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Unveiling the Power of Communication Through Social Media Marketing in Brand Attachment Formation: Bridging Brand and Platform Outcomes

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Abstract

The literature emphasizes the importance of perceived social media marketing activities (SMMAs) in shaping various brand-related outcomes. However, their importance in brand attachment formation remains underexplored. Grounded in the Stimulus–Organism–Response (S-O-R) framework and Attachment Theory, this study examines the relationship between SMMAs and brand attachment, and the impact of brand attachment on brand loyalty and consumer engagement with brand social media (CEBSM). A questionnaire survey was conducted with 502 consumers of outdoor and sports brands in Algeria. Data analysis was performed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings unveil that SMMAs, including interactivity, informativeness, personalization, trendiness, and WOM, are positively associated with brand attachment. Furthermore, brand attachment is significantly associated with both brand loyalty and CEBSM. This study makes several theoretical contributions by being among the early studies to examine the individual effects of social media marketing dimensions, the role of SMMA in brand attachment formation, and brand-related outcomes alongside in-platform outcomes. This study offers recommendations to guide community managers and brand managers in clarifying the roles and capabilities of social media marketing in evoking and reinforcing brand attachment.

Keywords: social media marketing; brand attachment; consumer engagement; loyalty; S-O-R framework

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1. Introduction

For nearly two decades, nearly every brand, from renowned universities to independent craft makers, has used social media for marketing. This shift from traditional channels to social media platforms is fueled by advancements in social network technologies, enabling brands and consumers to communicate, share information, interact, and conduct transactions more effectively [1]. In Algeria, social media users are expected to exceed 26 million in December 2025 (55% of the total population). Facebook remained the dominant platform, while Instagram also showed strong penetration with about 14 million users (28% of the population). Overall, social media usage is expected to continue rising in

the coming years [2]. Thus, leveraging social media marketing guides consumers to favorable brand perceptions and reinforces brand-related responses that translate into firm performance [3,4].

Studies indicate that social media is not only an instrument for managing customer relationships and a sales method, but also an excellent tool for communication purposes [5,6]. Social media platforms, such as Facebook and Instagram, enable brands to deliver personalized messages with high inspiration and interactivity, using various formats, while also allowing real-time engagement with consumers, creating a two-way communication channel [7,8]. Many companies have adopted social media strategies to strengthen their online presence, engage with their audience, and secure sustained consumer relationships [9]. Because consumer behavior is complex, many studies attempt to capture specific aspects of favorable brand-related responses as consequences of social media marketing activities (SMMAs). The evidence demonstrates that SMMAs significantly contribute to enhancing brand equity properties [10], trust, satisfaction [11,12], brand value [13], and brand experience [14].

Despite the significant contributions of prior research in this field, the role of SMMAs in the formation of affection states remains underexplored [15,16]. Researchers acknowledge that true brand commitment stems from more than cognitive appraisal; it is also fueled by brand affective attributes and an intense emotional state that links the consumer to the brand [17,18]. The widespread adoption of digital channels has led consumers to rely on these platforms for information acquisition and opinion sharing across diverse social media features. These platform contents and interactions not only shape brand beliefs and evaluations but also elicit emotional responses, fostering meaningful engagement and enduring consumer-brand relationships.

A scoping review of the literature on SMMAs' capacity to elicit emotional responses is summarized in Table 1. Existing research consistently indicates that SMMAs act as a catalyst for both cognitive and affective dimensions [19–21], which in turn serve as critical drivers of behavioral outcomes [9,15,21], particularly brand loyalty [16,22]. The synthesis reveals that brand love remains the primary affective construct examined empirically in this context. Despite the growing emphasis on brand love in contemporary marketing literature [23], love is a positive emotion that reflects attachment rather than the bond itself [24]. In other words, while consumers may experience feelings of love toward a brand, attachment encompasses more than this emotion, extending to the core of enduring and strong brand–consumer relationships [23–25]. Thus, the deeper and more persuasive form of emotional attachment to brands remains underexamined in the SMMAs literature. Emotional brand attachment is an integral component of modern brand management, characterized by strong emotional bonds with a brand, in which separation induces significant discomfort and distress [26,27]. Brand attachment functions as a critical driver of positive attitudes, motivating consumers to engage in difficult behaviors such as waiting for the brand, defending it, and committing personal resources [25]. Given the scarcity of studies exploring consumers' emotional responses to SMMAs, examining brand attachment offers a meaningful avenue for advancing research in this field [28].

Furthermore, prior studies extend the understanding of the role of SMMAs by linking brand beliefs and evaluations to behavioral brand-related outcomes, notably consumer brand engagement [29], word of mouth [30], purchase intention [31], and brand loyalty [32]. Yet, the exploration of their influence on in-platform dynamics, measured through engagement metrics such as likes, shares, and comments, remains intriguingly scarce [33,34], leaving a critical gap in understanding the full potential of SMMAs.

Drawing on the above, this study aims to examine the influence of SMMAs on brand attachment and the effect of brand attachment on loyalty and consumer engagement with

brands' social media. To do so, a Stimulus–Organism–Response (S-O-R) framework and attachment theory were employed as underpinning theories. A cross-sectional study was conducted by collecting data from consumers of a fitness and sportswear brand in Algeria. The present study makes two key theoretical contributions. First, examining the dimensions of SMMAs individually highlights the unique role of each activity (i.e., interactivity, informativeness, personalization, trendiness, and word-of-mouth) in shaping brand attachment. Second, it extends prior research by demonstrating that brand attachment not only influences loyalty but also drives consumer engagement with brand social media, offering a broader understanding of the behavioral consequences of attachment.

Table 1. Overview of literature on the effects of SMMAs on brand affection.

Study	SMMAs Hierarchy	Brand Affection (Emotional Construct)	Context/Theory	Findings
[16]	Higher-Order Constructs	Brand love (no direct effect)	• No specific brand in Jordan • No theory	The findings show that SMM activities positively influence self-expressive brands, thereby enhancing brand love and ultimately boosting brand loyalty.
[35]	One dimension: Social Media Interactivity	Emotional attachment (no direct effect)	• Travel-related platforms in the US • No theory	The findings demonstrate that social media interactivity positively influences brand image, which in turn positively affects emotional attachment.
[19]	Higher-Order Constructs	Brand love	• No specific industry in China • S-O-R	The findings revealed that SMMAs positively impact brand experience, brand love, and brand equity. Furthermore, brand experience positively affects brand love and brand equity.
[15]	Overall SMMAs: aggregated measures	Brand attachment	• Martial arts in China • No theory	The outcomes support the conclusion that SMMAs positively affect attitudes, social norms, and attachment toward martial arts, which, in turn, strengthen the intention to participate.
[22]	Higher-Order Constructs	Brand love	• Retailing in Norway • Cognitive appraisal theory and attachment theory	The study revealed that SMMA influences store love, which, in turn, affects store loyalty, with store love acting as a mediator between SMMA and store loyalty.
[20]	Higher-Order Constructs	Lovemark	• Luxury fashion industry in Qatar • Lovemark theory, S-D logic Theory, and brand equity theory.	The findings indicate that SMMAs positively impact community engagement and lovemark but do not directly enhance brand loyalty. However, the effect of SMMAs on brand loyalty is mediated through community engagement and lovemark.

