Short video marketing: what, when and how short-branded videos facilitate consumer engagement

emerald PUBLISHING

Internet Re

Short video marketing: What, when, and how short branded videos facilitate consumer engagement

Journal:	*Internet Research*
Manuscript ID	INTR-02-2022-0121.R3
Manuscript Type:	Research Paper
Keywords:	Video marketing, Digital marketing, Social media marketing, Short branded video, Consumer engagement

Short video marketing: What, when, and how short branded videos facilitate consumer engagement

Abstract

Purpose: This study explores whether and how four main factors of short branded video content (content matching, information relevance, storytelling, and emotionality) facilitate consumer engagement (likes, comments, and shares), as well as the moderating effect of the release time (morning, afternoon, and evening) in such relationships.

Design/methodology/approach: This study uses Python to write programs to crawl relevant data information, such as consumer engagement and short video release time. It combines coding methods to empirically analyze the impact of short branded video content characteristics on consumer engagement. A total of 10,240 Weibo short videos (total duration: 238.645 hours) from 122 well-known brands are utilized as research objects.

Findings: Empirical results show that the content characteristics of short videos significantly impacted consumer engagement. Furthermore, the release time of videos significantly moderated the relationship between the emotionality of short videos and consumer engagement. Content released in the morning enhanced the positive impact of warmth, excitement, and joy on consumer engagement, compared to that released in the afternoon.

Practical implications: Our findings provide new insights for the dissemination of products and brand culture through short videos. We suggest that enterprises that use brand videos consider content matching, information relevance, storytelling, and emotionality in their design.

Originality/value: From a broader perspective, this study constructs a new method for

comprehensively evaluating short branded video content, based on four dimensions (content matching, information relevance, storytelling, and emotionality) and explores the value of these dimensions for creating social media marketing success, such as via consumer engagement.

Keywords: Video marketing, Digital marketing, Social media marketing, Short branded video, Consumer engagement

Paper type: Research paper

1. Introduction

The growing number of emerging information systems and the maturity of mobile Internet technologies have accelerated the popularity of social media platforms (Li and Xie, 2020) and reshaped marketing praxis (Gavilanes *et al.*, 2018). Using different social networks and platforms, companies can deliver marketing and brand content to targeted audiences in an efficient and timely manner (Teixeira and Wedel, 2012). Among social marketing techniques, short videos have become prominent (Kang *et al*., 2012). The combination of short-form videos and social media platforms increases the richness and vividness of information and improves communication efficiency, providing great opportunities for socially based interactive marketing and advertising that engender emotional arousal, immersion, trust, and social ties (Kang *et al.*, 2022; Gavilanes *et al.*, 2018; Teixeira *et al.*, 2012). The short-form video market has been growing at an astonishing pace. In 2020, the global online video platform market reached 1.17 billion dollars and is expected to reach 3.35 billion dollars in 2027 (Hengzhou Bozhi (QYR) Software and Business Service Research Center, 2021). Watching short-form videos, especially on mobile devices, is becoming the principal way for most consumers to acquire information (Song *et al.*, 2021), and short-form video platforms such as TikTok, YouTube Shorts, and Instagram Reels have concomitantly become the main battlefield of

marketing.

One of the biggest challenges in today's digital marketing for firms' consumer relationship management is to engage consumers through social media content in all possible ways (Pansari and Kumar, 2017). Consumer relationship management is considered an important firm activity (Pansari and Kumar, 2017) and an approach for firms and organizations to acquire and maintain a sustainable competitive advantage. Accordingly, in video content-based social media marketing, consumer engagement can be used as the key indicator to measure digital and social media marketing performance (Gavilanes *et al.*, 2018). However, competition in short video marketing is becoming fiercer; firms currently face huge challenges in achieving satisfactory performance of short video marketing. To be more specific, the key questions related to creating short branded videos are: What kind of content can attract and retain consumers? How do consumers engage with them? Does the release time of short branded videos affect consumer engagement?

A review of existing studies on video and social media marketing reveals a lack of comprehensive understanding of the factors influencing the success of short branded video marketing. It is unclear what short-form video content consists of and what dimensions it includes from a holistic perspective. In addition, it is important to know which factors and dimensions of short-form video content play important roles in enhancing consumer engagement. Moreover, due to the social nature of short-form videos, the time of publishing and posting the video content may be particularly important. On one hand, unlike the passive relationship between audiences and traditional media such as TV and video platforms, social media users have high autonomy to actively choose marketing and advertising content (Liu *et al.*, 2018); on the other hand, they expect and crave more social connections with others (Mulier *et al.*, 2021). The influence of the time of posting video

content seems to be related to the users' mental resources and their perception of social relatedness (Zor *et al.*, 2022). Kanuri *et al.* (2018) pioneered exploring the impact of the time of social media platform story posting on clicks to story links, but to our knowledge, there is almost no relevant research on the impact of posting time on the marketing performance of short videos. In terms of research methods, this study crawls relevant data information based on self-developed Python programs to ensure the objectivity and authenticity of the findings which makes up for the shortcomings of most existing studies based on self-reported surveys.

To address the aforementioned research gaps, this study empirically investigates the influence of four main factors of short branded video content (content matching, information relevance, storytelling, and emotionality) on consumer engagement (including likes, comments, and shares) by analyzing 10,240 Weibo short videos (total duration: 238.645 hours) from 122 well-known brands. We also examine the potential moderating effect of the release time. The study makes two main contributions. First, we extracted the four important factors, namely, content matching, information relevance, storytelling, and emotionality using a theoretical and empirical approach. Second, this study provides strong evidence on how these factors influence consumer engagement with time as a boundary condition. The findings contribute to content marketing and relationship management theory and provide several practical implications. In this regard, the study shows that high-quality short videos can attract consumers' attention, enhance consumer engagement, and increase product and brand publicity.

2. Literature Review

2.1. Short video marketing

Video marketing refers to an online platform --with content as the core and creativity as the

orientation--that uses finely planned video content to achieve product marketing and brand communication. With the progress of media technology, visual information has become more prevalent on social media, and companies increasingly rely on videos to promote their products and services (Li *et al.*, 2019). Compared with text or static images, videos contain richer information, including facial, body, and vocal features that enhance their popularity (Kang *et al.*, 2022). Therefore, visual information, which is considered unstructured data (Sudhir, 2016), may play an important role in the consumer decision-making process.

Current video marketing research shows that online video consumption is an important driver to economics. From the perspective of consumer interest, engagement, and processing fluency, Mulier *et al.* (2021) found that mobile vertical video advertising can improve consumer interest and engagement compared to horizontal video advertising. In addition, the optimization of video title information content, video title emotional intensity, video description information content, and video tag volume can affect consumers' viewing behaviors (Tafesse, 2020), and short videos are also an effective tool for marketing movies and other online contents (Liu *et al.*, 2018). Therefore, research on the characteristics of short video content is important for visual marketing.

2.2. Characteristics of short branded video content

Recently, an increasing number of scholars have focused on the interaction between branded marketing content and consumers on social media. For example, the interactivity, subjective norms, and social ties of social media positively affect users' attitudes and behaviors related to sharing relevant information (Lin *et al.*, 2019), and brand post characteristics (including vividness and interactivity) and brand post content (including information and entertainment) on social media affect the popularity of brand posts and consumer engagement (Schultz, 2017; Xi and Hamari, 2020). She

et al. (2021) found that headline characteristics and account types significantly influence the attractiveness of social media posts, and content characteristics and media types affect the number of likes of social media posts. Other research indicates that the credibility of product and industry knowledge and dissemination of company content information significantly affect consumer brand engagement (Bapna *et al.*, 2019), and multimedia content--such as videos, brand names, tags, and subjective vocabulary--effectively increases consumers' positive word-of-mouth behavior related to brand posts (Kim *et al.*, 2019).

Short branded video content refers to the products, characters, music, text, and other related information contained in the short videos released by a brand. For short videos, characters, narratives, and atmosphere are important. Research on characters shows that attractive spokespersons positively impact consumers' purchase intentions (Kim *et al.*, 2021), and celebrities and cute elements, such as babies and animals, are crucial to stimulating positive emotions, such as excitement (Tellis *et al.*, 2019). Short videos with a narrative structure can effectively stimulate the decision-making and cognitive integration functions of brain regions, leading to better evaluations and more positive attitudes toward a brand (Wang *et al.*, 2016). The higher the perceived fit of short videos to consumers, the stronger consumers' preference for the brand (Batra *et al.*, 2010). Furthermore, detailed branded product information may be particularly important to promoting brands and their products. Maaya *et al.* (2020) indicate that information is important in decision-makers' choices, and the attribute information provided during online shopping increases consumers' attention to relevant attributes, thereby affecting consumer choice. Product-related information and source credibility in user reviews positively affect consumers' cognitive attitudes and purchase behavior (Aghakhani *et al.*, 2018). Furthermore, short videos contain information that expresses certain emotions that may

affect consumers' purchase decisions (Zhou *et al.*, 2021). Positive emotions facilitate consumers' more emotion-consistent behaviors (Teixeira *et al.*, 2012; Tellis *et al.*, 2019).

Most previous studies mainly investigated the following four features of brand posts: content matching, information relevance, storytelling, and emotionality (see Green and Brock, 2000; Kruglanski, 2006; Agnihotri *et al.*, 2019). While most of the brand posts investigated consist of textual and pictorial information, Tellis et al. (2019) examined what drives video ad sharing across multiple social media platforms. In our research, we investigated the role of the four factors in short branded videos.

We selected 26 important items from Weibo short videos and invited 10 experienced Weibo users to rate the items according to their importance. We deleted 10 items based on the literature and user scoring. The remaining 16 most critical items have been cited extensively in the past and have attracted users' attention. We used 11 of the 16 items as coding indicators for four factors that we identify by referring to the literature and expert discussion. We included the remaining 5 items as control variables because of their importance (for more detailed information, see Appendix 1).

Finally, consistent with previous research (Dall'Olio and Vakratsas, 2022), we considered the characteristics of a short branded video from the perspective of its content and execution. Content represents what is communicated in an ad, and execution represents how content is communicated. For content, our study focuses on information relevance and emotionality, and for execution it centers on content matching and storytelling. We explored the impact of both content and execution on consumer engagement. Information refers to the various contents people transmit or receive, which could enhance their understanding of their surroundings, and information relevance alludes to the characters, products, and others. Emotion is part of the attitude, here concerning an individual's

attitude toward objects. Emotionality exists all the time, and consumers have different emotional experiences related to different contents, affecting subsequent behavioral responses. Content matching distinguishes the degree of causal correlation among phenomena and involves the atmosphere created. Storytelling refers to the description of a story and mainly involves the storyline, including two parts: narration and story.

2.3. Consumer engagement behavior

Consumer engagement has been widely discussed in relationship marketing as an important outcome measure of a firm's activities (Pansari and Kumar, 2017). It refers to the degree of connection that individuals form with organizations, including services, products, brands, and activities (Vivek *et al.*, 2012). Consumer engagement behavior has been defined as the behavioral manifestation of consumers toward brands or companies caused by motivation drivers, including word-of-mouth activities, recommendations, helping other consumers, writing comments, and even participating in legal proceedings (Van Doorn *et al.*, 2010). Regarding consumer brand engagement, Liu *et al.* (2019) showed that recognition, community identification, and self-efficacy have significant positive effects on consumer engagement, which consequently enhances brand loyalty. Obilo *et al.* (2021) stated that consumer brand engagement reflects the consumer's response to a good experience in the process of interacting with brands, and it contains only behavioral dimensions; consumer engagement is positively associated with brand advocacy. Moreover, building relationships and stimulating emotional commitment can also increase consumer engagement behavior (Hu and Chaudhry, 2020), and highly engaged consumers usually produce multiple behaviors, such as word of mouth, providing consumer ratings, and blogging (Verhoef *et al.*, 2010).

In terms of behavioral engagement, scholars have focused on the number of likes, comments,

and shares, and have examined the specific factors that affect these behavioral engagements. For example, word-of-mouth (positive or negative) and its interaction with community types (social or functional target groups) affect the number of user likes and comments (Relling *et al.*, 2016). The interaction between information readability and hedonism (Davis *et al.*, 2019) and language behavior, rhetorical style, cross-information dynamics, and visual elements influence information sharing (Ordenes *et al.*, 2019). Moreover, factors such as the launch of new products, product display, consumer feedback, entertainment information, organization brand, text readability, processing fluency, and advertising content attributes significantly impact consumers' likes, comments, and shares (Gavilanes *et al.*, 2018; Pancer *et al.*, 2019).

Based on the focus of this study--namely, short branded videos--and the availability of data, we use indicators of brand post popularity--that is, the number of likes, comments, and shares--to measure consumer engagement behavior.

3. Research Framework and Hypotheses Development

Short branded video content is an important way to promote a brand and its products, and the characteristics of short branded video content are very important. Consumers who watch a short video will first hear background music and notice the location. The degree of matching between each of these types of background and the product content displayed in the short video will affect consumers' perceived fluency, which is expected to affect their attitudes toward the branded product (Lee and Labroo, 2004). Therefore, content matching refers to the degree of matching of the short branded video's background music with the brand or product and the short branded video's background with the brand or product. As consumers obtain brand product information through short videos, these videos must convey specific, clear, and credible informational content, and the

credibility of the information is expected to affect consumers' cognitive attitudes and engagement (Agnihotri and Bhattacharya, 2019). Therefore, information relevance refers to the relevance of information conveyed by the short branded video to a brand or product (i.e., whether and to what extent the short video conveys brand or product information) and the clarity and credibility of the short video product and non-product informational content. Concise language description and high-quality narratives are easier to gain people's attention and promote consumer engagement (Green and Brock, 2000; Atkinson *et al.*, 2018).

From discussions with experts in our research group, we consider storytelling to include the conciseness of the short branded video's language and the excellent production of short video stories. Emotionality refers to the emotion category conveyed by short branded videos. According to Tellis *et al.* (2019) on the driving factors of video ad sharing, we identified 16 emotion categories, including anger, courage, deprivation, disgust, excitement, failure, fear, hatred, humor, joy, love, pride, sadness, shame, triumph, and warmth. Consumer engagement behavior includes comments and shares. This study uses content matching, information relevance, storytelling, and emotionality as independent variables, and consumer engagement behavior as the dependent variable. The research model is illustrated in Figure 1.

