

Article

# Effect of in-stream ads on viewer's attitude to purchase—The moderating role of viewer's control

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**Abstract:** Research in the field of online advertising has focused on the effect of in-stream ads on viewers' attitudes and intentions to purchase. However, little is known regarding the crucial role of viewer's control in terms of the 'skip ad option' towards the attitude to purchase. This research aims to investigate the effect of in-stream ads on viewers' attitudes to purchasing with the moderating role of viewer control. Primary data was collected from respondents of Vehari district of Pakistan through a questionnaire based on 5 points Likert scale. 370 questionnaires were incorporated after excluding the questionnaires having missing values. Structural equation modelling was used through SmartPLS-3 software in testing the hypotheses. The findings reveal that, in-stream (emotional, informational, and entertaining) ads have positive impact on viewers' attitudes, and viewers' control moderates the relationship between in-stream ads and viewers' attitudes towards the ads. Further, viewers' attitude toward the ads has a significant positive impact on viewers' intention to purchase. To the best of our knowledge this is one of the first studies that examines the effect of in-stream ads on viewers' attitudes to purchasing with the moderating role of viewer control in the context of a developing country, like Pakistan.

**Keywords:** in-stream ads; viewers' attitude towards ad; viewers' control; viewers' intention to purchase; Pakistan

## 1. Introduction

The majority of people use social media and online video streaming sites in their daily lives, such as Facebook, Twitter, YouTube, Dailymotion, etc. During videos, viewers watch ads while some ads have a skip ad option. Due to the boom in mobile technology and interest, online video has become an important kind of media utilization (Joa et al., 2018). As of January 2024, the number of internet users globally was 5.35 billion and is expected to reach 7.9 billion by 2029 (Pelchen, 2024; Think, 2023). Similarly, in 2023, world-wide digital marketing size reached \$366.1 and is expected to cross \$1029 billion by 2032 (Statista, 2024b). Among the online video streaming websites, Netflix is a widely used platform globally with 260.28 million subscribers (Durrani, 2024, p. 125). In Pakistan, YouTube is most widely used website for the video content with more than 40 million users (Alishba, 2024, p. 126). The volume of the online in-stream video advertisement market has increased due to the development of online video content (Joa et al., 2018). Global

video advertisement spending was \$104.7 billion in 2023 and expected to reach to \$120 billion by 2024. In Pakistan, video advertising market is projected to reach \$27.3 million in 2024 (Statista, 2024a). In such type of hugely changed atmosphere, YouTube has provided an opportunity for online video advertisers due to its varied viewers and diverse video content (Joa et al., 2018). Online in-stream video advertisement websites such as YouTube, Dailymotion, Instagram, Facebook, etc., allow marketers to use different kinds of advertising, such as banner advertisement, overlay advertising, and also in-stream advertising. Advertisers have given more preference to in-stream video advertisements as compared to other advertisements because of its more potential to grape the attention of viewers or users' (Pashkevich et al., 2012). In 2010 YouTube and other social media websites such as Daily Motion, Instagram, and Facebook introduce a customized appearance of online in-stream advertising (Chungviwatanant et al., 2016). In-stream advertisement allows the viewers' or users to see the ad only for 5 s and after 5 s it allows the users to skip or continue seeing the remaining part of the ad (Belanche et al., 2017; Pashkevich et al., 2012). Advertisers mostly provide control to viewers' during in-stream advertising approach so it is a necessity to examine viewers' attitudes regarding in-stream video ads (Belanche et al., 2017; Kononova and Yuan, 2015). In contrast, ads containing no skip option and forcing the audience for seeing the complete ad are called full-length, forced, or mandatory ads (Belanche et al., 2017; Pashkevich et al., 2012). Prior investigations identified that entertainment has a positive impact on consumer attitudes towards in-stream ads (Chungviwatanant et al., 2016). Whereas, the studies that focused on consumer attitudes towards online video advertising have revealed that entertainment and informativeness in the advertisement exert a positive impact on viewers' attitudes toward the ads (Yang et al., 2017). Regardless of this a few investigations also identified users' or viewers' attitudes towards skippable and full-length or forced in-stream ads.

Viewers control in the form of skip ad option is an innovative form of in-stream video advertisement used to create a positive attitude and intention in online viewers or users. The skip ad option has a significant impact to increase the viewers' or users' control and make viewers think that in-stream ads are less intrusive as compared to full-length advertisements (Belanche et al., 2017; Pashkevich et al., 2012). In-stream advertising creates a sense of respect among viewers and creates a positive attitude and intention (Youn and Kim, 2019). When viewers' goals and interests are disturbed through the interference of in-stream ads then viewers shift towards the psychological state of restoring the lost control. Although viewers' can attain effective control through the skip ad option on the ad which is against their goals can induce a positive attitude and intention toward the advertisement (Belanche et al., 2017). While the relationship of emotional ads on consumer attitude to purchase intention with the moderating role of users' control is vague and has never been explored in the context of in-stream video ads. So, the current study also fills up this vital gap. Additionally, the current study is also investigating the effect of the informational ads on viewers' attitudes with the moderating role of viewers' control. To the best of our knowledge, the relationship of in-stream informational ads on consumer attitude with the moderating role of users' control has never been explored in the context of in-stream ads. Consumer attitude, behavioral intention,

and users' watching behavior have been analyzed in the context of video advertising on YouTube (Ramadhani et al., 2020). After studying a list of studies, we found that impact varies from area-to-area and country to country. Therefore, the purpose of current study is to analyze the impact of different in-stream ads on viewers' attitude towards in-stream ads with the moderating role of viewers' control in terms of the skip ad option among the university students of district Vehari, Pakistan.

The contribution of current study is three-fold. First, it will enhance the understanding of the advertisers regarding viewer's behaviors and thus enable them to optimize the content of their ads for better viewership. Second, the study will highlight that how increased viewer's control in terms of skip ad function enhance their engagement with more positive viewing experience. Third, study will also contribute to the existing literature on digital ads in the context of an emerging economy.

The remaining paper is organized as follows. Section 2 describe the literature review, section 3 presents the research methodology, section 4 discusses the empirical results, and the conclusion of the study discussed in section 5.

## **2. Literature review**

### **2.1. In-stream emotional appeal ad and viewers or users' attitude towards the ad**

Advertising strategies could be broken into two forms rational as well as emotional (Golan and Zaidner, 2008; Laskey et al., 1989; Liu and Stout, 1987; Wells, 1980). Rational appeal has a connection with cognition while emotional appeal targets the user's emotions and senses (Puto and Wells, 1984; Wells, 1980; Wu and Wang, 2011). Rational appeal supplies information regarding product attributes (Haghirian et al., 2005; Wu and Wang, 2011). In contrast, emotional appeal stimulates the emotions of users with the help of content that hits users' emotions in the form of love, sadness, etc. (Alhabash et al., 2012; Lee and Hong, 2016). Prior investigations have described that emotions in ads are an imperative element for the effectiveness of a message or ad (Xie et al., 2004). According to the elaboration likelihood model, emotional appeal ads will be more convincing for the users who have little cognition capability to process the message delivered in the advertisement (Petty and Cacioppo, 1986). An emotional appeal has a positive impact on attitude in the context of social media advertisement (Lee and Hong, 2016). Similarly, according to Edell and Burke (1987), deeper positive feelings and negative feelings each affect the advertisement. In Pakistan, Emotional appeal during in-stream ads is an important predictor of consumer behavior (Kamran and Siddiqui, 2019) and is also effective for drawing consumer positive reactions (Nauman Abbasi et al., 2014). Additionally, for in-stream video advertisements, emotional appeal is found as a precursor of users' attitudes toward advertising (Hegner et al., 2016). According to Grant et al. (2015) emotional appeal element in the ad build-up users' or viewers' positive attitudes towards the ad. Prior investigations recommend that emotional appeal is an important constituent in online in-stream advertisement (Liu-Thompkins, 2019; Yadati et al., 2013; Zhang et al., 2016). Therefore, in line with the

above research, it is expected that an emotional appeal ad will have a positive impact on users' attitudes towards the ad. Thus, the following hypothesis is formulated:

H1: In-stream emotional appeal ad has a positive impact on users' attitude towards the ad.

