Seminar Paper

Advanced Topics in Social Network Analysis

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**Engage Me: How YouTube Motor Vloggers
Can Maximise User Engagement**

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1. Introduction

Without a true understanding of how users engage with content on social media, it can be difficult to understand its value, impact, and how to exploit it to one's advantage (Hayat, Samuel-Azran, & Galily, 2016). How a user engages can be divided up into many sub sections, but in its simplest notion it's how a person interacts with the content that is presented to them. Engagement is also a sign that a person has paid attention to what is being presented to them.

YouTube was created by former PayPal employees Steve Chen, Jawed Karim and Chad Hurley in 2005, and today with 1 billion monthly active users, it is the most used social networking and video sharing platform on the internet. YouTube also has a powerful effect in that it enables people to spread content effortlessly and freely to a wide and open audience. Understanding the incredible power of YouTube can be highlighted by examples such as Justin Bieber who rocketed to international stardom and fame via the platform, or how the world stopped and focused on Kony in 2012. Much of this success and popularity of the website has been explained by the fact that users are able to communicate "through textual and video responses as well as video rating systems" (Milliken, Gibson, O'Donnell & Singer 2008).

This research paper serves to make important contributions to topics of viral marketing and engagement behaviours of users on YouTube. This is important when considering the popularity of YouTube and the numbers of users actively engaging in content, especially for business and individuals who use YouTube as their source of income. Research on various microblogging platforms has revealed "that microblogs can be tailored to facilitate informal communication between colleagues in organizations", (Suh, Hong, Pirolli, & Chi, 2010) but there is little research that explores video blogging communities on YouTube. This research paper will explore how tags and the length of videos impact user engagement in the Motor Vlogging community.

In section 2, a general overview of related and relevant research is presented, followed by the research question and hypothesis in section 3 which explores the relationship between social engagement on YouTube Motor Vlogger videos from Australia and how the presence of tags and the length of the videos impact on the levels of engagement. The methodology of the research is presented in section 4 with results presented and discussed in sections 5 and 6 respectively.

2. Related Work

With such massive use of content sharing websites such as YouTube, understanding how users engage with this content is critical, especially when considering that “users have diverse motivations to share content on social network sites (Bakhshi, Shamma & Gilbert, 2014)”. Previous research has taken a glance at factors that drive engagement in online communities (Hayat & Amichai-Hamburger, 2012), and the results have been very widespread: from “content of posts, but also the emotional valence behind it can drive its usage” (Bakhshi, Shamma & Gilbert, 2014)”. Exploring and understanding the types of content shared by users gives insight into “how they perceive YouTube as both a system and a social outlet” (Biel & Gatica-Perez, 2009).

The concept of a users’ social capital is very important to understand in order to comprehend the results of a YouTube Motor Vloggers viewers engagement levels. Defined as “the resource’s available to people through their social interactions” (Valenzuela, Park, & Kee, 2009) research has shown has a users’ social capital is of great importance (Hayat, & Lyons, 2010; Hayat, & Mo, 2015).

Understanding what type of content users engage with is crucial for marketers and businesses , and an understanding of production qualities, additional information and categorization can help learn the best type of video content for YouTube.

While YouTube was initially created for the intentions of entertainment, “users are producing and viewing videos about topics such as immunizations, prostate cancer, and kidney stones in greater numbers” (Desai, Shariff, Dhingra, Minhas, Eure, & Kats, 2013) demonstrating that it is also a platform and source of information that people go to not just for a pick-me-up, but to gain real, relevant and useful information.

“YouTube is widely regarded as the most important source of visual entertainment and information in the world” (Oliphant, T. 2013), which is effectively changing the world, especially the way “people connect, access, share and exchange information” (Oliphant, T. 2013). However, one issue with YouTube is the “lack of transparency and consistency in how YouTube’s search algorithm determines relevant search results” (Oliphant, T. 2013). Oliphant found that “search results were not determined by view counts, number of comments, video producer, or date posted”.

But there is evidence that tags play a crucial role in providing relevant videos search results. “Non-textual web search (such as image search or video search) relies heavily or solely on textual content surrounding or otherwise explicitly accompanying the images or videos” (Toderici, Aradhye, Pasca, Sbaiz, & Yagnik, 2010), so relevant and meaningful results can be given to a person who is searching for them. This helps to highlight the significance and importance of tags in YouTube videos, however the research does not explore its impact on user engagement with the video itself.

