How Video Length Shapes Engagement

Abstract

This study investigates the relationship between video length and user engagement on social media. Building on previous research that has primarily examined a linear relationship, we hypothesize that the effect of video length follows an inverted U-shape, with moderate lengths maximizing engagement. We also examine the moderating effects of music and advertising. A survey experiment was conducted in which subjects were asked to rate two different videos. The videos were varied in length, music presence and advertisement presence, resulting in 48 different variations. In total, 310 data points were generated. The results confirm a significant inverted U-shaped relationship between video length and engagement, with an optimal length of 34.69 seconds. Music has a positive moderating effect on the relationship, while advertising has a negative moderating effect. These findings provide theoretical and practical insights for optimizing video content to increase social media engagement. Future research should investigate further moderating factors and test longer video formats.

Key Words: Social Media, Video Length, Engagement, Music, Social Media Advertising

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Introduction

Engagement is one of the key indicators of social media success. Engagement is typically measured by the number of likes, comments and shares for social media content (Leung et al. 2022; Wies et al. 2022). Video is becoming an increasingly important content type, especially with the growth of TikTok. Therefore, it is important to understand what factors affect engagement with video content. Emotions are known to be a driver of engagement (Berger & Milkman 2012; Reichstein & Brusch 2019). A factor that can be easily controlled, the length of the video, has received little attention. However, this is a critical factor as users' attention spans continue to decrease (Facebook 2016). Therefore, the aim of this work is to answer the following question:

How does video length affect engagement?

To answer this question, we conducted a survey experiment. In the survey, 2 different videos were varied in length, music and the presence of advertising. Subjects were then asked about their intention to engage with each video. The results show that video length has a strong influence on engagement. We suggest that this influence is not a linear effect, as previously suggested in the literature (Cheng & Li 2024), but a non-linear effect. Therefore, we test whether the relationship between video length and engagement follows an inverted U-shape.

Furthermore, we assume that this relationship is moderated by the variables of music and advertising and test this as well. With our results, we provide theoretical and managerial contributions for the effect of video length in social media.

Theoretical Background and Conceptual Model

The effect of video length has already been investigated in several contexts. For example, it is known that video length influences the perceived intrusiveness of advertising (Goodrich et al. 2015; Hegner et al. 2015). Furthermore, the length of the video has a positive effect on the recall of brand names in emotional advertisements (Singh & Cole 1993). In the context of YouTube videos, Munaro et al. (2020) find that medium-length (10 to 20 minutes) and long videos (over 20 minutes) generate greater engagement than short videos (under 10 minutes). YouTube videos, which have been the subject of research related to video length (e.g. Munaro et al. 2020), have an average length of 11.7 minutes (Statista 2018). In contrast, videos on TikTok have an average length of 42.68 seconds (Statista 2024). In this study, we focus on rather short videos as they are common in social networks like TikTok, Facebook, Instagram or X. Cheng & Li (2024) find a positive linear effect of video length on engagement with TikTok videos.

However, to the best of our knowledge, there has been no research into the effect of optimal video length on engagement. Instead of a linear relationship (Cheng & Li 2024), we assume that the relationship is non-linear and follows an inverted U-shape.

Practitioners already provide some guidance on how long social media videos should be. Depending on the platform, different optimal lengths for social media videos are recommended (e.g. TikTok = 1 to 15 seconds, X = 44 seconds, Instagram = 15 to 60 seconds, Facebook = 1 minute) (Hughes, 2022; Smith, 2024). Based on previous research and insights from practitioners, we believe that a moderate video length maximizes engagement. This leads to Hypothesis 1:

H1: Video length affects engagement in an inverted U-shape.

We also expect the relationship between video length and engagement to be moderated by the video elements of music and advertising. A qualitative study by Lu & Lu (2019) found that music in videos had a strong impact on user engagement. We therefore assume that music in videos positively moderates the relationship between video length and engagement. We assume that videos with music are more likely to be watched for longer and generate higher engagement. Hypothesis H2 is therefore as follows:

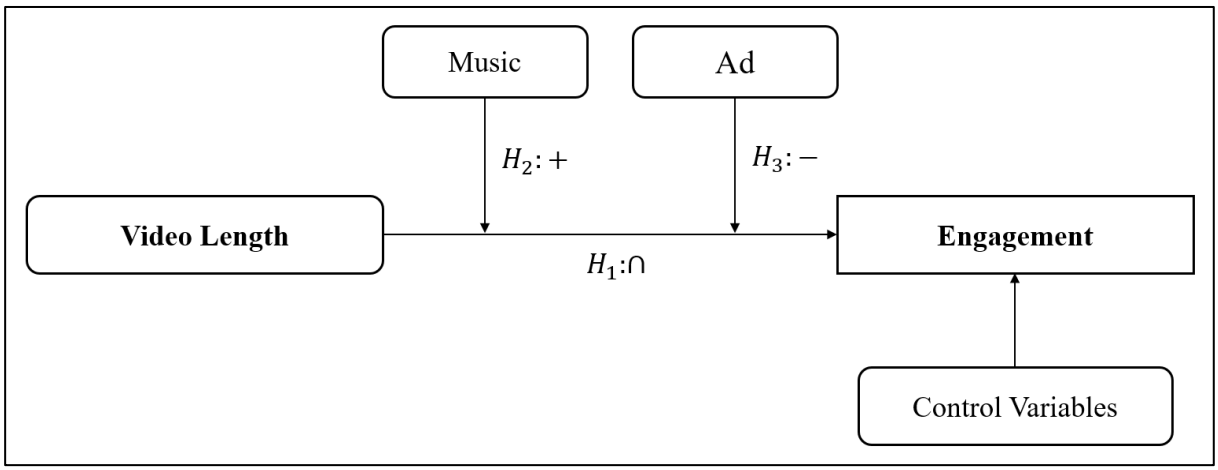
H2: Music moderates the effect of video length on engagement, in the sense that music enhances the effect.

The study by Lee et al. (2018) shows that advertising can have a negative effect on engagement when it is purely informative. We assume that in videos in which advertising is displayed, the relationship between video length and engagement is negatively moderated. Accordingly, we suspect that videos with advertising generate lower engagement and that users want to watch such videos for a shorter period of time.

H3: Advertising moderates the effect of video length on engagement in the form that advertising weakens the effect.

Our assumptions are illustrated in the conceptual model in Figure 1.

Figure 1. Conceptual Model.



Empirical Strategy

A survey experiment was conducted to test the effect of video length on engagement. In this experiment, the subjects were shown two different videos. Afterwards, questions were asked about the intention to engage, the interest in the content of the videos and attention check questions. The videos were varied in terms of video length, music (on and off) and advertising (on and off).

Design

Two YouTube videos (FIFA, 2022; RKSJ JSKR, 2015) were used for the experiment. The first video is a highlight summary of the football match between Argentina and France from the 2022 World Cup. The second video was an original advertisement from the "John Lewis" brand from 2015. The videos were edited and shortened into six lengths (from 10 to 60 seconds) and modified in four variants: Video with music, without advertising; Video without music, without advertising; Video with music, with advertising; Video without music, with advertising. This resulted in 48 different video clips for the survey. First, the subjects were randomly shown one of the variants of the first or second video in the survey. They then rated their level of interest

in the content of the video and answered three attention test questions to confirm that they had watched it in full. Finally, they rated the likelihood of liking, commenting on, or sharing the video.

Since we used a within-subject design for the survey, the subjects were then shown a random variant of the video not shown before, with the same associated sequence of questions. The survey concluded with demographic questions (age, gender, occupation).

Data

193 subjects participated in the study, of which 167 completed the questionnaire. The responses of 12 participants had to be deleted because they did not pass the attention check. The final data set therefore consists of 155 subjects. Of these, 49% identified as female and 51% as male. The subjects included 82 students, 53 full-time employees, 6 part-time employees, 4 unemployed, and 10 subjects who classified themselves as "other". The majority of subjects were between 18 and 29 years old (82%). The within-subject design generated a total of 310 data points for analysis.

Measurements

Engagement. The dependent variable in this study is engagement. For this study, engagement was calculated using the responses to the intention to like, comment and share questions. A seven-point Likert scale was used to measure the intention to like, comment or share (1 = very unlikely, to 7 = very likely). First, exploratory factor analysis was used to calculate the individual loadings of likes, comments and shares on the engagement factor. The factor loadings for likes (.968), comments (.967) and shares (.894) show that the three questions load on one factor and can therefore be used to calculate engagement. The calculation for the dependent variable engagement is as follows:

$$\text{Engagement} = (\text{Like} \times 0.968) + (\text{Comment} \times 0.967) + (\text{Share} \times 0.894)$$

Video Length. The video length was measured in seconds based on the length of the two videos used. The video length was varied in six different ways in both videos (10, 20, 30, 40, 50 and 60 seconds in length).