## **2.2. In-stream informational ad and viewers' or users' attitudes towards the ad**

Informational ad is the capability of an ad for supplying updated, accurate, timely, useful, and easy-to-access information (Altuna and Konuk, 2009; Fung and Lee, 1999). Information plays an imperative role in helping the viewers to develop a positive attitude toward the in-stream online ad. Prior investigations have identified that informational advertisement has a positive impact on consumer attitude toward mobile advertisement (Haghirian and Madlberger, 2005; Tsang et al., 2004). When updated, accurate, timely, and easily accessible information is provided in the advertisement named as informativeness (Altuna and Konuk, 2009). According to Fung and Lee (1999), informativeness is described as adequate and accurate accessibility of information. Informativeness plays an imperative role to develop a positive attitude of users' or viewers towards advertisements (Kaasinen, 2003; Tsang et al., 2004; Wang et al., 2009). For an in-stream video ad, an informative advertisement has an impact on the overall rating of the advertisement (Styśko-Kunkowska and Borecka, 2010) and builds up users' or viewers' positive attitudes regarding the advertisement (Goodrich et al., 2015). Advertisement will be favourable if it supplies informative content (Hwang and Jeong, 2019; Redondo and Aznar, 2018). Past studies literature described that long in-stream ads have more capability to communicate a message through ad properly (IAB, 2012). In-stream ads having a period of 30 seconds develop good persuasion as compared to ads having a period of 15 seconds with skip-able option (Goodrich et al., 2015). According to Jung (2017) users skip in-stream video ads providing irrelevant as well as detailed information. Conversely, in a full-length or forced in-stream ad detailed information is provided to users or viewers but sometimes it becomes a hindrance for the users' because it de-tracks the users from their interest and de-tracks the video they are seeing leading to a negative attitude. Past investigations have discovered a positive relationship between ad informativeness and users' or viewers' attitudes in the context of in-stream video advertisement (Puwandi et al., 2020). When viewers view in-stream ads then viewers think about how much time the advertisement will play. Users or viewers perceived long-duration advertisements with detailed information as a massive disturbance towards their purposeful search which compels the viewers or users to skip the long-duration advertisement because it would lead to a longer delay to see the video in which they are interested and in turn users' or viewers attitude will be unfavourable towards ad (Cho, 2004). Furthermore, high-quality information in the advertisement encourages pleasure and affects viewers' perception, attitudes, and intentions toward the ad (Hwang and Jeong, 2019; Sandvig et al., 2011). In line with the above literature, we assume a hypothesis.

H2: In-stream informational ad has a positive impact on viewers' attitude towards the ad.

### **2.3. In-stream entertaining ad and viewers' or users' attitude towards the ad**

The pleasure which a viewer received while watching an advertisement is called entrainment (Unala et al., 2011). Entertainment is the expression of viewers regarding their sense of pleasure toward advertisements (Ünal et al., 2011). Entertainment also refers to viewers' or users' feelings of enjoyment linked with the ad (Shavitt et al., 1998). When viewers feel that an advertisement is more enjoyable than viewers are likely to display a positive attitude toward that advertisement. Entertainment in the ad facilitates viewers or users to develop a positive attitude (Pollay and Mittal, 1993). Ads having entertainment features build up positive users' or viewers' attitudes towards ads (Aslam et al., 2016; Shavitt et al., 1998; Ul Haq, 2012). In the domain of online in-stream ads, entertainment is acknowledged as a positive attribute of viewers' or users' attitudes (Puwandi et al., 2020; Yang et al., 2017). Moreover, entertainment in the in-stream ad is the contributing factor to the emerging viewership of ads (Joa et al., 2018). In-stream advertisements having the aspects of pleasure and humour build up the viewer's positive attitude toward the ad (Goodrich et al., 2015; Raney et al., 2003). In line with the above literature, we employed the following hypothesis.

H3: In-stream entertainment ad has a positive impact on viewers' attitude towards the ad.

### **2.4. Viewers' control in terms of skip ad option**

Due to the advancement in technology content marketers upload amazing video content for the viewers. YouTube and other video-sharing websites have become famous communication channels for providing information, and entertainment and also become the major source for hitting the viewers' emotions through different appeals to engage the users' (Banerjee and Chua, 2019; Belanche et al., 2017). Advertising literature has started to place a keen focus on the inspection of emotional advertising and responses elicited from the viewers. Prior investigations have analysed how emotional appeal ads affect the viewers (Batra, 1986; Holbrook and O'Shaughnessy, 1984; Mitchell, 1986). YouTube offers a lot of emotional appeal ads before the start of any video, in the mid of any video, and also at the end of the video with a skip ad button option or full-length ad. An online advertisement in different formats such as skip-able, full length, forced, pre-roll skip-able, pre-roll forced, mid-roll skip-able, and mid-roll forced has become a more useful marketing tool to attract the consumer's attention to the advertisement (Hwang et al., 2011; Mohammed and Alkubise, 2012; Wang and Sun, 2010). Additionally, YouTube has introduced a new pattern of advertisements in term of skip-able which give freedom to viewers in a sense of control to skip the advertisement to achieve their interest (Pashkevich et al., 2012), and viewers' decision to skip the ad has a positive impact over their interests which lead to positive attitude (Gerbasi and Prentice, 2013). When an in-stream emotional ad appeared then viewers' do not act as passive receivers but perform an active role in the sense of what needs to see based on the power of control (Hofacker and Belanche, 2016). The skip-able format of the advertisement has become dominant because it gives control to viewers which in turn leads to a positive attitude

(Belanche et al., 2017; Pashkevich et al., 2012). More accurately, viewers can select an online ad based on their preferences and also have control over advertisements that produce favourable outcomes in the form of viewers' positive attitudes.

Viewers receive some information from the in-stream advertisement, after attaining that information viewers decide either to receive further information from the advertiser or to continue the video of their interest (Dukes et al., 2018). Particularly, viewers decide to continue information seeking based on the information which viewers gain in the first five seconds. Prior investigations have described either to see "all or nothing" (Anderson and Coate, 2005). Advertising provides autonomy in the form of choices helping viewers to control their exposure to ads and inducing a positive reaction of viewers towards the ad (Moller et al., 2006). In opposition advertising with a lack of autonomy become the source of viewers' negative reactions (Edwards et al., 2002; Ying et al., 2009). In the domain of online in-stream video, advertisement viewers' perceived control influences viewers' responses, and viewers' capability to choose enhances their interest in information processing (Langer, 1975). When viewers or users' have more opportunities in the form of control during in-stream advertisements then viewers' have the power to proceed with the ad or returned to their main interests and viewers' more control leads to a positive attitude and intention (Prestwich et al., 2012). When users or viewers have a high degree of control received through ad-context and choices then they exhibit positive attitudes and behaviours toward the ad (Hui and Toffoli, 2002).

Viewers' feelings of enjoyment assembled with ads play an important role to account for the viewers' attitudes towards advertisements (Shavitt et al., 1998). However, it is mandatory in the advertisement message should be precise and funny which in turn measures the viewers' attitude and intention toward the ad (Kalakota et al., 2002). Entertainment in in-stream advertisement adds value to the minds of the viewer and increases viewers' loyalty to the ad of the product (Haghirian and Dickinger, 2005). An in-stream advertisement having entertaining features makes users see the advertisement until the skip ad option appeared and provides control to viewers encouraging viewers' positive attitude toward the ad (Jeon et al., 2019). In addition, the option of skip ads makes users feel more respected and freer which lowered their negative attitudes and intention (Youn and Kim, 2019). Past investigations have described that when viewers' control over a video is returned then it restores the viewer's freedom and minimizes the negative emotional responses (Jeon et al., 2019; Okazaki et al., 2012). In line with the above literature, researchers assume that viewers' or users' control moderates the relationship between in-stream ads and viewers' attitudes toward ads. Viewers achieve control over an ad through choice or opportunity offered in the form of skip ad option, which leads to viewers' attitude towards in-stream ads in the form of favourable or unfavourable responses. Therefore, the current investigation is employed to expose the effect of in-stream ads on viewers' attitudes toward in-stream ads and purchase intention with the moderating role of viewers' or users' control over the in-stream ad, which appeared on social media websites such as YouTube, Dailymotion, Facebook, Instagram, and Twitter. Therefore, we proposed the following hypotheses.

