Journal of
Theoretical and Applied Electronic Commerce Research

MDPI

Article

How Can Mobile Social Media Sustain Consumers? Assessing the Dynamic Influences of Differentiated Perceived Interactivity on Attitudes, Belongingness, and Stickiness

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Abstract: The swift advancement of wireless communication technology has resulted in the gradual permeation of mobile social media into everyday lives, proffering unparalleled prospects for the dissemination of information and supporting networking. Despite several studies on the perceived interactivity of mobile social media, academic attention on comprehending the fundamental elements that lead to consumers belonging or sticking to these platforms has been limited. Drawing on previous scientific literature in related domains, this study presents a conceptual research framework that examines the extent to which three distinct facets of perceived interactivity, namely mutual interaction, message responsiveness, and social connectedness, may influence consumers' attitudes towards mobile social media, ultimately impacting their belongingness and stickiness. This study empirically evaluates data from 665 mobile social media consumers and employs statistical analysis to demonstrate that perceived interactivity significantly influences consumers' attitudes towards mobile social media platforms. Moreover, consumer attitudes towards these platforms are found to be the most significant predictor of consumer belongingness and stickiness. Furthermore, consumer belongingness also exerts a significant impact on stickiness. By identifying the factors and rationales that influence consumer belongingness and stickiness in using mobile social media, this study addresses the need for a comprehensive evaluation of perceived interactivity and consumer attitudes. The aforementioned discoveries not only have the potential to enhance our comprehension of consumer belongingness and stickiness in the realm of perceived interactivity but also to provide experts with innovative viewpoints, clarify effective strategies for promoting the adoption of mobile social media, and encourage increased levels of user engagement in a society that is saturated with mobile devices.

Keywords: perceived interactivity; consumer attitudes; belongingness; stickiness; mobile social media

Citation: Pang, H.; Ruan, Y.; Wang, L. How Can Mobile Social Media Sustain Consumers? Assessing the Dynamic Influences of Differentiated Perceived Interactivity on Attitudes, Belongingness, and Stickiness. *J. Theor. Appl. Electron. Commer. Res.* **2024**, *19*, 2783–2798. https://doi.org/10.3390/jtaer19040134

Academic Editor: Luís F. Martinez

Received: 1 May 2024
Revised: 3 July 2024
Accepted: 8 October 2024
Published: 14 October 2024

1. Introduction

The advent of mobile social media has fundamentally transformed communication modalities, compelling corporations to cultivate their online presence across diverse platforms. This strategic shift aims to facilitate direct engagement and interaction with users [1,2]. Mobile social media exhibits formidable social capabilities, empowering users to transition their offline social networks to the digital realms. Moreover, its capacity for viral information dissemination endows it with exceptional timeliness and influence. Consequently, it serves as an important medium for enterprises to harness the social connections of their clientele and rapidly disseminate information to a broad audience of potential users [3,4]. Furthermore, amidst the relentless proliferation of mobile social media, the role of consumers has transformed from traditionally passive recipients of information to active collaborators in its creation. The expectations of consumers extend beyond the mere dissemination of information via supermarket posters. There is an increasing demand for

access to mobile social media platforms, which allow consumers to engage with companies and obtain more valuable and meaningful information about their products and overall operations [5]. The advent of digital business and mobile social media has profoundly impacted our daily routines and the efficacy of society [6]. According to the latest statistical report published by the China Internet Information Center (CNNIC), as of December 2022, the number of online shopping users in China reached 845 million, an increase of 3.19 million from December 2021, accounting for 79.2% of the total netizens [7].

Amidst the evolving landscape of mobile social media and consumer behavior, numerous scholars and experts advocate the notion that customer engagement can be conceptualized as the iterative interactions between consumers and a brand. These interactions fortify the affective, cognitive, or behavioral commitment that a client maintains towards the brand [8,9]. Enhancing corporate performance can be effectively achieved by increasing the rate of sales growth, securing a competitive advantage, and optimizing profitability. The theoretical foundation behind these assertions is predicated upon the notion that socially active consumers are pivotal in the generation of content, the co-creation of consumer experiences and value, and the facilitation of referrals for products, services, and brands to other consumers [10]. In the current study, consumers displaying heightened levels of stickiness are deemed to be of paramount significance. It can be inferred that a significant proportion of individuals demonstrate a passive engagement with mobile social media, lacking a profound and meaningful connection with the platform. Their engagement may be confined to browsing news and information disseminated via social media, without actively contributing to the discourse. Accordingly, mobile social media managers typically perceive the sustainability of their platform as contingent upon the engagement of customers exhibiting high levels of stickiness [11]. The significance of consumer engagement in mobile social media for business operations has attracted growing attention in both industry and academia. Specifically, consumer engagement has emerged as a pivotal research topic within the field of marketing.

In academia, the perceived values of mobile social media members are increasingly acknowledged as a crucial determinant of their affective responses, particularly their attitudes and belongingness [12,13]. According to the assertions made by Wang et al., consumers generally purchase commercial goods and participate in expenditure activities based on two foundational factors: pleasure-oriented awareness derived from perceptual characteristics and functional advantages [14]. Therefore, investigating the psychological values perceived by consumers would assist marketers in comprehensively understanding the relationship between perceived values and consumption responses, including consumers' stickiness, attitudes, and related behavioral outcomes. Multitudinous scholarly investigations have been dedicated to the topic of mobile social media commerce [15,16]. Nonetheless, scant attention has been devoted to examining the ramifications of perceived interactivity within a mobile social media commerce milieu. Furthermore, a significant research gap exists concerning user stickiness, particularly regarding the cognitive aspects of mobile social media.

