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Nguyen Hong Quan*, Hoang Thi Hong Nga, Nguyen Thi Hai Ha, Pham Phuong Hien, Truong Nguyen Yen Thanh and Nguyen Thi Kieu Trang

Faculty of Business Administration,
Foreign Trade University,
Hanoi, Vietnam
Email: quannh@ftu.edu.vn
Email: hoangnga167604@gmail.com
Email: nguyenhaiha270801@gmail.com
Email: phamphuonghien2304@gmail.com
Email: thanhtny.work@gmail.com
Email: kieutrang31ftu@gmail.com
*Corresponding author

Abstract: Viral videos can create social connections by encouraging sharing among individuals, thereby supporting the spread of marketing messages. The study determines the impact of social media viral videos on purchase intention through consumer attitudes and examines the differences between various elements of a viral video. Primary data from 621 valid survey samples were analysed using covariance-based structural equation modelling (CB-SEM). The result indicates entertainment and brand awareness, along with source credibility, informativeness, interactivity, and incentives have positive effects on consumer attitudes, thereby positively affecting purchase intention. Additionally, the effect of these factors differentiates between two genders. The assertion that brand awareness and interactivity have positive effects on consumer attitudes through viral videos has supplemented the brand equity theory and the halo effect. The study also provides administrators with policy implications focusing on every element of viral video on social media for effective marketing and consumer buying behaviour promotion.

Keywords: viral video; online video advertisement; social network; consumer attitudes; purchase intention.

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Biographical notes: Nguyen Hong Quan is a Lecturer and researcher at the Foreign Trade University, major in e-commerce, customer behaviour, branding, corporate social responsibility and human resources. He has published in international and Vietnamese peer-reviewed journals such as *Journal of Managerial Psychology*, *International Journal of Quality and Service Sciences*, *Humanities and Social Sciences Communications*, *International Journal of Process Management and Benchmarking*, *International Journal of Electronic*

Business, *Journal of Asian Business and Economic Studies*, *Journal of Development*, *Journal of Trade*, *Journal of International and Economics Management*, *Journal of Trade Science*, and *Journal of Science and Technology*.

Hoang Thi Hong Nga is a graduate of the Faculty of International Trade, Foreign Trade University, Vietnam. Her research interests are e-commerce, human management and logistics.

Nguyen Thi Hai Ha is a graduate of the Faculty of International Trade, Foreign Trade University, Vietnam. Her research interests are supply chain management, logistics and linguistics.

Pham Phuong Hien is a graduate of the Faculty of International Trade, Foreign Trade University, Vietnam. Her research interests are finance, psychology and sociology.

Truong Nguyen Yen Thanh is a graduate of the Faculty of Business English, Foreign Trade University, Vietnam. Her research interests are marketing, psychology and sociology.

Nguyen Thi Kieu Trang is a graduate of the Faculty of International Trade, Foreign Trade University, Vietnam. Her research interests are marketing, entrepreneurship and logistics.

1 Introduction

Viral video marketing using videos involving marketing messages through interactive network-based channels to gain new customers from existing customers (Smith, 2000) has been increasingly developed to boost a brand's popularity. Huang et al. (2013) and Dafonte-Gómez (2014) affirmed that by inspiring purchase intention and building brand image, viral video advertising is an effective communication method with consumers. Southgate et al. (2010) and Brown et al. (2013) showed that emotional appeal prevails in viral videos. Besides, entertainment had an impact on consumer attitudes towards video, thereby affecting their purchase intention (Yang et al., 2017). Informativeness and usefulness were also proved to play a decisive role in consumer attitudes toward viral videos (Janssens and De Pelsmacker, 2005; Mir and Rehman, 2013; Yang et al., 2017). Besides, other research contexts also showed several elements influencing consumer attitudes: irritation and credibility (Mir and Rehman, 2013; Yang et al., 2017) and incentives (Wang and Lan, 2018). However, it still has research gaps that examine the influence of embedded brand information and interactivity on the effectiveness of viral videos on social media. Additionally, these studies only target consumers in general without specifically studying gender differences. On the other hand, the embeddedness of brand information can boost brand awareness and brand recall, thereby increasing the value of brand equity (Aaker, 1991). Moreover, internet development has increasingly caused the popularity of online social interaction, hence the formation and maintenance of dependent attitudes of social media users. Therefore, this is an opportunity to study the impact of embedded brand information and interactivity on consumer attitudes towards viral video, as well as gender differences in elements of viral video. This study attempts

to answer the following questions: does gender make any difference in elements of viral videos? How does brand awareness in viral videos affect consumer behaviour? How does the halo effect affect the relationship between viral video interactions on social networks and consumer attitudes?

The results of consumers' trend that they refer to past experiences of friends, colleagues, specialised magazines, or websites when making choices involving valuable resources are opinion mining and sentiment analysis (Cambria et al., 2013). Cambria et al. (2013) indicated that opinion mining and sentiment analysis become an effective tool for companies to develop marketing strategies by gathering information from a website about product reviews, and brand perception, creating and automatically maintaining review and opinion-aggregation websites to improve customer relationship management.