H4: Viewers' or users' control positively and significantly moderate the

relationship between in-stream emotional appeal ad and viewers' attitude towards the ad.

H5: Viewers' or users' control positively and significantly moderate the relationship between in-stream informational ads and viewers' attitude towards the ad.

H6: Viewers' or users' control positively and significantly moderate the relationship between in-stream entertaining ad and viewers' attitude towards the ad.

## **2.5. Viewers' attitude towards intention to purchase**

The current study employed the theory of reasoned action to analyse the consumer attitude and behaviours allied to particular situations and phenomena (Aslam et al., 2016) which was initially originated by Fishbein (1979). The theory of reasoned action claimed that an individual or person or viewers' attention is the reaction of his attitude and subjective norms of users' (Ajzen and Fishbein, 1977). However, to inspect viewers' or users' intentions, consumer attitudes should be determined. The attitude of viewers or users' or people is the positive or negative feelings that induce their action (Webster et al., 1993). According to Lee et al. (2017) advertisement through mobile is beneficial for users and build up positive users' or viewers' attitude and intention toward Ad. Viewers' attitude toward ads is an imperative fact because it is an important source for building the perception of viewers or users towards ads (MacKenzie and Lutz, 1989). Additionally, prior investigations have analysed that users' attitudes toward skippable advertisements and intentions have positive relation towards each other (Duroy et al., 2018). Viewers' or users' attitudes develop a positive intention toward advertisements (Oh and Xu, 2003). Therefore, viewers having a positive attitude toward in-stream online advertisements develop a viewer's positive intention to purchase through in-stream online ads. Additionally, some prior investigations have argued the positive relationship between attitude and intention toward the ad (Lee et al., 2017; Xu et al., 2009).

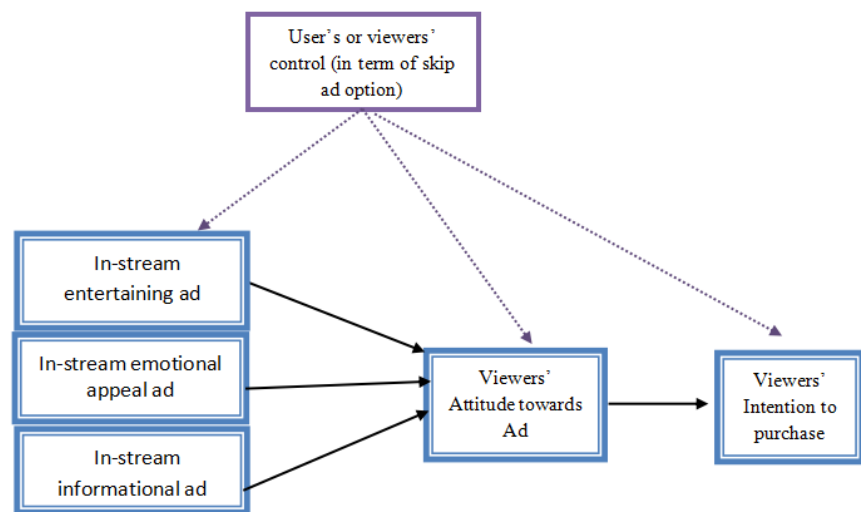
Moreover, the researcher also employed the theory of planned behaviour. According to the theory of planned behaviour, behavioural intention is the psychological process that an individual experience before taking any action. This theory clarifies that viewers' intention toward an ad is the fundamental antecedent of the actual behaviour of the users (Ajzen, 1991). The viewer's intention toward an in-stream ad is dependent on the decision made by the viewers before the appearance of the behaviour and it can be used for the prediction of actual behaviour towards an in-stream ad. In line with the previous investigations, we employ the concept of viewers' intention to purchase through online in-stream ads. In line with the above literature, the researcher develops a hypothesis

H7: Viewers' attitude toward ads has a positive and significant impact on viewers' intention to purchase.

## **3. Research methodology**

The current study intended to gather information on study variables from respondents via survey through administered questionnaires. Primary data was

gathered from students at target universities of district Vehari, Southern Punjab Pakistan. These universities are COMSATS University Islamabad (CUI), Vehari Campus, Bahaudin Zakariya University (BZU) Vehari Campus, Faisalabad Agriculture University Vehari Campus (FAU) and Education University Vehari Campus. The students were considered because they are more likely to use mobile devices such as smartphones and tablets for accessing online content. In-stream video ads are often integrated into mobile apps and websites, making students a key audience for advertisers targeting online platforms. Due to this reason, in this study our population comprises students. It is impossible to gather the data from the whole population. Therefore, a stratified random sampling technique was employed in this study. The data regarding number of students are taken from the administration of each University campus. The total target population for this study was approximately 104,77 so the desired sample was derived through equal distribution of sample units. According to Krejcie and Morgan (1970) table, the sample size for this study is 370 respondents. For the collection of data, 440 questionnaires were distributed from which 398 questionnaires were collected. After screening, 370 questionnaires were employed for analysis (see questionnaire in Appendix). The questionnaires which were excluded have the issue of missing values. Personally self-administered questionnaires technique was incorporated to collect data because it gives access to the researcher to handle the respondents in large quantity. The data were collected on a five-point Likert scale. The conceptual model can be seen in **Figure 1**.



**Figure 1.** Conceptual model.

Items related to emotional appeal ad adapted and revised form (Davis, 1983; Escalas and Stern, 2003) with three items. Items related to informational ad adapted and revised form (Ducoffe, 1996) with three items. Items related to entertaining ad adapted and revised form (Ducoffe, 1996; Tsang et al., 2004) with four items. Items related to viewers' or users' attitudes towards online ads adapted and revised form (Nwagwu and Famiyesin, 2016) four items. Items related to viewers' or users' intention to purchase adapted and revised form (Jain et al., 2018; Thananuraksakul, 2007) with three items. Viewers' or users' control in terms of skip ad option measured with the help of items adapted and revised form (Jewell and Kidwell,



2005; Youn and Kim, 2019) with four items.

Smart PLS3 software was used for the analysis of the data. Reliability analysis of scales, descriptive statistics, correlation analysis, Partial Least Square – Structural Equation Model (PLS-SEM), multiple regression analysis, and moderation regression were used. PLS found strong support from many researchers (Sarstedt et al., 2016). PLS-SEM gives greater freedom to experiment and explore different setups and configurations (Dash and Paul, 2021). Because this is an exploratory study and has a small sample size, due to this PLS-SEM method is adopted in this study. Due to its variance-based relationship rather than covariance, PLS approach is more popular among researchers (AlNuaimi et al., 2021; Mueller and Hancock, 2018).

#### 4. Results and discussion

**Table 1** provides the sample profile, which shows that a total of 370 respondents took part in the study, from those 370 respondents 182 respondents were male, and the remaining 188 respondents were female. **Table 1** represents that majority of the respondents fall between 26–33 years of age. **Table 1** shows that 46.8 percent of the respondents studying for bachelor degree, 31.6 percent studying for master degree while 21.6 percent of respondents studying for MPhil degree.

**Table 1.** Profile of sample.

Factors	Valid No.	Percentage (%)	
Gender	Female	188	50.8
	Male	182	49.2
Age	18–25	144	38.9
	26–33	210	56.8
	34–41	16	04.3
Qualification	Bachelor	173	46.8
	Master	117	31.6
	MPhil/MS	80	21.6
Institution of respondents	CUI Vehari	75	20.3
	EU Vehari	97	26.3
	BZU Vehari	42	11.4
	FAU Vehari	156	42.2

**Table 2.** Reliability of constructs.

Constructs	Cronbach’s alpha
In-stream emotional appeal ad (ISEAA)	0.796
In-stream informational ad (ISIA)	0.781
In-stream entertaining ad (ISEA)	0.836
Viewers’ attitude towards ad (VATA)	0.839
Viewers’ intention to Purchase (VIP)	0.796
Viewers’ control (VC)	0.850

**Table 2** shows Cronbach’s alpha values, and the values show a high level of internal consistency for all the reflective constructs used in this study. The PLS algorithm was used to calculate the reliability of reflective constructs. According to Hair Jr et al. (2016), the threshold value for Cronbach’s alpha is 0.70 (values equal to or above 0.07 are considered reliable) and **Table 2** represents that all values were above the threshold value.