Table 1. *Cont.*

Study	SMMAs Hierarchy	Brand Affection (Emotional Construct)	Context/Theory	Findings
[21]	Higher-Order Constructs	Brand love	• Domestic brand in Indonesia. • Associative-network memory theory	Engaging in social media marketing activities strongly increases brand love among young consumers, with brand awareness and brand image amplifying this effect.
[9]	Lower-Order Constructs	Brand love	• Fashion clothing in Pakistan • S-O-R	The findings show that SMMAs enhance brand love, which drives behavioral engagement. Entertainment, trendiness, customization, and word of mouth significantly influence brand love, with gender moderating the effects of customization (stronger for females) and word of mouth (stronger for males).
The current study	Lower-Order Constructs	Brand attachment	• Brand of the outdoor and sports store in Algeria • S-O-R and attachment theory	The results unveiled that each SMMAs dimension positively impacts brand attachment. Furthermore, brand attachment positively affects brand loyalty and consumer engagement with the brand's social media page.

2. Literature Review

2.1. Theoretical Background

2.1.1. Perceived Social Media Marketing Activities

Social media is an Internet-based platform that enables the creation and exchange of user-generated content in various formats, including text, images, and videos [36,37]. This technology has fundamentally enhanced firm–consumer interactions and transformed the marketing landscape, as social media platforms serve as sales channels, institutional and brand communication tools, sources of market intelligence, and instruments for relationship management [38–40]. Social media marketing for communication purposes entails activities that involve creating and delivering online brand messages while engaging with followers across the brand's social media portfolio to build brand value and maintain consumer-brand relationships [7,29]. Rather than an isolated activity, this tool serves as a key component of a comprehensive, holistic communication strategy [5]. While grounded in traditional marketing communication principles, social media marketing introduces distinct capabilities. It transforms the consumer experience by driving active interaction and information sharing, providing personalized buying suggestions, and sparking organic peer-to-peer discussions regarding both existing and new offerings [10,41].

Several frameworks have been developed to measure social media marketing activities (SMMAs). The most widely adopted scale is that of Kim and Ko [42], which includes five dimensions: entertainment, interaction, trendiness, customization, and word-of-mouth. This framework originates from Kim's master's thesis and has been extensively validated in subsequent studies. A second framework, proposed by Yadav and Rahman [41], also conceptualizes SMMAs through five dimensions: informativeness, trendiness, interactivity, personalization, and word-of-mouth. Although both models capture similar constructs,

they differ in one key dimension: entertainment in the Kim and Ko scale versus informativeness in the Yadav and Rahman scale. These contextual differences reflect variations in which luxury and experience-driven consumption emphasize entertainment, while e-commerce contexts prioritize information utility for decision-making. In addition to conceptual differences, the frameworks also vary in their methodological development. The Kim and Ko [42] scale is the most widely used, although its original measurement development process is not fully detailed. In contrast, Yadav and Rahman [41] follow a more explicit scale development procedure grounded in empirical testing. A third, less frequently used framework, by Chang et al. (2015), focuses on argument quality, post popularity, and post attractiveness, emphasizing the persuasive characteristics of social media content as drivers of favorable responses [33]. Thus, the current study adopts the second framework to measure SMMAs, as it offers a more comprehensive dimensional structure and a more rigorous methodological development.

2.1.2. S-O-R Framework

To explain how SMMAs influence brand outcomes, prior studies have drawn on several theoretical perspectives, primarily the Stimulus–Organism–Response (S-O-R) framework, the Uses and Gratifications Theory (UGT), and the Social Exchange Theory (SET). The S-O-R framework has a strong ability to capture the process through which external stimuli (SMMAs) influence internal states (Organism) and subsequent behavioral responses (Response) [9,43]. In comparison, the UGT has been adopted in SMMAs' studies, primarily focused on understanding user motivations for engaging with SMMAs, such as information seeking, entertainment, and social interactions [44]. While UGT is valuable for explaining drives for media use, it primarily adopts a consumer-centric (users' needs) rather than a brand-oriented (communication needs) perspective. Thus, brands had better begin by examining users' underlying motivations and subsequently inform the design of SMMAs that align with their expectations and preferences. The SET explains the effects of SMMAs through the lens of cost–benefit analyses in social interactions. Brands and users exchange value, fostering satisfaction and relationship-building [45]. However, it provides limited insight into consumer benefits and into how reciprocity is operationalized in social media marketing contexts. This issue is also common in the field of human-interaction technology research [46]. These frameworks can collectively provide complementary explanations, ranging from internal psychological processes (S-O-R) to user motivations (UGT) to social interactions (SET). Given that the S-O-R framework remains the predominant framework, and its ability to capture multiple stimuli while explaining not only the effects of SMMAs but also the internal organismic processing that leads to responses [9,43,47], this framework is adopted in the current study.

The S-O-R framework, developed in environmental psychology, is widely applied across contexts to understand the complex decision-making process, moving beyond stimulus–response explanations. In the context of SMMAs, S-O-R was adopted to suggest that perceived brand social media content and interaction activities act as marketing stimuli that elicit consumers' psychological states, which in turn yield specific consumer behaviors [9,31,47].

The perceived characteristics of social media marketing act as external environmental stimuli for consumers under the brand's control, thereby constituting firm-generated content. Drawing on the S-O-R framework, the literature demonstrates that SMMAs, as stimuli, evoke a variety of internal consumer states, fostering important belief and evaluative components such as brand awareness, brand image, satisfaction, trust, experience, and perceived value [11,12,31,41]. These prior studies have explored how these internal psychological mechanisms account for individual behavioral outcomes, including purchase

and repurchase behavior, participation intention, word-of-mouth, willingness to pay a premium price, and brand loyalty [11,12,41,47]. In addition to cognitive evaluations, SMMAs stimulate the affective components of the brand, with prior research emphasizing emotional constructs, particularly brand love, as an important organism-level outcome [9,19,22,31].

To extend the understanding of affective responses to SMMAs, this research positions brand attachment as the focal construct, as it is broader and more influential than brand love [23,24]. Emotional attachment to a brand is an internal psychological state manifested through consumers' emotional bonds with the brand [26]. Prior research underscores that external information and digital communications have an important role in nurturing such brand attachment [35,48].