Moreover, development of innovative techniques and methods for better processing the huge volume of customers' opinion data available on social networks and media is evident (Song et al., 2020; Zhang et al., 2021). A more prominent and modern method is AI. The use of AI in natural language processing (NLP) has immense potential to determine positive, negative, and neutral reviews (Geler et al., 2021). There are much past research works on customer sentiment analysis using AI namely machine learning (ML) (Akila et al., 2020; Luo and Xu, 2019) and deep learning (DL) (Dang et al., 2020; Lopez and Kalita, 2017; Lorente et al., 2021), techniques across the FDS domains, XAI technique and so on. Therefore, even with the appearance of AI and modern technologies, the way how customers feel about viral marketing, thereby forming positive signals for advertising and products is always important. These are the final goals when studying customer attitudes.

In the certain scope of the research, the research team shrank the approach scope, which focuses on people whose attitudes are analysed through advertising on social networks. Besides, in the research context in Vietnam, using AI for analysis and evaluation still requires complexity and limitations, it will be more suitable for marketers and businesses to study the impact of attitude right from the human perspective. Moreover, people these days tend to make purchases through social networks for convenience. Thus, the social network influences users' activities such as creation, sharing, conversation, relationship establishment and group participation (Amalanathan and Anouncia, 2017). These activities are related to direct user interaction and reflect an individual's behaviour. Therefore, the role of AI in analysing human emotions will be considered in future studies with a broader research scale and more appropriate research context.

2 Literature review and hypotheses construction

2.1 Theoretical basis

2.1.1 Advertising value model

Entertainment and informativeness mentioned in the advertising model of Ducoffe (1995) were said to be factors that have a direct impact on advertising value and an indirect on consumer attitudes towards advertising and advertised products. Entertainment in an advertisement consisted of warm and playful materials (Teixeira et al., 2014), or lively,

amusing, imaginative, or intellectual content (Aaker and Bruzzone, 1981). An interesting, humorous, and fun advertisement could capture the viewers' attention (Haghirian et al., 2005). Hoffman and Novak (1996) suggested that the higher the level of interest and engagement in digital interactive advertisements, the higher the consumer's subjective perception and mood. Entertainment advertising could put the audience in a good mood which created a positive impact on consumer attitudes towards advertising (Tsang et al., 2004). A hypothesis is proposed:

H1 Entertainment has a positive effect on consumer attitudes towards viral videos.

Consumers perceived the informativeness of advertising if they received necessary, essential, and accessible information (Bendixen, 1993; Janssens and De Pelsmacker, 2005). Consumers often required complete (Hunt et al., 2013), relevant, up-to-date, and useful material to satisfy their product information needs (Cho et al., 2014). Informative advertisements kept consumers updated about the product and understand its competitive advantages, thereby persuading consumers (Chandy et al., 2001; Holbrook and Batra, 1987; Stewart and Koslow, 2013) and resulting in the most positive attitudes towards advertising and brand (Janssens and De Pelsmacker, 2005). A hypothesis is proposed:

H2 Informativeness has a positive effect on consumer attitudes towards viral videos.

2.1.2 Brand equity theory

According to Aaker (1991), brand awareness was one of the five factors that created brand equity. In the same opinion, Keller (2000) emphasised that consumers have the proper depth and breadth of awareness and strong, favourable, and unique associations with the brand in their memory. Brand awareness reflected levels of an individual's brand recognition and recall; and played an important role in a business's brand equity (Aaker, 1992). In viral marketing, videos were created to go viral with a marketing message to increase brand awareness (Puksirivongchai, 2019). Thanks to the internet, online video advertising became an effective way to reach target customers and increase brand awareness (Knips, 2013). The higher the brand awareness of the product suggested in an advertisement, the more positive attitude towards the sponsored recommendation post (Lu et al., 2014). Thus, the brand had a positive and significant impact on consumer attitudes (Haryani and Motwani, 2015). A hypothesis is proposed:

H3 Brand awareness has a positive effect on consumer attitudes towards viral videos.

2.1.3 Incentives

Incentives contained monetary benefits such as discounts, coupons, gifts, bonuses, games, and other non-monetary benefits (Varnali et al., 2012) that aimed to stimulate the desired action in consumers (Wang and Lan, 2018). Kim and Han (2014) stated that consumers were interested in tangible and financial benefits, therefore incentives were key reasons why consumers engage with brand-related content in the media (Rohm et al., 2013). Incentives were said to influence consumer attitudes towards viral marketing messages and consumer willingness to receive these messages based on promotional elements (Tsang et al., 2004). Therefore, there was a beneficial relationship between promotions and consumer attitudes when they received viral marketing messages (Hanley et al., 2006). A hypothesis is proposed:

H4 Incentives have a positive effect on consumer attitudes towards viral videos.

2.1.4 Halo effects

Thorndike (1920) showed that initial perceptions of an individual tend to leave a deeper impression than other characteristics, thereby influencing overall how we form positive/negative comments and impressions, known as 'cognitive bias' (Smith et al., 2010). In the studies of consumer behaviour, this theory stated that consumers' initial perception and evaluation of a product tended to be influenced by the reviews of those who can endorse the product (Djafarova and Rushworth, 2017). The halo effect made consumers have a more positive attitude towards advertising if there were many positive reviews and comments about it (Djafarova and Rushworth, 2017). For a video, the more likes and views, the more its popularity (Mir and Rehman, 2013), and thereby positively influence online consumer attitudes (Ler, 2014). A hypothesis is proposed:

H5 Interactivity has a positive effect on consumer attitudes towards viral videos.