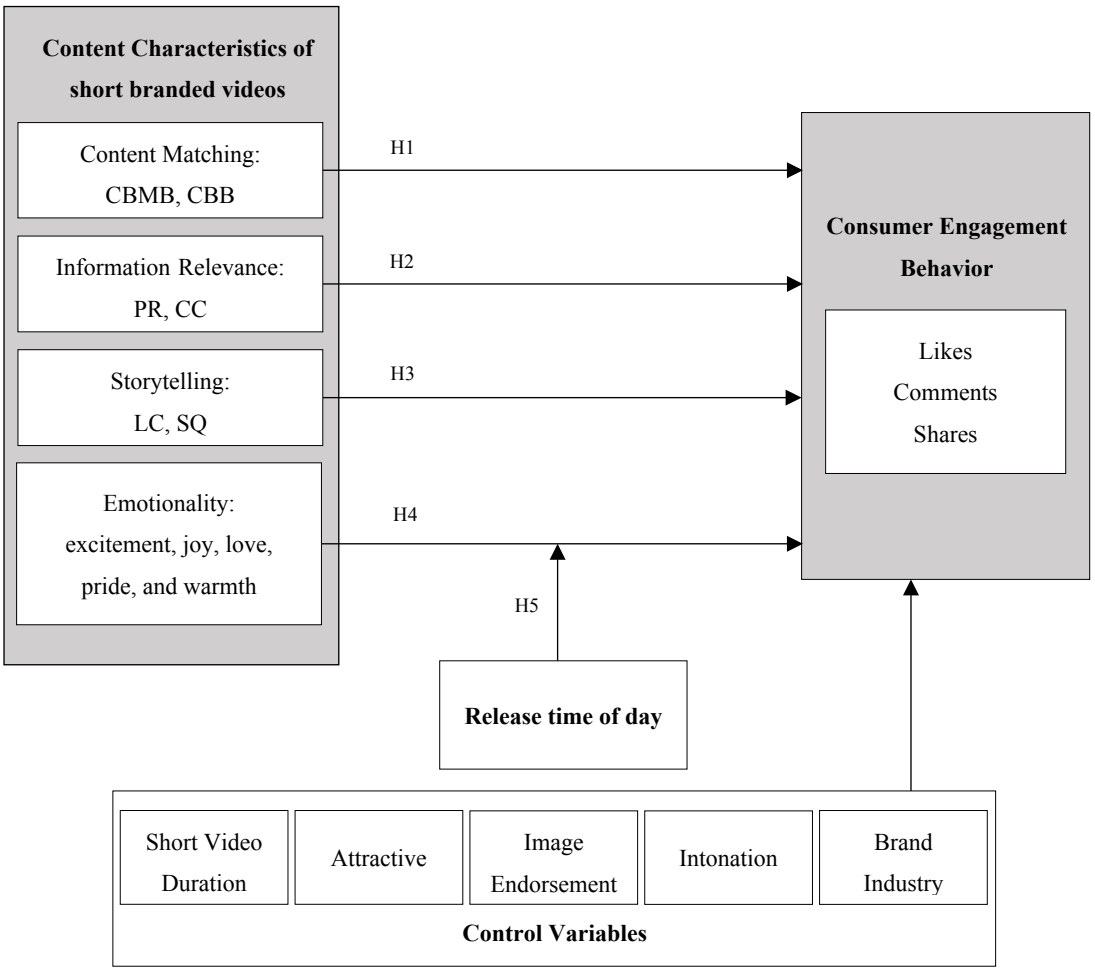

Fig 1. Research model

Note: CBMB: the degree of matching of short video background music with the brand or product; CBB: the degree of matching of the short video background with the brand or product; PR: the relevance of information conveyed by the short video to brand or product; CC: the clarity and credibility of the short video product and non-product information content; LC: the conciseness of the short video language; SQ: the excellence of production of short video stories.

3.1. Characteristics of short branded video content and consumer engagement behavior

3.1.1 *Characteristics of short branded video content: Content Matching*

Studies related to fluency theory (Labroo and Lee, 2006; Shapiro and Nielsen, 2013) indicate that a fit brings higher perceived fluency, and a fluent consumer experience contributes to the formation of a more positive consumer attitude toward a brand, thereby promoting consumer engagement. Previous research has shown that a lack of fit leads to the use of cognitive resources to resolve inconsistencies, which may reduce an individual's attention to information (Wang *et al.*, 2021). Accordingly, when a fit occurs, people are more likely to have a good feeling about what they have done, and then make a more positive evaluation response (Kruglanski, 2006). Among extended brands with a high degree of brand concept consistency and product feature similarity to the original brand, the stronger the perception of fit is, the more significant consumers' preference for the extended brand will be, which helps to form a higher brand evaluation (Batra *et al.*, 2010). Similarly, music that fits more closely with the content of a short video is likely to enhance consumers' belief in the brand, thus promoting consumers' interaction with the brand. Therefore, we propose the following hypothesis:

H1: Factors related to content matching positively influence consumer engagement behaviors with short branded videos including likes, comments, and shares.

3.1.2 *Characteristics of short branded video content: Information Relevance*

On social media, brand-related posts that convey irrelevant information about the brand hinder consumers' searching for brand-related information (Ha *et al.*, 2021), thereby reducing the interaction between consumers and the brand or other consumers. Consumers tend to make decisions based on information in the external environment and experiences stored in memory. Given limited time and

energy, they always choose to receive information that is beneficial to them, whereas irrelevant information weakens their product beliefs and may even have negative effects (Guo *et al.*, 2020). Agnihotri and Bhattacharya (2019) used indicators of advertising credibility, advertising clarity, and advertising content richness to evaluate consumers' attitudes toward advertising. Consumers' credibility perception of short videos can significantly predict their intention to continue using short video apps to obtain information (Song *et al.*, 2021). Furthermore, information source credibility and social interaction can affect consumers' perceived usefulness, perceived enjoyment, and social support in s-commerce (Hu *et al.*, 2022). In this study, brand credibility refers to the credibility of product information. The higher the credibility of the brand, the more it can promote consumers' consideration and choice of the brand. Therefore, we propose the following hypothesis:

H2: Factors related to information relevance positively influence consumer engagement behaviors with short branded videos including likes, comments, and shares.

3.1.3 *Characteristics of short branded video content: Storytelling*

Research related to transportation theory shows that when individuals are drawn into a storytelling world, the narrative affects their beliefs about the real world (Green and Brock, 2000). Information transmitted in narrative form can have a greater impact on judgment and decision-making than that presented through lists, and people are more likely to praise it (Hsiao *et al.*, 2013; Gelper *et al.*, 2018). Elements of storytelling blogs, such as perceived aesthetics, narrative structure, and self-reference, indirectly influence readers' intentions through empathy and attitude. High-quality and popular stories obtain higher transmission rates more easily (Green and Brock, 2000), resonating with consumers and shortening the distance between them and the brand, thereby enhancing interaction. Moreover, learners are more accustomed to simplified language systems (Atkinson *et al.*,

2018). Thus, concise and clear language offers more advantages in interpersonal communication (Garritty *et al.*, 2020). Therefore, we propose the following hypothesis:

H3: Factors related to storytelling positively influence consumer engagement behaviors with short branded videos including likes, comments, and shares.

3.1.4 *Characteristics of short branded video content: Emotionality*

Studies related to the theory of emotional contagion show that emotional attributes can be transmitted through media, can be positive or negative, and can impact consumers' attitudes (Hasford *et al.*, 2015; Smith and Rose, 2020). Positive emotions, such as gratitude, joy, and love, have a strong positive impact on consumer behavior (Dong *et al.*, 2022; Dong *et al.*, 2023; Kranzbühler *et al.*, 2020), and advertisements with positive emotions related to, for example, entertainment, excitement, inspiration, and warmth, generate more sharing (Tellis *et al.*, 2019). Positive emotions, such as surprise and joy, concentrate people's attention, directly or indirectly affecting consumer retention (Teixeira *et al.*, 2012) and thus influencing consumer purchase behavior. Negative emotions also play an important role in the relationship between consumers and brands. For example, sadness causes consumers to talk less about the brand experience, and anger leads to consumers' complaints. Accordingly, we propose the following hypothesis:

H4: Factors related to emotionality positively influence consumer engagement behaviors with short branded videos including likes, comments, and shares.

3.2. Moderating effect: Short branded videos' release time

In almost all marketing practices (e.g., advertising content, new products, and events), the release time is crucial to the success of marketing activities. Many studies (e.g., Bagchi and Cheema, 2013; Kanuri *et al.*, 2018) have indicated one's level of emotional arousal varies over time. Specifically, the availability of working memory peaks in the morning, but as the day goes on and an individual must undertake tasks and experience stress, resources are gradually depleted. Stress-induced elevated cortisol levels impair the availability of working memory, and consumers also increase their preference for simplified processing and reliance on reference choices (Luethi *et al.*, 2009; Pocheptsova *et al.*, 2009), especially regarding emotional expression. Therefore, at different times of the day, different levels of emotional arousal may have varied impact on consumer behavior, including consumer engagement behavior. In the morning, consumers' emotional resources and working memory may be stronger, and high arousal may significantly impact their engagement. In the afternoon, with the depletion of emotional and cognitive resources, consumers may increase their preferences for simplified processing and dependence on reference choices (Pocheptsova *et al.*, 2009), and the impact of high arousal on consumer engagement may be weakened. In the evening, with the gradual recovery of emotional resources, the impact of high arousal on consumer engagement may increase. Thus, exposure to short videos in the morning may stimulate stronger consumers' enthusiasm for content engagement than in the afternoon and evening. We propose the following hypothesis:

H5: The positive correlation between emotionality and consumer engagement behavior is higher for short videos released in the morning and afternoon than for those released in the evening.

4. Research Methods

4.1. Data collection

To explore the impact of the characteristics of short branded video content and their time of release on the success of short branded video marketing, we selected the top 200 brands listed on "The Annual Report on The World's Most Valuable and Strongest Brands"[1] but excluded 78 brands that did not have Sina Weibo accounts or did not publish video content. Sina Weibo (referred to as Weibo) is a social media platform based on user relationships. It realizes real-time sharing of information and interaction among users through text, pictures, videos, and other forms, and is one of the main channels for short video marketing in China. In December 2019, Weibo was selected as the 2019 China Brand Power Ceremony Model 100 Brand. Based on Weibo's social and interactive nature, we chose it as a media platform from which to obtain short videos. Eventually, from November 2018 to January 2020, we took 10,240 short branded videos of 122 brands related to products released on the Weibo platform. Weibo has an official certification mark, and we can ensure that the selected accounts were the brand's official Weibo accounts. The 122 selected brands represent 20 common industry categories, including apparel (e.g., Nike), business services (e.g., Deloitte), retail (e.g., Walmart), and technology (e.g., Amazon). Detailed brand information is provided in Appendix 2.

[1] Founded in 1996, Brand Finance is the world's leading independent brand valuation consultancy. Brand Finance has the advantages of independence, technical credibility, transparency, and expertise. Every year, thousands of the world's largest brands are tested to evaluate which brands are the strongest and most valuable. Brand Finance assisted in the crafting of the internationally recognized standard on Brand Valuation (ISO 10668) and the recently approved standard on Brand Evaluation (ISO 20671).

4.2. Variables and measures

4.2.1. Pilot study

According to the characteristics of the Weibo platform, and combined with the discussion results from professors and research team members, we tested the substitution effect of 22 variable indicators in four dimensions related to short video content on the characteristics of short video content and the importance of their impact on consumer engagement behavior. These variable indicators were the degree of matching between the video's background music and the brand or product (CBMB); the degree of matching between the video's background and the brand or product (CBB); the relevance of the information conveyed by the video to the brand or product (PR); the clarity and credibility of video's product and non-product information content (CC); the conciseness of the video's language (LC); the excellence of production of the video's stories (SQ); and the emotional content related to anger, courage, deprivation, disgust, excitement, failure, fear, hatred, humor, joy, love, pride, sadness, shame, triumph, and warmth. This information was subsequently coded.

We recruited 109 participants from Chinese universities (47.71% female, 52.29% male; M_{age} = 22.3) to evaluate the short video content items (see Appendix 3 for the questionnaire). Each participant was asked to watch two randomly selected short branded videos and rate the related items of short video content characteristics and their importance (1 = extremely unimportant; 5 = extremely important). After collecting 218 valid questionnaires, we conducted a regression analysis with the six content element indicators as independent variables and consumers' willingness to share short branded videos as the dependent variable (Chen and Berger, 2016; Barasch *et al.*, 2018). Our findings indicate that the degree of matching between the short video background music and the

brand or product (CBMB), and between the short video background and the brand or product (CBB); the relevance of information conveyed by the short video to the brand or product (PR), the clarity and credibility of the short video product and non-product information content (CC), the conciseness of the short video language (LC), and the excellence of production of short video stories (SQ) were all positively correlated with consumers' willingness to share (Table I). Moreover, we found that participants believed that the excitement, joy, love, pride, and warmth conveyed by the short videos had a significant positive impact on the popularity of short videos (Table II). Most research related to emotions considers both positive and negative emotions. However, positive emotion is more germane to short branded videos because their main purpose is to convey positive thoughts (Kim *et al.*, 2019). Positive emotional expression can bring more positive emotions to consumers, leading to their positive attitude toward brand products (Rocklage and Fazio, 2020) and enhancing consumers' willingness to interact with short videos. Combining the pilot study results and discussions with experts, we decided to consider only positive emotions, such as excitement, joy, love, pride, and warmth, in the main study.

In addition, the significance level of the Kolmogorov–Smirnov test of unstandardized residual and standardized residual was 0.200, which was significantly > 0.05, and the dependent variable conformed to a normal distribution (Table III). Simultaneously, we drew a P-P graph, and the results showed that the standard predicted value and the standard residual value were linearly related, indicating good homoscedasticity.

