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Article

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Factors affecting customer engagement and brand loyalty in Vietnam FMCG: the moderation of artificial intelligence

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ABSTRACT

This study was conducted to investigate factors affecting Vietnamese customer engagement, the effect of customer engagement on brand loyalty in the Fast-Moving Consumer Goods (FMCG) industry, and the moderating role of artificial intelligence (AI). A 416 valid sample was used in this study to assess the influence of self-congruity, social influence, economic benefits, information seeking, brand warmth, brand activism, social media marketing, brand attachment on customer engagement, then the impact of customer engagement on brand loyalty, and how AI experience moderates the correlation between customer engagement and brand loyalty. For the multivariate regression test, there were 8 factors positively affecting customer engagement. Self-congruity, Social media marketing, Brand warmth, Social influence, Economic benefit, and Brand attachment all positively influence Social Customer engagement. The findings of this study have provided a fresh perspective, assisting managers in their efforts to promote customer engagement and brand loyalty. Moreover, study also suggests several new and innovative applications of AI in customer engagement on social media platforms. In this study, AI experience is investigated to enhance the effect of social customer engagement on brand loyalty in the Vietnam FMCG industry.

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1. Introduction

More and more brands discover that their revenues depend on selling more products to existing customers (Maier & Wieringa, 2021). Cross-selling is now a strategic goal for all of Wells Fargo's retail branches since the bank claims that their household cross-selling ratio of 5.70 financial products generates more than 80% of its revenues (Budur, 2018). Therefore, academics and practitioners are starting to pay more attention to the subject of consumer engagement (Majeed et al., 2022). Besides, gaining loyal customers and creating a recognized brand image are among a company's top priorities in the current era of globalization and intense competition (Budur, 2018). Gustafsson et al. (2005) posit that brand loyalty can be developed through the creation of bonds and relationships with customers. Brand loyalty occurs after consumers get satisfied with products and services given by a brand, and they trust the brand so that it is hoped that customers will make repeat purchases, and customers will think again and will not even switch to another brand (Susanto et al., 2022). Previous research has found that customer satisfaction and trust affected customer behavior in terms of loyalty (Hwang et al., 2020); customer engagement was found to be positively associated with brand loyalty (Kosiba et al., 2018).

The world is forever changing, and the economy is not an exception. Year by year, styles and tastes of customers gradually follow the latest trends (Gumber & Rana, 2021). People tend to dress more well, eat healthier and live more fully following the crowd effect in social media (Jiotsa et al., 2021). Coty's CEO, Camillo Pane, discussed this speed. He claimed that 'brands are produced at the speed of light and

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the business is getting more and more complicated'. This is particularly true for FMCG companies, who can no longer rest their success on securing dependable clients, as they once could (Kim & Ko, 2012). Realizing the rapid change of customer tastes, the authors come up with the question whether the relationship of customer engagement stays the same, or the trend-leading taste of customer may affect their loyalty in brands. Moreover, we can easily see how customers' tastes change along with the revolution of the Internet over time, not just online marketing or online shopping. Those who were born in 1995 or later are referred to as Generation Z, also known as digital natives, iGeneration, screenagers, post-millennials, homeland generation, and tweens (Fister-Gale, 2015). They were raised in a world that is extremely connected, never having been without the internet (Williams & Page, 2011). They are highly educated and technologically astute and frequent consumers of technology (Priporas et al., 2017). Generation Z presents a problem for marketers because of the way they behave in comparison to Generations Y and X.

The younger generation is more demanding of their favorite brands while yet being less brand loyal and caring more about the overall experience (Williams & Page, 2011). Here we are in the golden era of AI. Thanks to recent developments in every product area, what was once thought of as a unique or even borderline science-fiction concept is now becoming much more approachable to the public (Milner & Burgmann, 2023). However, COVID-19 has significantly accelerated AI's entry into the economy (Ehiorobo, 2020). Brands are developing innovative strategies to keep customers interested in and connected to their products (Keller, 2020).

Vietnam is about to reach a turning point in its development (Tram & Ngoc Huy, 2021). Under labor and capital shortages, the nation will need to rely more on productivity gains to boost GDP growth (Song & Zhou, 2020). A significant increase in domestic innovation capacity will be needed for this. The socio-economic development of Vietnam has seen a significant increase in the importance of research, technology, and innovation since the start of 2010. With the geographical location in one of the world's most dynamic regions and attracting lots of investments from other nations, Vietnam is setting a straight way to imply AI technology into the industry (Tran, 2021). According to Oxford Insights' most recent research, Vietnam moved up seven spots in the Government AI Readiness Index 2022, placing sixth among ASEAN nations and 55th overall. With all these strengths and threats, it is time to let AI innovation become an essential tool for businesses to solve the equation of customer engagement and brand loyalty.

Customer engagement on social media has previously been meticulously and thoroughly studied by a variety of experts and authors worldwide. However, most of the earlier research on social customer engagement focused on several well-known factors, such as information seeking, social influence, entertainment, and economic benefits (André, 2015; Azar et al., 2016; Jayasingh, 2019). Hence, there are 2 remarkable novelties in this research that ought to be considered. Firstly, the research model will be rebuilt with core elements inherited from previous research, however, new factors that are suitable and practical in the modern customer trend are analyzed including self - congruity, brand activism, brand warmth and social media marketing. Moreover, it is indisputable that advanced technology has been developing in the modern period, particularly the growth of artificial intelligence. Artificial intelligence is still a little studied factor in studies looking at client interaction on social media sites, though. Hence, the moderating variable - Artificial intelligence (AI) is also a significant factor in this research model.