2.1.5 Influencer marketing theory

Influencer marketing on social media, a viral marketing method that directly influences consumer attitudes through viral videos, posts, blogs, or any other kinds of communication on social networks (Freberg et al., 2011; Ferguson, 2008), was proven to have an impact on consumer attitudes and purchasing decisions through social media shares and statuses (Freberg et al., 2011). The source credibility could be considered by the popularity and reputation of a website or social network where the information was provided and people shared the advertisement. It was reviewed on all three aspects: reliability, experience, and expertise (Li and Zhan, 2011; Martin and Lueg, 2013; Wei and Li, 2013; Wu and Wang, 2011). The greater the value of advertising, the higher consumers perceive the credibility of the advertisement (Haghirian et al., 2005), thereby having a positive attitude (Wang and Lan, 2018). A hypothesis is proposed:

H6 Source credibility has a positive effect on consumer attitudes towards viral videos.

2.1.6 Consumer behaviour

Affected by external stimuli, consumer behaviour was a psychological process when they decide to choose goods or services (Loudon and Bitta, 1984; Schiffman and Kanuk, 1994). Consumer attitudes and purchase intention were two factors influencing consumer behaviour (Howard, 1994). Consumer attitudes towards viral video advertising were defined as a predisposition to respond favourably or unfavourably to a particular promotional stimulus in the video (Wang and Lan, 2018). Consumers themselves, others' attitudes and surprising elements were three factors affecting their process from purchase intention to purchase decision. According to Sinthamrong and Rompho (2015) and Sallam and Algammash (2016), a positive attitude was the most important factor affecting purchase intention. The more positive the consumer attitudes, the stronger the purchase intention (Gresham and Shimp, 1985). Research by Yu and Wu (2007) also showed that a positive attitude towards online shopping generated more intention to buy a product or service online. A hypothesis is proposed:

H7 Consumer attitudes towards viral videos have a positive impact on purchase intention.

2.1.7 Gender difference

Ulbrich et al. (2011) illustrated that there are gender differences in e-commerce transactions and the privacy of personal information on social networks (Moscardelli and Divine, 2007) as well as attitude toward online advertisements (Wolin and Korgaonkar, 2003). Gender differences affected trust and behaviour in online shopping (Rodgers and Harris, 2003; Chen et al., 2015). When shopping online, males were concerned with price, while females considered more elements such as label, brand, quality (Ahasanul et al., 2006), privacy when using the Internet, and risks in e-commerce transactions (Flynn et al., 1994). Research by Darley and Smith (1995) also showed that males tend to process information selectively while females process information more comprehensively. Eight hypotheses about the gender variable are proposed as follows:

H8a There are differences in perceived entertainment in viral videos between males and females.

H8b There are differences in perceived informativeness in viral videos between males and females.

H8c There are differences in brand awareness in viral videos between males and females.

H8d There are differences in perceived incentives in viral videos between males and females.

H8e There are differences in perceived source credibility in viral videos between males and females.

H8f There are differences in perceived interactivity in viral videos between males and females.

H8g There are differences in attitudes towards viral videos between males and females.

H8h There are differences in purchase intention between males and females.

2.2 Research models

Based on all the above hypotheses, the authors propose the research model shown in Figure 1.

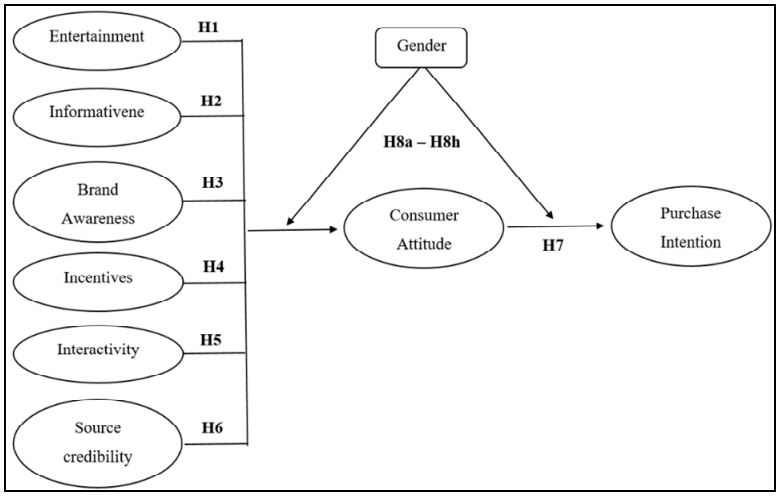
3 Methodology

3.1 Method of sampling and data collection

The research is based on primary data collected by questionnaire, aimed at individual consumers who are experienced in using social networks. Consumers were invited to participate in the online questionnaire attached to a link posted on the Facebook platform. The questionnaire survey reached 875 social network users in Vietnam, of which 23

responses from marketers were not subject to the study, and 17 responses with incomplete data were excluded. In total, 621 valid samples were used for the study, reaching 74.37%. All survey consumers responded that they have experience in using social networks, which ensures the reliability of the present research.

