

Impact of Technology-Evoked Mental Imagery on Brand Personality and Brand Association for Beauty Brands among Women in India

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Abstract: The increased dependence of customers on smart technology for convenience has motivated marketers to turn to new-age technologies for the representation of products and promotion of brands. This study analyses the influence of mental imagery generated by augmented reality on brand personality and brand association for skincare/cosmetics products among women in India. The cross-sectional study collected data through the mall intercept method. The significance of this study is the usage of real brands and gathering real experiences towards mental imagery evoked using virtual try-on links. The originality of the brands and the experience of the respondents could create a realistic relationship between the constructs under study and avoid the researcher's bias. Path analysis was performed to analyse the statistics and the data fit with the proposed model through IBM AMOS 22.0 software. The findings showcase that elaboration dimension of mental imagery has a significant relationship with brand personality and brand association. However, the quality dimension of mental imagery did not have a significant relationship with brand personality and brand association. The findings contribute to the existing literature on branding and information processing and provide significant insights for marketers when adopting augmented reality to create brand-evoked mental imagery among customers.

Keywords: Mental imagery, female brand personality, brand association, augmented reality

Introduction

Humans by nature are visual beings and brands primarily capitalise on the visualisation power of the rational customers through attractive brand elements, like logos, package colours, fonts, brand mascots, etc. Marketers, for long years, have motivated consumers to employ their imagination while interacting with brands. The already proven idea that visualization increases consumers' purchase intention ([Babin & Burns, 1998](#); [Smink et al., 2020](#)) is reinforced by the brand logos, slogans and visual representations of products ([Elder & Krishna, 2012](#)). The study of mental imagery in information processing is garnering interest in consumer behaviour studies, as the integration of the rich senses of the physical world into the online marketplace is resulting in highly context-driven integration with customers' real-time processing of augmented-reality-based brand experiences, making it enjoyable, effective and value adding ([Hilken et al., 2017](#)).

In the book *Being Digital*, the “digital revolution” that influenced customer experience over the past 20 years is described as a shift from “atoms” to “bits”. Moreover, as per studies, the next 20 years will witness a new phase of the digital revolution which will be highlighted by a shift from “bits” back to “atoms” and instilling digital information into physical and tangible products ([Negroponte et al., 1997](#)). At the heart of the new revolution transforming customer experience are artificial intelligence-powered three technology clusters: the Internet-of-Things (IoT), augmented reality (AR)/virtual reality (VR)/mixed reality (MR), and virtual assistants/chatbots/robots; and these technologies are highly argued to enhance the concept of customer experience ([Hoyer et al., 2020](#)). The working definition of augmented reality for the current study is “augmented reality is a medium in which digital information is overlaid on the physical world that is in both spatial and temporal registration with the physical world and that is interactive in time” ([Craig, 2013](#)).

Previous studies reveal that both elaboration and quality of mental imagery significantly influence consumers' attitude towards the product ([Park & Yoo, 2019](#)) and the positive product attitude created by mental imagery helps generate positive purchase intentions among the consumers ([Smink et al., 2020](#)). In online retailing, the augmented reality technology has been studied and found to be effective to reduce the mental intangibility with the sensory controls and enhance customer value judgements ([Heller et al., 2019b](#)). The artificial intelligence-powered technologies, more specifically augmented reality/virtual reality/mixed reality evokes imagination, enabling consumers to virtually experience the products or services in real-time in 3D. The application of the new age technologies in the pre-transaction stage of the customer journey is observed and found in many industries. In online retailing, for example, customers using the augmented reality technology can virtually furnish spaces and clearly

visualize how a specific table or chair fits into the selected space (e.g., IKEA's place app) or even consumers can visualize and evaluate how specific cosmetic products or eyewear look on their face (e.g., L'Oréal Makeup Genius app or Lenskart app). Thus, the virtual enhancement of the physical environment of the consumers ([Hilken et al., 2017](#)) and the capability to evoke the perception of being locally present within customers' environment ([Verhagen et al., 2014](#)) enable the visual images generated through augmented reality technology to dominate customers' product purchase intention, decision-making and consumption.

Multiple studies have been conducted to understand the influence of AR on consumer purchase decisions, consumption, brand attitude, etc. However, relatively little research has been conducted to understand the so-called concept of "brand-evoked mental imagery". Brand-evoked mental imagery is the imagery evoked through the marketing of a product or a service as a brand ([Gavilan & Avello, 2020](#)) and visualization evoked beyond product-related visual images ([Smink et al., 2020](#)). Thus, the goal of this research is to understand the influence of augmented reality-generated mental imagery on brand personality and brand association. Primarily, this research attempts to supplement the existing literature on mental imagery by providing an understanding of the influence of mental imagery generated by brands (through the augmented reality technology) on the brand personality and brand association. This study is significant, since new technologies primarily focus to bring life to brands and be able to evoke all the senses of the customers for a better brand experience. Thus, understanding the influence created by augmented reality-evoked mental imagery for a specific brand on its brand personality and aligned brand association is invariably significant in creating more personified brands that enhance customers' brand association and experiences.