Therefore, we inferred that the 11 indicators (CBMB, CBB, PR, CC, LC, SQ, excitement, joy, love, pride, and warmth) could effectively represent the characteristics of short video content and are important predictors of consumer engagement. The following section describes our further empirical

analyses.

Table I

Impact of short video content characteristics on users' willingness to share

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.766	.279		2.744	.007
CBMB	.147	.074	.148	1.988	.048
CBB	.203	.070	.204	2.904	.004
PR	.185	.071	.179	2.621	.009
CC	.243	.061	.247	4.001	.000
LC	.130	.059	.139	2.228	.027
SQ	.197	.059	.234	3.341	.001

a. Dependent variable: Willingness to share.

b. Note: connection between background music and brand (CBMB); connection between background and brand (CBB); product relevance (PR); content credibility (CC); language conciseness (LC); and story quality (SQ)

Table II

Emotional expression in short videos

Emotion	Frequency of Occurrence	Emotion	Frequency of Occurrence	Emotion	Frequency of Occurrence
Anger	2.75%	Fear	2.75%	Sadness	0.92%
Courage	13.30%	Hatred	1.38%	Shame	3.67%
Deprivation	2.75%	Humor	13.76%	Triumph	11.93%
Disgust	1.38%	Joy	62.39%	Warmth	53.67%
Excitement	55.96%	Love	48.17%		
Failure	0.46%	Pride	46.79%		

Table III

Residual Analysis

Model	Unstandardized		standardized	t	Sig.	B [95.0% CI]		Collinearity	
	B	Std Error				Lower limit	Upper limit	tolerance	VIF
alpha	0.766	0.279		2.744	0.007	0.215	1.316		
CBMB	0.147	0.074	0.148	1.988	0.048	0.001	0.292	0.468	2.135
CBB	0.203	0.070	0.204	2.904	0.004	0.065	0.341	0.526	1.903
PR	0.185	0.071	0.179	2.621	0.009	0.046	0.324	0.558	1.791
CC	0.243	0.061	0.247	4.001	0.000	0.123	0.363	0.680	1.471
LC	0.130	0.059	0.139	2.228	0.027	0.015	0.246	0.667	1.500
SQ	0.197	0.059	0.234	3.341	0.001	0.081	0.313	0.531	1.882

a. Dependent variable: Willingness to share

b. Note: connection between background music and brand (CBMB); connection between background and brand (CBB); product relevance (PR); content credibility (CC); language conciseness (LC); and story quality (SQ)

Additionally, we measured participants' familiarity with Weibo ("I am not at all/very familiar with Sina Weibo," "I am not at all/ very knowledgeable about Sina Weibo," and "I have no/much experience with Sina Weibo" using five-point semantic differential scales; Davis *et al.*, 2019). To prove that the results obtained were independent of participants' familiarity with Weibo, we conducted another regression analysis for participants who were very familiar with Sina Weibo (familiarity > 3; α = 0.828) and obtained consistent results. That is, CBMB, CBB, PR, CC, LC, and SQ were positively correlated with consumers' willingness to share (Table IV).

Table IV

Impact of short video content indicators on its characteristics (familiarity > 3)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.561	.272		2.063	.041
CBMB	.178	.080	.183	2.235	.027
CBB	.193	.074	.196	2.617	.010
PR	.171	.076	.168	2.251	.026
CC	.263	.071	.258	3.714	.000
LC	.155	.064	.163	2.422	.017
SQ	.234	.063	.268	3.743	.000

a. Dependent variable: Willingness to share

b. Note: connection between background music and brand (CBMB); connection between background and brand (CBB); product relevance (PR); content credibility (CC); language conciseness (LC); and story quality (SQ)

4.2.2. Characteristics of short video content

We explored the four dimensions of the characteristics of short branded videos (content matching, information relevance, storytelling, and emotionality), with the 11 indicators. In addition to conducting the pilot study to choose the indicators, the four researchers discussed the meaning of the indicators multiple times before formal coding began. Two coders who were blind to the purpose of the research scored each short video on a five-point Likert scale (1 = very low content matching, weak information relevance, poor storytelling, and negative emotional expression; 3 = moderation;

and 5 = very high content matching, strong information relevance, excellent storytelling, and positive emotional expression). They were postgraduates majoring in Internet marketing under the supervision of two Ph.D.level associate professors of Internet marketing. The coders individually rated the videos and met twice a week, under the guidance of the two professors, to negotiate inconsistent results. Manual coding method is considered more reliable for content analysis, as the data obtained through coding are more accurate (Song *et al.*, 2020). The two coders took three months to conduct the coding work, and the two resulting sets of data were highly correlated (the overall interrater agreement percentage was 0.859).

4.2.3. Consumer engagement behavior

Based on previous research (Akpinar and Berger, 2017; Gavilanes *et al.*, 2018; Pancer *et al.*, 2019), we used the indicators of brand posts' popularity, that is, the number of likes, comments, and shares, to measure consumer engagement. Likes are a common measure of social media engagement in that they enable users to express love, recognition, and appreciation of content without leaving comments. They are considered a more personal and direct form of consumer engagement. Comments derive mainly from consumers' demands for social interaction and express their active engagement in social media. Shares are a high level of social engagement that allow users to recommend relevant content to their followers, thus affecting the attitudes and behaviors of other users (Ordenes *et al.*, 2019; Li and Xie, 2020).

In March 2020, we recorded the number of likes, comments, and shares for each short video released by each brand during an observation period of 15 months, from November 2018 to January 2020. The principal reason for choosing this period is that it contained different seasons, which enabled us to avoid the influence of festivals, customs, and other related factors. We used Python to

write programs to crawl the number of likes, comments, and shares of the videos; it can objectively and accurately reflect the cumulative volume of each video. As all kinds of information automatically pop up on the Weibo platform consumers are unlikely to see previously brand-released short video messages unless they make a specific inquiry, we regard the numbers we counted as the maximum values of likes, comments, and shares.

4.2.4. Short videos release time

Following Kanuri *et al.*'s (2018) research on the best time to release a social media story, we used Python programming to crawl the time of day of each brand's release and divided the data into night, morning, afternoon, and evening (00:00–5:59, 6:00–11:59, 12:00–17:59, and 18:00–23:59, respectively). Finding that the number of short videos released at night during the observation period was very small, we considered only three time periods (morning, afternoon, and evening) in the formal analysis and used the evening period as the baseline.

4.2.5. Control variables

The control variables were duration of the video, attractiveness of the video, endorsement in the video, first-person tone, and brand industry. Tellis *et al.* (2019) pointed to an asymmetric inverted U-shaped relationship between duration and advertising sharing. Specifically, they found that the best advertisement duration was 1.2–1.7 minutes, and shorter ads generated more shares than longer ads. While likable music can bring pleasure and may stimulate positive beliefs in consumers, positive comments from attractive reviewers can improve brand evaluation and positively impact consumers' purchase intentions (Ozanne *et al.*, 2019). Some cute elements, such as babies and animals, can also help arouse positive emotions (Tellis *et al.*, 2019). Moreover, intonation is an important factor in effective online communication that enhances the hedonic value of consumers' online experiences.

We also considered the industry fixed effects. The 122 brands we explored represented 20 common sectors, with the aerospace industry as a reference. Notably, commercial services, financial services, oil and gas, real estate, and utilities may be less attractive to consumers. Table V shows detailed descriptions and sources of all the variables. Table VI presents descriptive statistics.

Table V Variables description and sources

Variables	Notation	Detailed Description	Variable type	Source
Consumer engagement:				
Likes	LIKE	Total number of likes received by video	Continuous	Weibo
Comments	COMMENT	Total number of comments on video	Continuous	Weibo
Shares	SHARE	Total number of forwards of video	Continuous	Weibo
Characteristics of short video content (1–5):				
Connection Background Music and Brand	CBMB	Matching of background music and brand or product	Continuous	Weibo code
Connection Background and Brand	CBB	Matching of background and brand or product	Continuous	Weibo code
Product Relevance	PR	Relevance of information conveyed by video to brand or product	Continuous	Weibo code
Content Credibility	CC	Clarity and credibility of product and non-product information content	Continuous	Weibo code
Language Conciseness	LC	Conciseness of language	Continuous	Weibo code
Story Quality	SQ	Excellence of production of story	Continuous	Weibo code
Excitement Emotion	Excitement	Level of excitement in video	Continuous	Weibo code
Joy Emotion	Joy	Level of joy in video	Continuous	Weibo code
Love Emotion	Love	Level of love in video	Continuous	Weibo code
Pride Emotion	Pride	Level of pride in videos	Continuous	Weibo code
Warmth Emotion	Warmth	Level of warmth in video	Continuous	Weibo code
Moderator:				

Time of day	Morning Afternoon Evening	Release time of day (morning, afternoon, evening)	Dummy	Weibo
Controls:				
New Follower	NF	Number of fans of the brand	Continuous	Weibo
Length Seconds	LS	Total length of video	Continuous	Weibo
Content Attractiveness	CA	Attractiveness of video content	Continuous	Weibo code
Endorser Attractiveness	EA	Attractiveness of endorsements in video	Continuous	Weibo code
First-person Tone	FPT	Use of first-person tone	Dummy	Weibo code
Time Fixed Effects	Y2019	Short branded videos published on Weibo from November 1, 2018, to January 31, 2020	Dummy	
Industry Fixed Effects	Industry 1	Aerospace	Dummy	Brand Finance Global 500
	Industry 2	Alcohol	Dummy	
	Industry 3	Apparel	Dummy	
	Industry 4	Automotive	Dummy	
	Industry 5	Beverage	Dummy	
	Industry 6	Commercial service	Dummy	
	Industry 7	Cosmetics and Personal Care	Dummy	
	Industry 8	Engineering and Construction	Dummy	
	Industry 9	Financial services	Dummy	
	Industry 10	Leisure	Dummy	
	Industry 11	Luxury	Dummy	
	Industry 12	Media	Dummy	
	Industry 13	Oil/Gas	Dummy	
	Industry 14	Real Estate	Dummy	
	Industry 15	Restaurants	Dummy	
	Industry 16	Retail	Dummy	
	Industry 17	Technology	Dummy	
	Industry 18	Telecoms	Dummy	
	Industry 19	Transportation	Dummy	
	Industry 20	Utilities	Dummy	

Note: Notation represents the abbreviated label of a variable.

Table VI Descriptive statistics

Variable	Notation/Description	Min	Max	Mean	SD
Consumer engagement					
Likes	LIKE	0	712,000	2,205.023	18,970.900
Comments	COMMENT	0	197,000	546.651	3,864.951
Shares	SHARE	0	722,000	2,513.175	20,835.940
Characteristics of short video content (1–5):					
Connection Background Music and Brand	CBMB	0	5	3.339	1.404
Connection Background and Brand	CBB	0	5	3.176	0.997
Product Relevance	PR	0	5	4.475	0.858
Content Credibility	CC	2[a]	5	3.999	0.256
Language Conciseness	LC	0	5	3.593	0.508
Story Quality	SQ	0	5	1.783	1.815
Excitement	Excitement	0	5	1.785	1.877
Joy	Joy	0	5	1.579	1.881
Love	Love	0	5	0.038	0.393
Pride	Pride	0	5	0.439	1.222
Warmth	Warmth	0	5	0.335	1.086
Moderator:					
Time of day	Morning			2919[c]	
	Afternoon			4065	
	Evening			3256	
Controls:					
New Follower	NF	2.468	11.409	5.538	1.493
Length in Seconds	LS	1	2748	83.472	124.479
Content Attractiveness	CA	2[b]	5	3.450	0.551
Endorser Attractiveness	EA	0	5	0.865	1.555
First-person Tone	FPT	0	1	5560[c]	0.498

a. Note: [a, b] the content contained in each short branded video has a certain credibility and attractiveness, so the minimum value is > 0. [c] the value reports the frequency of morning, afternoon, evening, and first-person tone.

5. Validity Checks

5.1. SUR Model

Seemingly uncorrelated regression (SUR) refers to the absence of an internal connection between the variables of each equation but a correlation between the disturbance terms. When the same dataset is used in different equations, the correlation between disturbance terms is easy to produce, whereas SUR allows correlation errors among equations (Shahbaznezhad *et al.*, 2021). Moreover, the lower the correlation between the independent variables of equations or the higher the correlation between the disturbance terms of equations, the greater the efficiency improvement brought about by the feasible generalized least squares estimation of SUR (Tan *et al.*, 2019). The generalized linear model is used mainly to resolve the situation in which the residual term does not meet the normal distribution, involving a single dependent variable. Given that our final model contains 3 dependent variables and 28 independent variables (including interaction effects), referring to the research of Shahbaznezhad *et al.* (2021), we used SUR for the validity test. Table VII shows the results of the correlation analysis for the normalized treatment of the dependent variables.

Table VII

Correlation analysis among dependent variables

	Norm Likes	Norm Comments	Norm Shares
Norm Likes	1		
Norm Comments	0.795***	1	
Norm Shares	0.339***	0.314***	1

（Significance level of significant variables: ***p < 0.001, **p < 0.01, *p < 0.05）

Table VII shows that the numbers of likes, comments, and shares were highly correlated. We recommend that future research measure the residual value of each dependent variable in the correlation regression model and the correlation between the residuals. Table VIII presents the results of the correlation analysis for the residuals of the dependent variables.

Table VIII

Correlation analysis among the residuals at the 0.01 level

	Standardized Residual Likes	Standardized Comments	Residual	Standardized Residual Shares
Standardized residual likes	1			
Standardized residual comments	0.625***	1		
Standardized residual shares	0.543***	0.573***		1

(Significance level of significant variables: ***p < 0.001, **p < 0.01, *p < 0.05)

Table VIII shows that the residuals of the number of likes, comments, and shares were significantly correlated. Moreover, the kurtosis values of the dependent variable residuals are very high; that is, some residuals are abnormal (see Appendix 4). Combining the correlation between the residuals of dependent variables, we used the Breusch–Pagan test of SUR to determine a significant relationship between the dependent variables, which also means a meaningful correlation between the three equations (see Appendix 5).