For responses, the present study incorporates two significant responses: brand loyalty and consumer engagement with brand social media (CEBSM). Brand loyalty has been widely considered a central marketing endeavor for long-term customer relationships [49,50], and is the ultimate objective for brands in engaging with SMMAs [51]. Although previous studies have extensively examined brand-related responses, including purchase and repurchase intentions, loyalty, brand engagement, and willingness to pay [9,11,12,43,49], there has been limited attention to outcomes associated with the social media platform itself. This study, therefore, explores the role of brand attachment in promoting consumers' page engagement, operationalized via CEBSM, which captures consumer behaviors on brand social media pages, including liking, sharing, and commenting [52,53]. To bridge these gaps, this study adopts the S-O-R framework to reveal the nuanced dynamics of SMMAs' (S) influence on brand attachment (O) and the effect of brand attachment on brand loyalty and CEBSM (R).

2.1.3. Attachment Theory

Drawing on attachment theory, this study defines brand attachment and conceptualizes its effect on brand loyalty and CEBSM. Attachment theory defines attachment as a sustained psychological connection between an individual and an object [54]. This theory is the most widely employed to underpin brand attachment in research models in the brand management literature [55]. This theory posits that the attached brand is regarded as irreplaceable [25] and individuals who form strong emotional bonds with a brand tend to exhibit specific behaviors, including proximity maintenance, separation distress, and emotional security [56]. Such a connection fundamentally outlines the individual's evolving self-concept and their broader social perspective [55]. Brand attachment emerges when consumers develop specific positive emotions such as passion, connection, and affection [56]. The theoretical basis for brand attachment research remains relatively narrow, drawing primarily on the foundational principles of attachment theory proposed by Lacœuilhe [26] and Thomson et al. [56]. In this research, brand attachment is "a psychological construct that reflects a lasting and enduring affective relationship with the brand, where separation is experienced as painful, and denotes a state of psychological closeness to the brand" [26]. Because emotional attachment makes it uncomfortable for consumers to distance themselves from a brand, maintaining loyalty and engagement with the brand's social media platforms functions as a strategy to position the brand as a source of security and a means to maintain closeness.

2.2. Conceptual Framework

The conceptual framework integrating all study variables is presented in Figure 1.

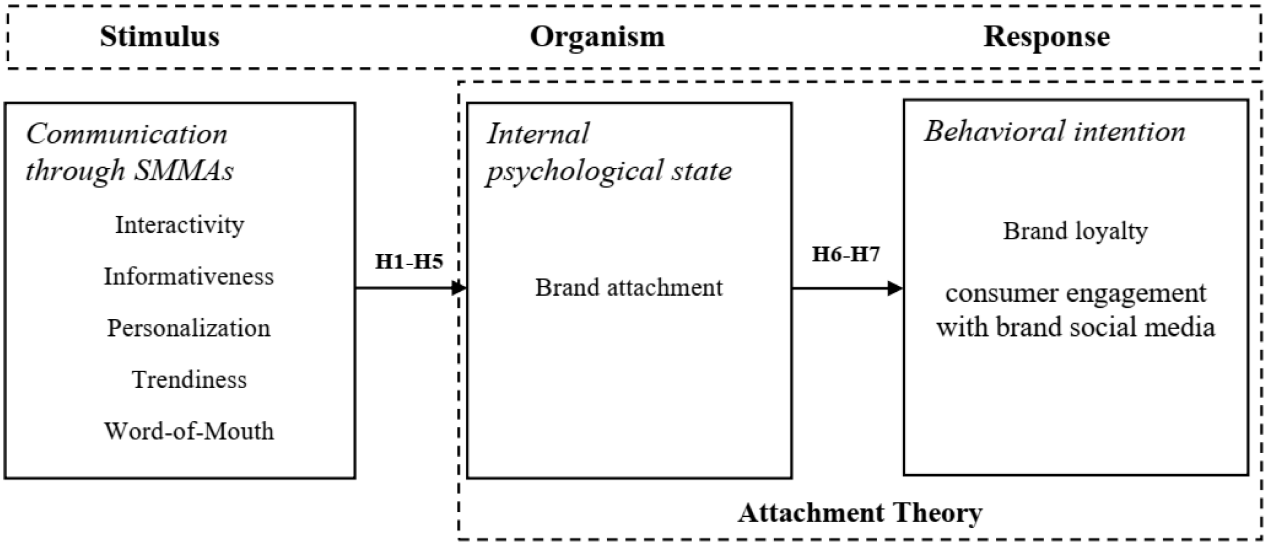

Figure 1. Conceptual model.

2.2.1. Interactivity and Brand Attachment

Interactivity is a prevalent feature of social media platforms that seamlessly facilitates two-way communication, serving as a cornerstone of the modern digital landscape [7]. These interactions nurture the brand–consumer relationship across cognitive, affective, and behavioral dimensions [11,57]. Interactivity in online brand communities is an effective way for brands to listen to consumers, address their concerns, and enable them to engage with and support one another. These advantages fulfill their needs, foster a sense of closeness and emotional bonds, and culminate in strong brand attachment [28,35,58]. Hence, we suggest that increased social media interaction between the consumer and the brand is likely to cultivate a stronger affective attachment with the brand. Therefore, we suggest that:

H1. *Interactivity within SMMAs is positively associated with brand attachment.*

2.2.2. Informativeness and Brand Attachment

Informativeness in brand social media refers to information accuracy, usefulness, comprehensiveness, timeliness, and clarity, among other important information quality (IQ) traits. In the absence of high-quality information on social media content, customers are unable to sustain the relationship due to diminished trust and credibility [59,60]. Studies in brand management argued that marketing initiatives, known for bolstering brand knowledge, can also elicit consumer emotions through brand-related information [61]. When consumers observe a brand actively disseminating insightful content on social media, they develop informed evaluations of relevant topics, which not only shape their choices but also strengthen their emotional affinity [40] and deepen brand love and attachment [19,35]. According to the SO-R framework, favorable stimuli eventually evoke and support an individual's favorable affective appraisal. Therefore, we suggest that:

H2. *Informativeness within SMMAs is positively associated with brand attachment.*

2.2.3. Personalization and Brand Attachment

Unlike traditional media, social media marketing campaigns should satisfy consumers' needs, whether by fostering connections, supporting self-expression, or offering enjoyable content [62]. Brands use social media portfolios to personalize content and services because personalization fosters consumer intimacy and enhances trust, both of which are precursors

to long-term brand relationships [42]. It is confirmed that perceived personalization in social media activities increases the perceived personal relevance aligned with brand messages, thereby strengthening self-brand connections [63], a determinant of brand attachment [24]. Personalized ads on Facebook, based on consumer preferences, foster brand attachment by fostering emotional connections and encouraging involvement [64]. Thus, this study posits that brands can strengthen consumer-brand affection by personalizing meaningful content that resonates with their target consumers.