This study was conducted to investigate factors affecting Vietnamese customer engagement, the effect of customer engagement on brand loyalty in the FMCG industry, and the moderating role of artificial intelligence. Information seeking, self-congruity, brand activism, social media marketing, brand warmth, social impact, economic advantage, brand attachment are recommended elements that drive customer engagement on social media platforms. Additionally, the study examined the relationship between online customer involvement and brand loyalty, using artificial intelligence as a moderating factor.

2. Literature reviews

2.1. Self-Congruity theory

The degree to which a customer's self-concept reflects his or her perception of a specific brand is said to have some bearing on the customer's behavior, according to the self-congruity theory. Customers

frequently favor brands that are more in line with their sense of self than those that are less so (Helgeson & Supphellen, 2004). Therefore, if a customer's self-concept is more in line with that of the brand, they are more likely to have a favourable perception of it. The four different categories of self-concept (i.e. actual self, ideal self, social self, and ideal social self) provide the basis for actual self-congruity, ideal self-congruity, social self-congruity, and ideal social self-congruity (Sirgy, 1982). Self-congruity research has also produced the most convincing evidence for both actual and ideal self-congruity. Self-Congruity Theory was used by Lee et al. (2020) to indicate that self - congruity positively influences customer engagement on social networking sites, particularly, Facebook. Similarly, according to Andonova et al. (2015), self-congruity theory emphasizes the significance of matching brand encounters with people's self-concepts, which makes it essential for social customer engagement research. To sum up, Self-congruity theory explains customer engagement by aligning brand image with customers' self-concept, enhancing connection and loyalty, which is developed by Andonova et al. (2015) as well.

2.2. Uses and gratification theory (UGT)

Positive in its epistemological stance, the 'Uses and Gratifications' (U&G) theory is a social psychological approach. The theory was developed by researchers Katz et al. (1973). They published 'The Uses of Mass Communication: Current Perspectives on Gratifications Research' in 1973, which provided a thorough explanation of the Uses and Gratifications Theory. People are assumed to make informed, deliberate, and reasonable decisions (in the sense of goal-oriented decisions). It attempts to answer the question of why these involved and perceptive individuals use the many elements and features of social media by identifying the gratification/rewards they seek. This is why the U&G theory has been used to explain the use of traditional media (such as television, magazines, radio, video games, TV satellite) repeatedly in the past (Ruggiero, 2000). This idea has been applied to the phenomenon of internet use, virtual communities, and more recently, social networks, since the early 2000s.

Uses and Gratification Theory is pertinent to social customer engagement research as it examines why individuals consume media and how they derive satisfaction from it. Understanding customers' motivations aids businesses in tailoring content to meet specific needs, driving more engaging and gratifying social interactions, thus enhancing overall customer engagement. The studies of Jayasingh (2019), and Choedon and Lee (2020) argue that the UGT theory is highly appreciated when applied in research papers on social customer engagement. To recap, Uses and Gratification theory explains customer engagement by identifying how consumers actively seek content to fulfill specific needs and desires, and in this study, social media marketing is used as a significant component related to social customer engagement.

Several authors have previously methodically and in-depth explored customer participation on social media. However, authors could identify two areas for additional research. First off, most past studies on social consumer engagement concentrated on several widely recognized characteristics, including information seeking, social influence, entertainment, and financial gains (André, 2015; Azar et al., 2016; Jayasingh, 2019). Nevertheless, it is indisputable that advanced technology has been developing in the modern period, particularly the growth of artificial intelligence which considerably affects customer engagement. Artificial intelligence is still a little studied factor in studies looking at client interaction on social media sites, though.

The moderator 'AI' was used in the study on brand loyalty and consumer engagement to determine how it affected the correlation between these variables. Artificial Intelligence played a crucial part in customer contact analysis, experience personalization, and prompt help. Artificial intelligence has been shown to dramatically increase brand loyalty by improving engagement through personalized communication and effective service. This illustrated how important AI's ability to comprehend and predict consumer requirements is to build a closer, more enduring relationship between a company and its customers. Several authors pointed out how AI exerts a significantly positive influence. According to Bag et al. (2022), AI enhances client involvement on social media, while Bedi et al. (2022) demonstrated that AI can also increase brand loyalty in the retail sector. From this basis, AI is inherited and developed into a moderating variable in the relationship between social customer engagement and brand loyalty.

2.3. Research hypothesis

This study proposes research hypotheses to indicate factors affecting customer engagement and brand loyalty in Vietnamese FMCG by relying on evidence from other studies in this field.

Information seeking (IS): is an information-gathering procedure for products (Gironda & Korgaonkar, 2014). Being able to search for and find information about a company, product, or brand is one of the key factors that influence customer involvement in online brand communities like Facebook brand pages (Azar et al., 2016). Customers, for instance, can learn information about a bottle of soft drink's pricing, origin, or advantages through social media. According to Fernandes and Remelhe (2016) research, information seeking increases consumer engagement. Gao and Feng (2016) also show a favorable correlation between information search and online customer engagement. Therefore, hypothesis proposed is that:

Hypothesis H1. Information seeking has a positive effect on customer engagement in Vietnam FMCG