Building upon the existing literature on perceived interactivity, consumer attitudes, belongingness, and user stickiness, several critical research gaps become evident. Firstly, relatively few studies have specifically investigated perceived interactivity, particularly the distinct types of perceptual interactions such as mutual interaction, message responsiveness, and social connectedness. Existing studies often treat perceived interactivity as a broad concept, without thoroughly exploring these specific dimensions in detail. This study addresses this gap by thoroughly examining these three distinct types of perceived interactivity and their unique impacts. Secondly, there is a notable research gap regarding the relationship between consumer attitudes and perceived interactivity. Although numerous academics have investigated the impact of perceived interactivity on consumer satisfaction and decision-making, few have focused exclusively on the correlation between perceived interactivity and consumer attitudes within the mobile internet environment. This study addresses this gap by analyzing how perceived interactivity influences consumer attitudes in the specific context of mobile social media. Thirdly, while the existing literature primarily

examines how consumer attitudes influence the sense of belongingness and stickiness among mobile internet users, the reciprocal relationship between user belongingness and stickiness has not been extensively researched. This research contributes to the literature by exploring how user belongingness affects stickiness, enhancing the depth of our understanding of these interrelated constructs. Accordingly, the study seeks to examine the influence of interactions, message responses, and social connections on user attitudes from the perspective of perceived interaction, as well as their subsequent impact on a consumer's sense of belonging and stickiness. Specifically, the article centers on mobile social media and endeavors to establish a model illustrating the impact of customers' perceived interactions on consumer attitudes, belongingness, and stickiness. Eventually, this article aims to enhance previous studies on consumer interaction, customer belongingness, and stickiness, while also providing pragmatic insights for businesses by promoting customer participation and augmenting the stickiness of social media.

2. Theoretical Framework and Hypotheses Development

2.1. Linking Perceived Interactivity to Consumer Attitudes

Previous research indicates that defining interactivity precisely is challenging. Nevertheless, interactivity is crucial for the successful implementation of mobile social media activities [17,18]. From a perception-oriented perspective, perceived interactivity is defined as a cognitive state experienced by a website visitor during their interaction [19]. It can be classified into three primary categories: consumer-to-consumer, consumer-to-content, and consumer-to-system. Consumer-to-consumer interactivity focuses on communication between consumers. Consumer-to-content interactivity involves engagement with materials or documents, allowing consumers to interact with content uploaded by others. Consumer-to-system interactivity emphasizes engagement with the technical components of mobile social media and is closely linked to social connectedness. Although scholars have proposed various categories for perceived interactivity, the most commonly cited ones in the literature are interaction, message responsiveness, and social connectedness. These three components are essential for consumers to achieve a high degree of involvement. Therefore, we propose the concept of perceptual interaction, which captures the characteristics of interaction in three dimensions (mutual interaction, message responsiveness, and social connectedness). Understanding the concept and categories of perceptual interaction is vital for comprehending its impact on consumer attitudes. High levels of perceived interactivity can significantly enhance consumer engagement. This increased engagement fosters a sense of participation and belonging, dynamically influencing attitudes towards mobile social media. By experiencing these interactive elements, consumers are more likely to develop favorable attitudes, enriching their overall user experience and solidifying their perception of the platform's value.

Within the realm of psychological studies, attitude is defined as a consistent tendency to respond positively or negatively to a mental stimulus [20]. It is a fundamental construct for comprehending an individual's evaluation of an entity and its consequential behavioral inclinations. Attitude can be defined as a learned predisposition to approach an element, such as merchandise and assistance, in either a positive or negative light to achieve adaptability to the surrounding environment [21]. Attitude is predominantly a consequence of a cognitive mechanism, which arises exclusively from a reflective or normative, analytic, intentional, and evaluable methodology. In the context of online shopping, consumers generally hold favorable views when it offers time-saving benefits and the flexibility to shop from any location. Attitude has emerged as the most reliable predictor of the sustained use of mobile social media, with its utilitarian aspect being the primary driver of these behaviors. Empirical research has demonstrated a robust correlation between consumer attitudes and interactive behavior on social media [22]. Therefore, it is essential to thoroughly understand the mechanisms through which consumer attitudes are formed and how they subsequently influence behavioral intentions and outcomes. The concept of mutual interaction, characterized by a bidirectional flow of information, involves the exchange of roles

between individuals, namely senders and receivers, rather than one-way communication. The formation of consumer attitudes during the early phases of a connection is implicitly guided by the principle of mutual interaction, which promotes their development within exchange relationships. Building upon the above points, we posit the following hypothesis:

H1: *Mutual interaction positively affects consumer attitudes*.

Numerous academic scholars assert that message responsiveness is a critical indicator for assessing consumer attitudes [23,24]. This assertion stems from the fact that an elevated degree of perceived interactivity largely depends on continuous responsiveness or favorable consumer attitudes. The concept of responsiveness is characterized by the promptness and timeliness of responses exhibited by individuals utilizing mobile social media platforms in reaction to messages received from other users [25]. When users experience delays in communication, the resulting lack of responsiveness can disrupt the communication flow, potentially cultivating negative attitudes towards the communication process among consumers. Hence, it can be hypothesized that technological features that enhance perceived interactivity through improved message responsiveness will positively influence consumer attitudes. Accordingly, we formulate the following hypothesis:

H2: *Message responsiveness is positively related to consumer attitudes*.

This study delves into the notion of connectedness in the framework of mobile social media. Connectedness is specifically defined as the experience of forging bonds with fellow users of the platform [26]. This technological attribute encapsulates the fundamental human need for social interaction, as individuals are motivated by the desire to cultivate favorable social connections in pursuit of a sense of belongingness [27]. Prior research has highlighted the paramount importance of connectedness as a pivotal determinant of consumer attitudes, particularly within platforms such as Sina Weibo, and its role in shaping consumer experiences in e-retailing [28]. Building on these insights, we posit that the strength of the sense of affiliation with fellow consumers on mobile social media positively influences consumer attitudes. Accordingly, we posit the following hypothesis:

H3: *Social connectedness positively affects consumer attitudes*.