The discriminant validity of the model has checked with the help of Fornell and Larcker (1981) criterion. Fornell and Larcker (1981) criterion is used to check the validity of data for the current study. This criterion argued that the Average Variance Extracted (AVE) square root of each construct must be greater than construct correlation. Square root values of each construct and correlation are given in **Table 3**. Square root values are greater than their bivariate correlations by comparing opposite rows and columns.

**Table 3.** Fornell and Larcker (1981) criterion

	<b>ISEAA</b>	<b>ISEA</b>	<b>ISIA</b>	<b>VATA</b>	<b>VC</b>	<b>VIP</b>
ISEAA	<b>0.755</b>					
ISEAA	0.543	<b>0.749</b>				
ISIA	0.301	0.379	<b>0.737</b>			
VATA	0.275	0.358	0.306	<b>0.797</b>		
VC	0.251	0.279	0.270	0.432	<b>0.808</b>	
VIP	0.094	0.028	0.050	0.143	0.007	<b>0.753</b>

Results of the regression model are affected by the presence of multicollinearity. Multicollinearity affects the results by tumbling the ability to forecast the dependent variable and determine the diverse effect of explanatory variables (Hair et al., 2010). According to Hair et al. (2010), multicollinearity is identified by testing the “Variance of Inflation Factor (VIF)”. Hair et al. (2011) stated that the threshold value for VIF should be below 5.0. **Table 4** provides the VIF values of all the predictor variables and all the values are less than 5.0 and confirming there is no collinearity issue present in the constructs.

**Table 4.** Collinearity statistics.

<b>Predictor variables</b>	<b>VIF</b>
ISEAA	1.531
ISEA	1.355
ISIA	1.545
VC	1.554

According to Hair et al. (2006), the structural model provides information regarding the association in a hypothesized model of the study. The structural model provides path coefficients that are the same as the standardized beta coefficient in regression analysis. To assess the structural model *R* square was calculated. *R*-square shows the amount of variance explicate with the exogenous variables (Barclay et al., 1995). All three independent variables such as in-stream emotional appeal ad, in-

stream informational ad, in-stream entertaining ad, and moderator viewers' control jointly explain 30.2% of the variance in users' viewers' attitude towards the ad. Using a bootstrapping technique in Smart PLS3 parameter estimates and *t*-statistics were used to determine the significance of the relationship among the constructs of the study, which are additionally utilized for decision-making regarding proposed hypotheses. From the analysis, it was found In-stream emotional appeal ad (*T*-value = 2.217, *p* < 0.028) has a positive significant impact on viewers' attitudes towards the ad. This finding has the support of prior investigation of researcher about in-stream emotional appeal ads which confirmed that in-stream emotional appall ads has a positive impact on viewers' attitude in the context of social media advertisement (Lee and Hong, 2016). In-stream informational ad with (*T*-value = 3.260, *p* < 0.020) has a positive significant impact on viewers' attitudes towards the ad. This finding has the support of prior investigation of researcher about in-stream informational ad plays an imperative role for the development of viewers' positive attitude towards advertisement (Kaasinen, 2003; Tsang et al., 2004; Wang et al., 2009). Advertisement will be favourable if it supplies contents which are informative (Hwang and Jeong, 2019; Redondo and Aznar, 2018). In-stream entertaining ad with (*T*-value = 2.596, *p* < 0.013) has a positive significant impact on viewers' attitudes towards the ad. This finding has the support of prior investigation about entertainment in the in-stream advertisement facilitate viewers or users to develop a positive attitude (Pollay and Mittal, 1993). Moreover, advertisement having entertainment features build up viewers' or users' positive attitude towards ad (Aslam et al., 2016; Shavitt et al., 1998; Ul Haq, 2012). In the context of online in-stream entertaining ad, entertainment acknowledged as positive attribute of viewers or user's attitude (Puwandi et al., 2020; Yang et al., 2017).

**Table 5.** Hypothesis testing (bootstrapping).

Hypothesis	Relationships	Parameter estimator	Std error	<i>t</i> -value	<i>P</i> -value	Decision
H1	ISEAA → VATA	0.103	0.047	2.217	0.028	Supported
H2	ISIA → VATA	0.163	0.050	3.260	0.020	Supported
H3	ISEA → VATA	0.129	0.052	2.596	0.013	Supported
H4	VC * ISEAA → VATA	0.155	0.076	2.128	0.038	Supported
H5	VC * ISIA → VATA	0.165	0.072	2.288	0.023	Supported
H6	VC * ISEA → VATA	0.191	0.050	3.932	0.000	Supported
H7	VATA → VIP	0.143	0.042	3.205	0.001	Supported
<i>R</i> <sup>2</sup> square for endogenous variables		0.302 (30.2%)	Viewers' intention to purchase <i>R</i> <sup>2</sup>	0.232 (23.2%)		

Viewers' control with (*T*-value = 2.128, *p* < 0.038) positively and significantly moderates the relationship between in-stream emotional appeal ad and viewers' attitude towards the ad. Viewers' control with (*T*-value = 2.288, *p* < 0.023) positively and significantly moderates the relationship between in-stream informational ads and viewers' attitudes towards the ad. Viewers' control (*T*-value = 3.932, *p* < 0.000) positively and significantly moderate the relationship between in-stream entertaining ads and viewers' attitudes towards ads. Viewers' attitude toward an ad (*T*-value = 3.205, *p* < 0.001) has a positive significant impact on viewers' intention to purchase.

Table 5 depicts that all the hypotheses are supported. Figure 2 represents the structural model of the study after bootstrapping while Figure 3 represents the structural model for path coefficient.

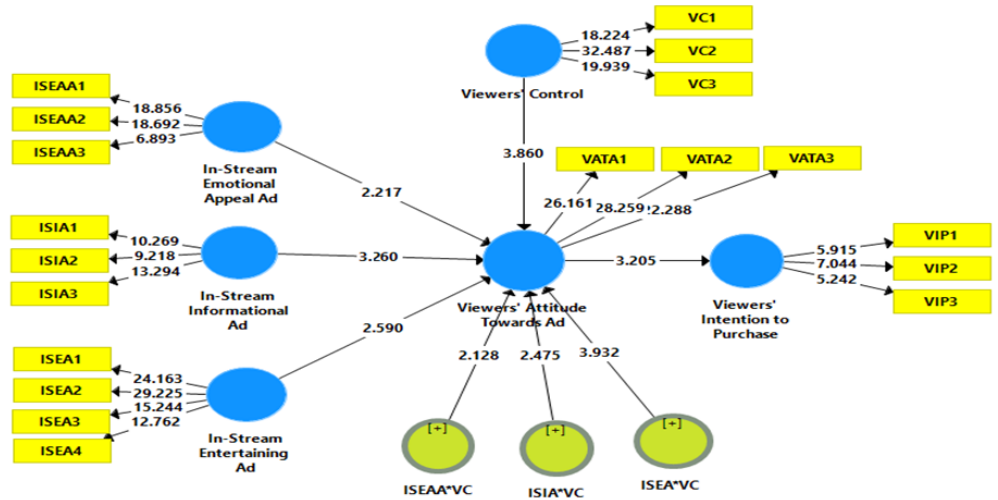


Figure 2. Structural model (bootstrapping).