This research also has a few practical implications, and the results would enable marketers to clearly understand the penetration of usage of augmented reality technology, specifically in the skincare or cosmetics sector. The research will outline the significance of the effect of mental imagery on brand personality, as well as brand association. Primary data for the current study was collected through the mall intercept method at various points of time over a period of four months; and a total 165 responses were qualified for the data analysis. The qualified data was analysed using structural equation modelling, and the structural model framework and research hypotheses were tested. The findings of the study revealed that the previous knowledge or experience of the brand do have an influence on the mental imagery evoked through virtual mirrors and this also has positive impact on the brand personality and brand association. However, the interaction during the study with the respondents revealed that previous knowledge about the offerings of the specific cosmetic brand posed a hindrance in a trial of product variants of the brand using AR assistance, since the respondents felt slight

differences between the original product they use and the virtual image of the product. This result will enable marketers in the beauty industry to understand the key association cues to be highlighted as they adopt or integrate artificial intelligence-powered technology in future for their brands.

In the following sections, we present an overview of the beauty industry, the literature review and our hypothesis, then details of the study conducted and, finally, a conclusion by highlighting the specific contributions of the study and suggestions for future study in this area.

Beauty Market and Augmented Reality in India

India is a country in South Asia and is the democracy with highest population in the world. With a thriving young population and growing disposable income, India is considered as one crucial market for future growth by corporations worldwide. India's Beauty and Personal Care (BPC) market is ranked fourth globally with a total revenue of US\$8.07bn ([Statista, 2022b](#)). The BPC industry in India is expected to grow at a CAGR of 6.45% over the next five years and reach \$38 billion by 2028 ([IMARC Group, 2022](#)). The beauty and cosmetics product segment primarily includes five categories: body care, face care, hair care, hand care and colour cosmetics. The Indian cosmetics market, in fact, is showing strong signs of growth during the next five years and the market size is expected to grow at a CAGR of 2.87% during the period from 2023–2027 ([Statista, 2022a](#)). The Indian market predominantly is capitalised by international skincare and beauty products; however, with the popularity of direct-to-customers (D2C), demand for natural and harmful chemical-free products and increased usage of new mediums like Instagram for shopping, an opportunity has been created for new indigenous companies, such as MamaEarth, Khadi Essentials Plum, and SoulTree, to promote their cruelty-free homemade cosmetics and personal care products.

Besides the growth and popularity of new and natural beauty and cosmetic brands, another sector to witness success was the online discovery and sales of the beauty and personal care products. For instance, in 2012, Nykaa E-Retail Private Limited was founded by Falguni Nayar as an online-only retailer of beauty and cosmetics products; and Nykaa today is one of the leading companies with the highest share in the online beauty and personal care segment ([Statista, 2022b](#)). The advent of Covid-19 and the related restrictions in the movement of people and the introduction of artificial intelligence-powered virtual mirrors and apps by brands to attract sales, left consumers wanting more benefits from the convenience of a few taps on their smartphones. Moreover, technology aids enable brands to carry out digital diagnosis of customer problems and provide personalized solutions to individual customers. Customers no longer prefer the 'one size fits all' approach and, instead, prefer a 1:1 tailored

solution. Powered by this demand for personalization, brands are turning to the advantage of artificial intelligence and, specifically, augmented reality technology for online retailing.

According to market trends and research, the total augmented reality/virtual reality market size in India is expected to advance at a CAGR of 38.29%, reaching a total value of US\$14.07 billion by 2027. Globally, the augmented reality/virtual reality market sizes stood at US\$28 billion in 2021 and have been projected to reach US\$250 billion by 2028 ([Statista, 2022b](#)). In terms of revenue as well, the AR and VR market is projected to reach US\$624.30m in 2023. The AR/VR market has an expected annual growth rate (CAGR 2023–2027) of 14.63%, resulting in a projected market volume of US\$1,078m by 2027; and AR software with a market volume of US\$211.30m in 2023 is the largest segment.