Figure 1 Research model proposed



Consumers are required to fill out the online questionnaire after watching a typical viral video on YouTube. Applying three criteria:

1 videos with great interaction

2 playful and useful videos embedded with brand information, influencers, and incentives

3 videos with high audiovisual quality, the research team selected five viral video advertisements: Shopee 'Baby Shark', Lazada 'Big Sale 11.11', Dien May Xanh '0% Installment Washing Machine', Momo 'Shake for Lucky Money', and Grab 'N-what?'.

An online survey using the poll tool of the Facebook platform was conducted in a group named 'Chua Lang Community', which includes all ages and genders, by asking the question, "if this is your first time watching these videos, what videos would you share with the people around you?" Videos were selected by counting the number of times it was shared because sharing is at the core of virality, furthermore, it also showed that viewers had a deeper engagement with the video content (Dafonte-Gómez, 2014). The survey result revealed that Shopee 'Baby Shark' was the most likely to be shared. Video has updated the latest offers in Shopee's sale campaign to consumers such as "anything is available, buy it all at Shopee", "don't worry about the price", and 'free shipping' with the presence of famous goalkeepers and singers. At the same time, the brand name and logo 'Shopee' and the iconic orange colour of Shopee are also repeated throughout the video, along with the catchy, easy-to-remember melody of Baby Shark, a previously viral song, that makes consumers cannot help but think of Shopee every time they hear or mention this song, thereby increasing brand recognition.

Of the 621 survey responses, there are 53% female and 47% male. The percentage of age less than 18 years old is 6%; from 18 to 25 years old is 67%; from 26 to 30 years old is 6.4%; from 31 to 35 years old is 6.3%; from 36 to 40 years old is 7.4%, and more than 40-year-old is 6.9%. The percentage of lower secondary education level is 2.1%; high school is 8.1%; intermediate and college is 4.2%; the university is 73.3%; postgraduate is 12.4%. The percentage of income less than USD250 is 62.5%; from USD250– USD500 is 17.9%; from USD500 to USD1,000 is 10.2%; from USD1,000– USD2,000 is 4.7%; over USD2,000 is 4.7%. The percentage of time using social networks <2 hours/day is 19.8%; 2–5 hours/day is 50.7%; >5 hours/day is 29.5%. The percentage of experience in using phones less than 1 year is 1.1%, from 1 to 3 years is 18%; from 3 to 6 years is 34.6%, and more than 6 years is 46.2%.

3.2 Questionnaire design and measurement instruments

Rubenking (2019) approached and examined how different perspectives of emotions affect the attitudes and intentions to share among viewers. He pointed out that the videos that are most commonly shared are highly arousing and positive, followed by highly arousing and negative and/or disgusting. Besides, neutral, non-emotional, or low arousing videos are the least likely to be shared online (Berger, 2011; Eckler and Bolls, 2011; Guadagno et al., 2013; Nelson-Field et al., 2013). For example, Nelson-Field et al. (2013) studied and analysed whether 800 videos shared on Facebook were rated according to high or low levels of irritation, positive or negative. And the results are that videos with high irritation and positive emotions got more shares than videos with negative emotions, and videos with neutral emotions had the lowest shares. Therefore, the scales below are referenced and inherited from the standard scales that have been established and tested for reliability from previous literature, then were adjusted to suit the research context of viral videos with positive and negative emotions on social networking platforms. A five-point Likert scale, from 'strongly disagree' to 'strongly agree' (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree) was used to measure respondents' attitudes towards each factor of viral videos.

Entertainment was measured using four items adapted from Ducoffe (1995), Hsieh (2012) and Martins et al. (2019): 'eye-catching videos', 'funny videos', and 'interesting videos', and 'relaxing videos'. Informativeness was measured using five items adapted from Logan et al. (2012), Mir and Rehman (2013) and Zernigah and Sohail (2012): "video provides information about the product that was looking for", "video updates on the latest product information", "video provides full information about the product", "video is a very convenient source of product information", and "video provides more product information than other sources." Brand awareness was measured using five items adapted from Cheung et al. (2019), Foroudi (2019) and Martins et al. (2019): "the brand has been heard before", "the brand is familiar", "the brand can be differentiated and compared with similar brands", "the brand can be easily recalled if mentioning brand assets", and "the brand can be recognised through external signs." Source credibility scale consists of six factors adapted from Cheung et al. (2009) and Tien et al. (2018): "acquaintances (family, friends, etc.)", "celebrities (influencers, KOLs, etc.)", "experienced consumers in using the brand's products", "experts in the field of the brand", "trustworthy website/fan page", and "people with similar interests and habits." Interactivity with five factors adapted from Mir and Rehman (2013): "video is watched

by multiple users", "video is shared by multiple users", "video is commented and rated positively by multiple users", "video is liked by multiple users", and "video owner regularly responds to video comments."