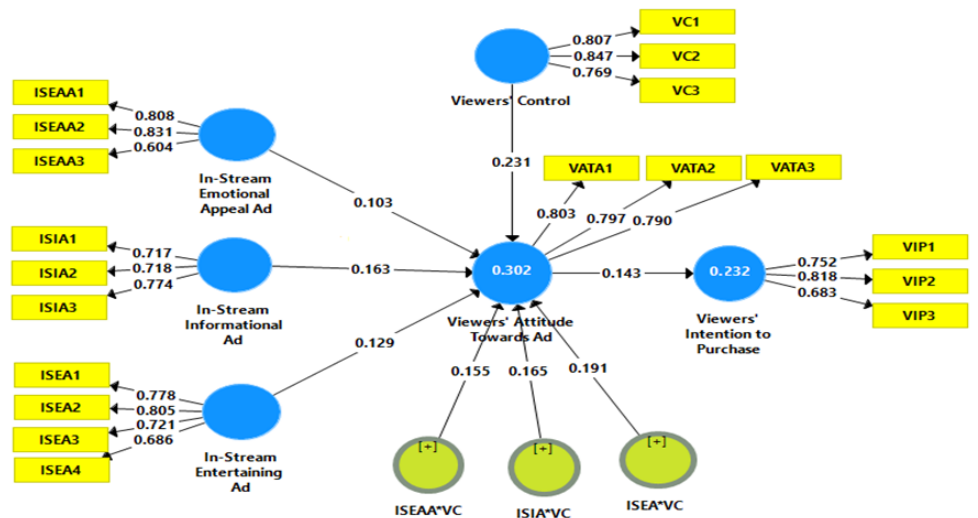


Figure 3. Final research model (path coefficients).

### 5. Conclusion

Based on the finding of the current investigation in-stream emotional appeal ad has a positive effect on the viewers' attitude towards the ad. Therefore, the emotional appeal should be considered in the in-stream ads with the viewers' control option so that viewers' attention can be captured to see the ad till the skip ad option in terms of viewers' control appeared. In-stream informational ad is also found a leading factor towards viewers' attitudes with the moderating role of viewers' control. The in-stream informational ad has a positive impact on viewers' attitudes and viewers' control is also positively and significantly moderates the relationship between in-stream informational ad and viewers' attitudes towards the ad. The in-stream entertaining ad also has a positive impact on viewers' attitudes as well as viewers'

control in terms of the skip ad option is playing a moderating role between the in-stream entertaining ad and viewers' attitude towards the ad. Therefore, entertainment, enjoyment, and pleasure attributed should be included in the in-stream ad to capture the attention of users. Finally, the current investigation found that viewers' attitudes towards ad also an important factor leading to viewers' intention to purchase. Current investigation confirms that viewers' attitude towards ads has a positive and significant impact on viewers' intention to purchase. In short viewers, control plays an important role as a moderator between in-stream ads and viewers' attitudes towards the ad.

### **5.1. Practical implications**

The current investigation provides a lot of implications to the marketing managers as well as brand managers so that they can formulate effective strategies regarding in-stream video advertisement. Marketing managers, as well as brand managers, interactivity clearly facilitates viewers' entry into a state of flow and, in turn, increases their willingness to engage in positive behaviors for purchase intention (Zheng et al., 2023). it suggested to include some emotional aspects in the content of the product or service ad to capture the viewers' attention and to create the viewers' positive attitude toward the ad. Moreover, ads that provide complete and short information in the first five seconds before viewers' control option can be fruitful for persuading the viewers to see the advertisement. Marketing managers should give attention to providing complete and short information about products because viewers like to view short information and dislike those ads that bombard with information about their products. Marketing managers of the company should pay extensive attention to create the entertainment element in the advertisement to attain their attention and positive attitude. On the platform the marketing managers should focus on developing interactions to allow viewer's control and viewer's attitude to interact better. In-stream entertaining ads reduce the level of irritation among the viewers (Lin et al., 2021), so the entertaining element is an important concern for the marketer to include in the advertisement content. Entertaining elements play an important role in reducing the level of irritation among the users because viewers feel that seeing ads is not a waste of time. In short marketing, managers should consider these facts in mind and also consider the time factor for an advertisement to formulate an effective advertising strategy.

### **5.2. Theoretical implications**

The current investigation has some theoretical implications. Firstly, according to the previous studies that focused on the stream (Li and Peng, 2021; Ming et al., 2021). No early investigation is conducted to check the effect of the in-stream ad on viewers' attitudes towards ads with the moderating role of viewers' control in terms of the skip ad option. To the best off our knowledge, this may the first study which is applying the viewers' control as a moderator between in-stream ads and viewers' attitudes towards the ad. Second, prior investigations have checked the impact of in-stream emotional appeal ads on perceived intrusiveness, but the current investigation is based on the comprehensive model, having the element of in-stream emotional

appeal ad to analyse the viewers' attitude towards ad through the moderation of viewers' control. Third, our results are supported by Hsu et al. (2012), they concluded that continuously watching stream and intentional purchasing affected by interactivity and social presence. However, the prior investigations check the direct impact of different ads on users' attitudes and ignore the element of viewers' intention in the context of in-stream ads, but the current investigation is fulfilling this gap and also investigating the impact of viewers' attitudes towards ad on viewers' intention to purchase. This study provides a novel perspective and gives direction to researchers on the influencing factors of in-stream ads and viewer's attitude and intention to purchase.

### **5.3. Future research**

There are several suggestions for future research. First, data is collected in the selected universities of District Vehari Punjab Pakistan, like COMSATS University Islamabad Vehari Campus, Bahaudin Zakariya University (BZU) Vehari Campus, Faisalabad Agriculture University Vehari Campus (FAU) and Education University Vehari Campus. Further research can be conducted in the other regions. Second, this study has acknowledged the effect of in-stream ads on viewers' attitudes towards ads with the moderating role of viewers' control. Future research may attempt to explore other moderators such as length of the advertisement in terms of time, personality traits, and gender which can be utilized between in-stream advertisement and viewers' attitudes towards ads. Third, the current study finds the impact of attitude on intention while future research may be conducted to find out viewers' behavior after viewers' intention. Fourth, in the present research, data was collected from male and female students while future research can be conducted by collecting data only from one gender students. Finally, in the present study, we checked the effect of in-stream ads on viewers' attitudes with the moderating role of viewers' control and also analyze the effect of attitude on viewers' intention in the context of students who are almost youngsters, however, future research can be conducted to check this effect by taking elder peoples.