Problem statement

The artificial intelligence-powered new technologies adopted by various brands, such as the Internet of things (IoT), virtual reality (VR), augmented reality (AR), mixed reality (MR), chatbots, virtual assistants and robots, are enabling brands to provide a more immersive and interactive customer experience ([Hoyer et al., 2020](#)). The results of empirical evidence in consumer behaviour gathered through multiple experiments using the Microsoft HoloLens m-AR technology in the context of online retailing indicate that m-AR integrates well a consumer's perception of the physical environment with digitally enhanced interactive and sensory information and expands the multiple sensory control, resulting in active inference and feedback process within the online context ([Heller et al., 2019a](#)). Through computer-generated imagery and environment, augmented reality alters how consumers interact and sense products ([Qin et al., 2021](#)). Also, the virtual features of augmented reality, such as real-time connectivity, offer a captivating experience of exploring real products ([McLean & Wilson, 2019](#)). Hence, it is evident that augmented reality enables customers to better visualize the products in view and help enhance their purchase intentions. However, there is a significant scope to understand the influence of augmented reality-generated visual mental imagery on branding, specifically in enhancing brand personality and brand association.

Literature Review and Hypotheses

Mental imagery

Richardson ([1969](#)) in his book titled *Mental Imagery* attempted to provide a formal definition for mental imagery, one that encompasses all the dimensions that enable us to understand the actual meaning of the subject. Thus, he referred to mental imagery as “(1) all those quasi-sensory or quasi-perceptual experiences of which (2) we are self-consciously aware, and which (3) exist for us in the absence of those stimulus conditions that are known to produce their

genuine sensory or perceptual counterparts, and which (4) may be expected to have different consequences from their sensory or perceptual counterparts". In simple terms, mental imagery is defined as "a process by which sensory information is represented in working memory in the absence of genuine and perceptual counterparts" ([MacInnis & Price, 1987](#); [Richardson, 1969](#)).

The mental imagery theory states that "individuals mentally represent stimuli and actions based on what they have experienced in the past, combined with perceptual information available at that moment" ([Lee & Gretzel, 2012](#)). Imagery anchors heavily on past experiences and stored knowledge and manifests vivid sensory representations of feelings, memories and ideas ([Yuille & Catchpole, 1977](#)). Thus, forming imagery is multi-sensory and employs all modalities of human senses: visual, auditory, olfactory, kinaesthetic, gustatory, and haptic. Out of all the senses, perception is created by two-thirds of all information captured through the visual system of the brain, and visual stimuli dominate during decision-making and actual consumption ([Schifferstein, 2009](#)).

Visual imagery or visual mental imagery has been highlighted as the experience of "seeing with the mind's eye" ([Kosslyn et al., 2006](#)). The formation of clear and robust visual mental imagery is subject to the nature of the stimuli, the individual's cognitive orientation, the availability of information that arouses imagination, and positive (or favourable) experiences that are consistent with an individual's sensory information ([Krishna & Schwarz, 2014](#)). In today's information age, as compared to descriptive or symbolic information, imagery is undoubtedly a vital tool for information processing. Imagery, with its unique capability to draw more realistic representations of the stimuli and create a lasting impact on affective, cognitive, physiological and behavioural phenomena ([MacInnis & Price, 1987](#)), is only poised to garner more interest among researchers with the advancement in invention and application of technology in all major fields of study and trade.

In an online or virtual environment, mental imagery plays a more significant role, since studies indicate that in such situations, when products cannot be physically experienced or felt, consumers tend to form mental images of using the brand or product by reproducing their previous experiences with it in their mind ([Argyriou, 2012](#)) or consumers may even create new images or pictures of prospective future experience using mental imagery. Thus, due to the nature of online retailing, mental imagery is becoming very important in information processing.

Mental imagery is multidimensional and, through analysis and testing, Babin & Burns ([1998](#)) established a three-dimensional model consisting of vividness (quality), quantity and elaboration. For previous studies and scales, primarily conducted using ad copies as stimuli to

generate mental imagery, the quantity of images, referred to as the number of images that come to mind when evoked by a stimulus ([McGill & Anand, 1989](#)), was significant. However, for our study related to AR-generated visual imagery, the dimensions of mental imagery have been limited to elaboration and quality. Vividness or quality is the clarity with which an individual senses an image and reflects its intensity, and distinctiveness ([Bone & Ellen, 1992](#)); and the elaboration dimension of mental imagery is the activation of information, over and above that provided by the stimulus, in generating mental images ([Babin & Burns, 1998](#)).