Self – congruity (SC): referred to in this study as the correspondence between a brand's personality and a customer's opinion of themselves that consumers perceive or experience as they forge a bond with the brand (Kim et al., 2005). Customers have the chance to choose brands to represent their ideal selves in ways that are not supported in real life by using social networking sites (SNS). According to Wolfinbarger and Gilly (2003), customers of various personality types who have closer emotional bonds to brands that represent themselves are more inclined to take part in eWOM (electronic Worth-of-Mouth) activities for such brands. Customers typically favor companies and remain loyal to those whose focus matches their image, such as luxury or glamour. Self-acceptance has a favorable impact on user involvement on social networking sites, particularly Facebook, according to Lee et al. (2020). Additionally, Andonova et al. (2015) examined a substantial relationship between online customer interaction and confidence. Therefore, hypothesis proposed is:

Hypothesis H2. Self - congruity has a positive effect on customer engagement in Vietnam FMCG

Brand activism (BAC): is defined as a values-driven tactic used by companies to show that they are conscious of the current and future aspects of society (Kotler & Sarkar, 2017). According to Edelman and van Knippenberg (2018), 64% of consumers around the world base their choice of whether to support or reject a brand purely on that brand's stance on social and political issues. As the importance of brand activism has increased in the eyes of the consumer, brands have begun adding more advertising campaigns that don't always center on the product being sold but instead focus on a societal issue or a specific cause (Khuong et al., 2021; Waheed et al., 2021). The polarization that emerges from societal issues ensures a high degree of participation regardless of a brand's stance on an issue, since 70% of customers are keen to provide the company their direct opinion on its social responsibility activities. Therefore, hypothesis proposed is:

Hypothesis H3. Brand activism has a positive effect on customer engagement in Vietnam FMCG

Social media marketing (SMM): is a subset of online marketing that makes use of popular culture to further its communication and branding objectives. In recent months, social media marketing has paid a lot of attention to customer engagement. Customer relationship management, customer assistance, buyer research, lead generation, sales promotion distribution, paid advertising, and branding are among the marketing activities made available by social media through its platforms (Patma et al., 2021). If the messaging associated with their businesses, Website traffic, search results, and customer loyalty all increase, marketers may find opportunities from social media communication, claims. Social media marketing has a favorable impact on social consumer involvement, as demonstrated by Nguyen et al. (2020). Furthermore, Kim and Ko (2012) showed that social media marketing had a positive impact on client brand engagement. Therefore, hypothesis proposed is:

Hypothesis H4. Social media marketing has a positive effect on customer engagement in Vietnam FMCG

Brand warmth (BW): consists of genuineness, amity, helpfulness, and zeal (Fiske et al., 2002). Additionally, consumers are more likely to describe a company as warm when they think it has noble aims, such as safeguarding the environment. People's perceptions of other people's warmth are believed to be more

important in their affective and behavioral responses, according to Fiske et al. (2007). These perceptions are almost always of great interest to others and are almost universally viewed favorably. Customers connect and view brands in a way that is human-like (Aggarwal & McGill, 2007). This viewpoint suggests that supporting a business online by clicking the 'like' button on a brand page is comparable to 'friending' someone else, with the exception that in this case the 'friend' cannot refuse the request. Continuing from the previous point, it makes obvious that if someone is warm and likable, they will be more likely to be introduced to their circle of friends (Sherman et al., 2006). Bernritter (2015) exhibited that brand warmth has a significantly positive impact on social customer engagement. Therefore, hypothesis proposed is:

Hypothesis H5. Brand warmth has a positive effect on customer engagement in Vietnam FMCG

Social influence (SI): refers to the reactions of other people to a customer's decision to embrace and utilize a particular good or service (Curran & Lennon, 2011). They can have an impact on others and increase their social involvement when they 'like' a brand on Facebook. Users can view which friends and how many friends are followers of a specific product or brand page before joining a community on social media (Coulter & Roggeveen, 2012). The likelihood that a user will get interested in, explore, and ultimately approve of and support a brand or product page increases when they see that their friends are members of it. Because they wish to follow their friends and because other users have done so, people may register for a brand page and publish information about the brand (Gironda & Korgaonkar, 2014). According to Jayasingh (2019), social influence has a favorable impact on consumer brand engagement on social media. In line with this, André (2015) reached the same conclusion in his research about the link between Facebook customer involvement and social impact. Therefore, hypothesis proposed is:

Hypothesis H6. Social influence has a positive effect on customer engagement in Vietnam FMCG

Economic benefits (EB): relates to 'the extent to which community members desire to receive utilitarian rewards (e.g. financial rewards, time savings, offers or incentives, merchandise and awards) through their engagement in the community' (Baldus et al., 2015). Financial incentives and other perks are some of the key advantages of using Facebook brand pages (Tsai & Men, 2013). Right now, finding financial benefits from brands on social networks is not difficult. Customers who participate in minigames or media campaigns through likes and shares might win enticing rewards from businesses like gift cards to stores or accumulated loyalty points. Economic advantages could boost Facebook customer involvement with brands, according to research by Azar et al. (2016). Similar to this, Jayasingh (2019) revealed that economic advantages influence client brand involvement on social media in a good way. Therefore, hypothesis proposed is:

Hypothesis H7. Economic benefits have a positive effect on customer engagement in Vietnam FMCG