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## References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, 84(5), 888–918. <https://doi.org/10.1037/0033-2909.84.5.888>
- Alhabash, S., McAlister, A. R., Quilliam, E. T., et al. (2012). Between “Likes” and “Shares”: Effects of Emotional Appeal and Virality of Social Marketing Messages on Facebook. *Cyberpsychology, Behavior, and Social Networking*, 16(3), 175–182. <https://doi.org/10.1089/cyber.2012.0265>
- AlNuaimi, B. K., Khan, M., & Ajmal, M. M. (2021). The role of big data analytics capabilities in greening e-procurement: A higher order PLS-SEM analysis. *Technological Forecasting and Social Change*, 169, 120808. <https://doi.org/10.1016/j.techfore.2021.120808>
- Altuna, O. K., & Konuk, F. A. (2009). Understanding consumer attitudes toward mobile advertising and its impact on consumers behavioral intentions: a crossmarket comparison of united states and Turkish consumers. *International Journal of Mobile Marketing*, 4(2).
- Anderson, S. P., & Coate, S. (2005). Market provision of broadcasting: A welfare analysis. *The review of Economic studies*, 72(4), 947–972. <https://doi.org/10.1111/0034-6527.00357>
- Aslam, W., Batool, M., & Haq, Z. U. (2016). Attitudes and behaviors of the mobile phones users towards SMS advertising: A study in an emerging economy. *Journal of Management Sciences*, 3(1), 63–80. <https://doi.org/10.20547/jms.2014.1603105>
- Banerjee, S., & Chua, A. Y. (2019). Identifying the antecedents of posts’ popularity on Facebook Fan Pages. *Journal of Brand Management*, 26(6), 621–633. <https://doi.org/10.1057/s41262-019-00157-7>
- Barclay, D., Higgins, C., & Thompson, R. (1995). The partial least squares (PLS) approach to casual modeling: personal computer use as an Illustration. *Technal. Stud.*, 2(2).
- Batra, R. (1986). Affective advertising: Role, processes, and measurement. *The Role of Affect in Consumer Behavior*, 53–85.
- Belanche, D., Flavián, C., & Pérez-Rueda, A. (2017). Understanding interactive online advertising: Congruence and product involvement in highly and lowly arousing, skippable video ads. *Journal of Interactive Marketing*, 37, 75–88. <https://doi.org/10.1016/j.intmar.2016.06.004>
- Cho, C. H. (2004). Why do people avoid advertising on the internet? *Journal of Advertising*, 33(4), 89–97. <https://doi.org/10.1080/00913367.2004.10639175>
- Chungviwatanant, T., Prasongsukarn, K., & Chungviwatanant, S. (2016). A study of factors that affect consumer’s attitude toward a “skippable in-stream ad” on YouTube. *AU-GSB e-Journal*, 9(1), 83–83.
- Dash, G., & Paul, J. (2021). CB-SEM vs PLS-SEM methods for research in social sciences and technology forecasting. *Technological Forecasting and Social Change*, 173, 121092. <https://doi.org/10.1016/j.techfore.2021.121092>
- Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology*, 44(1), 113–126. <https://doi.org/10.1037/0022-3514.44.1.113>
- Ducoffe, R. H. (1996). Advertising value and advertising on the web. *Journal of Advertising Research*, 36(5), 21.
- Dukes, A., Liu, Q., & Shuai, J. (2018). Interactive advertising: The case of skippable ads. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3169629>
- Duroy, D., Sabbagh, O., Baudel, A., & Lejoyeux, M. (2018). Compulsive buying in Paris psychology students: Assessment of DSM-5 personality trait domains. *Psychiatry research*, 267, 182–186. <https://doi.org/10.1016/j.psychres.2018.06.015>
- Edell, J. A., & Burke, M. C. (1987). The power of feelings in understanding advertising effects. *Journal of consumer research*, 14(3), 421–433. <https://doi.org/10.1086/209124>
- Edwards, S. M., Li, H., & Lee, J. H. (2002). Forced exposure and psychological reactance: Antecedents and consequences of the perceived intrusiveness of pop-up ads. *Journal of Advertising*, 31(3), 83–95. <https://doi.org/10.1080/00913367.2002.10673678>
- Escalas, J. E., & Stern, B. B. (2003). Sympathy and empathy: Emotional responses to advertising dramas. *Journal of consumer research*, 29(4), 566–578. <https://doi.org/10.1086/346251>
- Fishbein, M. (1979). A theory of reasoned action: Some applications and implications. *Nebraska Symposium on Motivation*, 27, 65–116.
- Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research*, 18(3), 382. <https://doi.org/10.2307/3150980>

- Fung, R., & Lee, M. (1999). EC-trust (trust in electronic commerce): exploring the antecedent factors. *AMCIS 1999 Proceedings*, 179.
- Gerbasi, M. E., & Prentice, D. A. (2013). The self-and other-interest inventory. *Journal of Personality and Social Psychology*, 105(3), 495–514. <https://doi.org/10.1037/a0033483>
- Golan, G. J., & Zaidner, L. (2008). Creative strategies in viral advertising: An application of Taylor's six-segment message strategy wheel. *Journal of computer-mediated communication*, 13(4), 959–972. <https://doi.org/10.1111/j.1083-6101.2008.00426.x>
- Goodrich, K., Schiller, S. Z., & Galletta, D. (2015). Consumer reactions to intrusiveness of online-video advertisements: do length, informativeness, and humor help (or hinder) marketing outcomes? *Journal of advertising research*, 55(1), 37–50. <https://doi.org/10.2501/jar-55-1-037-050>
- Grant, P., Botha, E., & Kietzmann, J. (2015). Branded flash mobs: Moving toward a deeper understanding of consumers' responses to video advertising. *Journal of Interactive Advertising*, 15(1), 28–42. <https://doi.org/10.1080/15252019.2015.1013229>
- Haghirian, P., & Dickinger, A. (2005). Identifying success factors of mobile marketing. *ACR Asia-Pacific Advances*.
- Haghirian, P., & Madlberger, M. (2005). Consumer attitude toward advertising via mobile devices-An empirical investigation among Austrian users. *ECIS 2005 Proceedings*, 44.
- Haghirian, P., Madlberger, M., & Tanuskova, A. (2005). Increasing advertising value of mobile marketing-an empirical study of antecedents. In: *Proceedings of the 38th annual Hawaii international conference on system sciences*.
- Hair, J., Anderson, R., Babin, B., & Black, W. (2010). *Multivariate data analysis: A global perspective*: Pearson Upper Saddle River. Pearson.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing theory and Practice*, 19(2), 139–152. <https://doi.org/10.2753/mtp1069-6679190202>
- Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications.
- Hegner, S. M., Kusse, D. C., & Pruyn, A. T. (2016). Watch it! The influence of forced pre-roll video ads on consumer perceptions. In: *Advances in Advertising Research*. Springer. pp. 63–73.
- Hofacker, C. F., & Belanche, D. (2016). Eight social media challenges for marketing managers. *Spanish Journal of Marketing-ESIC*, 20(2), 73–80. <https://doi.org/10.1016/j.sjme.2016.07.003>
- Holbrook, M. B., & O'Shaughnessy, J. (1984). The role of emotion in advertising. *Psychology & Marketing*, 1(2), 45–64. <https://doi.org/10.1002/mar.4220010206>
- Hsu, C., Chang, K., & Chen, M. (2012). Flow Experience and Internet Shopping Behavior: Investigating the Moderating Effect of Consumer Characteristics. *Systems Research and Behavioral Science*, 29(3), 317–332. <https://doi.org/10.1002/sres.1101>
- Hui, M. K., & Toffoli, R. (2002). Perceived control and consumer attribution for the service encounter. *Journal of Applied Social Psychology*, 32(9), 1825–1844. <https://doi.org/10.1111/j.1559-1816.2002.tb00261.x>
- Hwang, J., Yoon, Y. S., & Park, N. H. (2011). Structural effects of cognitive and affective responses to web advertisements, website and brand attitudes, and purchase intentions: The case of casual-dining restaurants. *International Journal of Hospitality Management*, 30(4), 897–907. <https://doi.org/10.1016/j.ijhm.2011.01.011>
- Hwang, Y., & Jeong, S. H. (2019). Editorial content in native advertising: How do brand placement and content quality affect native-advertising effectiveness? *Journal of advertising research*, 59(2), 208–218. <https://doi.org/10.2501/jar-2018-019>
- Jain, G., Rakesh, S., & Chaturvedi, K. R. (2018). Online video advertisements' effect on purchase intention: an exploratory study on youth. *International Journal of E-Business Research (IJEER)*, 14(2), 87–101. <https://doi.org/10.4018/ijebr.2018040106>
- Jeon, Y. A., Son, H., Chung, A. D., & Drumwright, M. E. (2019). Temporal certainty and skippable in-stream commercials: Effects of ad length, timer, and skip-ad button on irritation and skipping behavior. *Journal of Interactive Marketing*, 47, 144–158. <https://doi.org/10.1016/j.intmar.2019.02.005>
- Jewell, R. D., & Kidwell, B. (2005). The moderating effect of perceived control on motivation to engage in deliberative processing. *Psychology & Marketing*, 22(9), 751–769. <https://doi.org/10.1002/mar.20083>
- Joa, C. Y., Kim, K., & Ha, L. (2018). What makes people watch online in-stream video advertisements? *Journal of Interactive Advertising*, 18(1), 1–14. <https://doi.org/10.1080/15252019.2018.1437853>
- Jung, A. R. (2017). The influence of perceived ad relevance on social media advertising: An empirical examination of a mediating role of privacy concern. *Computers in Human Behavior*, 70, 303–309. <https://doi.org/10.1016/j.chb.2017.01.008>



