of media usefulness on reuse intention reflects how consumers are more likely to engage with systems that continuously provide valuable and relevant information. The unexplained 30.5% variance in reuse intention could be influenced by other external factors, such as customer satisfaction, trust, brand loyalty, and post-purchase behavior. Research by Kim et al. (2016) has shown that customer satisfaction and service quality play a significant role in increasing reuse intention, suggesting these could be the missing variables. Whang et al. (2021) in South Korea found that AR enhances cognitive control and purchase intentions, with peer opinions moderating the effect, which confirms that AR significantly improves consumer confidence and purchase intentions, reinforcing its value in enhancing online shopping experiences.

4.3. Descriptive Statistics

Table 6

Variable	Mean (M)	Standard Deviation (SD)
System Quality (X1)	4.21	0.85
Reality Congruence (X2)	4.05	0.79
Media Usefulness (Y1)	4.32	0.81
Choice Confidence (Y2)	4.19	0.76
Reuse Intention (Y3)	4.11	0.82
Purchase Intention (Y4)	4.25	0.78

Mean and standard deviation for each variables

The results indicate that media usefulness (M = 4.32, SD = 0.81) had the highest mean score, suggesting that respondents perceived AR BeautyCam features as beneficial in their shopping experience. Reality congruence (M = 4.05, SD = 0.79) had a slightly lower score, indicating room for improvement in making AR-generated visuals more realistic. Choice confidence (M = 4.19, SD = 0.76) and purchase intention (M = 4.25, SD = 0.78) were also high, reinforcing that the system's accuracy influences consumer decision-making. These findings establish a strong foundation for further analysis using PLS-SEM modeling.

4.4. Hypotheses

The hypothesis can be accepted, and the correlation between variables is considered significant if the t-statistic score obtained in this hypothesis testing is \geq 1.96. Table 7 presents the results of the hypothesis testing scores derived from the calculation of path coefficients and specific indirect effects in this study.

Table 7Research hypotheses

Hypotheses	Correlations	Path Coefficients (Original Sample)	T-Statistics	P-Values	Description
H1	$SQ \rightarrow MU$	0.434	4.498	0.000	Accepted
H2	RC -> MU	0.394	3.844	0.000	Accepted
H3	RC -> CC	0.480	6.864	0.000	Accepted
H4	MU -> CC	0.443	5.888	0.000	Accepted
H5	MU -> RI	0.834	35.248	0.000	Accepted
H6	CC -> PI	0.645	8.819	0.000	Accepted

5. Conclusion

In this study, 6 variables are utilized, namely system quality, reality congruence, media usefulness, choice confidence, reuse intention, and purchase intention.

Hypothesis 1 states that there is a positive and significant influence of system quality on the media usefulness. Therefore, with high-quality system features, the media usefulness for prospective consumers is expected to increase. Thus, the first hypothesis in this study is accepted.

Hypothesis 2 explains that there is a positive and significant influence of reality congruence on the media usefulness. Consequently, features aligned with reality are expected

to enhance media usefulness for prospective consumers. Thus, the second hypothesis in this study is accepted.

Hypothesis 3 elucidates that there is a positive and significant influence of reality congruence on the choice confidence. Hence, realistic feature alignment is anticipated to boost choice confidence for prospective consumers. Thus, the third hypothesis in this study is accepted.

Hypothesis 4 clarifies that there is a positive and significant influence of media usefulness on the choice confidence. Therefore, the addition of new, beneficial, and appealing features is expected to increase choice confidence for prospective consumers. Thus, the fourth hypothesis in this study is accepted.

Hypothesis 5 outlines that there is a positive and significant influence of media usefulness on the reuse intention. Consequently, the presence of quality and beneficial features is expected to enhance reuse intention for prospective consumers. Thus, the fifth hypothesis in this study is accepted.

Hypothesis 6 explains that there is a positive and significant influence of choice confidence on the purchase intention. Thus, the presence of informative features helps convince consumers in product choices and is expected to increase purchase intention for prospective consumers. Therefore, the sixth hypothesis in this study is accepted.

The results also showed that choice confidence has the greatest influence on reuse intention and purchase intention, implying e-commerce application managers to provide tools and increase the reality and confidence of potential customers.

E-commerce platforms can optimize their AR BeautyCam features by enhancing system quality, ensuring AR technology is fast, responsive, and bug-free, and integrating AI-powered skin tone matching for accuracy. Improving reality congruence through high-definition product imaging and real-time rendering can help reduce mismatches between virtual try-ons and real-life appearances. To maximize media usefulness, platforms should provide interactive tutorials, AI-driven personalized recommendations, and AR-based customer reviews to build trust. Strengthening choice confidence can be achieved by enabling social sharing, community-driven AR reviews, and AI-assisted beauty consultations, helping users make informed decisions. By implementing these strategies, e-commerce businesses can enhance consumer engagement, trust, and purchase behavior, transforming AR from a novelty into a powerful decision-making tool for online beauty shopping. To enhance future research,

examining social influence, emotion-based drivers, and situational factors (such as product availability, promotions, or customer service experiences) would provide a more holistic view of consumer behavior in digital environments. Future research should explore longitudinal effects of AR on brand loyalty and the impact of social influence on AR adoption to provide deeper insights into AR's evolving role in digital commerce.

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Institutional Review Board Statement

This study was conducted in accordance with the ethical guidelines set by Widya Mandala Catholic University Surabaya. The conduct of this study has been approved and given relative clearance(s) by Widya Mandala Catholic University Surabaya.

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