Brand attachment (BAT): is defined as 'an emotion-laden target-specific bond between a consumer and a specific brand' (Thomson et al., 2005), and it is based on Bowlby's (1977) attachment theory. Affection, passion, and connection are the three components that comprise brand attachment (Thomson et al., 2005). Firstly, brand affection describes the positive emotions a brand creates. Secondly, brand passion describes the powerfully favorable emotions that a brand arouses. Lastly, brand connection refers to the sensation of 'being linked' to bound to or associated with the brand. It has been demonstrated that increasing the number of 'likes' on a company's Facebook page promotes sales (Lee et al., 2015). Customers can also 'share' images or stories that feature the brand with others in their network to demonstrate their enthusiasm for it. Furthermore, customers can 'comment' on a brand's Facebook page, which is viewable by others in their network and can be read by others who visit that page (Japutra et al., 2022; Kabadayi & Price, 2014). All of these are visible to a chosen set of friends on the sender's timeline. Consumer engagement is measured by actions like liking, sharing, and commenting (Gummerus et al., 2012). Therefore, hypothesis proposed is:

Hypothesis H8. Brand attachment has a positive effect on customer engagement in Vietnam FMCG

Social customer engagement (SCE): is the process of connecting customers' bodies and minds so they can actively contribute to a brand's image independent of any physical transactions (So et al., 2021).

Additionally, social customer engagement is described as clients' cognitive, emotional, and behavioral investments into interactions with a particular brand on social media; clients' underlying (latent) cognitive and emotional engagement becoming visible through clients' social media-based engagement behaviors. Five primary categories of effects of customer participation on social media are brand impacts, product impacts, customer impacts, content effects, and market impacts. Brand community involvement behaviors will increase the perceived value of customers, which will also increase customer happiness and loyalty. It means that when consumers connect with brands, they often become familiar with and like them, which develops brand loyalty. In his research, Jayasingh (2019) showed how customer brand involvement influences brand loyalty in a favorable way. Therefore, hypothesis proposed is:

Hypothesis H9. Social customer engagement has a positive effect on brand loyalty in Vietnam FMCG

Artificial intelligence (AI): is defined as intelligent activity and conduct by devices, computers, or robots for the benefit of individuals and groups. AI fits into Uses and Gratification Theory by providing personalized experiences that meet user needs. According to Self-Congruity Theory, AI increases the similarity between customers and brands, thereby enhancing customer engagement and loyalty. AI-based social media marketing strategies have the potential to influence and forecast user behavior as well as provide social media users with a wide variety of practical analytics capabilities that support user engagement (Capatina et al., 2020). AI assists with information gathering and analysis on a subconscious level. AI improves a company's capacity to communicate with clients via social media (Pillai & Sivathanu, 2020). The use of voice assistants, chatbots, sentiment analysis, face recognition, natural language processing, visual search, and AI-driven touchless kiosks are just a few of the important applications of AI that have been shown to increase customer interaction on social media. In addition, AI can direct users to specialist software where they can test out things or suggest appropriate products based on past searches. According to Bag et al. (2022), AI increases client involvement on social media. Additionally, Bedi et al. (2022) demonstrated how AI might increase brand loyalty in the retail sector. It is proposed that artificial intelligence positively affects the relationship between social customer engagement and brand loyalty, which means the higher the level of artificial intelligence applied, the stronger the relationship between social customer engagement and brand loyalty. Therefore, hypothesis proposed is:

Hypothesis H10. Artificial intelligence (AI) moderates the relationship between social customer engagement and brand loyalty in Vietnam FMCG

Based on several high – ranking research and hypothetical development, the research model is developed as being shown in Figure 1 to show factors affecting social customer engagement, the effect of social customer engagement on brand loyalty and the moderating role of AI.

3. Research methods

3.1. Method of data analysis and processing

In-depth online interviews were used in the study as a qualitative research method to evaluate the suitability of components and scales once the model and scale were constructed. Those participating in group interviews are thoroughly explained and provided necessary information related to this study. The questionnaire is set up in both Vietnamese and English versions, with accuracy tested by experts. Interviewees are surveyed in Vietnamese version in order to deeply understand. The scale was then improved in light of the information obtained, and a formal survey was carried out using survey questionnaires to acquire information about the variables included in the research model. Three items adopted for IS, EB, SI was referred from (Jayasingh, 2019); three items adopted for SMM was referred from (Choedon & Lee, 2020); three items adopted for BAC was referred from (Gray, 2019; Hennig, 2021); three items adopted for SC was referred from (Rabbanee et al., 2020); three items adopted for BW was referred from (Kolbl et al., 2020; Xue et al., 2020); three items adopted for SCE was referred from (Vo Minh et al., 2022); three items adopted for BL was referred from (Helme-Guizon & Magnoni, 2019); three items adopted for BAT was referred from three items adopted for AI was referred from (Yin & Qiu, 2021). Authors employed Smart-PLS software to process the gathered data and employed a multivariable linear

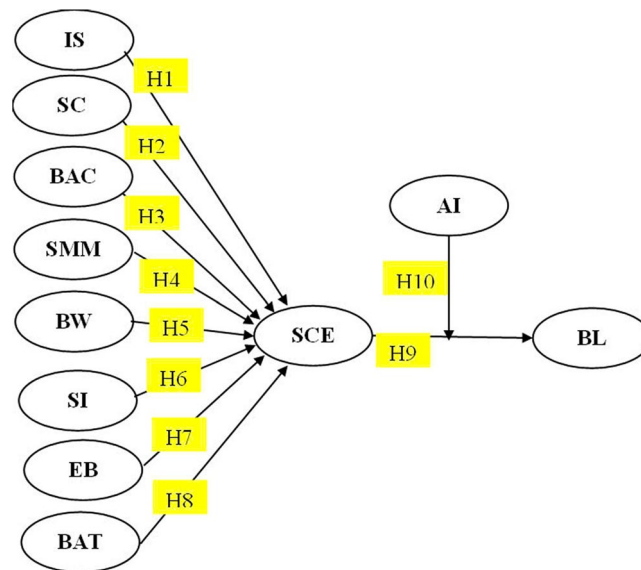


Figure 1. Research model.