2.2. Linking Consumer Attitudes to Consumer Belongingness

Belongingness is considered one of the five fundamental social motivations underlying much social behavior, alongside understanding, controlling, self-enhancement, and trusting [29]. According to the belongingness presumption, individuals possess an innate drive to establish enduring and robust social connections [30]. Consequently, individuals are propelled to actively pursue regular interpersonal interactions and foster relationships that facilitate the development and sustenance of social ties. The affective experiences of connection and worth to others, engendered through a sense of belongingness, has been shown to elevate self-regard and promote overall psychological adaptation. Prior investigations pertaining to individuals' utilization of mobile social media have demonstrated that these platforms are employed to establish and sustain consumer belongingness [15]. For example, young people utilize mobile social media to flirt and initiate contact with potential partners, as they perceive it to be less intimidating and antagonistic than face-to-face interactions. Electronic relationships often function as a supplementary means of social connection, rather than a replacement for conventional face-to-face relationships. This assertion underscores the crucial role of technology in cultivating social relationships among its users. In particular, mobile social media has been found to facilitate the formation and maintenance of both belongingness and social connections. These findings highlight the importance of recognizing the potential of consumer belongingness to enrich our social lives.

Belongingness theory is regarded as a pivotal framework for understanding the fundamental role that human relationships play in daily life. This theoretical framework

conceptualizes belongingness as a pervasive and all-encompassing feeling of security, as well as the emotional experience of being regarded as a part of human society [31]. Consequently, the notion of belongingness, being a form of mental awareness, serves as a mediating factor between the external subjective and objective surroundings, along with the corresponding behaviors of the individuals. The construct of belongingness comprises three dimensions: the degree of closeness and connectedness among social media consumers, the importance of social media consumers to others and the entire environment, and the attitudes that social media consumers hold towards their own demands [32]. The concept of belongingness pertains to the extent of identification and closeness that an individual or group feels towards a particular phenomenon. According to the theory of belongingness, individuals are driven to cultivate and nurture favorable social relationships to attain a feeling of belongingness. Therefore, belongingness serves as a crucial and enduring internal state, which is reinforced and enhanced by the consumer's attitudes through the employment of the system. The beneficial influence of belongingness on continuance intention has already been investigated within the context of mobile social media. For instance, mobile social media consumers with higher overall attitudes are more prone to experience elevated feelings of belongingness [33]. Consequently, we formulated the following assumption:

H4: *Consumer attitudes are positively related to consumer belongingness*.

2.3. Linking Consumer Attitudes and Consumer Belongingness to Stickiness

The concept of stickiness refers to the capacity of mobile social media platforms to attract and retain consumers [34]. Platforms exhibit a substantial degree of stickiness when consumers repeatedly engage with and spend prolonged periods on the platform [35]. Within the literature on mobile social media, consumer stickiness is deemed a critical predictor of consumer loyalty and a fundamental element of business success. A mobile social media platform is considered sticky when a consumer consistently revisits it and spends significantly more time browsing compared to the average consumer. This prolonged exposure to mobile social media increases the likelihood of customer purchases and enhances their exposure to advertisements. Consequently, stickiness has been acknowledged as a critical factor in enhancing profitability. In the existing literature, the concept of stickiness has been broadly conceptualized from two distinct perspectives. From the standpoint of websites, stickiness refers to the ability of websites to attract and retain consumers, thereby prolonging the duration of consumer engagement. From a consumer-oriented standpoint, the concept of stickiness can be characterized as the recurrent engagement with and utilization of a favored website, driven by steadfast convictions that remain impervious to external stimuli and marketing initiatives that may otherwise prompt consumer renunciation.

Multitudinous investigations have been conducted to determine the primary factor predicting consumer loyalty, with attitudes consistently being identified as the crucial variable [36]. For instance, positive attitudes significantly enhance the stickiness of mobile social media, while consumer attitudes act as a significant antecedent to stickiness in social networking games. Furthermore, studies examining consumer attitudes have yielded valuable insights, indicating that attitudes function as an affective variable influencing consumer loyalty. According to the stimulus–organism–response framework, a user's inner status could significantly impact their response, such as their behavior or behavioral intention [11]. Therefore, based on prior research, attitudes could be characterized as an affective condition that represents an emotional response towards the use of mobile social media. The attitude structure comprises three dimensions: affect, behavioral intent, and cognition. Within the realm of mobile social media, users who display positive emotions, behavioral intentions, and perceptions are more likely to prefer continued usage, thereby significantly enhancing the stickiness of a product or service. Accordingly, we posit the following hypothesis:

H5: *Consumer attitudes are positively related to stickiness.*

The concept of belongingness represents a cultural psychological construct that was initially put forth by the renowned American psychologist Abraham Maslow. Maslow posited that belongingness constitutes an essential human requirement that must be fulfilled prior to the development of self-esteem in individuals [37]. In this study, the concept of belongingness is operationalized as the level of dedication and perseverance demonstrated by a member in cultivating and sustaining relationships with the mobile social media platform [38]. As belongingness captures the degree of affinity or emotional connection that a consumer has towards mobile social media, it may serve as an effective indicator of the experiential state of individuals in a human-to-human interaction context. Moreover, prior research has demonstrated a positive correlation between consumer belongingness and stickiness across various studies on mobile social media [27]. According to Apuke and Omar, the phenomenon of belongingness has been shown to motivate consumers to persist in their use of social media platforms [39]. Belongingness can be understood as an internal state that affects consumers' coping responses, such as their level of stickiness, in a given situation. Consequently, when consumers feel attached to mobile social media, they are likely to increase their stickiness to continue using it. Based on this, we contend that consumers who experience a stronger sense of belongingness to mobile social media will be more likely to exhibit higher levels of stickiness. Consequently, we formulated the following assumption:

H6: *Consumer belongingness positively affects stickiness.*

3. Research Methodology

3.1. Research Model

According to prior studies on mobile social media users, the current study presents a research model (depicted in Figure 1) aimed at identifying potential factors that may impact consumers' attitudes, belongingness, and stickiness. Specifically, this investigation explores the extent to which three distinct facets of perceived interactivity (namely, mutual interaction, message responsiveness, and social connectedness) may exert differential effects on consumers' attitudes, belongingness, and stickiness towards mobile social media platforms.

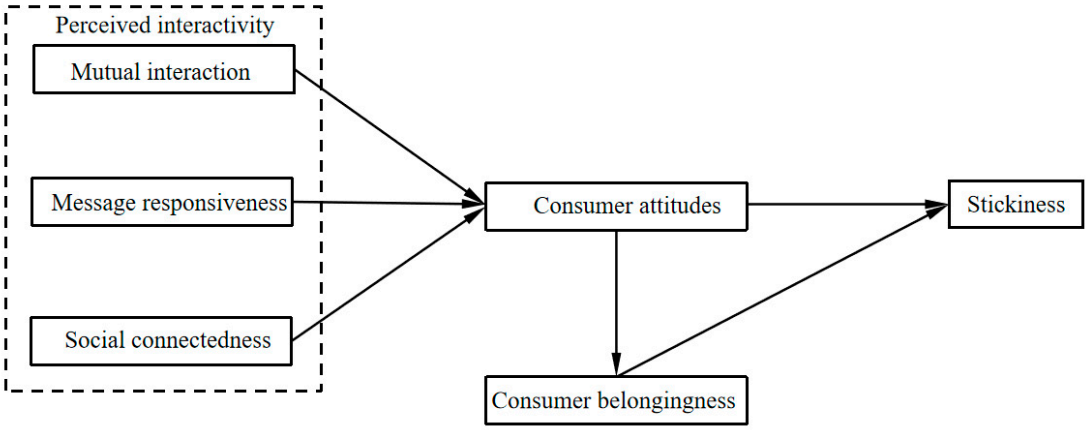

Figure 1. The conceptual research model.

3.2. Measurement

The present model incorporates six potential variables: mutual interaction, message responsiveness, social connectedness, consumer attitudes, consumer belongingness, and stickiness. The evaluation scales for mutual interaction, message responsiveness, and social connectedness were all subject to revision, informed by the research endeavors of Xiang and Chae [27]. The consumer attitudes assessment scale underwent revision in accordance with Wang et al. [40]. For consumer belongingness, we adapted the measures from Chai

and Kim [41]. Moreover, the measurement scale for stickiness was adapted from Lien et al. [42]. Furthermore, various demographic factors encompassing age were integrated as control variables. This article utilized a questionnaire which encompassed the adjustment of previously standardized scale questions, with careful consideration given to the distinctive characteristics of mobile social media in the Chinese context. Each scale was assessed using a five-point Likert scale, spanning from 1 (strongly disagree) to 5 (strongly agree). Prior to the primary survey, a pretest was executed with 25 mobile social media consumers who were invited to participate. Following the pretest, the linguistic manifestation of the survey inquiries was adjusted, and input was solicited from seven graduate mentors and doctoral candidates specializing in communication studies to guarantee their comprehensibility and lucidity. Table 1 presents the list of measurement items and their sources.

Table 1. Measurements and questionnaire.

Variable	Item	Source
mutual interaction	I can communicate with others effortlessly using mobile social media. I can exchange and share opinions with others seamlessly through mobile social media. I can easily connect with others via mobile social media.	Xiang and Chae [27]
message responsiveness	Using mobile social media, I always received numerous responses to my posts. Using mobile social media, I could count on quick responses to my posts. Using mobile social media, other users reacted positively to my posts.	Xiang and Chae [27]
social connectedness	Using mobile social media, I shared my experiences and feelings with others. Using mobile social media, I benefited from the user community. Using mobile social media, I felt a common bond with other members.	Xiang and Chae [27]
consumer attitudes	I am very pleased with mobile social media. I am satisfied with this mobile social media. I am content with this mobile social media. Choosing to use the mobile social media was a wise decision.	Wang et al. [40]
consumer belongingness	I feel a strong sense of belonging to my mobile social media. I enjoy being a member of my mobile social media. I am very committed to my mobile social media. I feel strongly connected to my mobile social media.	Chai and Kim [41]
stickiness	I spend more time on mobile social media than on other activities. I frequently visit mobile social media. I visit mobile social media as often as possible. I intend to access mobile social media every time I am online.	Lien et al. [42]

3.3. Sample and Data Collection

This study's online investigation was conducted utilizing the commonly used questionnaire website in China, Sojump (wjx.cn). While the investigation technique had inherent limitations in terms of control, it allowed for a high degree of generalization. Consistent with prior research, this study utilized a survey methodology to our test assumptions. The study employed a voluntary sampling method, targeting participants who are active members of mobile social media. This approach was chosen to ensure that the respondents have relevant experience and insights into the mobile social media under study. Although voluntary sampling is often criticized for its susceptibility to self-selection bias, where only those with a strong interest in the topic—either extreme enthusiasm or significant

disapproval—tend to participate, this characteristic does not undermine the research objectives in this instance. Instead, it aligns closely with the study's aim, which focuses on individuals with firsthand experience in the subject matter. This experience is crucial to the research questions, ensuring that responses reflect the insights of those who are most engaged with and impacted by the topic under investigation. Thus, employing voluntary sampling in this context not only aids in collecting relevant data but also enhances the depth and significance of the findings by concentrating on a segment of the population who are inherently motivated to offer meaningful and informed responses. The survey respondents were randomly selected from an online survey website, representing a varied cross-section of the populace. Interviewees were offered petty monetary incentives for completing the survey. Participants were instructed to provide candid feedback regarding their social media experiences and to undertake all investigating issues with due diligence. This online survey spanned a three-week period, resulting in 687 completed questionnaires. To ensure data accuracy, any response which was deemed ineffective or took less than one minute to finish was excluded from the final dataset. Ultimately, 665 valid questionnaires were obtained. Table 2 presents the descriptive statistics of the investigation data.