5.2. Endogeneity

A possible endogeneity problem in this study comes from measurement errors. Specifically, given the error in the measurement of dependent or independent variables, deviations are between measured and true values, which lead to the endogeneity problem. In terms of dependent variables, our data on consumer engagement are obtained directly from mobile social media using crawler technology and have no measurement error. However, the measurement of independent variables, namely, indicators of short video content characteristics, could have some deviations. Therefore, we conducted a pilot study to determine the characteristic indicators of short video content and used the encoded data of two coders to eliminate measurement deviations.

We invited two coders who were blind to the purpose of the research in advance to code the short videos, using a five-point Likert scale. In most studies regarding the measures of characteristics

of technology, systems, and platforms (see, e.g., technology acceptance model; Hollebeek and Belk, 2021), perceived characteristics have been widely used to assess usability, functions, utility, and performance. Our four independent variables--content matching, information relevance, storytelling, and emotionality--are all perceived characteristics. As absolute objective indicators cannot be used to measure these independent variables, the debate over objective or subjective measures pertains to accuracy and validity. In this study, the two coders (postgraduates), following two associate professors' guidelines, used the criteria suggested by Hayes and Krippendorff (2007) to evaluate the four main aspects of video content. Before the coding, the coders had extensive discussions with the team members to ensure that everyone had a consistent understanding of the concepts and coding standards related to the feature elements of short branded video content, with the goal of high accuracy of the manual coding. Thus, the reliability and validity of this study were ensured based on a relatively rigorous coding process.

The credibility of the two sets of code data was measured. The overall inter-rater agreement percentage was 0.859, and the kappa and tau correlations were 0.767 and 0.82, respectively. According to the standard criterion, a kappa of 0.75 is generally regarded as sufficient. Therefore, our coded data have strong accuracy and credibility.

6. Main Study Result

We conducted a correlation matrix analysis of all variables. The results are shown in Appendix 6.

6.1. Regression analysis

We used a multiple regression model with categorical variables to test the influence of independent variables and a moderator variable on the dependent variables. We used the logarithmic transformation of the dependent variables to ensure their approximate normal distribution, which is

consistent with existing research (Davis *et al.*, 2019). The independent variables examined in this study are the 11 indicators contained in the four dimensions of the characteristics of short video content, with a range of variation from 0 to 5. The grouping variables used in this study were binary. The short videos release time of day (morning and afternoon) was a moderator and a dummy variable. The dependent variables were count variables (Shahbaznezhad *et al.*, 2021). Considering the interaction between the independent and moderator variables, the regression model for each dependent variable in our study was developed as follows:

$$Yij = \alpha_{1j}CBCB + \alpha_{2j}CBB + \alpha_{3j}PR + \alpha_{4j}CC + \alpha_{5j}LC + \alpha_{6j}SQ + \alpha_{7j}Love + \alpha_{8j}Warmth + \alpha_{9j}Excitement + \alpha_{10j}Joy + \alpha_{11j}Pride + \alpha_{12j}Morning + \alpha_{13j}Afternoon + \alpha_{14j}NF + \alpha_{15j}\mathrm{LS} + \alpha_{16j}CA + \alpha_{17j}EA + \alpha_{18j}FPT + \alpha_{19j}Love * Morning + \alpha_{20j} Love * Afternoon + \alpha_{21j}Warmth * Morning + \alpha_{22j}Warmth * Afternoon + \alpha_{23j} Excitement * Morning + \alpha_{24j}Excitement * Afternoon + \alpha_{25j}Joy * Morning + \alpha_{26j} Joy * Afternoon + \alpha_{27j}Pride * Morning + \alpha_{28j}Pride * Afternoon + \varepsilon_{1j} . \quad (1)$$

In Equation (1), i represents the index of different independent variable coefficients, and j represents the index of the number of likes, comments, or shares.

6.2. Model results

Table IX shows that the four dimensions of short branded video content characteristics significantly impacted consumer engagement, and the short videos' time of day effectively moderated the positive correlation between emotionality and consumer engagement. We discuss below the following three aspects: the impact of the characteristics of short branded video content on consumer engagement, the moderating effect of short videos' time of release, and control variables.

Table IX

Impact of short video content characteristics and the time of day on consumer engagement

	likes			comments			shares		
	γ	SE	p	γ	SE	P	γ	SE	p
Independent variables:									
CBMB	−0.006	0.009	0.51	−0.008	0.013	0.54	0.018	0.015	0.23
CBB	0.084***	0.016	0.00	0.109***	0.023	0.00	0.051*	0.028	0.07
PR	0.173***	0.019	0.00	0.254***	0.027	0.00	0.283***	0.032	0.00
CC	−0.177***	0.057	0.00	−0.227***	0.082	0.01	−0.213**	0.097	0.03
LC	0.206***	0.025	0.00	0.263***	0.036	0.00	0.269***	0.042	0.00
SQ	0.078***	0.007	0.00	0.094***	0.010	0.00	0.125***	0.012	0.00
Excitement	0.270***	0.013	0.00	0.275***	0.019	0.00	0.349***	0.023	0.00
Joy	0.241***	0.013	0.00	0.217***	0.018	0.00	0.317***	0.022	0.00
Love	0.022	0.057	0.70	0.050	0.081	0.54	−0.015	0.095	0.87
Pride	0.282***	0.018	0.00	0.193***	0.026	0.00	0.299***	0.031	0.00
Warmth	0.228***	0.021	0.00	0.213***	0.030	0.00	0.264***	0.035	0.00
Morning	−0.201***	0.069	0.00	−0.055	0.099	0.58	−0.052	0.117	0.66
Afternoon	−0.070	0.063	0.27	0.104	0.091	0.25	0.066	0.106	0.53
Controls:									
NF	−0.140	0.086	0.10	−0.171	0.119	0.15	−0.013	0.117	0.91
LS	0.00002	0.0001	0.84	0.0002	0.0001	0.05	0.001***	0.0002	0.00
CA	0.955***	0.027	0.00	1.055***	0.039	0.00	1.238***	0.046	0.00
EA	0.375***	0.009	0.00	0.389***	0.014	0.00	0.496***	0.016	0.00
FPT	0.037	0.026	0.15	−0.039	0.038	0.30	−0.020	0.045	0.66
Interactions:									
E*M	0.073***	0.018	0.00	0.051**	0.026	0.05	0.045	0.030	0.13
J*M	0.047***	0.017	0.01	0.030	0.024	0.21	0.028	0.029	0.33
L*M	0.100	0.074	0.18	0.105	0.106	0.32	0.155	0.124	0.21
P*M	0.016	0.025	0.52	0.049	0.036	0.17	0.018	0.042	0.67
W*M	0.067**	0.028	0.02	0.014	0.041	0.73	0.080*	0.048	0.10
E*A	0.006	0.017	0.72	−0.064***	0.024	0.01	−0.020	0.029	0.49
J*A	0.030*	0.016	0.06	0.009	0.023	0.70	−0.010	0.027	0.71
L*A	0.010	0.072	0.89	0.005	0.103	0.96	0.038	0.121	0.75
P*A	−0.073***	0.024	0.00	−0.062*	0.034	0.07	−0.056	0.040	0.16
W*A	0.018	0.027	0.51	−0.029	0.038	0.45	0.014	0.045	0.76
Fixed effects:									
Industry 2	−1.728	1.214	0.15	−1.695	1.672	0.31	−2.736*	1.635	0.09
Industry 3	0.138	1.177	0.91	−0.115	1.622	0.94	−1.177	1.587	0.46
Industry 4	−1.441	1.079	0.18	−1.312	1.486	0.38	−1.564	1.453	0.28
Industry 5	−0.471	1.200	0.69	−0.192	1.653	0.91	−0.988	1.617	0.54
Industry 6	−2.847**	1.272	0.03	−4.335**	1.753	0.01	−3.873**	1.716	0.02
Industry 7	0.093	1.475	0.95	0.470	2.031	0.82	−0.786	1.983	0.69
Industry 8	−0.345	1.429	0.81	−0.151	1.969	0.94	−2.216	1.926	0.25

Industry 9	−2.792**	1.143	0.01	−2.079	1.574	0.19	−2.183	1.540	0.16
Industry 10	−0.491	1.208	0.68	−0.991	1.664	0.55	−1.290	1.627	0.43
Industry 11	0.253	1.150	0.83	−0.140	1.584	0.93	−0.897	1.549	0.56
Industry 13	−4.880***	1.628	0.00	−4.849**	2.244	0.03	−6.688***	2.197	0.00
Industry 14	−2.484*	1.274	0.05	−3.988**	1.755	0.02	−3.431**	1.719	0.05
Industry 15	−0.202	1.210	0.87	0.279	1.667	0.87	−0.981	1.630	0.55
Industry 16	−2.516**	1.131	0.03	−2.212	1.559	0.16	−3.681**	1.525	0.02
Industry 17	−1.015	1.080	0.35	−0.587	1.488	0.69	−2.095	1.455	0.15
Industry 18	−0.505	1.231	0.68	0.820	1.696	0.63	−0.435	1.657	0.79
Industry 19	−1.357	1.640	0.41	1.071	2.260	0.64	−3.324	2.216	0.13
Industry 20	−3.104**	1.467	0.03	−2.675	2.021	0.19	−2.550	1.977	0.20

a. Note: *p < 0.1; **p < 0.05; ***p < 0.01. Industry 12 is media, and there is only one brand (Fox) in our research, with only one short video, and the short video does not contain background music, narrative, or other elements; therefore it was deleted from the data analysis.

b. Note: connection between background music and brand (CBMB); connection between background and brand (CBB); product relevance (PR); content credibility (CC); language conciseness (LC); story quality (SQ); new follow (NF); length in seconds (LS); content attractiveness (CA); endorser attractiveness (EA); first-person tone (FPT); excitement*morning (E*M); joy*morning (J*M); love*morning (L*M); pride*morning (P*M); warmth*morning (W*M); excitement*afternoon (E*A); joy*afternoon (J*A); love*afternoon (L*A); pride*afternoon (P*A); warmth* afternoon (W*A).

c. Time of day and industry were dummy variables, and evening and industry 1 were selected as reference groups.

6.3. Impact of short branded video content characteristics on consumer engagement

Through empirical analysis, we also conclude that the characteristics of short branded video content positively impacted consumer engagement. Most previous scholars have explored the impact of the vividness, interactivity, information, and entertainment of brand content on consumer cognition and behavior (Bazi *et al.*, 2020; Demmers *et al.*, 2020; Lin *et al.*, 2019; Schultz, 2017), whereas the present study divides the content characteristics of short branded videos into four specific dimensions, with 11 indicators, and further analyzes the impact of the content characteristics of short branded videos on consumer engagement.

The results showed that the degree of matching between short video background music and the brand or product had no significant impact on consumer engagement (p > 0.10). Ozanne *et al.* (2019) pointed out that likable music can bring pleasure and may stimulate positive beliefs in consumers,

which may lead to consumer engagement behaviors. However, the background music in short videos is not all likable, and when watching short videos with limited fragmentation time consumers pay more attention to the short video content while ignoring the existence of the background music. The degree of matching between the short video background and the brand or product had a significant positive impact on consumer engagement ($p < 0.10$), which is consistent with Lee and Labroo's finding (2004); specifically, they reveal that background will affect consumers' perceived fluency, which in turn affects consumers' attitudes toward branded products. Thus, Hypothesis 1 is partially supported. The relevance of the information conveyed by the short video to a brand or product positively impacted consumer engagement ($p < 0.10$). This result is almost consistent with the research of Gavilanes *et al.* (2018). They derived seven content categories for social network advertising which are relevant to the brand or product and then confirmed a significant but unequal impact of at least four content categories on various engagement metrics. However, the clarity and credibility of the short video product and non-product information content negatively impacted consumer engagement, probably because of some controversial content, which is more likely to attract consumers' attention and lead to more discussion, whereas clearer content is more likely to lead consumers to lose interest in further understanding; Hypothesis 2 is partially supported. The storytelling of the short branded videos—that is, the conciseness of the short video language and the excellent production of the short video stories—had a significant positive impact on consumer engagement ($p < 0.10$), thus supporting Hypothesis 3. This finding is consistent with previous researchers' results, that is, concise language description and high-quality narrative more easily gain people's attention and promote consumer engagement (Green and Brock, 2000; Atkinson *et al.*, 2018). The emotionality (warmth, excitement, joy, and pride) of the short branded videos had a

significant positive impact on consumer engagement, except for the emotion of love ($p > 0.10$). This result is similar to the finding of Berger and Milkman, who used a unique data set of all New York Times articles published over a three-month period to examine how emotion shapes viral transmission (Berger and Milkman, 2012). Their research object was articles, whereas the present study focused on short videos. Moreover, unlike our study, they do not investigate the emotion of love as an individual variable. Possibly, the reason love had no significant effect on consumer engagement in our study is that the emotional expression of love is sufficiently strong that consumers who become immersed in it ignore the process of participation. Thus, Hypothesis 4 is partially supported.

6.4. Moderating effect of the short videos release time of day

The time of day of a short video effectively moderated the impact of emotionality on consumer engagement. Overall, the interaction between emotionality and the morning was stronger than that between emotionality and the afternoon. The impact of the interaction of warmth, excitement, joy, and time of day on consumer engagement supports our hypothesis. That is, the interaction of a short video released in the morning with warmth, excitement, and joy had a significant positive impact on consumers' likes, whereas a short video released in the afternoon interacted only with joy, with a positive effect on likes. The reason may be that with the gradual depletion of individual resources throughout the day, consumers increase their preference for simplified processing and reliance on reference selection (Pocheptsova *et al.*, 2009). Accordingly, the emotional expression of warmth and excitement may not be able to arouse consumers' responses, but joy may be able to attract consumers' attention through a happy atmosphere, thereby promoting consumers' likes. Moreover, the interaction between the time of day and warmth and joy had no significant impact on consumers' comments,

whereas the interaction between short videos released in the morning and excitement positively impacted their comments; and the interaction between short videos released in the afternoon and excitement had a significant negative impact on their comments. A possible reason is that the emotions of warmth and joy are softer, and their impact on consumers' comments does not change over time. However, excitement can cause a drastic change in emotion, and its interaction with time significantly impacts consumers' comments. The interaction between the time of day and excitement and joy had no significant impact on consumers' shares, whereas the interaction between short videos released in the morning and warmth positively impacted shares. We believe that positive emotional expression always makes consumers generate a desire to share with others, which does not change over time. Therefore, we suggest that short branded videos should contain more positive emotions of warmth, excitement, and joy and be published in the morning as much as possible to promote consumers' engagement.