- Kaasinen, E. (2003). User needs for location-aware mobile services. *Personal and Ubiquitous Computing*, 7(1), 70–79. <https://doi.org/10.1007/s00779-002-0214-7>
- Kalakota, R., Robinson, M., & Kalakota, D. R. (2002). *M-business: The race to mobility*. McGraw-Hill New York.
- Kamran, Q., & Siddiqui, D. A. (2019). The Impact of Emotional Advertising on Consumer Buying Behavior for Home Appliance Products in Pakistan. *Business and Management Horizons*, 7(1), 23–48. <https://doi.org/10.5296/bmh.v7i1.14410>
- Kononova, A., & Yuan, S. (2015). Double-dipping effect? How combining YouTube environmental PSAs with thematically congruent advertisements in different formats affects memory and attitudes. *Journal of Interactive Advertising*, 15(1), 2–15. <https://doi.org/10.1080/15252019.2015.1009524>
- Krejcie, R., & Morgan, S. (1970). Sample size determination. *Business Research Methods*, 4(5), 34–36.
- Langer, E. J. (1975). The illusion of control. *Journal of Personality and Social Psychology*, 32(2), 311–328. <https://doi.org/10.1037/0022-3514.32.2.311>
- Laskey, H. A., Day, E., & Crask, M. R. (1989). Typology of main message strategies for television commercials. *Journal of Advertising*, 18(1), 36–41. <https://doi.org/10.1080/00913367.1989.10673141>
- Lee, E. B., Lee, S. G., & Yang, C. G. (2017). The influences of advertisement attitude and brand attitude on purchase intention of smartphone advertising. *Industrial Management & Data Systems*, 117(6), 1011–1036. <https://doi.org/10.1108/imds-06-2016-0229>
- Lee, J., & Hong, I. B. (2016). Predicting positive user responses to social media advertising: The roles of emotional appeal, informativeness, and creativity. *International Journal of Information Management*, 36(3), 360–373. <https://doi.org/10.1016/j.ijinfomgt.2016.01.001>
- Li, Y., & Peng, Y. (2021). What Drives Gift-giving Intention in Live Streaming? The Perspectives of Emotional Attachment and Flow Experience. *International Journal of Human-Computer Interaction*, 37(14), 1317–1329. <https://doi.org/10.1080/10447318.2021.1885224>
- Lin, H. C. S., Lee, N. C. A., & Lu, Y. C. (2021). The Mitigators of Ad Irritation and Avoidance of YouTube Skippable In-Stream Ads: An Empirical Study in Taiwan. *Information*, 12(9), 373. <https://doi.org/10.3390/info12090373>
- Liu-Thompkins, Y. (2019). A decade of online advertising research: What we learned and what we need to know. *Journal of Advertising*, 48(1), 1–13. <https://doi.org/10.1080/00913367.2018.1556138>
- Liu, S. S., & Stout, P. A. (1987). Effects of message modality and appeal on advertising acceptance. *Psychology & Marketing*, 4(3), 167–187. <https://doi.org/10.1002/mar.4220040303>
- MacKenzie, S. B., & Lutz, R. J. (1989). An empirical examination of the structural antecedents of attitude toward the ad in an advertising pretesting context. *Journal of marketing*, 53(2), 48–65. <https://doi.org/10.1177/002224298905300204>
- Ming, J., Jianqiu, Z., Bilal, M., et al. (2021). How social presence influences impulse buying behavior in live streaming commerce? The role of S-O-R theory. *International Journal of Web Information Systems*, 17(4), 300–320. <https://doi.org/10.1108/ijwis-02-2021-0012>
- Mitchell, A. A. (1986). Some issues surrounding research on the effects of feeling advertisements. *Advances in Consumer Research*, 13, 623–628. <https://doi.org/10.1086/209044>
- Mohammed, A. B., & Alkubise, M. (2012). How do online advertisements affects consumer purchasing intention: Empirical evidence from a developing country. *European journal of business and management*, 4(7), 208–218.
- Moller, A. C., Deci, E. L., & Ryan, R. M. (2006). Choice and ego-depletion: The moderating role of autonomy. *Personality and Social Psychology Bulletin*, 32(8), 1024–1036. <https://doi.org/10.1177/0146167206288008>
- Mueller, R. O., & Hancock, G. R. (2018). Structural equation modeling. In: *The reviewer’s guide to quantitative methods in the social sciences*. Routledge. pp. 445–456.
- Nauman Abbasi, M., Ramzan Sheikh, M., Saeed, R., & Imdadullah, M. (2014). Impact of Emotional Appeals on Youth Purchasing Behavior: Evidence from Pakistan. *Pakistan Journal of Social Sciences (PJSS)*, 34(2).
- Nwagwu, W. E., & Famiyesin, B. (2016). Acceptance of mobile advertising by consumers in public service institutions in Lagos, Nigeria. *The Electronic Library*, 34(2), 265–288. <https://doi.org/10.1108/el-09-2014-0169>
- Oh, L. B., & Xu, H. (2003). Effects of multimedia on mobile consumer behavior: An empirical study of location-aware advertising. *ICIS 2003 Proceedings*, 56.
- Okazaki, S., Molina, F. J., & Hirose, M. (2012). Mobile advertising avoidance: exploring the role of ubiquity. *Electronic Markets*, 22(3), 169–183. <https://doi.org/10.1007/s12525-012-0087-1>
- Pashkevich, M., Dorai-Raj, S., Kellar, M., & Zigmond, D. (2012). Empowering online advertisements by empowering viewers

- with the right to choose: the relative effectiveness of skippable video advertisements on YouTube. *Journal of advertising research*, 52(4), 451–457. <https://doi.org/10.2501/jar-52-4-451-457>
- Pelchen, L. (2024). Internet Usage Statistics in 2024. Available online: <https://www.forbes.com/home-improvement/internet/internet-statistics/> (accessed on 7 March 2024).
- Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In: *Communication and persuasion*. Springer. pp. 1–24.
- Pollay, R. W., & Mittal, B. (1993). Here's the beef: factors, determinants, and segments in consumer criticism of advertising. *Journal of marketing*, 57(3), 99–114. <https://doi.org/10.1177/002224299305700307>
- Prestwich, A., Conner, M. T., Lawton, R. J., et al. (2012). Randomized controlled trial of collaborative implementation intentions targeting working adults' physical activity. *Health Psychology*, 31(4), 486–495. <https://doi.org/10.1037/a0027672>
- Puto, C. P., & Wells, W. D. (1984). Informational and transformational advertising: The differential effects of time. *ACR North American Advances*.
- Puwandi, P. H., De, G. T., & Brasali, N. (2020). The factors affecting consumer response towards online video advertisement: YouTube as a platform. *International Journal of Multicultural and Multireligious Understanding*, 7(2), 486–495. <https://doi.org/10.1037/a0027672>
- Ramadhani, S., Suroso, A. I., & Ratono, J. (2020). Consumer attitude, behavioral intention, and watching behavior of online video advertising on YouTube. *Jurnal Aplikasi Manajemen*, 18(3), 493–503. <https://doi.org/10.21776/ub.jam.2020.018.03.09>
- Raney, A. A., Arpan, L. M., Pashupati, K., & Brill, D. A. (2003). At the movies, on the web: An investigation of the effects of entertaining and interactive web content on site and brand evaluations. *Journal of Interactive Marketing*, 17(4), 38–53. <https://doi.org/10.1002/dir.10064>
- Redondo, I., & Aznar, G. (2018). To use or not to use ad blockers? The roles of knowledge of ad blockers and attitude toward online advertising. *Telematics and Informatics*, 35(6), 1607–1616. <https://doi.org/10.1016/j.tele.2018.04.008>
- Sandvig, J. C., Bajwa, D., & Ross, S. C. (2011). Usage and perceptions of internet ad blockers: An exploratory study. *Issues in Information Systems*, 12(1), 59–69.
- Sarstedt, M., Hair, J. F., Ringle, C. M., et al. (2016). Estimation issues with PLS and CBSEM: Where the bias lies! *Journal of Business research*, 69(10), 3998–4010. <https://doi.org/10.1016/j.jbusres.2016.06.007>
- Shavitt, S., Lowrey, P., & Haefner, J. (1998). Public attitudes toward advertising: More favorable than you might think. *Journal of advertising research*, 38(4), 7–22.
- Statista. (2023). Number of digital video viewers worldwide from 2019 to 2023. Available online: <https://www.statista.com/statistics/1061017/digital-video-viewers-number-worldwide/> (accessed on 7 March 2024).
- Statista. (2024a). Number of digital video viewers in the Asia Pacific region from 2019 to 2023. Available online: <https://www.statista.com/statistics/658228/digital-video-viewers-in-apac/> (accessed on 7 March 2024).
- Statista. (2024b). Video Advertising, worldwide. Available online: <https://www.statista.com/outlook/dmo/digital-advertising/video-advertising/worldwide> (accessed on 7 March 2024).
- Styśko-Kunkowska, M. A., & Borecka, D. (2010). Extraversion and evaluation of humorous advertisements. *Psychological reports*, 106(1), 44–48. <https://doi.org/10.2466/pr0.106.1.44-48>
- Thananuraksakul, S. (2007). Factors influencing online shopping behavior intention: A study of Thai consumers. *AU Journal of Management*, 5(1), 41–46.
- Tsang, M. M., Ho, S. C., & Liang, T. P. (2004). Consumer attitudes toward mobile advertising: An empirical study. *International journal of electronic commerce*, 8(3), 65–78. <https://doi.org/10.1080/10864415.2004.11044301>
- Ul Haq, Z. (2012). Attitude toward SMS advertising: A survey with reference to Indian consumers. *Journal of Internet Commerce*, 11(4), 271–290. <https://doi.org/10.1080/15332861.2012.729463>
- Ünal, S., Ercis, A., & Keser, E. (2011). Attitudes towards mobile advertising—A research to determine the differences between the attitudes of youth and adults. *Procedia-Social and behavioral sciences*, 24, 361–377. <https://doi.org/10.1016/j.sbspro.2011.09.067>
- Wang, Y., & Sun, S. (2010). Examining the role of beliefs and attitudes in online advertising: A comparison between the USA and Romania. *International Marketing Review*, 27(1), 87–107. <https://doi.org/10.1108/02651331011020410>
- Wang, Y., Sun, S., Lei, W., & Toncar, M. (2009). Examining beliefs and attitudes toward online advertising among Chinese consumers. *Direct Marketing: An International Journal*, 3(1), 52–66. <https://doi.org/10.1108/17505930910945732>
- Webster, J., Trevino, L. K., & Ryan, L. (1993). The dimensionality and correlates of flow in human-computer interactions.