Gender dimension of brand personality

Brand Personality (BP) is defined as “the set of human characteristics associated with a brand” ([Aaker, 1997](#)). Like mental imagery, brand personality is also a multidimensional construct, popularly measured along the five dimensions of sincerity, excitement, competence, sophistication, and ruggedness, which uniquely apply to consumers’ characterization of brands ([Aaker, 1997](#)). Studies indicate that consumers attribute personality traits to brands because marketers highlight specific characteristics of brands or because customers perceive brands as an extension of self and use brands for self-expressive purposes ([Fournier, 1998](#); [Sirgy, 1982](#)). Since gender is an integral part of an individual’s self-concept, gender dimensions of personality are specifically relevant to symbolic (rather than utilitarian) brands attempting to enhance the masculinity and femininity of consumers (e.g., personal care, fragrance, apparel brands). In practice as well, brands support consumers’ interest in self-expression and imbibe masculine or feminine brand associations—for example, using packaging colour (e.g., white or pastel colour packaging to indicate natural and chemical-free products). Thus, gender dimensions of brand personality are effective to positively influence affective, attitudinal, and behavioural consumer responses, especially when congruent with sex role identity of consumers, and enable individual consumers to express a very significant dimension of self-concept ([Grohmann, 2009](#)).

The theory of anthropomorphism, which is one of the primary foundations for the concept of brand personality, focuses on attributing human-life characteristics or traits to non-living objects (i.e., products/brands); and this is analysed to be an effective way to increase consumer confidence in acceptance and usage of augmented reality technology ([van Esch et al., 2019](#)). An augmented reality-based study among Generation Z also revealed that Gen Z or millennials look forward to using augmented reality across different sectors in comparison to non-millennials; and exhibited positive significance towards openness and extraversion dimensions of brand personality and negative significance towards conscientiousness and neuroticism dimensions of brand personality ([Srivastava et al., 2021](#)). The results of another study, which compared virtual reality ads with 2D ads, indicated a significant relation towards

sophistication and excitement dimensions of brand personality and also towards the ruggedness dimension. Thus, logically and also theoretically, it is learned that, in interactions of consumers with anthropomorphised technologies like augmented reality, customers are able to experience a human touch and sense an elevated emotional connection and bond with the brand ([Manchanda & Deb, 2021](#)).

H_{1a}: There is a significant relationship between elaboration of mental imagery and brand personality.

H_{1b}: There is a significant relationship between quality of mental imagery and brand personality.

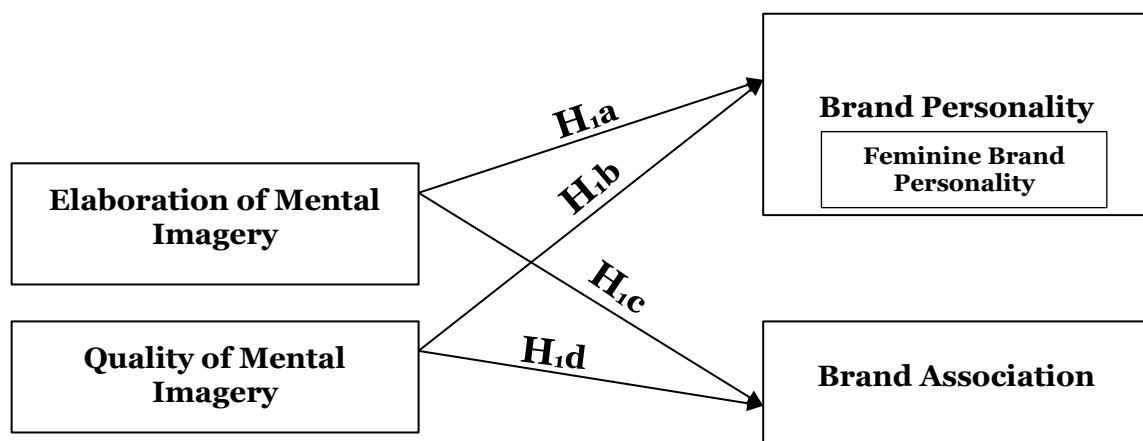


Figure 1. Hypothetical Model

Brand association

One of the four dimensions of brand equity is brand associations, along with the other three dimensions of brand awareness, perceived quality and brand loyalty ([Aaker & Joachimsthaler, 2000](#)). Also, there is a vast amount of literature that highlights brand associations being an integral part towards the success of brands. Though brand association has been studied in different facets, it was a qualitative study done by Azar ([2015](#)) that highlighted brand sexual associations as an important factor for competitive brand positioning, and encouraged a branding based on sexual associations as highly prospective for brands. Very few studies have been conducted to study the significance of augmented reality-based mental imagery on brand association. Prior studies have highlighted contributions that demonstrate the influence of perceived immersion and perceived enjoyment on brand association in the mixed reality context ([Bae et al., 2020](#)). It will be interesting to understand the impact of AR-generated mental imagery on brand association, specifically brand sexual association.