regression model with one moderating variable, one intermediate variable, and one other variable. Following the use of descriptive statistics, the authors used the Cronbach's Alpha coefficient to assess the scale's reliability. To determine how effectively the measured variables represent the number of components, the authors employed confirmatory factor analysis (CFA) and exploratory factor analysis (EFA). In order to examine the research hypotheses and the model's applicability, structural equation modeling (SEM) was evaluated in the end. A five-point Likert scale with the anchors 'Strongly Disagree' (1) and 'Strongly Agree' (5) was used to measure the responses to the scale items.

3.2. Data collection

Study used a Google Form to collect 435 responses from people in Ho Chi Minh City, representing a range of genders, age groups, income levels, and jobs. The sample size calculation was conducted using the parameters outlined by Chou et al. (1991). The total sample size for analyzing the study is 416 samples should meet both the right sample size conditions. In order to achieve the most accurate and valid and objective data set, the survey has been conducted with people aged 18 to 35 years old through direct and indirect answers followed by the survey links, from March to June 2023. Authors clearly presented the viewpoint as well as clearly mentioned the purpose of the survey, in order to bring more accurate data instead of making a coping survey. The construction of variables for surveys is also based on the actual situation so that the survey is as convincing as possible.

3.3. Informed consent

This research was obtained from approval of all participants and/or their legal guardians for participation in the study. This article does not contain any studies with human participants performed by any of the authors.

3.4. Ethics approval and consent to participate

Based on 'Regulations on integrity rules in scientific research at University of Economics Ho Chi Minh City (UEH) in 2019' (No. 3145/QyĐ-ĐHK-T-QLKH-HTQT), this study was conducted in line with the mentioned requirements. We also got ethical approval from the Ethical Committee of University of Economics Ho Chi Minh City (UEH). Specifically, the respondents' anonymity was strongly guaranteed. This consent was obtained in written form as the study employed hard copy questionnaires distributed to participants to

gather data. Support was totally deliberate, and the participants' responses would be utilized solely for scholarly purposes.

4. Results and discussions

4.1. Demographic results

Table 1 presents the characteristics of the sample. Some notable features are the proportion of females in the survey sample reached 59.6%, higher than male; the majority in the survey sample are working as office staff (54.3%). Students account for 29.8%. Workers and other subjects only account for 15.9%. Most respondents in the sample were aged 23–30 (40.4%), followed by subjects aged 18–22 (33.7%). The others are 31 years old and over, accounting for nearly 26%. Most of the respondents in the sample have an income of 11–15 mils VND (53.4%). Next, 33.7% of subjects have income from 6–10 mils VND. The others with high income levels account for nearly 13%.

4.2. Statistical research findings

4.2.1. Test the reliability scale and convergence scale

As shown below, the study tests the reliability of the scale through Cronbach's Alpha coefficient and composite reliability coefficient. For the convergence scale, the AVE coefficient needs to be above 0.5 and the outer loadings needs to be greater than 0.4 for the scale. The results in Table 2 shows that the scale of factors used in the research paper all satisfy the conditions. Cronbach's alpha coefficient of scales ranges from 0.651 to 0.880 (greater than 0.6). Composite reliability coefficients range from 0.805 to 0.926 (both greater than 0.7). The AVE coefficient of the scale ranges from 0.574 to 0.812 (greater than 0.5). Most of the outer loadings of the observed variables are greater than 0.7 (only IS1 is less than 0.7 but still greater than 0.4, so study accepts this result as a convergence scale)

4.2.2. Discriminant validity

The results of the discriminant validity all satisfy the conditions. For the Fornell-Larcker criterion coefficient: The result in Table 3 shows that the square root of AVE indicators is greater than the inter-construct correlations, so the scale reaches a discriminant validity (Fornell & Lacker, 1981).

In addition, in Table 4, the results of the HTMT values of the scales between pairs of concepts all range from 0.029 to 0.898 (both less than 0.9). Thus, the scales also meet the requirements of discriminant validity.

4.2.3. Conformity of measurement model

The conformity test results in Table 5 shows that the SRMR index of the estimated model is $0.078 < 0.082$. Therefore, it can be concluded that the measurement model is consistent with the collected dataset.

Table 1. Characteristics of the survey sample.

| | Sample | Frequency | Percent |
|--------|-------------------|-----------|---------|
| Gender | Female | 248 | 59,6 |
| | Male | 168 | 40,4 |
| Job | Student | 124 | 29,8 |
| | Office staff | 226 | 54,3 |
| | Worker and others | 66 | 15,9 |
| Age | 18–22 | 140 | 33,7 |
| | 23–30 | 168 | 40,4 |
| | 31–40 | 96 | 23,1 |
| | 41–50 | 12 | 2,9 |
| Income | 6–10 mils VND | 140 | 33,7 |
| | 11–15 mils VND | 222 | 53,4 |
| | 16–20 mils VND | 42 | 10,1 |
| | Over 20 mils VND | 12 | 2,9 |

Source: by authors, 2024.