H3. *Personalization within SMMAs is positively associated with brand attachment.*

2.2.4. Trendiness and Brand Attachment

Social media platforms empower brands to share content frequently, offering real-time updates on brand events and information in an engaging, modern style [65]. Users consistently look for new and relevant information that resonates with their interests [5]. Previous studies demonstrated that those properties of SMMAs, including trendiness, positively impact brand attachment [15], brand love [16,19], and purchase intentions [31]. This research argues that when brands deliver the newest content, consumers feel understood and evoke positive internal states, such as excitement and perceived relevance, which solidify emotional connection to the brand. Hence, we postulate that:

H4. *Trendiness within SMMAs is positively associated with brand attachment.*

2.2.5. WOM and Brand Attachment

Word of mouth (WOM) is an informal form of online and offline communication among consumers about a brand. WOM activity is perceived as significantly more trustworthy than marketer-controlled sources across all conventional promotional channels [66]. Social media platforms are an excellent online channel for users and firms to disseminate information on relevant topics [59]. Empirical investigations confirm that SMMAs, including word-of-mouth, positively influence brand attachment and brand love [15,20,22]. The effect is plausible because experiences conveyed through word-of-mouth trigger emotions, and attachment is formed through the social influence of the referred group [67]. Thus, word-of-mouth about SMMA elicits emotional reactions, forging a profound and lasting connection with the brand, such as brand attachment.

H5. *WOM within SMMAs is positively associated with brand attachment.*

2.2.6. Brand Attachment and Brand Loyalty

Cultivating a committed consumer base ensures brands an ultimate advantage, safeguarding their commercial prosperity. This is because loyal consumers become brand ambassadors, while retaining existing consumers is substantially more cost-effective than continually acquiring new ones [50]. One effective strategy for cultivating strong attitudinal and behavioral loyalty is to strengthen the foundational dimensions of brand attachment [55]. An abundance of studies demonstrated that consumers' attachment to a brand enhances loyalty behavior [22,26,27,68]. The link is evident as a strong brand emotional attachment captivates consumers and makes separation emotionally challenging. Thus, the need to maintain psychological closeness leads consumers to continually purchase the involved brand, even at the expense of their resources [26,56,69]. Hence, we hypothesize that:

H6. *Brand attachment is positively associated with brand loyalty.*

2.2.7. Brand Attachment and Consumer Engagement with Brand Social Media

Based on a comprehensive systematic review, consumer engagement on brand social media (CEBSM) is presented as a set of quantifiable actions that capture consumers' engagement with brand-generated content, notably liking, sharing, commenting, and posting activities [52]. How and to what extent consumers engage with brand social media pages are useful measures to evaluate the effectiveness of social media marketing campaigns [7]. Although the effects of brand attachment on brand outcomes are well documented, its influence on customer interaction with brand social media and digital platforms remains underexplored [20,33,34]. For instance, it has been demonstrated that brand attachment and brand attitudes influence both online and offline recommendations, with brand attachment having a greater predictive effect on social media recommendations than on offline recommendations [70]. A systematic review highlights that brand factors, such as brand attitude and brand warmth, are likely to engage consumers on the brand's social media [52]. In the tourism context, studies reveal a significant relationship between social media engagement and brand attachment, where emotionally attached consumers express their identity and engage with the brand beyond mere purchase behavior [28]. As an affective component, brand love enhances consumer behavioral intention, such as recommending, posting, and sharing brand information [9].

H7. *Brand attachment is positively associated with consumer engagement with brand social media.*

3. Methodology

The context in which the study was conducted profoundly impacts the interpretation of the findings. Individual interviews with 17 Master's students in service marketing at Blida 2 university were conducted to identify brands suitable for examining emotional attachment in the context of social media marketing. Frequency analysis of brands mentioned revealed several with active social media presence, with Decathlon ranking third, while the top two were international luxury brands not officially marketed in Algeria. Thus, the current investigation focuses on Decathlon's brand. This international brand produces and distributes sportswear and fitness apparel for various sports worldwide. Notably, while the role of SMMAs has been studied across many contexts, such as e-commerce and luxury brands, sports brands have received less attention [68]. This industry warrants investigation due to persistent challenges in building customer loyalty. Firms invest heavily in loyalty programs because these programs offer symbolic value tied to consumers' identities and athletic lifestyles. Both athletes and teams purchase and consume sport brands to express self-identity, a dynamic that marketers leverage to cultivate emotionally connected, community-driven brands balanced on quality of life-style [71]. In 2024, Decathlon El Djazair has more than 235,000 followers, ranking among the largest Decathlon pages worldwide, surpassing those of Italy, India, and the UK, though not France, which exceeds half a million followers as the retailing brand's country of origin.

To test the conceptual model, a survey-based study was conducted targeting a fitness and sportswear brand. A survey instrument was used to gauge consumer perceptions, emotions, and responses to the brand and its social media page. The questionnaire introduction presents the researcher's affiliation, study objectives, response instructions, and assurances regarding non-commercial data use, anonymity, voluntary participation, scientific purpose, and the right to withdraw at any time.

The next section includes items measuring the constructs of the research model (Appendix A). The study used 15 items to measure SMMAs, adapted from Yadav Rahman [41].

Interactivity: this construct refers to the extent to which brand social media platforms allow customers to share content and exchange opinions with the company and other consumers [41]. This construct was assessed utilizing three items. A sample item is "Brand's social media allows me to share and update the existing content".

Informativeness: this construct captures the degree to which brand social media provides accurate, useful, and comprehensive information [41]. Informativeness was assessed utilizing three items. A sample item is: "Brand's social media offers useful information."

Personalization: this construct reflects the extent to which brand social media offers tailored services to meet individual customer preferences [41]. The construct was assessed utilizing three items. A sample item is: "I feel my needs are met by using Brand's social media."

Trendiness: this construct indicates the degree to which a brand's social media features current, up-to-date content [41]. Trendiness was assessed utilizing three items. A sample item is: "Using Brand's social media is really trendy."

Word-of-mouth: WOM represents the extent to which customers recommend and share their experiences about the brand on social media [41]. This construct was assessed utilizing three items. A sample item is: "I would recommend my friends to visit Brand's social media."

Brand attachment: Attachment to a brand is a psychological construct that reflects a lasting, enduring affective relationship with the brand, in which separation is experienced as painful and denotes a state of psychological closeness to the brand. This construct was assessed using five measures developed by Lacœuilhe [26]. A sample item is "I am very attracted to Brand".

Brand loyalty: This construct is defined as the tendency to be loyal to a focal brand, as demonstrated by the intention to purchase it as a primary choice. This construct was assessed utilizing three measures adopted from Yoo and Donthu [49]. A sample item is "I consider myself to be loyal to Brand."

CEBSM: this construct is operationalized as a set of measurable actions that consumers take on social media in response to brand-related content: reacting (e.g., likes, hearts), commenting, sharing, and posting [52]. Following similar studies [33,72,73], rather than measuring actual behavior, the items used in the investigation capture the behavioral intention of consumers' positive interaction with brand social media [73]. A sample item is "I react to Brand content on social media."

All Items were rated on a Likert scale from (1) "strongly disagree" to (7) "strongly agree." The last section presents a demographic profile.