Similar to the research on the impact of emotionality on consumer engagement, the interaction between the short videos' release time of day and love had no significant impact on consumer engagement ($p > 0.10$), suggesting that the strong emotional expression of love may immerse consumers at any time. Moreover, the interaction between the short videos released in the morning and pride had no significant impact on consumer engagement ($p > 0.10$); however, the interaction between the short videos released in the afternoon and pride had a significant negative impact on consumers' likes and comments ($p < 0.10$), but no significant impact on consumers' shares ($p > 0.10$). A possible reason is that pride contains conceited emotional expressions and, according to the resource exhaustion theory, consumers may feel disdainful in response. Thus, we suggest that brand owners should avoid including pride when publishing short videos in the afternoon to reduce

consumers' negative reactions.

6.5. Control variables

Other content elements of short branded videos may generate consumer engagement. Our results show that the number of fans of the brand and first-person tones in the short video have no significant impact on consumer engagement ($p > 0.10$). The video's duration had no significant impact on consumers' likes and comments ($p > 0.10$) but significantly impacted consumers' shares ($p < 0.01$); longer duration enhanced consumers' willingness to share. In addition, the attractiveness of short video content and endorsements of short videos effectively increased consumer engagement ($p < 0.01$). Furthermore, by including industry fixed effects we showed that compared with the aerospace industry as the baseline, commercial services, financial services, oil and gas, real estate, retail, and utilities negatively impacted consumers' likes. Correspondingly, commercial services, oil and gas, and real estate negatively impacted consumers' comments; and commercial services, oil and gas, real estate, and retail negatively impacted consumers' shares.

7. Conclusions

This study presents the impact of short branded video content characteristics and short videos' release time of day on consumer engagement in social media. We divided the characteristics of short branded video content into four dimensions (content matching, information relevance, storytelling, and emotionality) and verified the research model and hypotheses based on data obtained from Weibo. The results show a significant positive correlation between the selected characteristics of short branded video content and consumer engagement. Moreover, we found that the short videos' release time of day significantly moderated the positive correlation between the positive emotions of short videos (e.g., warmth, excitement, and joy) and consumer engagement. In other words, compared with

an afternoon short video content release, a morning release appears to better promote the positive impact of warmth, excitement, and joy on consumer engagement, which is a finding that refines the relevant research of Kanuri *et al.* (2018).

7.1. Theoretical implications

This study combed existing research on consumer engagement and short video content characteristics, used short branded videos on the Weibo social media platform as research objects, and determined the variables that best represent consumer engagement--namely, likes, comments, and shares. We constructed a conceptual research model that combined theories of fluency, narrative transmission, and emotional contagion and used crawling, coding, and other methods to obtain data on the content characteristics of short branded videos, the time of day videos were released, and consumer engagement.

This study contributes to the field of online marketing in the following three ways. First, most studies related to factors that influence consumer engagement focus on textual and pictorial information, such as advertisement types and post features, while studies on short video content are relatively few. This study uses short branded videos on social media platforms as the research object and enriches theories of content marketing by employing a broader brand perspective.

Second, we organized the research framework based on previous research (Dall'Olio and Vakratsas, 2022), namely, following the paths of content and execution. In our research, content focuses on the independent variables of information relevance and emotionality, and execution focuses on content matching and storytelling. While previous research analyzed only the content of products, based on sales volume and marketing-mix activities, we have expanded previous research by investigating both content and execution in brand advertisement. Through crawling and coding we

identified four dimensions of short brand video characteristics and their effects on consumer engagement (likes, comments, and shares), thus contributing to the literature on short video content and consumer engagement and further expanding the content marketing theory and visual marketing theory.

Finally, this study explored the impact of the interaction between the time of day of short branded videos release and the emotionality of short branded videos on consumer engagement. In a fast-paced life, consumers are unable to browse short videos at any time and in any place, and some short videos may be ignored and/or miss wide dissemination because of the time in which they are released. By including the release time of day, we have captured the time periods when short videos may have the best effects. This result provides a reference for other researchers to further explore this field.

7.2. Managerial implications

Our suggestions for how businesses produce short videos include creating a comfortable atmosphere for consumers and selecting a background that matches the target product. Irrelevant information should be avoided as much as possible because it can easily divert consumers' attention, thereby weakening their awareness of the product. Focusing on the authenticity and credibility of the content can make consumers feel good about the brand and its products, while false information is known to mislead consumers and bring unbearable consequences for the brand (e.g., the Sanlu-contaminated milk scandal). Consumers are often unwilling to receive complex and redundant information. Thus, a simple description may produce a cordial feeling and help them to capture key information and form a deep impression easily. Elaborating stories is a way to attract consumers' attention and resonate with them, and positive emotions (e.g., warmth, excitement, joy, and pride) are likely to arouse

consumers' interest.

The release time of short videos is also very important. Except for special times (e.g., just-in-time hotspots, a memorable moment), enterprises should try their best to release short videos before noon. Given that release in the morning can enhance the positive impact of positive emotions, such as warmth, excitement, and joy, on consumer engagement and bring more consumer engagement, more potential consumers may be exposed to the short video content, leading to the best dissemination effect.

7.3 Limitations and future research

The current study makes significant contributions but also has certain limitations. First, we focused exclusively on Weibo, among the many social media platforms, and the research results may not adequately explain consumer engagement on other platforms, such as TikTok. Future research could extend the investigation of the impact of short video content on consumer engagement to more social media platforms. Second, short branded video advertisements tend to convey positive emotions, which limited our study of the relationship between a fuller range of emotions and consumer engagement. Examining the impact of negative emotions may be an interesting research direction. Third, we chose the short videos release time of day as the moderator variable. Future research should explore other moderating variables, for example, the existence of a brand logo, consumers' loyalty and familiarity with a brand, characters in short videos, and the duration of a short video may also affect the relationship between the characteristics of short video content and consumer engagement.

References:

Aghakhani, N., Karimi, J. and Salehan, M.A. (2018), "Unified model for the adoption of electronic word of mouth on social network sites: Facebook as the exemplar", *International Journal of Electronic Commerce,* Vol. 22 No. 2, pp. 202-231.

Agnihotri, A. and Bhattacharya, S. (2019), "The relative effectiveness of endorsers: The identity badge of CEOs and founders versus the attractiveness of celebrities", *Journal of Advertising Research*, Vol. 59 No. 3, pp. 357-369.

Akpinar, E. and Berger, J. (2017), "Valuable virality", *Journal of Marketing Research*, Vol. 54 No. 2, pp. 318-330.

Atkinson, M., Smith, K. and Kirby, S. (2018), "Adult learning and language simplification", *Cognitive Science*, Vol. 42 No. 8, pp. 2818-2854.

Bagchi, R. and Cheema, A. (2013), "The effect of red background color on willingness-to-pay: The moderating role of selling mechanism", *Journal of Consumer Research*, Vol. 39 No. 5, pp. 947-960.

Bapna, S., Benner, M.J. and Qiu, L. (2019), "Nurturing online communities: An empirical investigation", *MIS Quarterly*, Vol. 43 No. 2, pp. 425-452.

Barasch, A., Zauberman, G. and Diehl, K. (2018), "How the intention to share can undermine enjoyment: Photo-taking goals and evaluation of experiences", *Journal of Consumer Research*, Vol. 44 No. 6, pp. 1220-1237.

Batra, R., Lenk, P. and Wedel, M. (2010), "Brand extension strategy planning: Empirical estimation of brand–category personality fit and atypicality", *Journal of Marketing Research*, Vol. 47 No. 2, pp. 335-347.

Bazi, S., Filieri, R. and Gorton, M. (2020), "Customers' motivation to engage with luxury brands on social media", *Journal of Business Research*, Vol. 112, pp. 223-235.

Berger, J. and Milkman, K.L. (2012), "What makes online content viral?", *Journal of Marketing Research,* Vol. 49 No. 2, 192-205.

Chen, Z. and Berger, J. (2016), "How content acquisition method affects word of mouth", *Journal of Consumer Research*, Vol. 43 No. 1, pp. 86-102.

Dall'Olio, F. and Vakratsas, D. (2023), "The impact of advertising creative strategy on advertising elasticity", *Journal of Marketing,* Vol. 87 No. 1, pp. 26-44.

Davis, S.W., Horváth, C., Gretry, A. and Belei, N. (2019), "Say what? How the interplay of tweet readability and brand hedonism affects consumer engagement", *Journal of Business Research*, Vol. 100, pp. 150-164.

Demmers, J., Weltevreden, J.W. and van Dolen, W.M. (2020), "Consumer engagement with brand posts on social

media in consecutive stages of the customer journey", *International Journal of Electronic Commerce*, Vol. 24 No. 1, pp. 53-77.

Dong, X., Chang, Y, Liao, J., Hao, X. and Yu, X. (2023), "The impact of virtual interaction on consumers' pro-environmental behaviors: the mediating role of platform intimacy and love for nature", *Information Technology & People*, doi: 10.1108/ITP-02-2021-0164.

Dong, X., Wen, X., Wang, K. and Cai, C. (2022), "Can negative media coverage be positive? When negative news coverage improves firm financial performance", *Journal of Business & Industrial Marketing*, Vol. 37 No. 6, pp. 1338-1355.

Garritty, C., Hersi, M., Hamel, C., Stevens, A., Monfaredi, Z., Butler, C., Tricco, A.C., Hartling, L., Stewart, L.A., Welch, V., Thavorn, K., Cheng, W. and Moher, D. (2020), "Assessing the format and content of journal published and non-journal published rapid review reports: A comparative study", *PLoS ONE*, Vol. 15 No. 8, pp. 1-16.

Gavilanes, J.M., Flatten, T.C. and Brettel, M. (2018), "Content strategies for digital consumer engagement in social networks: Why advertising is an antecedent of engagement", *Journal of Advertising*, Vol. 47 No. 1, pp. 4-23.

Gelper, S., Peres, R. and Eliashberg, J. (2018), "Talk bursts: The role of spikes in prerelease word-of-mouth dynamics", *Journal of Marketing Research*, Vol. 55 No. 6, pp. 801-817.

Green, M.C. and Brock, T.C. (2000), "The role of transportation in the persuasiveness of public narratives", *Journal of Personality & Social Psychology*, Vol. 79 No. 5, pp. 701-721.

Guo, Y., Lu, Z., Kuang, H. and Wang, C. (2020), "Information avoidance behavior on social network sites: Information irrelevance, overload, and the moderating role of time pressure", *International Journal of Information Management*, Vol. 52, pp. 102067.

Ha, Y., Park, K., Kim, S.J., Joo, J. and Cha, M. (2021), "Automatically detecting image–text mismatch on Instagram with deep learning", *Journal of Advertising*, Vol. 50 No. 1, pp. 52-62.

Hasford, J., Hardesty, D.M. and Kidwell, B. (2015), "More than a feeling: Emotional contagion effects in persuasive communication", *Journal of Marketing Research*, Vol. 52 No. 6, pp. 836-847.

Hayes, A.F. and Krippendorff, K. (2007), "Answering the call for a standard reliability measure for coding data", *Communication Methods and Measures*, Vo. 1 No. 1, pp. 77-89.

Hengzhou Bozhi (QYR) Software and Business Service Research Center (2021), "2021–2027 Global and China Short Video Platform Industry Research and Analysis Report of the 14th Five-Year Plan", available at:

https://www.qyresearch.com.cn/reports/online-video-p803657.html (accessed 3 July 2021)

Hollebeek, L.D. and Belk, R. (2021), "Consumers' technology-facilitated brand engagement and wellbeing: Positivist TAM/PERMA- vs. Consumer Culture Theory perspectives", *International Journal of Research in Marketing*, Vol. 38 No. 2, pp. 387-401.

Hsiao, K.L., Lu, H.P. and Lan, W.C. (2013), "The influence of the components of storytelling blogs on readers' travel intentions", *Internet Research*, Vol. 23 No. 2, pp. 160-182.

Hu, M. and Chaudhry, S.S. (2020), "Enhancing consumer engagement in e-commerce live streaming via relational bonds", *Internet Research*, Vol. 30 No. 3, pp. 1019-1041.

Hu, X., Chen, Z., Davison, R.M. and Liu, Y. (2022), "Charting consumers' continued social commerce intention", *Internet Research*, Vol. 32 No. 1, pp. 120-149.

Kang, H., Shin, W. and Huang, J. (2022), "Teens' privacy management on video-sharing social media: the roles of perceived privacy risk and parental mediation", *Internet Research*, Vol. 32 No. 1, pp. 312-334.

Kanuri, V.K., Chen, Y. and Sridhar, S. (2018), "Scheduling content on social media: Theory, evidence, and application", *Journal of Marketing*, Vol. 82 No. 6, pp. 89-108.

Kim, M., Song, D. and Jang, A. (2021), "Consumer response toward native advertising on social media: the roles of source type and content type", *Internet Research*, Vol. 31 No. 5, pp. 1656-1676.

Kim, T., Kim, H. and Kim, Y. (2019), "How do brands' Facebook posts induce consumers' e-word-of-mouth behavior? Informational versus emotional message strategy: A computational analysis", *Journal of Advertising Research*, Vol. 59 No. 4, pp. 402-413.

Kranzbühler, A.M., Zerres, A., Kleijnen, M.H.P. and Verlegh, P.W.J. (2020), "Beyond valence: A meta-analysis of discrete emotions in firm-customer encounters", *Journal of the Academy of Marketing Science*, Vol. 48 No. 3, pp. 478-498.

Kruglanski, A.W. (2006), "The nature of fit and the origins of 'feeling right': A goal-systemic perspective", *Journal of Marketing Research*, Vol. 43 No. 1, pp. 11-14.