H_{1c}: There is a significant relationship between elaboration of mental imagery and brand association.

H_{1d}: There is a significant relationship between quality of mental imagery and brand association.

Methodology

Methodological premises

The current study has a cross-sectional descriptive research design; and primary data was collected through the mall intercept method at various points of time over a period of four months. The understanding of the reality that not many customers have purchased skincare/cosmetic products online with augmented reality assistance enabled framing the questionnaire in an experimental manner by inserting virtual try-on links of four popular brands, namely: L'Oréal Paris, Lakme India, Revlon and Colorbar. This insertion of links enabled us to evaluate the mental imagery generated by AR better among respondents who had not experienced augmented reality before for beauty products (though many had experience of augmented reality for purchase of fashion items). The significance of this study is the usage of existing and real brands (vs imaginary brands) and, thus, gathering real experience of respondents towards the mental imagery experienced by them. The originality of the brands and the experience for the respondents enabled us to create a more realistic relationship between the constructs under study and helped avoid the researcher's bias.

Sample size and data collection

The sample size was estimated statistically by considering the variation in the data. The same was estimated to be 158. In total, 170 questionnaires were distributed and, after removing questionnaires without full information, data from 165 respondents finally qualified for the data analysis. The study approached the respondents with a mall intercept survey method. The respondents who showed willingness to participate in the study at various malls were provided with the survey questionnaire link and the responses gathered were used to test the proposed hypothetical model employed. The survey questionnaire had two sections. The first section had seven questions probing the respondents' age, frequency of using skincare products, frequency of using cosmetic products (like lipstick, foundation, etc.), and prior experience of online purchase of skincare/cosmetics brand with augmented reality assistance. If the response of the respondents was 'Yes', indicating prior experience with augmented reality-based online purchase, then the respondents were asked to specify the brand and the specific products they had purchased. In the case that the response of the respondents to the question of having prior experience with augmented reality-based online purchase was 'No', the respondents were directed (within the questionnaire) towards virtual try-on links of four popular brands, namely: L'Oréal Paris, Lakme India, Revlon and Colorbar. The respondents

could click any link to the virtual try-on of the listed four brands and experience for themselves the sensory experience of trying out any specific beauty product of their choice.

The second section of the questionnaire had in total 20 questions to analyse mental imagery, brand personality and brand association constructs. The 7-point Likert scale (1=“strongly disagree” to 7=“strongly agree”) items, relating to the elaboration of the dimension of mental imagery construct, were adapted from a modified scale for measurement of communication-evoked mental imagery by Babin & Burns (1998); and the four semantic differential scale items, adapted from the study of Park & Yoo (2019), were used to measure quality of mental imagery dimension. The 9-point Likert scale (ranging from 1=“not at all” to 9=“fully applies”) for the construct of Feminine Brand Personality (FBP) was adapted from the study by Grohmann (2009); and the 5-point Likert scale (anchored at 1=“strongly disagree” and 5=“strongly agree”) for Brand Association was adapted from the study of Yoo & Donthu (1997, 2001). All the existing scales used for variables have been validated by previous studies.

Skincare/cosmetics brands were selected as the area for study owing to the symbolic nature of the product and the growing significance, since Covid-19, of virtual mirrors for purchase of beauty products online. Thus, considering the nature of the products, the population for the study was taken as females and the feminine brand personality (FBP) alone was considered under the brand personality construct. The primary data was collected from females and a convenience sampling technique was employed to select the respondents. The questionnaire developed in Google Forms was circulated to a total of 200 females, and only 165 respondents were considered for the current study, since other responses were unsatisfactory under certain sections.

Table 1. Construct Measurement Scales

Measure	Anchor	Source
<p>MENTAL IMAGERY ELABORATION AR helped me to fantasize about the product. AR helped me to imagine what it would be like to use the product. AR helped me to imagine the feel of the product. AR features helped bring to my mind concrete images or mental pictures. AR features helped me to visualise the product trial.</p> <p>QUALITY: Overall, the images that came to mind while I used the AR were: Sharp – Dull Intense – Weak Clear – Unclear Vivid – Vague</p>	<p>7-point Likert-scale: 1= “strongly disagree” to 7= “strongly agree”</p>	<p>Babin & Burns (1998)</p> <p>Park & Yoo (2019)</p>

Measure	Anchor	Source
BRAND PERSONALITY FBP: Rate your perception about the specific skincare/cosmetic brand personality: Expresses tender feelings Fragile Graceful Sensitive Sweet Tender	9-point Likert scale ranging from 1="not at all" to 9="fully applies."	Grohmann (2009)
BRAND ASSOCIATION/AWARENESS I can recognize the brand among other competing brands. I am aware of the brand. Some characteristics of the brand come to my mind quickly. I can quickly recall the symbol or logo of the brand. I have difficulty in imagining the brand in my mind.	5-point Likert scale anchored at 1="strongly disagree" and 5="strongly agree"	Yoo & Donthu (1997, 2001)

Data Analysis and Results

The data collected was analysed using structural equation modelling and the structural model framework and research hypotheses were tested. Path analysis was employed to analyse the statistics and the data fit with the proposed model through IBM AMOS 22.0 software.