Table 2. Demographics of research samples and general mobile social media usage (N = 665).

Category	Frequency	%
Gender		
Male	311	46.8
Female	354	53.2
Age		
Under 18	189	28.4
19–29	280	42.1
30–40	118	17.7
Over 41	78	11.7
Education		
Junior high school or lower	67	10.1
High school (including polytechnic school)	196	29.5
Undergraduate degree (including junior college)	296	44.5
Master's degree or above	106	15.9
Years of using mobile social media		
$\leq$1	27	4.1
1–3	38	5.7
4–6	134	20.2
$\geq$6	466	70.1
Daily usage time of mobile social media		
$\leq$1 h	81	12.2
1–2 h	93	14.0
2–4 h	176	26.5
$\geq$4 h	315	47.4

4. Results

4.1. Measurement Model, Reliability, and Validity

Confirmatory factor analysis (CFA) is an essential technique for testing a proposed model, which involves utilizing AMOS 23.0 to evaluate a measurement theory that comprises the overall model fit, construct reliability, and validity. Following this, structural equation modeling (SEM) is utilized to explore the relevance between the variables in a more intuitive manner. To ensure the veracity and dependability of the measurement and to obtain more significant results, we opted to adopt a biphasic approach in evaluating the suggested framework and the interconnections among study variables. The primary stage involves thorough scrutiny of the measurement structure, while the secondary stage scrutinizes the structural associations between all constructs. This approach is beneficial, as it facilitates a more comprehensive evaluation of the proposed model and enhances the overall quality of a study.

The model is evaluated using the absolute fit indices (χ^2/d.f. = 2.407; RMSEA = 0.046; RMR = 0.035) and the incremental fit indices (GFI = 0.944; AGFI = 0.925; NFI = 0.929; IFI = 0.957; TLI = 0.948; CFI = 0.957). The outcomes are presented in Table 3, and they demonstrate the appropriateness of the model fit. Cronbach's alpha and composite reliability (CR) are metrics utilized to ascertain the internal coherence of a framework. All of the Cronbach's alpha and CR measures surpass the acceptable threshold (Cronbach's alpha > 0.7, CR > 0.7), thereby demonstrating a good level of reliability. Similarly, the establishment of convergent validity in this study was achieved through a thorough analysis of factor loadings, average variance extracted (AVE), and squared multiple correlations (SMCs). The high factor loading observed in this study serves as a confirmation of the potential construct's strong convergent validity. Furthermore, the loading values, which range from 0.659 to 0.828, are predominantly above 0.7, indicating an excellent level of convergent validity. The AVE for each construct surpasses the minimum threshold of 0.5, suggesting satisfactory convergence. Additionally, the SMC values are greater than 0.5, further corroborating the convergent validity of the proposed measurement model. The findings of the confirmatory factor analysis are delineated in Table 4. The computed AVE was juxtaposed with the squared correlations of alternative constructs. As illustrated in Table 5, each AVE (on the principal diagonal) surpasses the corresponding squared correlation coefficients (off-diagonal), thereby indicating a remarkable degree of discriminant validity. In summary, the measurement paradigm used within this research exhibited adequate data conformance, commendable dependability, and strong convergent and discriminant validity.

Table 3. Fit indices for the measurement model and structural model.

	χ^2/d.f	RMSEA	RMR	GFI	AGFI	NFI	IFI	TLI	CFI
	(<3)	(<0.08)	(<0.08)	(>0.9)	(>0.9)	(>0.9)	(>0.9)	(>0.9)	(>0.9)
measurement model	2.407	0.046	0.035	0.944	0.925	0.929	0.957	0.948	0.957
structural model	2.655	0.050	0.062	0.937	0.919	0.919	0.948	0.939	0.948

Table 4. Summary of confirmatory factor analysis.

Constructs and Items	Loading	SMC	Cronbach's Alpha	AVE (>0.5)	CR (>0.7)
Mutual interaction (MI)			0.812	0.591	0.813
MI1	0.780	0.608			
MI2	0.737	0.543			
MI3	0.789	0.623			
Message responsiveness (MR)			0.827	0.617	0.828
MR1	0.770	0.593			
MR2	0.756	0.572			
MR3	0.828	0.686			
Social connectedness (SC)			0.759	0.512	0.759
SC1	0.709	0.503			
SC2	0.729	0.531			
SC3	0.708	0.501			
Consumer attitudes (CA)			0.830	0.552	0.831
CA1	0.765	0.585			
CA2	0.737	0.543			
CA3	0.781	0.610			
CA4	0.686	0.471			

Table 4. *Cont.*

Constructs and Items	Loading	SMC	Cronbach's Alpha	AVE (>0.5)	CR (>0.7)
Consumer belongingness (CB)			0.816	0.531	0.818
CB1	0.687	0.472			
CB2	0.806	0.650			
CB3	0.659	0.434			
CB4	0.754	0.569			
Stickiness (S)			0.814	0.527	0.816
S1	0.719	0.517			
S2	0.796	0.634			
S3	0.723	0.523			
S4	0.660	0.436			

Notes: SMCs, squared multiple correlations; AVE, average variance extracted; CR, construct reliability.