Table 2. Results of reliability test and convergence scale.

| | Outer loadings | Cronbach's alpha | Composite reliability | Average variance extracted (AVE) |
|------|----------------|------------------|-----------------------|----------------------------------|
| AI1 | 0.912 | 0.880 | 0.926 | 0.807 |
| AI2 | 0.900 | | | |
| AI3 | 0.882 | | | |
| BAC1 | 0.723 | 0.699 | 0.831 | 0.622 |
| BAC2 | 0.757 | | | |
| BAC3 | 0.877 | | | |
| BAT1 | 0.890 | 0.882 | 0.928 | 0.812 |
| BAT2 | 0.819 | | | |
| BAT3 | 0.986 | | | |
| BL1 | 0.895 | 0.836 | 0.901 | 0.752 |
| BL2 | 0.847 | | | |
| BL3 | 0.860 | | | |
| BW1 | 0.856 | 0.857 | 0.913 | 0.777 |
| BW2 | 0.909 | | | |
| BW3 | 0.879 | | | |
| EB1 | 0.768 | 0.844 | 0.906 | 0.765 |
| EB2 | 0.915 | | | |
| EB3 | 0.931 | | | |
| IS1 | 0.642 | 0.651 | 0.805 | 0.582 |
| IS2 | 0.823 | | | |
| IS3 | 0.811 | | | |
| SC1 | 0.848 | 0.842 | 0.905 | 0.760 |
| SC2 | 0.873 | | | |
| SC3 | 0.893 | | | |
| SCE1 | 0.909 | 0.863 | 0.917 | 0.786 |
| SCE2 | 0.919 | | | |
| SCE3 | 0.829 | | | |
| SI1 | 0.759 | 0.803 | 0.885 | 0.720 |
| SI2 | 0.914 | | | |
| SI3 | 0.865 | | | |
| SMM1 | 0.792 | 0.753 | 0.843 | 0.574 |
| SMM2 | 0.703 | | | |
| SMM3 | 0.806 | | | |
| SMM4 | 0.726 | | | |

Source: by authors, 2024.

Table 3. Fornell-Larcker criterion.

| | .AI | BAC | BAT | BL | BW | EB | IS | SC | SCE | SI | SMM |
|-----|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| AI | 0.898 | | | | | | | | | | |
| BAC | 0.448 | 0.789 | | | | | | | | | |
| BAT | 0.574 | | 0.901 | | | | | | | | |
| BL | 0.775 | 0.511 | 0.633 | 0.867 | | | | | | | |
| BW | −0.407 | −0.542 | −0.555 | −0.406 | 0.881 | | | | | | |
| EB | 0.547 | 0.438 | 0.601 | 0.609 | −0.450 | 0.875 | | | | | |
| IS | 0.422 | 0.418 | 0.651 | 0.548 | −0.414 | 0.480 | 0.763 | | | | |
| SC | 0.492 | 0.504 | 0.598 | 0.552 | −0.694 | 0.498 | 0.432 | 0.872 | | | |
| SCE | 0.608 | 0.336 | 0.668 | 0.698 | −0.363 | 0.664 | 0.547 | 0.565 | 0.887 | | |
| SI | 0.546 | 0.496 | 0.658 | 0.646 | −0.547 | 0.676 | 0.600 | 0.670 | 0.692 | 0.849 | |
| SMM | 0.561 | 0.442 | 0.505 | 0.607 | −0.439 | 0.524 | 0.563 | 0.509 | 0.566 | 0.617 | 0.758 |

Source: by authors, 2024.

4.2.4. Hypothesis testing

As a result of testing the structural model in Table 6, most of the hypotheses were accepted with a statistical significance of 5%. Only the H1 and H3 hypotheses were rejected. The H2, H4, H5, H6, H7, H8 are accepted. Thus, the factors, which are Self-congruity, Social media marketing, Brand warmth, Social influence, Economic benefit, and Brand attachment, all have a positive impact on Social Customer engagement in the field of FMCG. The H10 is accepted. This shows the positive moderating role of AI in the impact of Social Customer engagement on brand loyalty in the FMCG field. Besides, another result discovered is the positive impact of artificial intelligence on brand loyalty in the FMCG field.

The above results show that in the field of FMCG, most of the hypotheses are accepted at the significance level 5%, except for H1 and H3. This also opens the door to further research why they are different from other hypotheses. Self-congruity, Social media marketing, Brand warmth, Social influence, Economic benefit, and Brand attachment all positively influence Social Customer engagement. Self-congruity favorably influences Social Customer engagement. Lee et al. (2020) found that

Table 4. Heterotrait - monotrait ratio (HTMT).

| | AI | BAC | BAT | BL | BW | EB | IS | SC | SCE | SI | SMM |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| AI | | | | | | | | | | | |
| BAC | 0.574 | | | | | | | | | | |
| BAT | 0.654 | 0.528 | | | | | | | | | |
| BL | 0.898 | 0.662 | 0.739 | | | | | | | | |
| BW | 0.468 | 0.709 | 0.632 | 0.473 | | | | | | | |
| EB | 0.641 | 0.575 | 0.701 | 0.738 | 0.528 | | | | | | |
| IS | 0.550 | 0.633 | 0.837 | 0.721 | 0.531 | 0.619 | | | | | |
| SC | 0.575 | 0.660 | 0.692 | 0.658 | 0.815 | 0.594 | 0.564 | | | | |
| SCE | 0.696 | 0.418 | 0.756 | 0.822 | 0.415 | 0.774 | 0.698 | 0.662 | | | |
| SI | 0.659 | 0.655 | 0.782 | 0.801 | 0.657 | 0.828 | 0.802 | 0.813 | 0.828 | | |
| SMM | 0.682 | 0.608 | 0.613 | 0.760 | 0.526 | 0.654 | 0.765 | 0.630 | 0.692 | 0.788 | |
| AI×SCE | 0.526 | 0.188 | 0.191 | 0.257 | 0.130 | 0.225 | 0.029 | 0.189 | 0.148 | 0.166 | 0.216 |

Source: by authors, 2024.