The ratio of chi-squared minimum to the degree of freedom (CMIN/DF) was 4.381, which falls in the ideal fit criteria of less than 5 and illustrates an ideal fit between the data and the model. The value of other indices that indicate the model fit are GFI (goodness-of-fit index) = .952, CFI (comparative fit index) = .922, and AGFI (adjusted goodness-of-fit index) = .824 (Table 2). Thus, it can be reported that the hypothetical model illustrating the influence of variables specified in the hypothesis was found to be fit for further analysis.

Table 2. Model Fit Statistics

Measures	Threshold Values	Observed Value
CMIN/DF	< 3 Ideal. The values are acceptable between 3 and 5 (Hair et al., 2010)	4.381
CFI	> 0.90 (Hu & Bentler, 1999)	.922
GFI	> 0.95 (Baumgartner & Homburg, 1996)	.952
AGFI	> 0.80 (Baumgartner & Homburg, 1996)	.824

The relationship of elaboration of mental imagery on feminine brand personality (FBP) and on Brand Association were found to be significant; hence, H_{1a} and H_{2a} were accepted (p<0.05). The path analysis also checked the association of quality of mental imagery to FBP

and BA and it was found to have no significant relationship. Hence, H1b and H2b were rejected ($p > 0.05$). See Table 3 and Figure 2.

Table 3. Regression Coefficients

IV	DV	Regression Coefficient	Standardised Regression Coefficient	CR	P Value	Decision	Type
Elaboration	Brand Personality	.449	.277	3.137	<0.05	Accepted	Hypothesized
Elaboration	Brand Association	.211	.446	5.358	<0.05	Accepted	Hypothesized
Quality	Brand Personality	.544	.155	1.754	>0.05	Rejected	Hypothesized
Quality	Brand Association	.077	.075	.902	>0.05	Rejected	Hypothesized

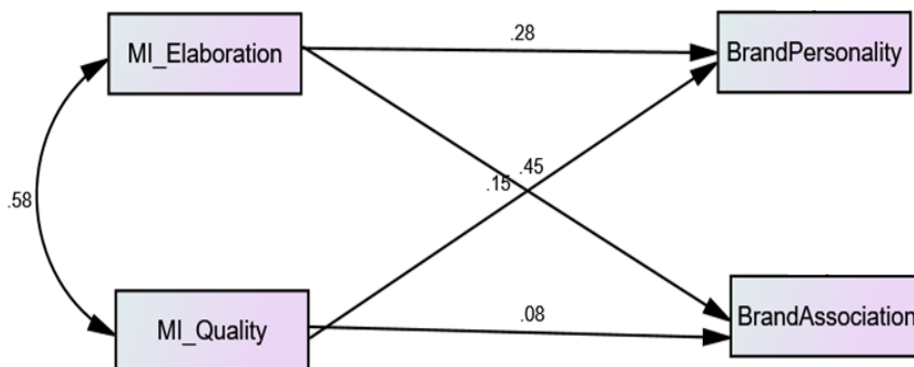


Figure 2. Path Diagram

Discussion and Implications

The fact that augmented reality-based technology enables marketers to ‘bring life’ to brands and create ‘telepresence’ of the advertised products is key to the better acceptance of such technologies in the retail sector. Moreover, studies have revealed that the application of new technologies (specifically AR and VR) in the retail sector have helped to enhance purchase intentions of customers and, additionally, have helped to grow sales (especially during and post Covid-19 restrictions) and revenues. Past studies have highlighted that augmented reality-based technology is the most appropriate technology to be adopted to engage the customers in the early stages of their customer journey, i.e., at the pre-purchase/pre-consumption stage (Zarantonello & Schmitt, 2023). With its playful elements, augmented

reality can enable customers to have an immersive experience with the featured products ([Kang et al., 2020](#)); and, also, studies in virtual try-on settings have revealed that augmented reality is capable of increasing the variants and range of products in the consideration set of customers ([Romano et al., 2021](#)). The flow experience created by augmentation of a customer's surrounding environment and self by virtual mirrors and virtual try-on features immerse the customer into a better experience of the featured product, rather than the brand featuring the specific product. Hence, the flow experience created by augmented reality ([Javornik, 2016](#); [Barhorst et al., 2021](#)) help increase customers' purchase intention, but has no significant effect in enhancing brand presence or brand-related thoughts in the minds of customers.