Table 5. Discriminate validity—Pearson's correlation coefficient.

	MI	MR	SC	CA	CB	S
MI	**(0.591)**					
MR	0.510	**(0.617)**				
SC	0.099	0.146	**(0.512)**			
CA	0.407	0.425	0.226	**(0.552)**		
CB	0.001	0.006	0.051	0.065	**(0.531)**	
S	0.023	0.019	0.066	0.105	0.181	**(0.527)**

Notes: MI, mutual interaction; MR, message responsiveness; SC, social connectedness; CA, consumer attitudes; CB, consumer belongingness; S, stickiness; ( ) = each construct's AVE.

4.2. Common Method Variance Testing

The phenomenon of CMV (common method variance) is characterized by the presence of overlapping variability, prompted by the data collection methods, instead of authentic structural importance. The present research employs a singular questionnaire approach for data collection, which may lead to the occurrence of common method bias, depending on the background and characteristics of this research project. Common method variance is a systematic error that can be identified through the use of Harman's Single-Factor Test. If the covariance among most data points is attributed to a single factor, it suggests the presence of a high degree of CMV. To this end, Harman's Single-Factor Test was conducted in this study, using exploratory factor analysis (EFA) on all the collected data and employing varimax rotation. The findings garnered through the EFA indicated that none of the explanatory variables exhibited a factor loading exceeding 40%, thereby suggesting no notable prevalence of common method bias in this research. Additionally, upon scrutinizing variances in CFA between univariate and multivariate arrangements, the findings (multi-factor: $\chi^2 = 477.817$, d.f. = 180; one-factor: $\chi^2 = 3140.329$, d.f. = 189; $\Delta\chi^2 = 2662.512$, Δd.f. = 9, $\Delta\chi^2/\Delta$d.f. = 295.835, p-value = 0.000) revealed that CMV did not exert any impact on efficacy. Altogether, this research has no common methodological biases.

4.3. Structural Model

The proposed structural model is inputted into AMOS 23.0, and the ultimate framework fit indices (χ^2/d.f. = 2.655 < 3; RMSEA = 0.050 < 0.08; RMR = 0.062 < 0.08; GFI = 0.937 > 0.9; AGFI = 0.919 > 0.9; NFI = 0.919 > 0.9; IFI = 0.948 > 0.9; TLI = 0.939 > 0.9; CFI = 0.948 > 0.9) suggest a satisfactory model fit. Following this, this study evaluates the structural model to identify the potential relationships. The results indicate that the standardized path coefficients support the hypothesized assumptions with statistical significance. As hypothesized, mutual interaction ($\beta = 0.322$, $p < 0.001$), message responsiveness ($\beta = 0.264$, $p < 0.001$), and social connectedness ($\beta = 0.262$, $p < 0.001$) were all positive predictors of consumer attitudes. Hypothesis 1, Hypothesis 2, and Hypothesis 3 were supported. Consumer attitudes ($\beta = 0.234$, $p < 0.001$) was positively related to consumer belongingness, supporting Hypothesis 4. Consumer attitudes ($\beta = 0.197$, $p < 0.001$) and consumer belongingness ($\beta = 0.290$,

$p < 0.001$) were ascertained to manifest substantial and positive effects on stickiness. Statistical validation was obtained for both Hypotheses 5 and 6. The outcomes of hypotheses testing are depicted in Figure 2, while Table 6 presents the path coefficient results.

Following H1–H6, this research investigated the mediating mechanisms of consumer attitudes between perceived interactivity, consumers belongingness, and stickiness. The bootstrapping results verified that the indirect effects of mutual interaction, message responsiveness, and social connectedness on consumer belongingness via consumer attitudes were positive and significant, with 95% CIs (confidence intervals) of [0.038, 0.140], β = 0.075; [0.030, 0.107], β = 0.062; and [0.028, 0.116], β = 0.061. Similarly, the indirect effects of mutual interaction, message responsiveness, and social connectedness on stickiness via consumer attitudes were also both positive and significant, with 95% CIs of [0.050, 0.134], β = 0.085; [0.035, 0.112], β = 0.070; and [0.040, 0.118], β = 0.069.

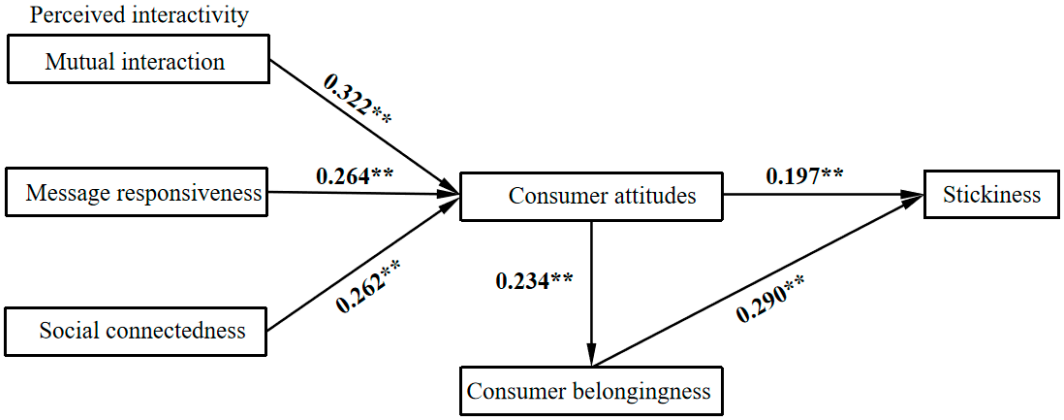

Figure 2. Results of structural path analysis. Notes: ** $p < 0.001$.