Labroo, A.A. and Lee, A.Y. (2006), "Between two brands: A goal fluency account of brand evaluation", *Journal of Marketing Research*, Vol. 43 No.3, pp. 374-385.

Lee, A.Y. and Labroo, A.A. (2004), "The effect of conceptual and perceptual fluency on brand evaluation", *Journal of Marketing Research*, Vol. 41 No. 2, pp. 151-165.

Li, X., Shi, M. and Wang, X. (2019), "Video mining: Measuring visual information using automatic methods",

International Journal of Research in Marketing, Vol. 36 No. 2, pp. 216-231.

Li, Y. and Xie, Y. (2020), "Is a picture worth a thousand words? An empirical study of image content and social media engagement", *Journal of Marketing Research*, Vol. 57 No. 1, pp. 1-19.

Lin, X., Sarker, S. and Featherman, M. (2019), "Users' psychological perceptions of information sharing in the context of social media: A comprehensive model", *International Journal of Electronic Commerce*, Vol. 23 No. 4, pp. 453-491.

Liu, L., Liu, R., Lee, M. and Chen, J. (2019), "When will consumers be ready? A psychological perspective on consumer engagement in social media brand communities", *Internet Research*, Vol. 29 No. 4, pp. 704-724.

Liu, X., Shi, S.W., Teixeira, T. and Wedel, M. (2018), "Video content marketing: The making of clips", *Journal of Marketing*, Vol. 82 No. 4, pp. 86-101.

Luethi, M., Meier, B. and Sandi, C. (2009), "Stress effects on working memory, explicit memory, and implicit memory for neutral and emotional stimuli in healthy men", *Frontiers in Behavioral Neuroscience*, Vol. 2, pp. 5.

Maaya, L., Meulders, M. and Vandebroek, M. (2020), "Online consumers' attribute non-attendance behavior: Effects of information provision", *International Journal of Electronic Commerce*, Vol. 24 No. 3, pp. 338-365.

Mulier, L., Slabbinck, H. and Vermeir, I. (2021), "This way up: The effectiveness of mobile vertical video marketing", *Journal of Interactive Marketing*, Vol. 55, pp. 1-15.

Obilo, O.O., Chefor, E. and Saleh, A. (2021), "Revisiting the consumer brand engagement concept", *Journal of Business Research*, Vol. 126, pp. 634-643.

Ordenes, F.V., Grewal, D., Ludwig, S., Ruyter, K.D., Mahr, D. and Wetzels, M. (2019), "Cutting through content clutter: How speech and image acts drive consumer sharing of social media brand messages", *Journal of Consumer Research*, Vol. 45 No. 5, pp. 988-1012.

Ozanne, M., Liu, S.Q. and Mattila, A.S. (2019), "Are attractive reviewers more persuasive? Examining the role of physical attractiveness in online reviews", *Journal of Consumer Marketing*, Vol. 36 No. 6, pp. 728-739.

Pancer, E., Chandler, V., Poole, M. and Noseworthy, T.J. (2019), "How readability shapes social media engagement", *Journal of Consumer Psychology*, Vol. 29 No. 2, pp. 262-270.

Pansari, A. and Kumar, V. (2017), "Customer engagement: the construct, antecedents, and consequences", *Journal of the Academy of Marketing Science*, Vol. 45 No. 3, pp. 294-311.

Pocheptsova, A., Amir, O., Dhar, R. and Baumeister, R.F. (2009), "Deciding without resources: Resource depletion and choice in context", *Journal of Marketing Research*, Vol. 46 No. 3, pp. 344-355.

Reich, B.J. and Pittman, M. (2020), "An appeal to intimacy: Consumer response to platform - appeal fit on social media", *Journal of Consumer Psychology*, Vol. 30 No. 4, pp. 660-670.

Relling, M., Schnittka, O., Sattler, H. and Johnen, M. (2016), "Each can help or hurt: Negative and positive word of mouth in social network brand communities", *International Journal of Research in Marketing*, Vol. 33 No.1, pp. 42-58.

Rocklage, M.D. and Fazio, R.H. (2020), "The enhancing versus backfiring effects of positive emotion in consumer reviews", *Journal of Marketing Research*, Vol. 57 No. 2, pp. 332-352.

Schultz, C.D. (2017), "Proposing to your fans: Which brand post characteristics drive consumer engagement activities on social media brand pages?", *Electronic Commerce Research & Applications*, Vol. 26, pp. 23-34.

Shahbaznezhad, H., Dolan, R. and Rashidirad, M. (2021), "The role of social media content format and platform in users' engagement behavior", *Journal of Interactive Marketing*, Vol. 53, pp. 47-65.

Shapiro, S.A. and Nielsen, J.H. (2013), "What the blind eye sees: Incidental change detection as a source of perceptual fluency", *Journal of Consumer Research*, Vol. 39 No. 6, pp. 1202-1218.

She, J., Zhang, T., Chen, Q., Zhang, J., Fan, W., Wang, H. and Chang, Q. (2022), "Which social media posts generate the most buzz? Evidence from WeChat", *Internet Research*, Vol. 32 No. 1, pp. 273-291.

Smith, L.W. and Rose, R.L. (2020), "Service with a smiley face: Emotional contagion in digitally mediated relationships", *International Journal of Research in Marketing*, Vol. 37 No. 2, pp. 301-319.

Song, H., Tolochko, P., Eberl, J.M., Eisele, O., Greussing, E., Heidenreich, T., Lind, F., Galyga, S. and Boomgaarden, H.G. (2020), "In validations we trust? The impact of imperfect human annotations as a gold standard on the quality of validation of automated content analysis", *Political Communication*, Vol. 37 No. 4, pp. 550-572.

Song, S., Zhao, Y.C., Yao, X., Ba, Z. and Zhu, Q. (2021), "Short video apps as a health information source: an investigation of affordances, user experience and users' intention to continue the use of TikTok", *Internet Research*, Vol. 31 No. 6, pp. 2120-2142.

Sudhir, K. (2016), "Editorial: The exploration-exploitation tradeoff and efficiency in knowledge production", *Marketing Science*, Vol. 35 No. 1, pp. 1-9.

Tafesse, W. (2020), "YouTube marketing: How marketers' video optimization practices influence video views", *Internet Research*, Vol. 30 No. 6, pp. 1689-1707.

Tan, X., Wang, Y. and Tan, Y. (2019), "Impact of live chat on purchase in electronic markets: The moderating role of information cues", *Information Systems Research*, Vol. 30 No. 4, pp. 1248-1271.

Teixeira, T., Wedel, M. and Pieters, R. (2012), "Emotion-induced engagement in internet video advertisements", *Journal of Marketing Research*, Vol. 49 No. 2, pp. 144-159.

Tellis, G.J., MacInnis, D.J., Tirunillai, S. and Zhang, Y. (2019), "What drives virality (sharing) of online digital content? The critical role of information, emotion, and brand prominence", *Journal of Marketing*, Vol. 83 No. 4, pp. 1–20.

Van Doorn, J., Lemon, K.N., Mittal, V., Nass, S., Pick, D., Pirner, P. and Verhoef, P.C. (2010), "Customer engagement behavior: Theoretical foundations and research directions", *Journal of Service Research*, Vol. 13 No. 3, pp. 253-266.

Verhoef, P.C., Reinartz, W. J. and Krafft, M. (2010), "Customer engagement as a new perspective in customer management", *Journal of Service Research*, Vol. 13 No. 3, pp. 247-252.

Vivek, S.D., Beatty, S.E. and Morgan, R.M. (2012), "Customer engagement: Exploring customer relationships beyond purchase", *Journal of Marketing Theory and Practice*, Vol. 20 No. 2, pp. 122-146.

Wang, R.W.Y., Chang, Y.C. and Chuang, S.W. (2016), "EEG spectral dynamics of video commercials: Impact of the narrative on the branding product preference", *Scientific Reports*, Vol. 6, pp. 36487.

Wang, Y., Ramachandran, V. and Liu Sheng, O.R. (2021), "Do fit opinions matter? The impact of fit context on online product returns", *Information Systems Research*, Vol. 32 No. 1, pp. 268-289.

Xi, N. and Hamari, J. (2020), "Does gamification affect brand engagement and equity? A study in online brand communities", *Journal of Business Research*, Vol. 109, pp. 449-460.

Zhou, M., Chen, G.H., Ferreira, P. and Smith, M.D. (2021), "Consumer Behavior in the Online Classroom: Using Video Analytics and Machine Learning to Understand the Consumption of Video Courseware", *Journal of Marketing Research*, Vol. 58 No. 6, pp. 1079-1100.

Zor, O., Kim, K.H. and Monga, A. (2022), "Tweets we like aren't alike: Time of day affects engagement with vice and virtue tweets", *Journal of Consumer Research*, Vol. 49 No. 3, pp. 473-495.

Appendix 1. Details of interview process

a. Purpose: After determining four features of short videos (content matching, information relevance, storytelling, and emotionality) to fill in previous research gaps, we needed to confirm the coding items for each factor.

b. Ten users: According to the official report of Weibo in 2020, nearly 80% of users were between 23 and 33 years old, and female users exceeded male users. We then recruited volunteers who were active users of Weibo aged 23 to 33 and attended a university; from them, 10 were selected randomly, including six males and four females. The average daily use time of Weibo for these users was more than 1 hour. Therefore, the user group selected in this study was representative.

c. Four experts: The four experts in this study were scholars from different universities with rich research experience in the field of Internet marketing, all holding Ph.D. degrees.

d. Items coding: Two postgraduates majoring in Internet marketing completed the coding work under the supervision of two Ph.D.-level associate professors of Internet marketing. In addition to conducting a pilot study to determine the indicators, the four researchers also discussed the meaning of the indicators many times before formal coding began. After determining the final indicators, the two coders individually encoded all the branded short videos and under the guidance of the two professors met twice a week to negotiate inconsistent ratings.

Appendix 2. Brand information

Brand		Brand Finance Global 200	Industry categories	Note
Amazon		1	Technology（17）	
Apple	ST	2		There were no short videos posted on Weibo.
Google		3	Technology（17）	
Microsoft		4	Technology（17）	
Samsung		5	Technology（17）	
AT&A	ST	6		There was no official Weibo.
Facebook	ST	7		There was no official Weibo.
ICBC		8	Financial services（9）	Weibo was only visible for half a year.
Verizon	ST	9		There was no official Weibo.
China Construction Bank	ST	10		There were no short videos posted on Weibo.
Walmart		11	Retail（16）	
Huawei		12	Technology（17）	
Mercedes-Benz		13	Automotive（4）	
Ping An		14	Financial services（9）	
China Mobile		15	Telecoms（18）	
Agricultural Bank of China		16	Financial services（9）	
Toyota		17	Automotive（4）	
State Grid		18	Utilities（20）	
Bank of China		19	Financial services（9）	
WeChat		20	Technology（17）	
Tencent (QQ)		21	Technology（17）	
Home Depot		22	Retail（16）	
Taobao		23	Technology（17）	
T (Deutsche Telekom)	ST	24		There was no official Weibo.
Disney		25	Leisure（10）	"Disney China" was selected as the research object, and they were classified as the leisure industry. Weibo content was posted until August 2019.
Shell	ST	26		There was no official

				Weibo.
Volkswagen		27	Automotive（4）	
NTT Group	ST	28		There was no official Weibo.
BMW		29	Automotive（4）	
Wells Fargo	ST	30		There were no short videos posted on Weibo.
Starbucks		31	Restaurants（15）	
YouTube	ST	32		There was no official Weibo.
PetroChina	ST	33		There were no short videos posted on Weibo.
Bank of America	ST	34		There was no official Weibo.
Tmall		35	Technology（17）	
Citi		36	Financial services（9）	
Chase	ST	37		There was no official Weibo.
Coca-Cola		38	Beverage（5）	
Marlboro	ST	39		There was no official Weibo.
IBM		40	Commercial service（6）	
Nike		41	Apparel（3）	
Boeing		42	Aerospace（1）	
McDonald's		43	Restaurants（15）	
UnitedHealthcare	ST	44		There was no official Weibo.
Moutai		45	Alcohol（2）	
Deloitte		46	Commercial service（6）	
Porsche		47	Automotive（4）	
UPS		48	Transportation（19）	
Sinopec		49	Oil/Gas（13）	Since the group official Weibo was not found, "Sinopec Guangdong Petroleum Branch" was selected as the research object.
Intel		50	Technology（17）	
General Electric	ST	51		There was no official Weibo.
Visa		52	Financial services（9）	
American Express		53	Commercial service（6）	
Xfinity	ST	54		There was no official Weibo.

Mitsubishi Group	ST	55		There was no official Weibo.
Accenture		56	Commercial service（6）	
Honda		57	Automotive（4）	
CSCEC		58	Engineering & Construction（8）	Weibo was only visible for half a year.
Oracle		59	Technology（17）	
Total		60	Oil/Gas（13）	
PWC		61	Commercial service（6）	
FedEx		62	Transportation（19）	Weibo contents were posted until June 2019.
Lowe's	ST	63		There was no official Weibo.
EY	ST	64		There were no short videos posted on Weibo.
Allianz		65	Financial services（9）	
Bosch		66	Engineering & Construction（8）	
Dell		67	Technology（17）	
BP	ST	68		There was no official Weibo.
Uber	ST	69		There was no official Weibo.
China Merchants Bank		70	Financial services（9）	
China Life		71	Financial services（9）	Weibo was only visible for half a year.
Cisco		72	Technology（17）	
Siemens		73	Engineering & Construction（8）	
IKEA		74	Retail（16）	
Vodafone	ST	75		There was no official Weibo.
CVS Health	ST	76		There was no official Weibo.
Netflix	ST	77		There was no official Weibo.
Orange	ST	78		There was no official Weibo.
Hyundai Group		79	Automotive（4）	
China Telecom		80	Telecoms（18）	
Evergrande		81	Real Estate（14）	Since there was no short video content in group official Weibo, "Evergrande Spring" was selected as the

				research object.
HSBC	ST	82		There was no official Weibo.
JP Morgan	ST	83		There was no official Weibo.
Nestlé		84	Beverage（5）	"Nescafe China" was selected as the research object, so it was classified as a beverage industry.
Audi		85	Automotive（4）	
Tata Group	ST	86		There were no short videos posted on Weibo.
Baidu		87	Technology（17）	
SoftBank	ST	88		There was no official Weibo.
Nissan		89	Automotive（4）	
Pepsi		90	Beverage（5）	
LG Group		91	Technology（17）	Since the group official Weibo was not found, "LG TV Official Weibo" was selected as the research object.
Zara		92	Apparel（3）	
Ford		93	Automotive（4）	
Mastercard		94	Commercial service（6）	
au	ST	95		There was no official Weibo.
Santander	ST	96		There was no official Weibo.
RBC	ST	97		There was no official Weibo.
Costco	ST	98		There was no official Weibo.
Chevron		99	Oil/Gas（13）	
Instagram	ST	100		There was no official Weibo.
Adidas		101	Apparel（3）	
Country Garden		102	Real Estate（14）	
Target	ST	103		There was no official Weibo.
Wuliangye		104	Alcohol（2）	
Fox		105	Media（12）	
Walgreens	ST	106		There was no official Weibo.