Consumer attitudes towards viral videos were measured using four items adapted from Muda and Hamzah (2021) and Zernigah and Sohail (2012): "I feel attracted to watch the video from start to finish", "I like watching the video", "I feel positive when watching the video", and "I wasted no time watching the video." Purchase intention was measured using five items adapted from Martins et al. (2019). Muda and Hamzah (2021): "I most likely to buy the product", "I will buy the product the next time I need that product", "I am sure to buy the product next time", "I will try the product", "I will consider buying the product in the video to replace the product I am using", and "I will recommend it to everyone."

For incentives, five items were used to measure: 'discount', 'gift', 'try free products', 'play games with rewards', 'free shipping', and 'warranty support' are evolved from Wang and Lan (2018) definition of incentive in marketing. By interviewing 15 marketing managers in Hanoi, we identified the most popular promotional methods among marketers: inventory reduction; quantity discounts; discounts on special occasions; gift vouchers; buy 1 get 1 free; lucky draw; loyalty card, membership card; golden hour, golden day, golden week; free or support shipping fee; free product use and warranty. After an in-depth interview with seven marketing experts, six groups of incentives, including discounts, gifts, free product trials, bonus games, free shipping, and warranty were chosen to survey 30 consumers in Hanoi about their understanding and likelihood to buy if there is any of each incentive. Respondents clearly understand and are strongly motivated to buy if the above incentives are put in the advertisement. A pilot study was conducted with 60 consumers using social networks, the survey results were analysed and verified by SPSS, showing that Cronbach's alpha was all above 0.7, indicating that the measurement scale used was good (Malhotra, 2004).

Besides, questions about demographic factors were also added to the questionnaire to increase the accuracy of the survey results, including gender, age, education level, income, time, and experience in using social networks.

3.3 Analytical method

A preliminary study was conducted with a sample of 60 consumers to ensure the validity and reliability of the factors before conducting the official survey. Most of the respondents said that the contents of the questionnaire were easy to understand. All factors also had Cronbach's alpha values above 0.7, which was a good use of the scale. Duplicate or dishonest answers were eliminated through exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to evaluate the suitability of the proposed theoretical model. In addition, we tested the relationship between the elements of the viral video, the attitudes towards the video, and the consumer purchase intention by analysing the data using structural equation modelling (SEM) (Hasani and Sheikhesmaeili, 2016).

4 Results

4.1 SEM analysis (Cronbach's alpha, EFA, CFA, and SEM)

SEM is used to test hypotheses about the relationship between elements of viral videos, consumer attitudes, and consumer purchase intention by IBM AMOS 20. The measurement model is tested by CFA. With the descriptive data including 40 observed variables and eight elements, the results of the CFA analysis show that the indicators are consistent with the proposed model:

Chi-square = 1,896.344; df = 708; P = 0.000; chi-square/degree of freedom (chi-square/df) = 2.678 (<3); goodness of fit index (GFI) = 0.869 (>0.8); Tucker Lewis index (TLI) = 0.938 (>0.9); comparative fit index (CFI) = 0.944 (>0.9); root mean square error of approximation (RMSEA) = 0.052 (<0.08).

Table 1 Scale measurement items, factor loadings and reliabilities

		# of item	*Cronbach's alpha*	*Corrected item – total correlation*	*Factor loading*
Entertainment (ENT)	ENT1	4	*0.873*	0.714	0.888
	ENT2			0.721	0.758
	ENT3			0.800	0.824
	ENT4			0.694	0.720
Informativeness (IF)	IF1	5	*0.893*	0.765	0.811
	IF2			0.729	0.819
	IF3			0.800	0.879
	IF4			0.752	0.812
	IF5			0.645	0.797
Brand awareness (BA)	BA1	5	*0.878*	0.724	0.883
	BA2			0.726	0.844
	BA3			0.681	0.720
	BA4			0.733	0.792
	BA5			0.694	0.716
Incentives (INC)	INC1	6	*0.893*	0.736	0.823
	INC2			0.711	0.787
	INC3			0.754	0.849
	INC4			0.686	0.805
	INC5			0.692	0.773
	INC6			0.710	0.792
Interactivity (INT)	INT1	5	*0.953*	0.855	0.950
	INT2			0.815	0.759
	INT3			0.930	0.933
	INT4			0.813	0.850
	INT5			0.942	0.985

Table 1 Scale measurement items, factor loadings and reliabilities (continued)

		# of item	*Cronbach's alpha*	*Corrected item – total correlation*	*Factor loading*
Source credibility (SC)	SC1	6	*0.914*	0.871	0.828
	SC2			0.869	0.934
	SC3			0.762	0.815
	SC4			0.713	0.872
	SC5			0.659	0.677
	SC6			0.710	0.772
Consumer attitude (CA)	CA1	4	*0.938*	0.917	0.949
	CA2			0.851	0.871
	CA3			0.815	0.818
	CA4			0.827	0.875
Purchase intention (PI)	PI1	5	*0.916*	0.793	0.875
	PI2			0.904	0.947
	PI3			0.689	0.815
	PI4			0.754	0.783
	PI5			0.788	0.747

The results of the CFA analysis summarised in Table 1 display the convergent value of each scale in use because the AVE is greater than 0.5 (Malhotra et al., 2017) and the reliability of each structure is confirmed by Cronbach's alpha with the composite reliability (CR) greater than 0.7.