Table 5. The conformity of measurement model.

| | Saturated model | Estimated model |
|------------|-----------------|-----------------|
| SRMR | 0.075 | 0.078 |
| Chi-square | 4,108.121 | 4,141.514 |
| NFI | 0.656 | 0.654 |

Source: by authors, 2024.

Table 6. Testing hypotheses in the research model.

| | Original sample (O) | Sample mean (M) | P-values | Conclusion |
|-------------|---------------------|-----------------|----------|-------------------|
| IS → SCE | 0.056 | 0.055 | 0.212 | H1: <i>Reject</i> |
| SC → SCE | 0.215 | 0.215 | 0.000 | H2: Support |
| BAC → SCE | −0.077 | −0.074 | 0.068 | H3: <i>Reject</i> |
| SMM → SCE | 0.136 | 0.136 | 0.002 | H4: Support |
| BW → SCE | 0.229 | 0.226 | 0.000 | H5: Support |
| SI → SCE | 0.223 | 0.222 | 0.000 | H6: Support |
| EB → SCE | 0.277 | 0.276 | 0.000 | H7: Support |
| BAT → SCE | 0.281 | 0.278 | 0.000 | H8: Support |
| SCE → BL | 0.329 | 0.328 | 0.000 | H9: Support |
| AI×SCE → BL | 0.089 | 0.089 | 0.003 | H10: Support |

Source: by authors, 2024.

self-acceptance has a favorable impact on user involvement on social networking sites, particularly Facebook. Self-congruity is the process of matching a brand's values and image to the self-identity of the consumer to foster good customer interaction. A genuine connection is formed, resulting in increased brand engagement, loyalty, and trust from customers who see a fit between the brand and their own personality or goals (Andonova et al., 2015; Kim et al., 2005). Social media marketing is a positively motivating factor for Social Customer engagement. Nguyen et al. (2020) saw that social media marketing has a favorable impact on social consumer involvement. Social media marketing offers a dynamic platform for brand connection that improves customer engagement. Consistently providing genuine material and engaging customers in real time create a feeling of community and motivate them to participate, which strengthens their bond with the company (Kim & Ko, 2012; Tuten, 2009). Brand warmth is also one of the important factors and enhances Social Customer engagement (Bernritter, 2015). Brand warmth positively impacts customer engagement by creating an emotional connection. When a brand exudes warmth, customers feel a sense of familiarity and trust, fostering lasting relationships and increased engagement (Fiske et al., 2007).

Besides, other results in this study are also quite consistent with previous studies. Social influence was assessed to promote Social Customer engagement (André, 2015; Coulter & Roggeveen, 2012; Girona & Korgaonkar, 2014; Jayasingh, 2019). Economic benefits were also found to positively affect Social Customer engagement (Azar et al., 2016; Jayasingh, 2019; Tsai & Men, 2013). Lee et al. (2015), Kabadayi and Price (2014), Gummerus et al. (2012) all confirm the positive impact of brand attachment on Social Customer engagement. Customer engagement is strongly impacted by brand attachment since it creates a strong emotional bond. Consumers who are emotionally invested in a brand are more likely to be loyal, to engage more frequently, and to do so over time (Kabadayi & Price, 2014). Many studies have been

conducted to explore the relationship between customer engagement and brand loyalty on social media (H9). Through meaningful interactions and experiences, customer engagement fosters brand loyalty. Customers are more inclined to stick with a company, recommend it to others, and make repeat purchases when they feel appreciated and connected (Jayasingh, 2019). Specifically, Jayasingh (2019) emphasized the role of information as an important factor to drive customers to engage on Facebook. Besides, other research results also support this hypothesis such as So et al. (2021).

One of the most striking results discovered in this study is the positive impact of AI on Brand loyalty. Not only that, but AI also plays a positively moderating role in the relationship between SCE and Brand loyalty, which means the higher the level of artificial intelligence applied, the stronger the relationship between social customer engagement and brand loyalty. This result is also consistent with research by Capatina et al. (2020), Pillai and Sivathanu (2020), Bag et al. (2022). From the research results, in the context of the Vietnam FMCG market, it becomes extremely important to create a strong relationship between the brand and the customer. Customers not only consume products, but they also interact and show their engagement with the brand through social networking platforms. This not only increases brand value but also promotes customer engagement and loyalty.

The FMCG sector is often characterized by high competition and a constant need for innovation. In this context, the application of AI can be a differentiator, helping brands stand out and attract brand loyalty. The ability to innovate through AI will help businesses in this field seize opportunities and optimize their business strategies. From the link between AI and Brand loyalty, managers will better understand the strategic benefits of investing in AI. In addition, the use of AI in FMCG is not only a technical support tool but also an important factor affecting brand loyalty. AI has helped to improve the customer experience by providing personalized service, anticipating customer needs, or possibly solving a customer's problem quickly and accurately.

5. Conclusion, recommendations, implications, and limitations

In summary, the results of this study provide a fresh and insightful perspective on the relationship between brand loyalty and customer engagement on social media platforms, especially in the FMCG sector in Vietnam.