- Computers in human behavior, 9(4), 411–426.
- Wells, W. D. (1980). *How Advertising Works*, Needham. In: Harper and Steers Advertising. Inc., Chicago.
- Wu, P. C., & Wang, Y. C. (2011). The influences of electronic word-of-mouth message appeal and message source credibility on brand attitude. *Asia Pacific Journal of Marketing and Logistics*, 23(4), 448–472.  
<https://doi.org/10.1108/13555851111165020>
- Xie, T., Donthu, N., Lohtia, R., & Osmonbekov, T. (2004). Emotional appeal and incentive offering in banner advertisements. *Journal of Interactive Advertising*, 4(2), 30–37. <https://doi.org/10.1080/15252019.2004.10722085>
- Xu, H., Oh, L. B., & Teo, H. H. (2009). Perceived effectiveness of text vs. multimedia location-based advertising messaging. *International Journal of Mobile Communications*, 7(2), 154–177. <https://doi.org/10.1504/ijmc.2009.022440>
- Yadati, K., Katti, H., & Kankanhalli, M. (2013). CAVVA: Computational affective video-in-video advertising. *IEEE Transactions on Multimedia*, 16(1), 15–23. <https://doi.org/10.1109/tmm.2013.2282128>
- Yang, K. C., Huang, C. H., Yang, C., & Yang, S. Y. (2017). Consumer attitudes toward online video advertisement: YouTube as a platform. *Kybernetes*, 46(5), 840–853. <https://doi.org/10.1108/k-03-2016-0038>
- Ying, L., Korneliussen, T., & Grønhaug, K. (2009). The effect of ad value, ad placement and ad execution on the perceived intrusiveness of web advertisements. *International Journal of Advertising*, 28(4), 623–638.  
<https://doi.org/10.2501/s0265048709200795>
- Youn, S., & Kim, S. (2019). Understanding ad avoidance on Facebook: Antecedents and outcomes of psychological reactance. *Computers in human behavior*, 98, 232–244. <https://doi.org/10.1016/j.chb.2019.04.025>
- Zhang, H., Cao, X., Ho, J. K., & Chow, T. W. (2016). Object-level video advertising: an optimization framework. *IEEE Transactions on Industrial Informatics*, 13(2), 520–531. <https://doi.org/10.1109/tii.2016.2605629>
- Zheng, S., Chen, J., Liao, J., et al. (2023). What motivates users' viewing and purchasing behavior motivations in live streaming: A stream-streamer-viewer perspective. *Journal of Retailing and Consumer Services*, 72, 103240.  
<https://doi.org/10.1016/j.jretconser.2022.103240>

## Appendix

**Table A1.** Questionnaire.

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**Demographics**

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**Gender:**  Male  Female **Age:** (years)

**Qualification:**  Bachelor  Master  MS/MPhil

**Institution:**  CUI Vehari  EU Vehari  BZU Vehari  FAU Vehari

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About in-stream advertisement:

In-stream advertisement refers to an ad which appeared on any social media websites before the start of video, in the mid of video and also at the end of video. Current study is going to analyze the viewers' attitude towards in-stream ad and viewers' purchase intention. In-stream ads shape viewers' particular attitude and intention. Social media websites such as Facebook, YouTube and daily motion uses in-stream advisements for the promotion products and services.

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
<b>SR In-stream emotional appeal Ad SD D N A SA</b>					
ISEAA1 After seeing in-stream emotional appeal advertisement, I had intense feelings.	1	2	3	4	5
ISEAA2 After seeing in-stream emotional appeal advertisement, I was emotionally attracted by the key message of the advertisement.	1	2	3	4	5
ISEAA3 The emotional appeal aspect of advertisement leads me to like the ad.	1	2	3	4	5
<b>SR In-stream Informational Ad SD D N A SA</b>					
ISIA1 In-stream informational advertisements are good source of product information.	1	2	3	4	5
ISIA2 In-stream informational advertisements supplies relevant product information.	1	2	3	4	5
ISIA3 In-stream informational advertisements provide timely information.	1	2	3	4	5
<b>SR In-stream entertaining Ad SD D N A SA</b>					
ISEA1 In-stream entertaining advertisements are enjoyable and entertaining.	1	2	3	4	5
ISEA2 In-stream entertaining advertisements are pleasing.	1	2	3	4	5
ISEA3 In-stream entertaining advertisements are entertaining.	1	2	3	4	5
ISEA4 In-stream entertaining advertisements are enjoyable.	1	2	3	4	5
<b>SR Viewers' Attitude towards Ad SD D N A SA</b>					
VATA1 I think In-stream advertising is good.	1	2	3	4	5
VATA2 I have a positive attitude towards in-stream advertising.	1	2	3	4	5
VATA3 I feel that receiving in-stream advertising is pleasant.	1	2	3	4	5
VATA4 I like to receive and watch in-stream advertising.	1	2	3	4	5
<b>SR Users' or viewers' control SD D N A SA</b>					
UC1 I feel I have the ability to skip advertisement.	1	2	3	4	5
UC2 I feel I have a lot of control over in-stream advertisement.	1	2	3	4	5
UC3 My actions decided the kind of experiences which I got after seeing in-stream advertisement.	1	2	3	4	5
<b>SR Viewers' intention to purchase SD D N A SA</b>					
VIP1 I will give a chance to the product that I find in in-stream advertisement.	1	2	3	4	5
VIP2 I expect to buy products that are advertised through in-stream advertisement in near future.	1	2	3	4	5
VIP3 I intend to buy products that are advertised through In-stream advertising.	1	2	3	4	5