H&M		107	Apparel（3）	
Universal		108	Leisure（10）	"Universal Pictures" was selected as the research object, so it was classified as a leisure industry.
AXA	ST	109		There were no short videos posted on Weibo.
SAP		110	Technology（17）	
AIA		111	Financial services（9）	
Spectrum	ST	112		There was no official Weibo.
China Railway Construction Corporation		113	Engineering & Construction（8）	
Hitachi Group		114	Technology（17）	Since the group official Weibo was not found, "Hitadhi Vantara Official Weibo" was selected as the research object.
BNP Paribas		115	Financial services（9）	
Alibaba		116	Technology（17）	
Bank of Communications		117	Financial services（9）	
Capital One	ST	118		There was no official Weibo.
NBC	ST	119		There was no official Weibo.
Johnson's		120	Cosmetics & Personal Care（7）	Since the official Weibo was not found, "Campus recruitment of Johnson's" was selected as the research object.
TD	ST	121		There was no official Weibo.
Volvo		122	Automotive（4）	
Cartier		123	Luxury（11）	It was classified as a luxury industry.
Louis Vuitton		124	Luxury（11）	It was classified as a luxury industry.
Anthem	ST	125		There was no official Weibo.
KFC		126	Restaurants（15）	
Petronas		127	Oil/Gas（13）	
Chevrolet		128	Automotive（4）	

ExxonMobil	ST	129		There was no official Weibo.
Shanghai Pudong Development Bank		130	Financial services（9）	
Warner Bros.		131	Leisure（10）	"Warner Bros. Movies" was selected as the research object, so it was classified as the leisure industry.
Paypal	ST	132		There were no short videos posted on Weibo.
Airbus	ST	133		There was no official Weibo.
KPMG		134	Commercial Services（6）	
China CITIC Bank		135	Financial services（9）	
Sumitomo Group	ST	136		There was no official Weibo.
Optum	ST	137		There was no official Weibo.
Midea Group		138	Technology（17）	
Sberbank	ST	139		There was no official Weibo.
Sony		140	Technology（17）	Weibo was only visible for half a year.
NetEase		141	Technology（17）	
EDF	ST	142		There was no official Weibo.
Panasonic		143	Technology（17）	
booking.com		144	Technology（17）	
Uniqlo		145	Apparel（3）	Weibo was only visible for half a year.
Industrial Bank		146	Financial services（9）	
CRECG	ST	147		There were no short videos posted on Weibo.
Barclays	ST	148		There was no official Weibo.
Chanel		149	Luxury（11）	It was classified as a luxury industry.
JR		150	Transportation（19）	
JD.com		151	Technology（17）	
ING	ST	152		There was no official Weibo.
MUFG	ST	153		There was no official Weibo.
Tesco	ST	154		There were no short videos

				posted on Weibo.
Scotiabank	ST	155		There was no official Weibo.
Renault		156	Automotive（4）	
DHL	ST	157		There were no short videos posted on Weibo.
SK Group	ST	158		There was no official Weibo.
CBS	ST	159		There was no official Weibo.
Postal Savings Bank		160	Financial services（9）	
Lockheed Martin	ST	161		There was no official Weibo.
Vanke		162	Real Estate（14）	Since the group official Weibo was not found, "Zhengzhou Vanke" was selected as the research object.
Hermes		163	Luxury（11）	It was classified as a luxury industry.
Aetna	ST	164		There was no official Weibo.
Greenland	ST	165		There were no short videos posted on Weibo.
L'Oréal		166	Cosmetics & Personal Care（7）	
BBVA	ST	167		There was no official Weibo.
China Pacific Insurance Company		168	Financial services（9）	
Eni	ST	169		There was no official Weibo.
Movistar	ST	170		There was no official Weibo.
Canon		171	Technology（17）	
UBS	ST	172		There was no official Weibo.
Telstra	ST	173		There was no official Weibo.
Goldman Sachs	ST	174		There was no official Weibo.
Aldi		175	Retail（16）	
Sky	ST	176		There was no official Weibo.

Engie	ST	177		There was no official Weibo.
Enel	ST	178		There was no official Weibo.
Humana	ST	179		Weibo contents were posted until April 2017.
China Unicom		180	Telecoms（18）	
Gucci		181	Luxury（11）	It was classified as a luxury industry.
Sam's Club		182	Retail（16）	
BMO	ST	183		There was no official Weibo.
Delta		184	Aerospace（1）	
7-Eleven		185	Retail（16）	
HP		186	Technology（17）	
Nokia		187	Technology（17）	
U.S. Bank	ST	188		There was no official Weibo.
Lexus		189	Automotive（4）	
Medtronic	ST	190		There was no official Weibo.
American Airlines		191	Aerospace（1）	
Carrefour		192	Retail（16）	
China Minsheng Bank		193	Financial services（9）	
Union Pacific	ST	194		There was no official Weibo.
Equinor	ST	195		There was no official Weibo.
PICC		196	Financial services（9）	
Mitsui Group		197	Retail（16）	"Mitsui Shopping Park in Japan" was selected as the research object, so it was classified as a retail industry.
TSMC	ST	198		There were no short videos posted on Weibo.
Yanghe		199	Alcohol（2）	
Land Rover		200	Automotive（4）	

Note: ST means special treatment.

Appendix 3. Questionnaire survey on the indicators of short video content regarding characteristics of short videos and the importance of consumer participation

Research on the influence of short video content elements on consumer participation

Dear students:

Hello! Thank you for participating in this questionnaire survey. Data collected will remain strictly confidential. All data will be used solely for research purposes. No names or identifying information will be used in any publication or presentation. The questionnaire may take up some of your precious time, please fill it out carefully according to your own feelings. Thank you again for your participation. Wish you all the best and a happy life!

1. Please watch the short video carefully, and then evaluate the importance of the following items to your understanding the video's content, and even to generating positive emotions. 1 means strongly unimportant, 2 means less important, 3 means average, 4 means more important, 5 means very important (tick "√").

Items	1	2	3	4	5
The title of the short video is very closely related to the displayed product.	◎	◎	◎	◎	◎
The background music of the short video fits perfectly with the displayed product.	◎	◎	◎	◎	◎
The background of the short video fits well with the displayed product.	◎	◎	◎	◎	◎
The graphic information conveyed by the short video is highly relevant to the product or brand.	◎	◎	◎	◎	◎
The content displayed in the short video is very clear and credible.	◎	◎	◎	◎	◎
There are hot topics in the short video.	◎	◎	◎	◎	◎
The language description in the short video is concise.	◎	◎	◎	◎	◎
The story in the short video is carefully crafted and appealing.	◎	◎	◎	◎	◎

(Multiple choice) What emotions do you think the short video contains that make you more willing to spend time with them. (Tap "√" under the corresponding emotion)

Love	Pride	Courage	Joy	Triumph	Warmth
◎	◎	◎	◎	◎	◎
Excitement	Humor	Shame	Disgust	Deprivation	Failure
◎	◎	◎	◎	◎	◎
Sadness	Fear	Anger	Hatred		
◎	◎	◎	◎		

2. Please watch the short video carefully and answer the following questions. 1 means strongly disagree, 2 means more disagree than agree, 3 means average, 4 means more agree than disagree, 5 means strongly agree (tick "√").

Items	1	2	3	4	5
I am certain to share this short video with others	◎	◎	◎	◎	◎
I am very likely to share this short video with others	◎	◎	◎	◎	◎
I will probably share this short video with others	◎	◎	◎	◎	◎

3. Please evaluate your familiarity with the Weibo platform. 1 means strongly disagree, 2 means more disagree than agree, 3 means average, 4 means more agree than disagree, 5 means strongly agree (tick "√").

Items	1	2	3	4	5
I log on Weibo every day and am very familiar with it.	◎	◎	◎	◎	◎
I know all the features of Weibo and am very knowledgeable about it.	◎	◎	◎	◎	◎
I always participate in discussions and express opinions on Weibo and have a lot of experience with it.	◎	◎	◎	◎	◎

4. Please note your basic personal information

Your gender: male female

Your age:

Appendix 4. The normal test of the residual of the dependent variable

Descriptives

			Statistic	Std. Error
Likes	Mean		2205.02	191.615
	95% Confidence Interval for Mean	Lower Bound	1829.42	
		Upper Bound	2580.63	
	5% Trimmed Mean		392.43	
	Median		75.00	
	Variance		3.599E8	
	Std. Deviation		18970.902	
	Minimum		0	
	Maximum		712000	
	Range		712000	
	Interquartile Range		248	
	Skewness		26.297	.025
	Kurtosis		842.783	.049
Comments	Mean		546.65	39.038
	95% Confidence Interval for Mean	Lower Bound	470.13	
		Upper Bound	623.17	
	5% Trimmed Mean		124.18	
	Median		26.00	
	Variance		14937848.840	
	Std. Deviation		3864.951	
	Minimum		0	
	Maximum		197000	
	Range		197000	
	Interquartile Range		80	
	Skewness		29.207	.025
	Kurtosis		1212.663	.049
Shares	Mean		2513.18	210.453
	95% Confidence Interval for Mean	Lower Bound	2100.64	
		Upper Bound	2925.71	
	5% Trimmed Mean		327.14	
	Median		20.00	
	Variance		4.341E8	
	Std. Deviation		20835.938	
	Minimum		0	
	Maximum		722000	
	Range		722000	
	Interquartile Range		137	
	Skewness		21.327	.025
	Kurtosis		582.274	.049

Tests of Normality

	Kolmogorov-Smirnov[a]		
	Statistic	df	Sig.
likes	.454	9802	.000
comments	.444	9802	.000
shares	.452	9802	.000

a. Lilliefors Significance Correction

Appendix 5. Breusch- Pagan test results

Seemingly unrelated regression

Equation	Obs	Parms	RMSE	" R-sq "	Chi2	p
Likes1	9,802	48	1.267399	0.6960	22437.50	0.0000
Comments1	9,802	48	1.778379	0.5609	12521.63	0.0000
Shares1	9,802	48	2.020015	0.5496	11962.15	0.0000

	Coef.	Std. Err.	z	p>|z|	[95% conf.	Interval]
Likes1						
NF	.0288211	.0132754	2.17	0.030	.0028018	.0548404
LS	-.0000339	.0001153	-0.29	0.768	-.0002598	.000192
CA	1.123186	.0302277	37.16	0.000	1.063941	1.182431
EA	.3657256	.0105834	34.56	0.000	.3449825	.3864687
FPT	.1254998	.0308771	4.06	0.000	.0649817	.1860179
CBMB	.0267212	.0103505	2.58	0.010	.0064346	.0470078
CBB	.0882979	.0186359	4.74	0.000	.0517722	.1248235
PR	.2249731	.0217732	10.33	0.000	.1822984	.2676478
CC	-.2660863	.0580651	-4.58	0.000	-.3798918	-.1522808
LC	.1724562	.0285333	6.04	0.000	.1165319	.2283804
SQ	.1206481	.0081674	14.77	0.000	.1046402	.136656
Excitement	.3160334	.0158585	19.93	0.000	.2849512	.3471155
Joy	.2675054	.0151491	17.66	0.000	.2378138	.297197
Love	-.0090715	.0673496	-0.13	0.893	-.1410744	.1229314
Pride	.3281178	.0216392	15.16	0.000	.2857058	.3705298
Warmth	.2383291	.0249094	9.57	0.000	.1895075	.2871506
E*M	.0476519	.0213752	2.23	0.026	.0057574	.0895465
J*M	.0457805	.0201425	2.27	0.023	.0063018	.0852591
L*M	.0655884	.0879903	0.75	0.456	-.1068694	.2380463
P*M	-.0067749	.0298912	-0.23	0.821	-.0653607	.0518109
W*M	.040422	.0337903	1.20	0.232	-.0258059	.1066498
E*A	.0250312	.0201054	1.24	0.213	-.0143747	.0644371
J*A	.0607286	.0190066	3.20	0.001	.0234763	.0979809
L*A	-.0661974	.0856629	-0.77	0.440	-.2340936	.1016989
P*A	-.0291276	.0279585	-1.04	0.297	-.0839252	.0256701
W*A	.053094	.0315762	1.68	0.093	-.0087943	.1149822
Morning	-.0977617	.0816058	-1.20	0.231	-.2577061	.0621827
Afternoon	-.267887	.0732524	-3.66	0.000	-.4114591	-.124315
Industry dummy						
Industry 2	-2.271121	.2049334	-11.08	0.000	-2.672784	-1.869459
Industry 3	-.5254884	.2043748	-2.57	0.010	-.9260556	-.1249212
Industry 4	-1.595908	.1877513	-8.50	0.000	-1.963894	-1.227922
Industry 5	-.8546633	.2067452	-4.13	0.000	-1.259876	-.44945
Industry 6	-3.050737	.2256719	-13.52	0.000	-3.493045	-2.608428