The questionnaire was administered online via Google Forms to followers of Instagram accounts for the targeted fitness and sportswear brand. A benchmark sample size of 384 respondents is commonly recommended to obtain statistically reliable results. After inviting followers of the selected brand page at their convenience for 1 month, a total of 523 responses were received. After the data screening, 502 responses were deemed ample for analysis. Due to the lack of a comprehensive consumer sampling frame, this study implemented several measures to reduce bias. In particular, the precautions balancing practicability and reliability suggested by Memon et al. (2025) were adopted, including clear survey instructions, anonymity assurance, a pre-test to ensure the clarity and relevance of the measurement items, and screening questions to evaluate the representativeness of the participants [74].

Table 2 presents the demographic and behavioral characteristics of the participants. The gender distribution is nearly balanced, with females accounting for 51.2% (n = 257). Most participants are aged 20–30 years (41.1%), followed by those aged 30–40 years (36.4%). Educational attainment is relatively high, with 63.1% holding a university degree. The

largest income group earns between USD 251–350 (46.7%), followed by USD 100–250 (27.9%), indicating a predominance of middle-income respondents. Instagram usage is predominantly daily (91.4%), with only 8.6% reporting occasional usage. Regarding annual brand purchase frequency, most respondents report a moderate level (3–6 purchases; 47.8%), followed by high frequency (7 or more purchases; 34.5%).

Table 2. Demographic and behavioral characteristics of participants.

	Groups	n	%
Gender	Male	245	48.8
	Female	257	51.2
Age	<20	97	19.4
	20–30	206	41.1
	30–40	183	36.4
	>40	16	3.1
Educational level	Graduated	317	63.1
	Did not graduate	185	36.9
Income	>100 USD	94	18.8
	100–250 USD	139	27.9
	251–350 USD	235	46.7
	351–450 USD	25	4.9
	>450 USD	9	1.8
Instagram usage	Daily	459	91.4
	Occasionally	43	8.6
Brand purchase frequency	Low (1–2 times a year)	89	17.7
	Moderate (3–6 times a year)	240	47.8
	High (7 or more a year)	173	34.5

Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed to test the research model. This statistical approach is commonly applied in social media marketing and brand constructs [4,68] since it enables simultaneous estimation of complex relationships and assessment of the model's robustness before drawing final conclusions [75]. SmartPLS 4 was used to calculate correlations, path coefficients, and the model's statistical significance.

4. Findings

4.1. Common Method Bias

When data for both independent and dependent variables are collected from a single source, particularly through self-assessment, the risk of common method bias (CMB) increases. Therefore, it is necessary to ensure that the data are not affected by this issue. As reported in Table 3, the variance inflation factor (VIF) values for all relationships do not exceed the recommended threshold of 3.3, indicating that CMB is unlikely to be a concern. In addition, Harman's one-factor test, conducted using principal component analysis in SPSS 26, reveals that a single factor accounts for only 43.25% of the total variance, which is below the critical 50% threshold. Together, these metrics ascertain that the collected data are not affected by CMB.

Table 3. Collinearity statistics (VIF)—Inner model.

Association	VIF
INTRA -> BA	2.327
INFO -> BA	2.206
PRS -> BA	2.431
TRD -> BA	2.304
WOM -> BA	2.963
BA -> BL	1.000
BA -> CEBSM	1.000

4.2. Measurement Model Assessment

To ensure that measurements are free from anomalies, the measurement model's adequacy was assessed according to the guidelines established by Sarstedt et al. [75]. After excluding the fourth item from the CESMB, the remaining indicators satisfactorily explained the latent variable (outer loadings > 0.708). Internal consistency was deemed acceptable, with Cronbach's alpha and composite reliability (CR) values exceeding the recommended limit (>0.70). Since the values of Average Variance Extracted (AVE) were above the threshold (>0.50), convergent validity of constructs was confirmed (Table 4).

Table 4. Construct reliability and validity.

Construct	Label	Outer Loadings	Cronbach's Alpha	CR	AVE
Brand Attachment	BA1	0.846	0.881	0.913	0.679
	BA2	0.898			
	BA3	0.862			
	BA4	0.795			
	BA5	0.706			
Brand Loyalty	BL1	0.795	0.793	0.877	0.705
	BL2	0.870			
	BL3	0.852			
Consumer Engagement in Brand social media	CEBSM1	0.897	0.839	0.902	0.756
	CEBSM2	0.933			
	CEBSM3	0.770			
Informativeness	INFO1	0.887	0.858	0.913	0.779
	INFO2	0.913			
	INFO3	0.846			
Interactivity	INTRA1	0.917	0.884	0.929	0.813
	INTRA2	0.936			
	INTRA3	0.850			
Personalization	PRS1	0.871	0.788	0.876	0.702
	PRS2	0.806			
	PRS3	0.836			
Trendiness	TRD1	0.875	0.871	0.920	0.794
	TRD2	0.900			
	TRD3	0.897			

Table 4. *Cont.*

Construct	Label	Outer Loadings	Cronbach's Alpha	CR	AVE
WOM	WOM1	0.926	0.932	0.957	0.881
	WOM2	0.947			
	WOM3	0.943			

The outcomes in Table 5 indicate positive associations among the proposed constructs, warranting further examination of the hypothesized causal relationships. The outcomes support the Fornell–Larcker criterion for discriminant validity. The square roots of the AVE for each construct (bolded on the on-diagonal) surpass the inter-construct correlations (the off-diagonal). For example, the square root of the AVE for brand attachment (AVE = 0.824) is higher than its correlations with other constructs, such as brand loyalty (r = 0.427) and consumer engagement (r = 0.527). The overall robustness of convergent validity was asserted by the Heterotrait–Monotrait (HTMT) ratio. As shown in Table 5, the constructs exhibit acceptable discriminant validity as all HTMT values fall below 0.85 [76]. These outcomes highlight that all items and constructs maintained tolerable reliability and validity.

Table 5. Discriminant validity.

Fornell and Larcker Criterion	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1. Brand Attachment	**0.824**							
2. Brand Loyalty	0.427	**0.840**						
3. CEBSM	0.527	0.472	**0.869**					
4. Informativeness	0.762	0.316	0.414	**0.883**				
5. Interactivity	0.671	0.523	0.702	0.520	**0.902**			
6. Personalization	0.659	0.303	0.383	0.667	0.479	**0.838**		
7. Trendiness	0.627	0.446	0.638	0.497	0.723	0.459	**0.891**	
8. WOM	0.730	0.350	0.434	0.687	0.587	0.733	0.591	**0.939**
HTMT	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1. Brand Attachment								
2. Brand Loyalty	0.501							
3. CEBSM	0.593	0.561						
4. Informativeness	0.847	0.370	0.477					
5. Interactivity	0.749	0.609	0.802	0.597				
6. Personalization	0.789	0.370	0.453	0.809	0.572			
7. Trendiness	0.703	0.531	0.735	0.571	0.820	0.550		
8. WOM	0.797	0.399	0.484	0.768	0.647	0.856	0.654	

4.3. Structural Model Assessment

The relevance of the association is assessed using path coefficients, and their statistical significance is assessed via a bootstrapping procedure. The analyses shown in Table 6 reveal that interactivity (β = 0.230; p = 0.000), informativeness (β = 0.393; p = 0.000), personalization (β = 0.099; p = 0.010), trendiness (β = 0.110; p = 0.006), and WOM (β = 0.187; p = 0.000) are positively and significantly associated with brand attachment, affirming H1, H2, H3, H4, and H5. Furthermore, the influence of brand attachment on brand loyalty

(β = 0.427; p = 0.000) and consumer engagement in brand social media (β = 0.527; p = 0.000) is positive and significant, supporting H6 and H7 (Figure 2).