The current study focuses on how mental imagery created by augmented reality influences brand personality and brand association. The study found that the elaboration element (vs quality) of the mental imagery construct has a significant influence on brand personality and brand association. The finding rather highlights that the processing of visual mental imagery created by augmented reality indeed contributes towards elaboration of brand features and not just enhances the featured product(s).

Theoretical implications

The results of the current study contribute to the literature on branding and information processing and highlight the significance of AR-evoked mental imagery for appropriate brand personality association and overall brand association among customers. Previous studies have highlighted that mental imagery processing plays a crucial role in the virtual setting ([Overmars & Poels, 2015](#)) and leads to enhanced customer purchase intention and brand attitude ([Zanger et al., 2022](#)).

Our study showed that AR-based product experience also enabled respondents to relate positively to the personality characteristics of the brand. The current study, using virtual mirrors (not AR apps), showed that AR enabled right visualization of the specific product of the chosen brand; and respondents (with or without previous AR-based purchase experience) were able to experience significant feminine brand personality traits for the brand. The results of the current study thus contribute to information processing theory and branding theory by highlighting the existence of a significant influence of the elaboration element of mental imagery on brand personality while processing imagery information during an online purchase. Also, while previous AR studies have contributed to branding theory by highlighting how interactive and experiential features of AR lead to better brand recognition and create better brand perception and attitude, the current study highlights that AR-based mental imagery is able to create better and significant brand association. This result highlights that AR, if rightly employed in combination with other marketing practices, can contribute to

better brand association, leading to better brand differentiation from competitors. As far as cosmetics and beauty products are concerned, the products of different brands remain similar to a large extent, with minor changes in the available shades. Thus, customers largely tend to be attracted to the product and are willing to try new brands (especially if it is organic or natural). In such a scenario, the application of an AR-powered virtual mirror will help brands to create better awareness and association among targeted and existing customers.

The current study found that no significant relationship existed between the quality element of mental imagery and the other two constructs of brand personality and brand association. One possible explanation for such a negative relationship can be the focus of the study on the impact of visual mental imagery processing on the specified brands and not on any one specific product range.

Practical implications

The current study enabled us to realise that the new technologies are only one among different means to familiarize brands, increase sales and enhance brand-evoked mental imagery. This realisation is in line with the results from the study by Gavilan & Avello (2020), which highlights that a familiar brand (against an unfamiliar brand) evokes in the customer enhanced levels of visual mental imagery; and brand favourability has a positive and significant moderating effect in the relationship between brand familiarity and visual mental imagery. To generate real brand awareness and brand familiarity for better brand-evoked mental imagery, marketers need to create an omni-channel marketing strategy for the brand, consisting of direct relevant advertisements, call-to-action sponsored ads in social handles of the brand, creation of brand communities, and also adoption of relevant new technologies (AR/VR/MR) appropriately for the brand's online store.

The hypotheses H_{1a} and H_{1b} accepted in the current study ($p < 0.05$) are consistent with the results of previous studies that higher levels of elaboration during information processing help better cognitive responses by customers to encoded information (vs low-elaboration information processing limited to eliciting recognition of the object/product presented); and in imagery processing, higher levels of prior knowledge help create more vivid and experiential imagery that has greater influence on cognitive, physiological and behavioural intentions (MacInnis & Price, 1987). The analysis of the current study reveals that virtual try-on of beauty products enabled evoking of concrete mental imagery among female customers and the elaboration dimension (extent of integration with prior brand knowledge) of mental imagery (vs quality dimension) showed a significant relationship with brand personality and brand association.

Unlike the result of a previous study by Zanger *et al.* (2022), our study and interaction with the respondents revealed that customers familiar with the brand, but not familiar with the product, or customers not familiar with both the brand or the product were more elated while trying out the AR-based virtual mirrors than those who had prior experience with a specific product of the brand as well as prior experience of online purchase using AR assistance. An explanation for such an experience may be that familiarity with the brand and product lead to a disparity between the original outcome they usually experience with the product and the outcome mirrored by the virtual mirror. The respondents with prior brand experience also seemed sceptical to try other products of the brand, after experiencing a disparity in the virtual image of a product they occasionally or regularly use of the specific brand. Thus, marketing professionals should try to enhance the image representation of virtual mirrors in order to increase sales from existing customers for other product ranges of the brand online. Also, AR assistance for purchase should be highlighted to target new customers and promote new products of the brand, since already popular products would be purchased by customers through online, offline or phygital mode.