Moderators. We used two moderators in this study: music and ads. In general, both videos had sound and were not silent. In addition, a video could contain music. The music was appropriate to the video (activating music for the football video and emotional, slower music for the John Lewis video). Music was coded as a binary variable. Where 1 indicates that a video contained music and 0 indicates that a video was played with normal sound but no music. A video could also contain an ad. In the football video, the Adidas brand was displayed in the top corner for the entire duration of the video. In the second video, the John Lewis brand was displayed in the top corner for the entire duration of the video. Ad presence was also coded as 1 (ad present) and 0 (ad absent).

Control Variables. In addition, subjects were asked to rate how interested they were in the content of the video (1 = not at all interesting, to 7 = highly interesting). The variable video is a dummy variable and indicates which of the two video variants was shown in the data point. The value 1 stands for the first video (football video) and the value 0 for the second video (John Lewis advert). The descriptive values and the correlation values of the variables are shown in Table 1.

Table 1. Descriptives and Correlations.

	Variable	Mean	SD	Min	Max	1	2	3	4	5	6
1	Engagement	9.69	3.91	2.83	18.9	1					
2	Video Length	35.19	17.19	10	60	-.130	1				
3	Music	.47	.50	0	1	.264	.018	1			
4	Ad	.53	.50	0	1	-.405	.001	.010	1		
5	Interest	6.23	.70	5	7	.023	.142	.040	.048	1	
6	Video	.50	.50	0	1	-.040	.009	-.071	-.006	.000	1

Results

The results of the study are presented in Table 2. The data was analyzed using OLS. We use the u-shape test of Lind and Mehlum (2010) to test H1.

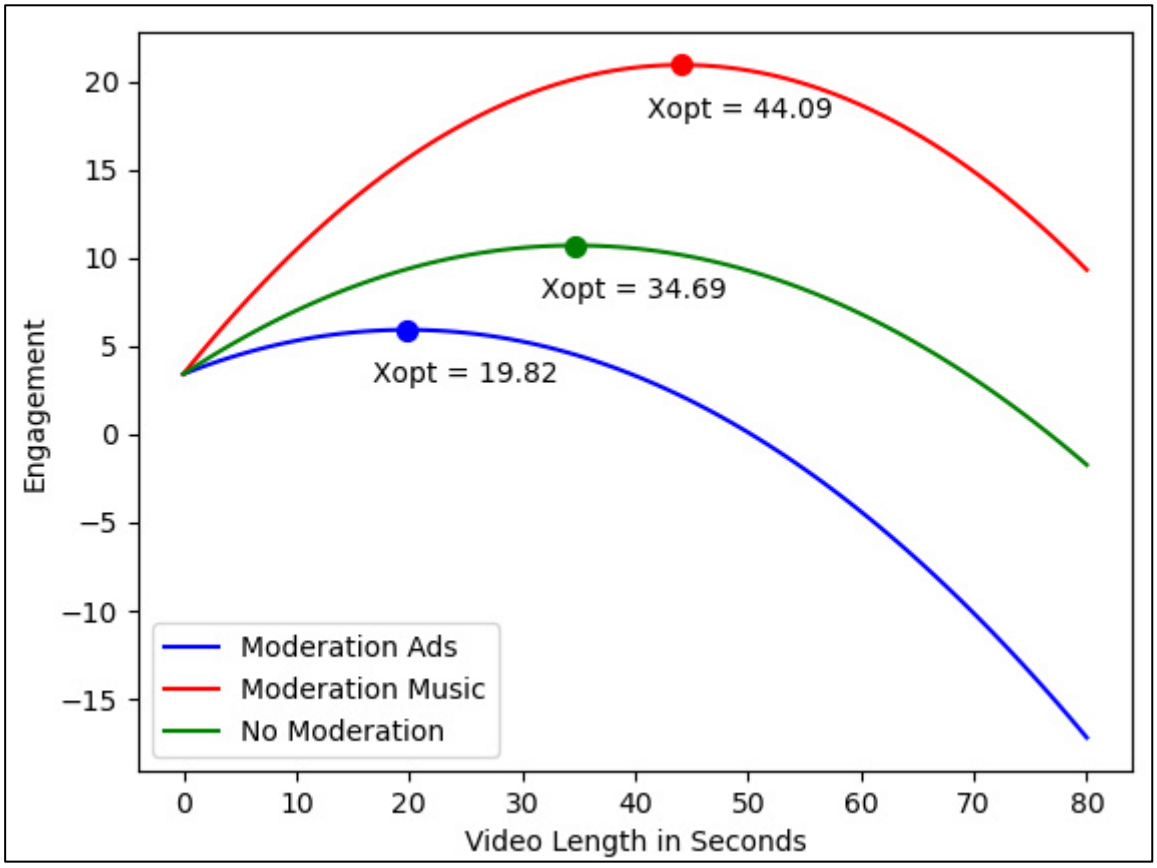
Table 2. Results for Engagement.