Table 6. Hypotheses testing.

	Path Coefficient	T Statistic	p-Values	Confidence Intervals		f^2	Decision
				5%	95%		
H1. INTRA -> BA	0.230	5.253	0.000	0.160	0.305	0.082	Accepted
H2. INFO -> BA	0.393	9.873	0.000	0.328	0.459	0.254	Accepted
H3. PRS -> BA	0.099	2.319	0.010	0.028	0.173	0.015	Accepted
H4.TRD -> BA	0.110	2.486	0.006	0.036	0.179	0.019	Accepted
H5. WOM -> BA	0.187	4.079	0.000	0.113	0.263	0.043	Accepted
H6. BA -> BL	0.427	11.374	0.000	0.366	0.490	0.223	Accepted
H7. BA -> CEBSM	0.527	16.718	0.000	0.476	0.578	0.384	Accepted

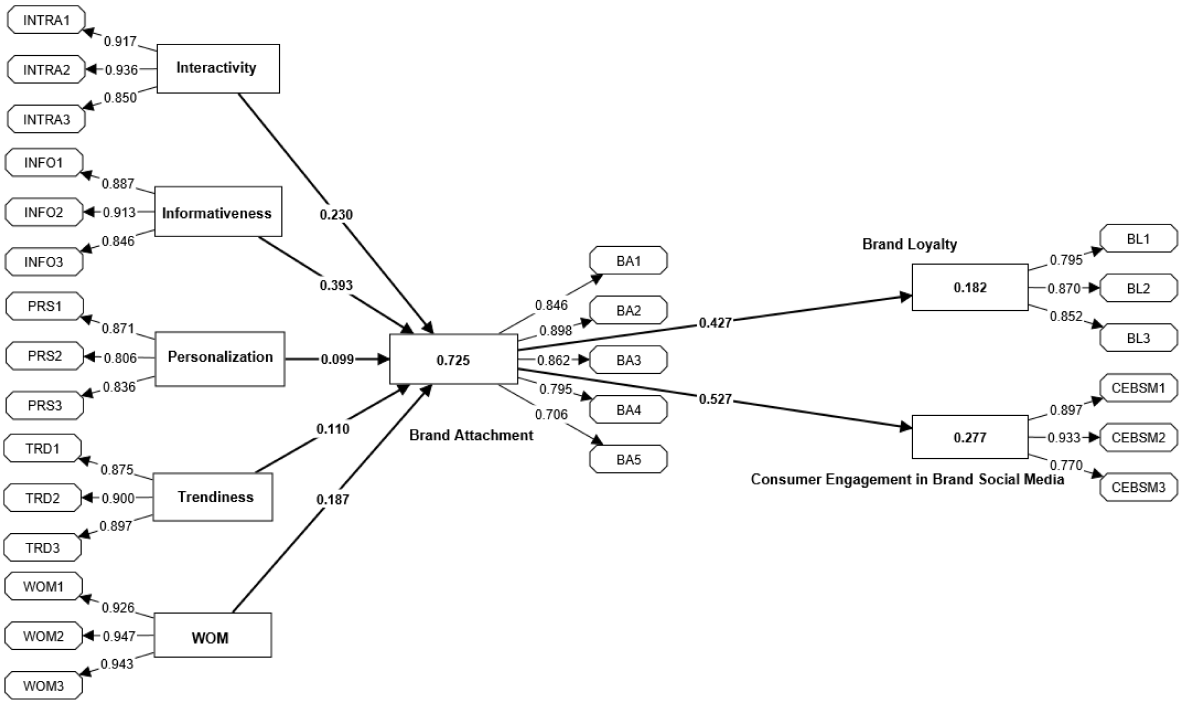

Figure 2. Tested the conceptual model.

For structural model evaluation, the collinearity diagnostics indicate that none of the latent variable associations are affected by multicollinearity concerns, as all Variance Inflation Factor (VIF) values fall below the recommended threshold (<3.3). The f^2 outcomes reveal small to moderate effect sizes (Table 6). Particularly, the size effect of H7 considered large (>0.35), the size effect of H2 and H6 considered medium (>0.15), the size effect of H1, H3, H4, H5, and H6 considered small (<0.15).

The R^2 values demonstrate satisfactory explanatory power (Table 7). In particular, brand attachment demonstrates strong explanatory power in SMMAs (72.5%). Brand attachment demonstrates a moderate explanatory power for brand loyalty (18.2%) and CEBSM (27.7%). The Q^2 values for PLSpredict exceed zero; the model demonstrates out-of-sample predictive capability.

Table 7. Explanatory and predictive power.

	R-Square	Q^2_Predict
Brand Attachment	0.725	0.715
Brand Loyalty	0.182	0.196
CEBSM	0.277	0.336

4.4. Control Variables

Age, gender, education, and income were included as control variables across all endogenous constructs in the model, including attachment, loyalty, and CEBSM. This approach was adopted to account for potential demographic influences on each outcome variable and to ensure robust results [77]. The data analysis indicates that most control variables did not meaningfully impact the endogenous constructs. However, gender and income levels directly influenced how loyalty is expressed (Table 8). In particular, the data reveal that gender is negatively associated with brand loyalty (β = −0.141, $p = 0.040$). This suggests that female participants (coded "1") exhibit higher loyalty than male participants (coded "0"). Moreover, a significant positive relationship exists between financial status (income level) and brand loyalty (β = 0.110, $p = 0.007$), suggesting that participants with higher income levels exhibit stronger brand loyalty. However, the effect size analysis of the control variables indicates that the practical contribution of demographic factors to all endogenous constructs in the model is negligible, as their effect sizes do not exceed 2% ($f^2 < 0.02$). In other words, the inclusion of these control variables does not meaningfully improve the model's explanatory power, as the coefficient of determination (R^2) remains unchanged. Thus, these findings ensure comparability across the sample and rule out the possibility that the outcomes are attributable to differences in demographic characteristics.

Table 8. Control variables analysis.