Also, the study highlights that customers do give weight to the visual mental imagery evoked by virtual mirrors while evaluating and relating to the personality of a brand. This is more significant for symbolic products, like skin care and beauty products, since symbolic products (vs utilitarian products) are primarily purchased by customers to enhance representation of their self. Thus, it is important that virtual mirrors portray images close to the real self of the customer; and, also, relevant directive information to capture the dimensions of the real environment/face should be provided within the brand website.

Policy implications

The current study among women in India enabled us to understand that the majority of the women respondents are ones who have not made an online purchase of skincare/cosmetic product with AR assistance up to that time, or are ones who prefer traditional shopping for skincare/cosmetic products. This highlights that a phygital mode of marketing, rather than pure virtual market, would be rather high yielding for an Asian population, especially for cosmetic customers of a country like India. The symbolic nature of the product of the brands under the current study and the variants available for the specific cosmetic products highlight the significance of real-time recommendation of popular shades for specific customers with specific skin tone or normal shade preference, etc. Thus, the study provides implications that, for symbolic products purchased by customers to better express their self, the marketing policy should stress inclusion of certain advanced features for the AR application for better brand association among customers.

Conclusion, Limitation and Directions for Future Research

This study focused on analysing the significance of the relationship between dimensions of mental imagery (elaboration and quality) with Brand Personality and Brand Association. From the analysis, it was revealed that the elaboration dimension of mental imagery has a significant relationship, while the two other constructs of the model and quality of mental imagery were not statistically supported to have established any significant relationship with brand personality and brand association. This supports to a great extent the previous study by Krishna & Schwarz (2014) indicating that lasting visual mental imagery is influenced by the nature of the stimuli, the cognitive orientation of the individual, the information availability that arouses imagination, and favourable experiences that are consistent with an individual's sensory information.

The current study learned about previous experience of respondents purchasing a beauty brand online with AR assistance with a direct Yes/No question. Respondents who did not purchase beauty products with AR assistance were directed towards a virtual experience by listing virtual try-on links of four popular brands (L'Oréal Paris, Lakme, Revlon and Colorbar). This experiment revealed that the majority of respondents lack a previous experience with AR for beauty products and, hence, the experience of a virtual try-on was a fun experience for the respondents. This revealed that AR is capable of enhancing enjoyment, inspiration and brand attitude and may be considered as an effective tool for relationship-building and customer retention (Zanger *et al.*, 2022) by brands. The variants of different beauty products (like ©/matte lipstick to fair/medium shade of foundation, etc.) create an impact on customer visualization of the product. Thus, interaction with respondents revealed that past knowledge or current usage of any of the products of the brand is significant to some extent to have an immersive brand association through the visual mental imagery generated by AR. However, the familiarity with certain products of the specific brand can lead to existing customers purchasing only a familiar product/shade of the product and not try a new product range or product variant. The lack of real representative imagery while using AR can cause hindrance in proper brand personality assessment and also in enhanced brand association in the long-term. Provision to highlight the brand along with highlighting product features should be a priority for brands specifically targeting customers online or through virtual settings. The interactive characteristics of AR definitely help to attract new customers having no previous knowledge about the brand.

Suggestions and scope for future research

The study reveals that there is significance in the relationship between AR-generated mental imagery and brand personality and brand association. However, specifically for the beauty brands, it is important that the marketers enhance the technical sophistication of AR technology that enables customers to better visualize the difference in nature of the variants of the products. Also, brand familiarity is revealed to enhance perceived immersion (rather than perceived enjoyment) of customers and, hence, marketers should try to implement relevant and effective omni-channel marketing strategies for better brand recognition by customers. Future research may consider understanding the impact of AR-generated mental imagery on personality and associations for brands in other segments, like fashion or eyewear, with a higher representative sample. Also, the mediating effect of brand loyalty among customers while purchasing using AR assistance can also be studied. Understanding the construct relationship in the current study in a virtual reality or mixed reality context also has high scope for future research.

Limitation of the study

Though the sample for the study is representative and highly valid, the sample size is relatively small. Moreover, the percentage of respondents with prior experience of shopping for skincare/cosmetic brands online with virtual try-on is comparatively few. In future, one could try to conduct a study with a higher sample size of those having prior experience of purchasing online with AR assistance. Another limitation was choosing skincare and cosmetic brands for the study. Since in India respondents revealed that, to purchase beauty products, they prefer to experience the product and the brand before purchase, this was a major limitation. Also, the study was limited by time and resources for collection of more data.

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