Variables	Engagement (No Moderation)	Engagement (Full Model)
Video Length	.4985***	.4202***
	(.047)	(.053)
Video Length²	-.0075***	-.0061***
	(.001)	(.001)
Music	2.102***	-6.589***
	(.325)	(.939)
Ad	-3.045***	3.362***
	(.324)	(.934)
Video Length x Music		.3744***
		(.061)
Video Length² x Music		-.003***
		(.001)
Video Length x Ad		-.1672**
		(.061)
Video Length² x Ad		-.0003
		(.001)
Interest	.2027	.2516
	(.234)	(.152)
Video (1=yes)	-.1158	-.3781
	(.324)	(.210)
Constant	3.115*	3.417***
	(1.583)	(1.217)
No. of Observations	310	310
Adjusted R-Square	.472	.780
AIC	1,535	1,268
BIC	1,561	1,309

*p < .05, **p < .01, ***p < .001.
Notes: Standard errors are reported in parentheses.

We find that video length has a positive significant effect ($\beta_1 = .4202, \mathrm{p} < .001$) on engagement. The low slope ($S_{\mathrm{low}} = .2991, p < .001$) and the high slope ($S_{\mathrm{high}} = -.3066, p < .001$) are both significant. The optimal video length to maximize engagement is 34.69 seconds. The optimal video length lies in the 90% Fieller interval (FI interval: [33.21; 36.14]). This fulfils all the conditions for a significant u-shape. Therefore, we can confirm H1. The relationship between video length and engagement follows a significant inverted U-shape. We can also confirm H2. We find a significant effect of the moderation term between music and video length ($\beta_5 = .3744, \mathrm{p} < .001$) and between music and the squared term of video length ($\beta_6 = -.003, \mathrm{p} < .001$). We find that music increases the optimal video length (optimal = 44.09 seconds), and that music increases the engagement of these videos. For the moderation term between advertising and video length, we find a significant negative term ($\beta_7 = -.1672, \mathrm{p} < .001$). However, the moderation term between advertising and squared video length is not significant. Nevertheless, H3 can be accepted. We find that videos with advertising reduce the intention to engage. The optimal video length for ads is 19.82 seconds. The visualization of the inverted u-shape progression between video length and engagement and the changes through the moderations can be found in Figure 2.

Figure 2. Relationship between Video Length and Engagement and the Moderating role of Music and Ads.



Discussion

This work contributes to the understanding of the relationship between video length and engagement. In the previous literature, the effect of video length on engagement has been little studied and only the linear relationship has been examined (Cheng & Li 2024).

However, we find that the relationship between video length and engagement follows a non-linear significant inverted U-shape. According to this, a moderate video length (optimum at 34.69 seconds) increases the engagement of social media videos.
Second, we show that music positively moderates this effect. Videos with accompanying music generally generate higher engagement. Furthermore, the optimal video length for this category of videos shifts to 44.09 seconds.
Third, we show that ads in videos generally generate lower engagement. For videos with ads, the optimal video length shifts to 19.82 seconds. Our recommendation therefore is that social media videos should be of moderate length and ideally with music (if appropriate) to increase engagement. When using ads, videos should be shorter on average than videos without ads.
This work has limitations. The videos were grouped into categories (football and advertising). Although we checked the content for interest, other topics could produce different results. In principle, we assume that there is always an inverted U-shaped relationship between video length and engagement. However, this curve can shift depending on the situation. We have shown this with the two moderations we looked at. It is very likely that the relationship is moderated by other variables.
Another limitation is the variation in video length. In this study, the maximum length of a video was 60 seconds. It is conceivable that the range of length examined (e.g. for YouTube videos) could be extended and that different results could be obtained as a result. It would also be interesting to investigate the effects in field studies.
This paper is a good starting point for future research in this area and we would like to see more studies on this topic.

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