Convergent validity was demonstrated since all the items were found to have significant factor loads over 0.60 (Bagozzi and Yi, 1988). Factor loadings are all greater than 0.60. Reliability was measured by Cronbach's alpha. The threshold value for this coefficient is 0.70, which guarantees the internal consistency of the scales. As Table 1 shows, Cronbach's alpha is all above the recommended value of 0.70 (Nunnally and Bernstein, 1994).

The convergent value referred to the extent to which observed variables were positively correlated to measure a construct (Hair et al., 1998). The criteria used to evaluate convergence values include standardised loading estimates, CR, and average variance extracted (AVE). Standardised loading estimates should be greater than 0.7 (Hair et al., 1998) or be at least 0.5 (Bagozzi and Yi, 1988). CR and AVE need to be greater than the minimum of 0.6 and 0.5 (Hair et al., 1998). As the convergence test results are shown in Table 2 and all factor loadings are greater than 0.7, composite reliabilities range from 0.872 to 0.955 and AVE values are all greater than 0.5 and greater than variance due to measurement error. Therefore, all three conditions of convergence validity of the model are accepted.

Discriminant validity referred to the extent to which a structure differentiated itself from the others according to the evaluation criteria (Hair et al., 1998). This study applied the AVE method of Fornell and Larcker (1981) to test the differences between structures. The discriminant value test results (Table 2) show that all structures pass the discrimination because the square root of average variance extracted (SQRTAVE) of

each structure is larger than the inter-construct correlations between the scales. Moreover, the values of maximum shared variance (MSV) are all greater than AVE.

Table 2 Convergence and discriminant test results

	CR	*AVE*	*MSV*	*SC*	*IF*	*ENT*	*BW*	*INC*	*INT*
SC	0.897	0.581	0.333	*0.763*					
IF	0.864	0.535	0.464	0.527	*0.732*				
ENT	0.831	0.524	0.464	0.487	0.681	*0.724*			
BW	0.846	0.502	0.440	0.577	0.527	0.663	*0.709*		
INC	0.861	0.502	0.106	0.183	0.210	0.286	0.325	*0.709*	
INT	0.917	0.677	0.358	0.512	0.575	0.598	0.544	0.292	*0.823*

Table 3 Correlation coefficients between variables to evaluate discriminant validity

Hypothesis	*Relationship*	*Regression weight*	*SE*	*CR*	*P-value*	*Hypothetical results*
H1	CA ← ENT	0.306	0.073	4.203	***	Accept
H2	CA ← IF	0.239	0.044	5.393	***	Accept
H3	CA ← BA	0.290	0.070	4.123	***	Accept
H4	CA ← INC	0.081	0.040	2.041	0.041	Accept
H5	CA ← INT	0.142	0.042	3.420	***	Accept
H6	CA ← SC	0.192	0.044	4.334	***	Accept
H7	PI ← CA	0.727	0.032	22.726	***	Accept

Notes: SE: standard error, CR: critical ratio, P-value: probability value, *** indicates significance less than 1‰.

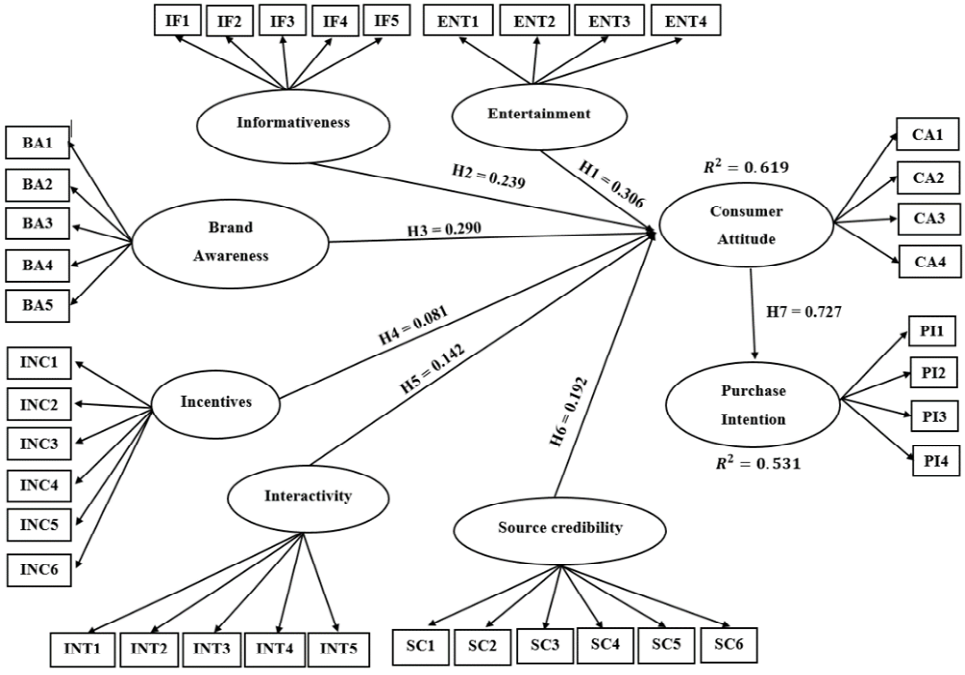
After the credibility of the scales and the convergence and discriminant value of the research model were tested, the SEM analysis method was applied to test the suitability of the proposed model and survey data. In addition to Chi-square used as a normal measure, Browne and Cudeck (1992) proposed to add GFI, CFI, and RMSEA indexes as a measure of the model's goodness of fit. Therefore, CFI and TLI (greater than 0.9), RMSEA (less than 0.08), and chi-square/df statistical indexes (less than 3) were used to assess the fit of the research model and survey data. The model has eight observed variables and 714 degrees of freedom; and all the indexes show the appropriateness of the model, including:

Chi-square = 2,021.103; chi-square/df = 2.831; GFI = 0.863; CFI = 0.938; TLI = 0.933; RMSEA = 0.054.