5.1. Theoretical implications

This study is conducted to address social customer engagement and research gaps resulting from prior studies. Beyond validating the Self-Congruity Theory (SCT) and Uses and Gratification Theory (UGT), this research pushes the theoretical boundaries of these frameworks by contextualizing them in a modern, AI-driven marketing environment. The study broadens SCT by showing how AI strengthens the relationship between self-congruity and social customer engagement in addition to proving its positive impacts. The incorporation of artificial intelligence (AI) into SCT points to a change in the way self-congruity is operationalized in a digital environment, where tailored AI-driven interactions reinforce the fit between customer identity and brand. This broadens the use of SCT in the digital era and creates opportunities for further research into the role AI plays in promoting identity-based brand loyalty. Gaining knowledge of how customers perceive themselves and how they identify with a company can help you better understand the dynamics of social customer involvement. Making clients feel like 'we are one' could be achieved by businesses through the usage of SCT as a potential approach. Moreover, UGT is seen as a crucial element in attracting potential customers in today's society. UGT traditionally focuses on consumer media consumption behaviors; however, with AI's influence, the theory is evolving to encompass personalized digital experiences, where technology not only satisfies but anticipates consumer needs.

In conclusion, this study offers a framework for comprehending how AI alters consumer-brand relationships in the digital marketplace in addition to reinforcing pre-existing hypotheses. The results have wider theoretical implications and motivate more investigation into how AI can moderate customer engagement and loyalty in various businesses and cultural contexts.

5.2. For policymakers

Vietnam wants to make artificial intelligence (AI) a leading technology in the fourth Industrial Revolution, in accordance with a national policy on AI research, development, and applications until 2030, which was adopted by the Government on January 26, 2021. By 2030, the nation aspires to become a hub for AI invention, development, and applications in ASEAN and beyond.

In order to reorganize and promote AI innovation ecosystem, the Government of Vietnam should concentrate on a few crucial strategic initiatives, such as: improving the operational and managerial processes of organizations working in the science and technology (S&T) sector; boosting state spending levels, giving funds to national S&T projects and goods top priority, and encouraging businesses to invest in S&T development; coordinating the creation of a robust S&T national market with the enforcement of intellectual property laws in order to promote innovation and technology R&D; enhancing the use of Vietnamese research and technology in worldwide markets.

5.3. For businesses

Self-congruity, a vital component of market segmentation, offers marketing managers information into positioning and advertising research. Marketers can more accurately position their items in a way that appeals to their customers if they have in-depth psychological knowledge of their target customers rather than superficial demographics. Additionally, 43% of customers have a more favorable opinion of a brand when it actively participates in social change. Over half of all customers purchasing decisions are influenced by brand activism, making it a crucial factor for businesses wanting to grow. Brand activism can take many different forms, such as expanding business opportunities for LGBTQ entrepreneurs, carrying transparent policies and good treatment of employees, providing clean goods, and not testing on animals, signing the Climate Pledge on Amazon, or developing environmentally friendly packaging for items.

Apart from creating a perfect brand image, to engage with customers and last a long relationship, brands need to focus on Brand warmth. Our findings recommend focusing primarily on stressing the brand warmth stereotype if a company wants to improve the perception of the emotional worth of its brand. This means that brand communications should be depicting the brand with good intentions (i.e. being nice, warm, and kind). It is significant to note that showcasing warmth also improves functional value, boosting communication methods intended to highlight the brand's expertise.

Businesses spend a lot of money attempting to establish trust in their brands, but social influence allows you to do it naturally through the evaluations and feedback of your customers. Customers desire information from people they can relate to and trust. Businesses spend a lot of money attempting to establish trust in their brands, but social influence allows brands to do it naturally through the evaluations and feedback of their customers.

After carrying out the research, authors successfully tested the moderating role of AI in the relationship of customer engagement and brand loyalty. Customers are reached by effective marketing communication at the appropriate time and through the appropriate channel. These fields are the focus of many new AI businesses. A fantastic method to personalize the customer experience and make sure that customers get prompt answers to frequent issues without calling customer care is to deploy chatbots, which use AI to have real-time discussions with users. Chatbots can assist clients in making informed selections by providing customized advice or addressing frequent sales objections raised by a product.

5.4. AI visual try-on & visual search

The AI market is anticipated to grow from roughly \$ 3.5 billion in 2017 to \$ 198 billion by 2025, according to Statista. When combined with 3D body scanning, AI will open the door to developments like virtual try-on technology, which 3D Insights predicts will completely transform the fashion store experience. When it comes to marketing and sales, a virtual try-on can significantly impact brands. Whether it is a tailored smartphone application or a smart mirror in a physical store, a virtual try-on gives customers

a realistic, personalized product presentation in a matter of seconds. Customers may rapidly test out dozens of products and even receive recommendations for related products, which promotes sales.

While the study has achieved many important results, it also has some limitations. Firstly, the scope of the study mainly focuses on the FMCG market in Vietnam, so some factors have not been considered, such as consumer culture or corporate strategy. In future studies, we can add more factors to expand the research model. In addition, the use of cross-section data does not allow us to see changes in behavior over time. Therefore, using a time-series data collection will help to see the change of brand loyalty over time.

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Consent for publication

All authors are willing for publication of this manuscript.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

The data that support the findings of this study are available from the corresponding author, upon reasonable request. Data was collected and analyzed from authors.

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