Control Variables	β	STDEV	T Statistics	*p* Values	f^2	Decision
Age -> Brand Attachment	−0.001	0.026	0.027	0.489	0.000	Negligible
Age -> Brand Loyalty	0.064	0.048	1.328	0.092	0.004	Negligible
Age -> CEBSM	0.000	0.042	0.003	0.499	0.000	Negligible
Education -> Brand Attachment	−0.047	0.222	0.209	0.417	0.000	Negligible
Education -> Brand Loyalty	0.506	0.377	1.344	0.089	0.006	Negligible
Education -> CEBSM	−0.319	0.453	0.705	0.240	0.002	Negligible
Gender -> Brand Attachment	−0.038	0.049	0.787	0.216	0.001	Negligible
Gender -> Brand Loyalty	−0.141	0.081	1.752	0.040	0.006	Negligible
Gender -> CEBSM	0.019	0.080	0.234	0.407	0.000	Negligible
Income -> Brand Attachment	−0.019	0.024	0.760	0.223	0.001	Negligible
Income -> Brand Loyalty	0.110	0.045	2.439	0.007	0.014	Negligible
Income -> CEBSM	−0.005	0.041	0.119	0.453	0.000	Negligible

5. Discussion

This study aims to explore the contribution of SMMAs to brand attachment formation and to examine the extent to which brand attachment translates into brand loyalty and enhances engagement intention with the brand's social media channels. The S-O-R framework and Attachment Theory served as underpinning theories for the conceptual model. Tested among consumers of Decathlon outdoor and sports stores in Algeria, the analysis supports all proposed hypotheses.

The findings reveal that individuals' perceived activities of social media marketing are positively associated with brand attachment. In particular, the perceived activity of

interaction on brand social media nurtures consumers' emotional bond with the brand. These outcomes resonate with prior investigation, suggesting that the consumer-brand interactions on social media facilitate listening and develop closeness to the brand [28,35,58]. Interaction is a core feature of social media and the strategic element brands use to implement a social media portfolio. Developing capabilities related to maintaining favorable interactions is one of the main endeavors in modern digital marketing [4,53].

Furthermore, the findings indicate that informativeness is positively associated with brand attachment. Thus, the present research asserted that the quality inherent to information posted by the brand on social media is closely linked to the development of a strong emotional state. According to the S-O-R framework and Information Quality Model, the brand-related information is a constituent of the external environment that can form not only the consumers' beliefs and evaluation but also evokes consumers' affection toward the brand [19,59,61]. Therefore, it is inconceivable that favorable feelings could develop towards a brand that disseminates inaccurate and misleading content.

In addition, the findings demonstrate a positive association between perceived social media personalization and brand attachment. This implies that consumers are more likely to form a positive emotional bond with a brand when they experience a stimulus that offers high levels of tailored services and information. Personalization in social media marketing campaigns encourages consumers to express themselves [62,63]; this is because the content is relevant and aligned with their interests and preferences [64].

The findings demonstrate that trendiness is a significant contributor to brand attachment formation. This indicates that consumers are more inclined to develop strong emotional bonds with a brand whose social media content provides frequent updates, a trendy style, and events. This outcome is corroborated by prior studies, which have found that delivering the latest content on brand social media pages is linked to brand love [16,19] and attachment [15]. Moreover, the WOM activity on brand social media platforms is positively associated with brand attachment. This suggests that consumers' confidence, emotions, and feelings can be influenced through engagement in a social process that involves the open exchange of information and experiences about brands on social media platforms [59,67]. Therefore, this social process represents a fundamental feature underlying the rise of social networking sites and should not be overlooked [78]. Marketers can leverage this dynamic by applying traditional word-of-mouth management principles, while also considering the unique characteristics of this channel, such as immediacy, impact, and reach [7].

Additionally, the findings ascertain that brand attachment is a strong antecedent of brand loyalty. This relationship has been observed in brand management and consumer relationship literature [26,27,55]. Building on attachment theory, the accumulated evidence indicates that emotional attachment to a brand elicits favorable consumer responses and encourages loyalty-related behaviors, as separation from the brand is typically perceived as distressing and uncomfortable.

Moreover, the brand attachment construct was found to be a significant determinant of CEBSM. This suggests that a stronger emotional bond with a brand drives consumers to engage more intensively with it on brand-related social media platforms. This particular in-platform outcome aligns with prior research exploring why users engage with brand social media, which suggests that brand-related emotions, such as attachment, can be a meaningful influencing factor [52,79]. Attachment theory supports this relationship by suggesting that consumers with stronger passion and affective ties to a brand are more likely to invest their time and resources in actively advocating the brand [24,26,56,80]. Thus, the inclination to engage on brand social media arises because it provides a natural avenue for consumers to express themselves and convey their strong feelings and emotional bond

to the brand [81]. Nevertheless, the relationship between loyalty and CEBSM was not examined in this study. In contrast, it represents an important extension for understanding social media outcomes. Future research could examine the bidirectional link between brand loyalty and active consumer engagement with brand social media platforms.

5.1. Theoretical Contributions

The study's findings provide incremental theoretical contributions to the literature on social media marketing and brand management. First, this research offers fresh insight into the role of social media marketing, showing that SMMAs positively contribute to the formation and salience of brand attachment. While prior research associates SMMAs with attitudinal brand outcomes, such as brand equity and satisfaction, this study extends the outcomes to brand emotional ties. Although existing literature has advanced the understanding of the impact of SMMAs on consumers' affective responses, primarily through the lens of brand love [9,16,20], the role of brand attachment in this context has remained largely underexamined. Adopting the S-O-R framework, this study addresses this research need and provides a deeper understanding of how brand communication influences the formation of brand attachment [55,61].

Second, the present work conducts an in-depth analysis of the individual effects of each perceived activity in social media marketing. The finding shows that interactivity, informativeness, personalization, trendiness, and word-of-mouth make a practical contribution in explaining the brand attachment, albeit with varying strength (effect size). While prior research has frequently conceptualized social media marketing as a higher-order construct, aggregating multiple activities into a single abstract variable, this approach, though suitable for parsimonious models, does not unveil the relative importance of each activity [82]. As argued by Sohaib et al. [9], analyzing the individual contribution of each social media component provides a more nuanced understanding of how these components function, rather than merely forming a general overview.

The third theoretical hallmark of this study is its focus on both brand-related and platform-specific outcomes within the SMMA context. Specifically, the study's findings indicate that, in addition to brand loyalty, CEBSM (e.g., commenting and liking intended behavior) is particularly motivated by brand attachment as a brand-related factor. Consumer engagement on social media is a key marketing outcome [52,53,72], but the role of brand emotional state as a driver has been largely overlooked [20,33]. Drawing on attachment theory, the current study proposes that consumers with strong affective bonds to a brand are more likely to engage with the brand on social media. Their emotional attachment motivates them to advocate for the brand and participate in interactions that extend their sense of self into the social sphere.

5.2. Practical Implications

This study provides important evidence-based recommendations for brand managers and community managers seeking to enhance brand communication and management. Although the findings are drawn from an outdoor and sports brand, they can cautiously be applied to other industries and contexts to help foster and strengthen emotional attachment. First, the positive role of interactivity and WOM on brand social media indicates to community managers the necessity to provide consumers with opportunities for meaningful participation. For instance, brands can run social media competitions in which winners are determined by engagement behaviors such as sharing content, liking posts, commenting, or inviting others [53]. Such initiatives not only incentivize participation but also strengthen emotional attachment and foster greater consumer engagement with the brand. This is

because direct interaction creates a sense of closeness, demonstrating that the brand listens to consumer voices.