A chi-square/df value less than three indicates that the model agrees with the theory (Kline, 2005). The proposed model satisfies this condition with chi-square/df = 2.831. Furthermore, both CFI and TLI values greater than 0.9 indicate a good fit, and RMSEA values less than 0.8 indicate an acceptable fit of the model (Hoe, 2008). The SEM linear structural model analysis method was performed to test the proposed hypotheses, the calculated regression weight, and P-value values and presented in Table 3 and Figure 2. Based on the regression weights' results of the observed variables, the interactions of the variables are exposed, and the original hypotheses are all accepted. This relationship is theoretically valid. The results show that the regression weights are all positive with

P-value less than 0.05, showing that all six factors in the viral video have a positive impact on attitude towards viral video. Radiance also has a positive effect on consumer product intention with 95% confidence. Specifically, the elements of viral videos have a significant impact on consumer attitudes towards videos. Therefore, Hypotheses H1, H2, H3, H4, H5, and H6 are accepted. The R^2 value for the relationship between these factors is 0.619, indicating that the pervasive video factors explain 61.9% of consumer attitudes towards video. The impact of attitude towards pervasive video on consumer purchase intention is significant with P-value = *** and regression weight = 0.727. Therefore, H7 is accepted, and the value $R^2 = 0.531$ shows that attitude towards viral videos explains 53.1% of consumer purchase intention.

Figure 2 SEM model result



4.2 Analysis of gender differences

According to the survey results, the study collected two gender groups: the male group had 290 samples (47%); the female group had 331 samples (53%). To assess the impact of gender on the elements of viral video in the model, the authors used an independent sample T-test for the mean differences of two groups of values, male and female.

Levene's test and T-test were used to examine the difference between males and females in the perception of each element in viral videos. The test results are presented in Table 4. Specifically, Levene's test of the factors: entertainment, informativeness, brand awareness, incentives, source credibility, interactivity, consumer attitudes, and purchase intention all have sig. value < 0.05 and sig. T-test values (equal variances not assumed) of eight factors above (except brand awareness and source credibility) are all < 0.05, which demonstrates that there is a difference in the perception of these factors between male and

females. The variable brand awareness has a sig. T-test value (equal variances not assumed) of 0.129 > 0.05, proved that there is no difference between the group of males and females in brand awareness. Therefore, Hypotheses H8a, H8b, H8d, H8e, H8g, and H8h are accepted; Hypothesis H8c is not accepted. Levene's test of the interactivity factor has sig. value > 0.05 and sig. T-test values (equal variances assumed) are 0.01 < 0.05, showing that there is a statistically significant difference in this factor between male and female. Therefore, Hypothesis H8f is accepted.

Table 4 Independent sample testing

	Levene's test for equality of variances	*t-test for equality of means*	
	Sig.	*Sig. (2-tailed)*	
		Equal variances assumed	*Equal variances not assumed*
ENT (H8a)	0.000	0.004	0.005
IF (H8b)	0.000	0.005	0.006
BA (H8c)	0.000	0.127	0.133
INC (H8d)	0.000	0.000	0.000
INT (H8f)	0.000	0.003	0.003
SC (H8e)	0.092	0.010	0.010
CA (H8g)	0.000	0.024	0.025
PI (H8h)	0.004	0.013	0.014

Table 5 Factor group statistics

	Gender	*N*	*Mean*
ENT	Male	290	4.017
	Female	331	3.840
IF	Male	290	3.525
	Female	331	3.716
BA	Male	290	4.061
	Female	331	3.978
INC	Male	290	3.814
	Female	331	4.155
INT	Male	290	3.761
	Female	331	3.602
SC	Male	290	3.636
	Female	331	3.797
CA	Male	290	3.702
	Female	331	3.548
PI	Male	290	5.150
	Female	331	4.038

The mean value is used to compare the impact level between the two genders on each factor in the model: the one with the larger mean value has the stronger effect. Thus,

according to the test results of the independent sample T-test for two groups of values, male and female, there is no difference between these two genders in the factor of brand awareness. Based on the statistical results of the factors in Table 5, the mean value between the gender groups has been demonstrated that the factors of entertainment, source credibility, attitude, and purchase intention have a higher influence on males than females. As for the remaining factors (informativeness, incentives, interactivity, and consumer attitudes), females have been affected greater than males.