Table 6. Statistical results of structural model.

Hypotheses	Paths	Path Coefficient	*p*-Value
H1	Mutual interaction→Consumer attitudes	0.322	0.000 **
H2	Message responsiveness→Consumer attitudes	0.264	0.000 **
H3	Social connectedness→Consumer attitudes	0.262	0.000 **
H4	Consumer attitudes→Consumer belongingness	0.234	0.000 **
H5	Consumer attitudes→Stickiness	0.197	0.000 **
H6	Consumer belongingness→Stickiness	0.290	0.000 **

Note: Double asterisk (**) represents $p < 0.001$.

5. Discussion

5.1. Conclusions

The intention of this article was to conduct a systematic and methodical investigation into the differential effects of three distinct facets of perceived interactivity (mutual interaction, message responsiveness, and social connectedness) and how they may exert differential effects on consumers' attitudes, belongingness, and stickiness towards mobile social media platforms. The findings indicate that the structural framework exhibits a significant interpretative capacity in predicting mobile social media consumers' attitudes, belongingness, and stickiness. Thus, the article increases our understanding of how various perceived interactivity factors could influence affective and perceptual behavior among mobile social media consumers in today's media-rich environments.

Firstly, the current study has produced definitive and compelling evidence validating the six proposed hypotheses. The results confirm the anticipated positive influence of perceived interactivity on consumer attitudes. These findings are consistent with preceding research, which has demonstrated a strong connection between consumer attitudes and perceived interactivity [4,21,43]. Specifically, the construct of perceived interactivity is conceptualized in this study as comprising three key dimensions, namely, mutual interaction, message responsiveness, and social connectedness. The study revealed that

mutual interaction among consumers exerts a significant and positive influence on their attitudes. Through mobile social media and other digital platforms, consumers can engage in communication, share purchasing experiences, provide reviews, and offer suggestions to one another. This interaction facilitates a better understanding of products or services, enhances brand or enterprise trust, and thereby impacts consumer attitudes. Hence, technological features that enhance perceived interactivity through message responsiveness are expected to improve customer attitudes towards web-based usage. These features foster positive attitudes through communication and interactions within supported work teams and strengthen purchase intentions through cognitive trust. Furthermore, social connectedness reflects the intrinsic desire for interpersonal communication that drives the deployment of technological characteristics. People are inclined to cultivate or maintain constructive social connections to acquire a sense of belongingness. Consumer attitudes are grounded in fulfilling social needs associated with the intimate connections that they seek to establish through a given technology. Therefore, we assert that a stronger sense of social connectedness with other users of a mobile social media platform would positively influence their attitudes and ultimately their overall satisfaction.

Secondly, this study offers factual evidence supporting the beneficial and significant impact of consumer attitudes on consumer belongingness and stickiness. The outcomes align with previous studies, which have demonstrated a beneficial correlation between consumer attitudes and belongingness and stickiness [32,35]. When consumers develop a favorable attitude towards a brand or company, they are more likely to feel a sense of belongingness. This can be attributed to several factors, including the quality of products or services, the company's reputation, and the manner in which the company engages with its customers. For instance, if a consumer has had positive experiences with a particular brand's offerings, they are more prone to developing an attachment towards that brand. Additionally, the favorable perception of a brand could lead to increased stickiness. Consumers who harbor positive feelings towards a brand are more inclined to continue patronizing that brand and recommending it to others. This can result in enhanced customer loyalty and a stronger connection between the consumer and the brand. However, it is noteworthy that negative consumer attitudes can also have a detrimental effect on belongingness and stickiness. If a consumer has a negative attitude towards a brand, they are less likely to feel a sense of attachment or loyalty. Negative encounters with a brand, such as inadequate customer service or subpar products, can reduce consumer belongingness and stickiness. Therefore, companies can benefit from comprehending the influence of consumer attitudes and endeavoring to improve their relationships with customers to foster a sense of belongingness and stickiness towards their brand.

Thirdly, the findings of this study indicate that consumer belongingness is positively associated with stickiness. In line with previous research, this article signifies that consumer belongingness can greatly enhance stickiness [44,45]. Specifically, the more emotionally connected consumers are with a brand or product, the more likely it is that they will maintain their loyalty over time. This is because consumers who experience a feeling of belonging to a particular brand or product are more inclined to perceive it as an extension of themselves, resulting in greater commitment. They are also more inclined to recommend the brand or product to others, thereby increasing its popularity and success. Consumer belongingness can be fostered in several ways. One of the most effective strategies is through the creation of a brand community. A brand community comprises a cohort of rational consumers possessing shared interests and affections for a specific brand or product. By creating a space for these consumers to connect and engage with each other, marketers can foster a sense of belongingness among them. This can be achieved through social media platforms, online forums, or even in-person events. Another way to foster consumer belongingness is through personalized marketing. By tailoring marketing messages and experiences to the individual consumer, marketers can create a sense of connection and understanding. This approach can help cultivate trust and loyalty over time, as consumers feel that the brand or product genuinely understands their needs and desires. By fostering

a sense of connection and belongingness among consumers, marketers could enhance the stickiness of their brand or product.