Second, the findings demonstrate that the ability to craft an engaging and well-written post is an essential factor in sustaining consumer affection momentum. Thus, social media content should possess at least three features: informative, personalized, and trendy. The quality of information formats (texts, pictures, and videos) should be evaluated for relevance, accuracy, and completeness before publication to ensure content that accurately conveys brand attachment. The content shared must resonate with the target audience by aligning with their interests and preferences. Tailored messaging that aligns with audience characteristics and needs reinforces brand perception and solidifies the consumer-centric orientation. Furthermore, the brand must regularly publish timely, trend-driven information about its offerings, market expectations, and its unique value proposition. Developing a convenient checklist to evaluate content before publication is essential to prevent distortion or misinterpretation that could negatively affect the consumer brand relationship.

Third, brand attachment was found to be a good precursor of consumer engagement on brand social media. Since brands need to strengthen their community [52], a brand should facilitate and encourage actions such as sharing experiences and making recommendations to enhance a sense of belonging and inspire other consumers. Community managers have to create and post content that reflects consumers' status, evokes nostalgia, and prompts passion, not only to nurture attachment but also to encourage active participation in the brand's community.

Fourth, the novelty of the current study lies in extending existing theory to a new empirical setting. Examining the role of SMMAs in an underexplored emerging-market context reinforces the external validity of existing theory while stressing the increasing convergence of consumer behavior in the digital era. While SMMAs-attachment responses are examined across contexts and predominantly in Asian settings (Table 1), our study extends the model to the Algerian context. It reveals that the proposed relationships remain comparable to those in other geographical and cultural contexts. Furthermore, the novelty of the current study lies in its focus on the outdoor and sportswear sector (Decathlon), offering a distinct lens on social media's role in this context. Outdoor and sportswear consumers internalize meanings of activity, health, and performance, while social media transmits these values, engaging users and reinforcing their perception of belonging to a sports-oriented community [83].

Overall, delivering both functional and symbolic value requires integrating capabilities across holistic and social media marketing strategies, particularly in targeting, content creation, social interaction, resource coordination, and performance monitoring. SMMAs are not isolated initiatives; they serve as effective digital assets that support and reinforce broader marketing objectives [4,5,8].

5.3. Limitations

Notwithstanding its contribution, this study is not without limitations. First, the investigation employs a cross-sectional design, with self-reported data gathered at a single point in time. Contemporary methods can capture the nuanced dynamics of complex phenomena, and longitudinal designs across multiple time points can reveal interactions among social media, consumer behavior, and brand dynamics [84]. Likewise, employing neuromarketing techniques to investigate stimulus effects on perception and emotion is valuable, since such methods minimize social desirability bias and enable more informed insights into consumer responses [85]. The absence of such a technical and temporal perspective in this research limits the ability to assess the strategic impact of SMMAs fully and constrains the robustness of the findings. Second, the study's contextualization

is limited to a single population and industry, which may limit the generalizability of its results to other contexts. Future studies may examine divergent product paradigms (e.g., low-affection versus high-affection products) and cultural orientations (e.g., risk-taking versus uncertainty avoidance) to identify adapted social media strategies. The study is based solely on Instagram, which may limit generalizability, as platforms differ in purpose and user base. For instance, Instagram is more creative and youth-oriented, while LinkedIn targets professional audiences [86].

Third, brand attachment was operationalized as a unidimensional construct. Future research could extend this analysis by incorporating additional affective states, such as passion, warmth, friendliness, and nostalgia, or by examining negative emotional states, such as brand hate and sadness, as focal constructs, to better understand the process of social media marketing to mitigate and contain unfavorable emotions and prevent negative consumer behaviors.

Fourth, future research could investigate the mechanisms underlying how social media SMMAs enhance brand and marketing performance under varying boundary conditions. This could involve developing moderated models that incorporate factors such as individual characteristics, brand context, and market volatility. For instance, comparing the magnitude and significance of effects across theoretically grounded groups may provide deeper insights and practical implications for community managers. Fifth, the current analysis employed causal logic to examine the individual contributions of social media marketing activities to the targeted outcome (i.e., whether X increases Y on average). Future research is encouraged to complement this approach with necessary condition analysis, identifying the specific role of each activity in achieving target outcomes (i.e., whether X is necessary for Y to occur) [87].

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Institutional Review Board Statement: In Algeria, there is no centralized national framework mandating ethical approval for non-clinical, survey-based research in the social sciences. Formal ethical review is legally required primarily for biomedical and clinical research involving human subjects and potential health-related risks. The present study complies with internationally recognized ethical standards, including the principles of the Declaration of Helsinki, and adheres to national and institutional regulations, notably the University Charter of Deontology and Ethics (2023) issued by the Ministry of Higher Education and Scientific Research, and Law No. 18-07 on the protection of personal data, which establishes requirements for confidentiality, informed consent, and secure data processing. In addition, Article 47 of the Algerian Constitution (30 December 2020) affirms that the protection of privacy in the processing of personal data is a fundamental right, and any violation is subject to legal sanction. all data were collected confidentially and anonymously, without recording participants' names. This approach aligns with standard practices in Algerian higher education institutions, particularly for survey-based research, in order to protect participants and avoid any potential harms or negative repercussions. Therefore, as no Algerian legislation explicitly requires formal ethical approval for minimal-risk, survey-based research, and given full compliance with applicable data protection and institutional ethical guidelines, the study did not require formal ethical review.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

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Appendix A. Measures

Interactivity [41]	1. Brand's social media allows me to share and update the existing content. 2. This Brand regularly interacts with its followers and fans on social media. 3. Brand's social media facilitates two-way interaction with family and friends.
Informativeness [41]	4. Brand's social media offers accurate information on products. 5. Brand's social media offers useful information. 6. The information provided by the brand's social media is comprehensive.
Personalization [41]	7. Brand's social media makes purchase recommendations as per my requirements. 8. I feel my needs are met by using Brand's social media. 9. Brand's social media facilitates personalized information search.
Trendiness [41]	10. Contents visible on Brand's social media is the latest trend. 11. Using Brand's social media is really trendy. 12. Anything trendy is available on Brand's social media.
WOM [41]	13. I would recommend my friends to visit Brand's social media. 14. I would encourage my friends and acquaintances to use Brand's social media. 15. I would like to share my purchase experiences with friends on Brand's social media.
Brand attachment [26]	1. Brand gives me joy and pleasure. 2. I find a certain comfort in buying or possessing brand. 3. I am very attached to brand. 4. I am very attracted to brand. 5. I am very loyal to brand.
Brand loyalty [49]	1. I consider myself loyal to the brand. 2. Brand would be my first choice. 3. I will not buy other brands if brand is available.
CEBSM [52]	1. I react to brand content on social media. 2. I comment on brand content on social media. 3. I share brand content with others on social media. 4. I post user-generated content on brand (Dropped)

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