5 Conclusions and managerial implications

5.1 Discussion

Entertainment has the greatest impact on attitude variables. The higher the entertainment in a viral video, the more positive the consumer attitudes. This result is consistent with the study of Tsang et al. (2004) in the context of handheld devices such as mobile phones gaining popularity and becoming a new channel for marketing. His outcomes highlighted the importance of entertainment as the most significant factor affecting consumer attitudes toward mobile advertising. Brand awareness and source credibility have positive impacts on viewers' attitudes towards video advertising, proving that the higher the source credibility of the video, the more positive the consumer attitudes. In today's selective information gathering landscape, the consumer purchase decision tends to rely most on brand awareness and business reputation.

The following factors are the informativeness and interactivity of the viral videos. Two factors have positive impacts on attitudes consistent with the previous studies of Wunsch-Vincent et al. (2007) and Mir and Rehman (2013) that the higher the level of interaction in a viral video, the higher positive consumer attitudes, and vice versa. However, these are just user-generated viral videos, not business marketing videos. Viral video advertisements provide information for consumers to make better purchasing decisions, these advertisements are more valuable and effective. Incentives promote a positive attitude of consumers towards viral videos, making them ready to receive the information in the video. In the same context as other online platforms, Ler (2014) not only conducted viral videos but also the whole viral marketing platform. The results prove that incentives are the most influential factor in consumer attitudes towards viral advertising since incentives are considered a part of the benefits that buyers could gain from viral marketing.

Females have higher requirements for informativeness, incentives, and interactivity of viral videos than males, while conversely, the influence of entertainment, source credibility, attitude towards viral videos, and purchase intention is stronger for males than for females. Females are often more sensitive to details and information; and more believable and persuasive by the information given in viral videos than males (Meyers-Levy and Sternthal, 1991), and are therefore more influenced by the incentives provided by marketers (Imam, 2013). As a result, informativeness, incentives, and interactivity of viral videos should be included to attract more female consumers.

Attitude towards online product recommendations influences the purchase intention of males more than females (Lin et al., 2019). If females are attracted by the information presented in viral video advertisements or are convinced by the interaction of viral video ads, they are more likely to spread to other users and form purchase intentions much

more than males. As for brand awareness, the results show that there is no difference between males and females, consistent with the previous study by Lues and Klerk (2017).

5.2 Theoretical contributions

The research confirms that brand awareness has a positive impact on consumer attitudes and reaches full potential for advertising effectiveness on social networking platforms. Differ from other kinds of advertising, a viral video will create a dual effect on brand awareness: affecting consumer behaviour and developing the brand image of the businesses, thereby increasing the value of brand equity. These findings complement and strengthen the theory of brand equity by Aaker (1991). Brand awareness helps consumers easily identify brands, especially brands that are already recognised in the market. Brand awareness is one of the most important factors for viral videos to spread effectively and therefore contributes to the process of increasing brand equity. The more interactive the viral video is the more positive impact it has on consumer attitudes. This shows that the halo effect also appears in viral videos: the higher the interactivity of the video, the more the halo effect spreads. Online marketing trends with modern technology allow consumers to directly connect with advertising at all times, so the interaction and evaluation between viewers are more positive, hence the effectiveness of advertising, thereby promoting a positive attitude and purchase intentions.

5.3 Implications

The findings of this study have some important implications for those businesses which advertise their products and services using viral videos. Entertainment, informativeness, incentives, and source credibility have a positive and significant influence on consumer attitudes and purchase intention, therefore, businesses should include compelling storylines, slogans, music, eye-catching visuals, etc. and contain useful, complete, and latest information about the product in the viral videos. Viral videos will attract more consumers if they add incentives such as monthly promotions, incentives for loyal consumers, or shipping support. Businesses attract consumers with attractive advertising strategies but inflating information which goes beyond their ability to perform must be avoided. To increase the credibility of viral video ads, businesses should collaborate with experts or consumers who have used the products/services to bring the most honest reviews.

Businesses need to improve advertising effectiveness and brand equity by embedding brand information in viral video marketing campaigns with brand names, logos, and slogans for the information they need to spread. Therefore, when implementing viral video marketing activities, will create brand awareness, creating a premise to improve brand equity. However, marketers need to avoid irritating the consumers by overusing brand images. For the viral video marketing campaign to be effective, it is essential to promote video engagement, including optimising elements of uploading and adding interactive baits for videos, etc. to reach the maximum target customers. Besides, it is also important to develop information policies and promptly handle negative comments and assessments on social networks publicly to the community to avoid negative eWOM about businesses.

With viral video campaigns targeting male consumers, business videos should wisely focus on their interest in the level of entertainment (games, funny elements, etc.); the trustworthiness of the person sharing the information, and the reputation of the brand. In contrast, for females, it is necessary to put into the video elements such as information satisfying their interests with attractive offers, videos with high interaction and good comments about products. To attract both males and females, the brand element in the video is indispensable. Focusing on the difference in attitudes of males and females, viral video campaigns will be more effective.

5.4 Limitations

The study is only conducted on social media but did not include blogs, forums, emails, online newspapers, interactive games, etc. This study focuses only on the national scale, not internationally. Finally, this study only considers the gender variable as a moderator of the inter-factor relationship, without considering other demographic factors in the relationships in the model. These limitations will be overcome by the authors in future studies.

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