Fourthly, consumer interaction behavior on mobile social media sometimes appears minimal, but this does not diminish its importance in understanding consumer–platform relationships. Some studies have shown that while consumers engage with numerous platforms daily, their active interactions (likes, comments, shares) are sparse. This phenomenon is particularly pronounced on social media platforms. Research indicates that low interaction rates should not be misconstrued as a lack of platform influence [46]. Instead, these rates reflect consumers' selective engagement, driven by factors such as time constraints, a lack of interest, and information overload. Despite the low frequency of overt interactions, consumers still demonstrate platform recognition and reliance through silent behaviors like purchasing and platform loyalty [45]. These behaviors suggest that the impact of a platform extends beyond visible social media engagement. The relationship between platforms and consumers is not solely dependent on interactive behaviors. According to Gerlich, M., the sustainability of this relationship hinges on the continuous delivery of value and emotional connection [47,48]. Even with infrequent direct interactions, platforms can maintain strong relationships with consumers through consistent value provision and emotional marketing strategies, such as impactful advertising and compelling platform stories. This approach ensures that consumers remain engaged and loyal, even in the absence of frequent social media interactions. While this study provides insights into consumer interaction behaviors, it also highlights areas for further investigation. Future research should explore more nuanced measures of non-interaction behaviors and their implications for platform strategy. Understanding these silent forms of engagement can offer a more comprehensive view of consumer–platform relationships in the digital age.

5.2. Theoretical and Practical Implications

This study's outcomes offer significant theoretical contributions. Firstly, our research provides innovative perspectives on the three parameters of perceived interactivity. We examine the impact of mutual interaction, message responsiveness, and social connectedness on consumer attitudes. By building upon previous research, our study enhances the current body of research on perceived interactivity within the context of mobile social media. Secondly, while considerable scholarly attention has been devoted to understanding how consumer attitudes influence the sense of belongingness and stickiness among mobile social media users, the reciprocal effect of user belongingness on user stickiness remains underexplored. The article seeks to fill the void by examining the dynamic interplay between user belongingness and stickiness within the realm of mobile social media. Thirdly, we develop a conceptual research framework that clarifies the roles of three types of perceptual interactions, namely mutual interactions, information responses, and social connections, and their effects on user attitudes. This, in turn, influences consumer belongingness and stickiness. Our research introduces a new analytical perspective, thereby advancing the study of mobile social media user behavior and extending the foundation laid by prior studies.

Practically, the results of this article offer insightful perspectives for professionals, service providers, and users of mobile social media. Firstly, practitioners should recognize that different dimensions of perceived interactivity, such as mutual interaction, message responsiveness, and social connectedness, significantly influence consumer attitudes within the mobile social media context. Managers can leverage these insights to intentionally design and optimize social media platforms, thereby enhancing the positive effects of perceived interaction on consumer attitudes and mitigating potential negative perceptions. For example, implementing real-time messaging and response systems can improve message responsiveness, fostering a sense of immediacy and engagement among users. Additionally, creating interactive content such as polls, quizzes, and live streams can facilitate consumer-to-content interaction, encouraging users to engage more deeply with the platform. Secondly, this research highlights that consumers' sense of belonging to mobile social media significantly influences their engagement levels. Service providers should

consider implementing strategies that foster a sense of belongingness, such as offering diverse content and features, personalized experiences, community-building initiatives, interactive functionalities, and reward mechanisms like points, badges, and rankings. For content-focused platforms like Instagram and TikTok, offering personalized content and features such as tailored feeds, story highlights, and user-generated challenges can enhance engagement. Community-focused platforms like Facebook Groups and Reddit benefit from community-building initiatives like live Q&A sessions, virtual meetups, and themed discussions. Advanced moderation tools and recognizing active contributors with badges or special roles can further strengthen community bonds. By adopting these specific strategies, managers and service providers can effectively enhance user engagement and loyalty across various types of mobile social media platforms. Thirdly, the research framework established in this study serves as a valuable reference for scholars and researchers aiming to explore the multifaceted aspects of mobile social media usage. It provides a robust foundation for future research, encouraging further exploration with a more nuanced and comprehensive approach.

6. Limitations and Implications for Future Research

This current investigation contributes to the existing literature on mobile social media; however, it has some limitations that suggest future research directions that are worth exploring. Firstly, due to the cross-sectional nature of the statistical data analyzed, the study may preclude establishing definitive causal associations among the primary variables. Future research should employ longitudinal data and experimental research to substantiate these associations. For instance, a longitudinal panel study could track changes in consumer attitudes over time, while an experimental design could test specific interventions to enhance perceived interactivity. Additionally, this research relied on self-reported data, which are vulnerable to memory errors and biases. Therefore, future research can explore alternative methodologies, such as comprehensive interviews and observational approaches. Secondly, data were collected exclusively from Chinese mobile social media consumers to ensure consistency. However, this may limit the generalizability of our findings, as cultural and environmental elements may influence perceived interactivity and consumer attitudes. Hence, further investigation should be pursued in alternative geographic settings, such as Europe, the United States, and Africa, to determine if analogous findings are acquired. Thirdly, this research concentrated solely on delineating the causal mechanism associated with the attitudes of mobile social media consumers. Specifically, the results of the present investigation are constrained to a singular aspect of mobile social media, perceived interactivity. There may be other diverse mobile social media attributes or aspects which interact with interactivity, thereby affecting consumers' attitudes, belongingness, and stickiness. Therefore, future research ought to investigate other relevant characteristics of mobile social media in conjunction with perceived interactivity.

Author Contributions: Conceptualization, H.P.; methodology, H.P., Y.R. and L.W.; writing—draft preparation, H.P. and Y.R.; analysis and interpretation of data, H.P., Y.R. and L.W.; writing—revision and editing, H.P., Y.R. and L.W.; funding acquisition, H.P. and L.W. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the Tianjin Philosophy and Social Science Planning Project (Grant No. TJWHSX2302-01). The authors also acknowledge support by the Open Access Publication Funds of the University of Konstanz.

Institutional Review Board Statement: Not applicable.

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

Data Availability Statement: The data of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest: The authors declare no conflicts of interest.

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