Industry 7	-.3772931	.2024627	-1.86	0.062	-.7741127	.0195265
Industry 8	-1.575417	.2370309	-6.65	0.000	-2.039989	-1.110845
Industry 9	-3.247689	.1992988	-16.30	0.000	-3.638308	-2.85707
Industry 10	-.8500898	.194743	-4.37	0.000	-1.231779	-.4684005
Industry 11	-.1209521	.1935364	-0.62	0.532	-.5002765	.2583724
Industry 13	-5.994992	.2998753	-19.99	0.000	-6.582737	-5.407247
Industry 14	-2.475266	.2499293	-9.90	0.000	-2.965118	-1.985413
Industry 15	-.2548421	.1936115	-1.32	0.188	-.6343137	.1246295
Industry 16	-2.186394	.1995849	-10.95	0.000	-2.577573	-1.795215
Industry 17	-.9410933	.188144	-5.00	0.000	-1.309849	-.5723379
Industry 18	-.8738205	.1932466	-4.52	0.000	-1.252577	-.4950643
Industry 19	-2.665157	.3367676	-7.91	0.000	-3.32521	-2.005105
Industry 20	-3.202647	.2572351	-12.45	0.000	-3.706819	-2.698476
_cons	-1.141219	.338947	-3.37	0.001	-1.805543	-.4768955
Comments1						
NF	-.0628094	.0186277	-3.37	0.001	-.099319	-.0262999
LS	.0000941	.0001617	0.58	0.561	-.0002229	.0004111
CA	1.280764	.0424147	30.20	0.000	1.197633	1.363895
EA	.4384588	.0148504	29.53	0.000	.4093527	.467565
FPT	.1533423	.043326	3.54	0.000	.068425	.2382597
CBMB	.0034124	.0145236	0.23	0.814	-.0250532	.0318781
CBB	.1533022	.0261494	5.86	0.000	.1020504	.2045539
PR	.2665408	.0305516	8.72	0.000	.2066608	.3264207
CC	.30279	.0814754	3.72	0.000	.1431013	.4624788
LC	.106243	.0400371	2.65	0.008	.0277717	.1847144
SQ	.1352714	.0114603	11.80	0.000	.1128096	.1577332
Excitement	.3107282	.0222523	13.96	0.000	.2671146	.3543419
Joy	.2293243	.0212567	10.79	0.000	.1876618	.2709867
Love	.0272007	.0945032	0.29	0.773	-.1580221	.2124235
Pride	.2176161	.0303635	7.17	0.000	.1581047	.2771275
Warmth	.2201358	.0349522	6.30	0.000	.1516307	.2886409
E*M	.016549	.029993	0.55	0.581	-.0422363	.0753343
J*M	.0372932	.0282634	1.32	0.187	-.0181021	.0926886
L*M	.0632357	.1234656	0.51	0.609	-.1787525	.3052239
P*M	.0275542	.0419426	0.66	0.511	-.0546517	.1097601
W*M	-.0226075	.0474137	-0.48	0.633	-.1155367	.0703216
E*A	-.1093988	.0282114	-3.88	0.000	-.164692	-.0541055
J*A	-.0145508	.0266696	-0.55	0.585	-.0668221	.0377206
L*A	-.0611114	.1201999	-0.51	0.611	-.2966988	.174476
P*A	-.0684463	.0392306	-1.74	0.081	-.1453369	.0084443
W*A	-.0413143	.0443069	-0.93	0.351	-.1281541	.0455256
Morning	.0298662	.114507	0.26	0.794	-.1945634	.2542958
Afternoon	.1657164	.1027857	1.61	0.107	-.03574	.3671728
Industry dummy						

Industry 2	-2.191454	.287557	-7.62	0.000	-2.755056	-1.627853
Industry 3	-1.154866	.2867731	-4.03	0.000	-1.716931	-.5928007
Industry 4	-1.321294	.2634475	-5.02	0.000	-1.837641	-.804946
Industry 5	-.6185231	.2900993	-2.13	0.033	-1.187107	-.049939
Industry 6	-4.878722	.3166567	-15.41	0.000	-5.499357	-4.258086
Industry 7	.0884972	.2840901	0.31	0.755	-.4683091	.6453036
Industry 8	-.7967183	.3325952	-2.40	0.017	-1.448593	-.1448437
Industry 9	-1.904378	.2796507	-6.81	0.000	-2.452484	-1.356273
Industry 10	-1.142854	.2732581	-4.18	0.000	-1.67843	-.6072781
Industry 11	-.3564551	.271565	-1.31	0.189	-.8887127	.1758025
Industry 13	-5.402963	.4207768	-12.84	0.000	-6.22767	-4.578255
Industry 14	-4.109133	.350694	-11.72	0.000	-4.796481	-3.421786
Industry 15	.2456393	.2716704	0.90	0.366	-.2868249	.7781035
Industry 16	-1.871296	.280052	-6.68	0.000	-2.420188	-1.322405
Industry 17	-.5595393	.2639984	-2.12	0.034	-1.076967	-.0421119
Industry 18	.7973804	.2711583	2.94	0.003	.26592	1.328841
Industry 19	.3783145	.4725431	0.80	0.423	-.5478529	1.304482
Industry 20	-2.758596	.3609452	-7.64	0.000	-3.466035	-2.051156
_cons	-5.41022	.4756011	-11.38	0.000	-6.342381	-4.478059
Shares1						
NF	.1101927	.0211587	5.21	0.000	.0687224	.151663
LS	.0008997	.0001837	4.90	0.000	.0005396	.0012597
CA	1.230381	.0481778	25.54	0.000	1.135954	1.324807
EA	.5182456	.0168681	30.72	0.000	.4851847	.5513065
FPT	.1775709	.0492129	3.61	0.000	.0811155	.2740263
CBMB	-.0155284	.0164969	-0.94	0.347	-.0478618	.016805
CBB	.0185103	.0297024	0.62	0.533	-.0397053	.0767259
PR	.4411782	.0347027	12.71	0.000	.3731621	.5091943
CC	.5007213	.0925458	5.41	0.000	.3193349	.6821077
LC	.1434457	.0454772	3.15	0.002	.0543121	.2325793
SQ	.1367691	.0130175	10.51	0.000	.1112553	.1622829
Excitement	.3786575	.0252758	14.98	0.000	.3291179	.4281971
Joy	.3350311	.024145	13.88	0.000	.2877078	.3823544
Love	-.0437116	.1073437	-0.41	0.684	-.2541015	.1666782
Pride	.3229965	.0344891	9.37	0.000	.2553991	.390594
Warmth	.2399116	.0397013	6.04	0.000	.1620984	.3177248
E*M	.0362908	.0340683	1.07	0.287	-.0304819	.1030635
J*M	.0499075	.0321037	1.55	0.120	-.0130146	.1128297
L*M	.1420611	.1402414	1.01	0.311	-.132807	.4169293
P*M	.0150033	.0476415	0.31	0.753	-.0783723	.108379
W*M	.0752914	.053856	1.40	0.162	-.0302644	.1808473
E*A	-.042452	.0320446	-1.32	0.185	-.1052581	.0203542
J*A	-.0287137	.0302933	-0.95	0.343	-.0880874	.03066
L*A	-.0442902	.1365319	-0.32	0.746	-.3118879	.2233075

P*A	-.0486189	.0445611	-1.09	0.275	-.135957	.0387192
W*A	.0181412	.050327	0.36	0.718	-.080498	.1167804
Morning	-.1627609	.1300656	-1.25	0.211	-.4176847	.092163
Afternoon	.0054878	.1167517	0.05	0.963	.2233414	.2343169
Industry dummy						
Industry 2	-3.176747	.3266286	-9.73	0.000	-3.816927	-2.536566
Industry 3	-2.143473	.3257382	-6.58	0.000	-2.781908	-1.505038
Industry 4	-1.570072	.2992433	-5.25	0.000	-2.156578	-.9835665
Industry 5	-1.193123	.3295163	-3.62	0.000	-1.838963	-.5472827
Industry 6	-3.894473	.3596822	-10.83	0.000	-4.599437	-3.189508
Industry 7	-1.12932	.3226907	-3.50	0.000	-1.761782	-.4968577
Industry 8	-3.070328	.3777864	-8.13	0.000	-3.810776	-2.32988
Industry 9	-2.071708	.317648	-6.52	0.000	-2.694287	-1.449129
Industry 10	-1.42855	.3103868	-4.60	0.000	-2.036897	-.820203
Industry 11	-1.174217	.3084638	-3.81	0.000	-1.778795	-.5696394
Industry 13	-7.59683	.4779496	-15.89	0.000	-8.533594	-6.660066
Industry 14	-3.391904	.3983443	-8.52	0.000	-4.172645	-2.611164
Industry 15	-.5930047	.3085835	-1.92	0.055	-1.197817	.0118078
Industry 16	-3.166523	.3181039	-9.95	0.000	-3.789995	-2.543051
Industry 17	-2.011528	.2998691	-6.71	0.000	-2.59926	-1.423795
Industry 18	-.3309256	.3080017	-1.07	0.283	-.9345979	.2727467
Industry 19	-4.219562	.5367496	-7.86	0.000	-5.271572	-3.167552
Industry 20	-2.384421	.4099885	-5.82	0.000	-3.187984	-1.580859
_cons	-6.758812	.5402231	-12.51	0.000	-7.81763	-5.699995

Note: new follow (NF); length seconds (LS); content attractiveness (CA); endorser attractiveness (EA); first person tone (FPT); connection between background music and brand (CBMB); connection between background and brand (CBB); product relevance (PR); content credibility (CC); language conciseness (LC); story quality (SQ); love*morning (L*M); warmth*morning (W*M); excitement*morning (E*M); joy*morning (J*M); pride*morning (P*M); love*afternoon (L*A); warmth*afternoon (W*A); excitement*afternoon (E*A); joy* afternoon (J*A); pride*afternoon (P*A).

Correlation matrix of residuals:

	Likes1	Comments1	Shares1
Likes1	1.0000		
Comments1	0.6260	1.0000	
Shares1	0.5442	0.5735	1.0000

Breusch-Pagan test of independence: chi2(3) = 9968.787, pr = 0.0000

Appendix 6. Correlation matrix

	LIKE	COMMENT	SHARE	CBMB	CBB	PR	CC	LC	SQ	Love	Warmth	Excitement
LIKE												
COMMENT	0.795***											
SHARE	0.339***	0.314***										
CBMB	0.038***	0.042***	0.041***									
CBB	0.029**	0.036***	0.026**	-0.006								
PR	0.042***	0.054***	0.037***	0.026*	0.693***							
CC	-0.000	-0.000	-0.001	-0.239***	0.016	-0.042***						
LC	0.059***	0.072***	0.055***	0.102***	-0.105***	0.009	-0.061***					
SQ	0.018	0.012	0.037***	0.256***	-0.100***	-0.082***	-0.158***	-0.020				
Love	0.012	0.003	0.026*	0.027**	-0.124***	-0.162***	-0.039***	-0.001	0.101***			
Warmth	0.003	-0.002	0.015	0.059***	-0.197***	-0.192***	-0.023*	0.059***	0.196***	0.225***		
Excitement	0.105***	0.121***	0.099***	0.078***	0.171***	0.190***	-0.061***	0.038***	-0.123***	-0.087***	-0.271***	
Joy	0.132***	0.159***	0.131***	0.124***	0.024*	0.034***	-0.050***	0.123***	0.068***	-0.010	-0.040***	-0.325***
Pride	-0.008	-0.022*	-0.006	-0.011	-0.050***	-0.047***	0.029**	0.049***	0.128***	-0.028**	-0.044***	-0.243***
Morning	0.046***	0.059***	0.050***	0.061***	0.016	0.037***	-0.048***	0.052***	0.057***	0.012	0.009	0.030**
Afternoon	-0.029**	-0.026**	-0.019	-0.085***	-0.019	-0.052***	0.091***	-0.037***	-0.051***	0.001	0.015	-0.070***
Evening	-0.014	-0.030**	-0.029**	0.030**	0.005	0.019	-0.048***	-0.011	-0.002	-0.013	-0.024*	0.045***
NF	-0.009	-0.015	-0.008	-0.067***	0.060***	0.043***	0.032**	-0.063***	0.009	-0.003	0.009	-0.092***
LS	-0.014	-0.025*	-0.010	-0.007	-0.149***	-0.163***	0.101***	-0.012	0.222***	0.073***	0.137***	-0.109***
CA	0.177***	0.205***	0.167***	0.171***	-0.048***	-0.044***	-0.054***	0.202***	0.192***	0.096***	0.100***	0.184***
EA	0.229***	0.258***	0.235***	-0.093***	-0.053***	-0.057***	0.150***	0.111***	-0.024*	0.058***	0.046***	0.073***
FPT	0.030**	0.040***	0.052***	-0.055***	-0.158***	-0.125***	0.104***	0.253***	0.168***	0.053***	0.131***	-0.171***

	Joy	Pride	Morning	Afternoon	Evening	Reward	Holiday	NF	LS	CA	EA	FPT
LIKE												
COMMENT												
SHARE												
CBMB												
CBB												
PR												
CC												
LC												
SQ												
Love												
Warmth												
Excitement												
Joy												
Pride	-0.190***											
Morning	0.062***	0.017										
Afternoon	-0.050***	-0.005	-0.512***									
Evening	-0.008	-0.012	-0.431***	-0.554***								
NF	-0.027**	0.091***	0.001	-0.002	0.002	0.044***	-0.051***					
LS	-0.060***	0.155***	-0.038***	0.047***	-0.012	0.034***	-0.022*	-0.008				
CA	0.293***	0.040***	0.058***	-0.088***	0.036***	0.154***	-0.020*	-0.076***	0.003			
EA	0.272***	-0.054***	0.033***	0.034***	-0.068***	0.041***	-0.022*	-0.074***	-0.007	0.372***		
FPT	0.090***	0.091***	0.020	0.054***	-0.076***	0.055***	-0.025*	0.023*	0.280***	0.106***	0.283***	

a. Note: *p < 0.1; **p < 0.05; ***p < 0.01.

b. Note: connection between background music and brand (CBMB); connection between background and brand (CBB); product relevance (PR); content credibility (CC); language conciseness (LC); story quality (SQ); new follow (NF); length seconds (LS); content attractiveness (CA); endorser attractiveness (EA); first person tone (FPT).