Not all content on YouTube is the same. Although intended to serve as a platform for user generated content, “only in the mid-1990s a separation between producer and consumer was established as a result of more intensified commercial investments in the medium” (Ostman, 2012). And with four or five of the top 10 visited websites in 2010 (Ostman, 2012) coming from user generated websites, it’s crucial to understand this type of content on the internet.

Alexandra Juhasz (2008) categorised user generated YouTube video clips as ‘bad’ videos created by everyday people who use low end technology and in large exploring topics of daily life, the thoughts of the individual, as well as emotions and feelings in comparison with professionally produced videos on the same social network. But videos classified as ‘Vlogs’, according to Juhasz, fall to second place compared with corporate videos which are more heavily viewed and dominate lists with videos that have much higher views.

But Burgess and Green (2009) found that holding a place on the most viewed list may not be the most important thing, and the consideration of the way people interact with the videos themselves also holds significant importance and value. This is an extremely important thing to note when exploring the idea of how to maximise the virality of a video and improve user engagement because it “captures the difference between the way mass media has traditionally been evaluated and the way media can and should be analysed in an age of expanding user participation” (Shifman, 2011).

There is a growing body of research which further highlights the changing nature of media consumption in the world, and it is important for a wide breadth of individuals to understand this change and its impact on user engagement. For example, from “2006 to 2012, only digital video advertising showed continuous growth as a percentage of total internet advertising revenues” (Li & Lo, 2014) and the overall user base is an ever growing

statistic. This growth in usage in social network sites “brings challenges both for researchers and practitioners attempting to understand consumer behaviour” (Gatautis, & Kazakevičiūtė, 2012) as we begin to move away from more traditional media sources.

Other research has found that “videos tend to get most of their views much earlier in their lifetimes” (Figueiredo, Benevenuto & Almeida, 2011). The research also found that “search and internal YouTube mechanisms, such as lists of related videos, are key mechanisms to attract users to the videos” which is significant to understand in order to maximise user engagement, as this would not occur at all if users could not reach the video itself.

Prior to 2012, YouTube had length limitations on videos, but since this was removed “there has emerged a tremendous range in the lengths of videos produced” (Buzzetto-More 2014). It was found that length impacted on whether or not a person would watch a video or not. This is an incredibly important finding, however it does not indicate specifically if this impacts on the level of user engagement of the video or not. Specifically for online students in an educational setting who retrieve informational videos of a formal nature from YouTube, indeed they “indicated a preference for longer videos”, but it is not certain if the same holds true for user engagement.

To foster user engagement, research has unearthed key strategies including “regular individualised interaction with users, encouraging conversation, uploading multi-media and relevant links, and highlighting celebrity involvement” (Veale, Sacks-Davis, Weaver, Pedrana, Stoové, & Hellard, 2015). But there still remains gaps in the current information, and “consideration should be given to whether achieving greater reach or greater interaction (or both) is important” (Veale et al., 2015), and to which social networks it can or should be applied to.

Creating meaningful engagement is crucial in forming meaningful networks online. Researchers have presented many strategies to achieve this, including creating a feeling for other users that “the more consumers feel like they are part of the organization the more identified they become and the more likely they are to form a lasting relationship” (Pronschinske, Groza, & Walker, 2012). This is an important consideration when exploring a vlogging community and how they engage with the main character/presenter in the Motor Vlog. But as Pronschinske, Groza, & Walker point out in their research, “identification is formed over time, subjectively, through repeated engagement”.

Commenting is one aspect of user engagement on social networks, and understanding how comments work and their value can be vital for improving social engagement in the long term. By analysing comments, one “can identify different groups of users such as loyal fans and provide them with special services” (Khobzi, & Teimourpour, 2015). In a type of spiralling effect, comments can lead to more engagement. This is because “more engagement causes more views for the fan page posts and consequently more popularity and awareness for the posts” (Khobzi, & Teimourpour, 2015).

3. Research Question & Hypothesis

The study further extends existing research conducted on user engagement on YouTube, and contributes important information on user engagement across similar social networks on the internet.

With such increasing usage of social network sites, in particular YouTube and its growing popularity, there is an increasing importance to understand the various things that can impact and influence user engagement. As previously covered in the literature review section, many aspects have already been explored, however there has been a gap in research surrounding the presence and influence on tags, as well as the impact of the length of a video on user engagement. To research these areas, the following research questions were asked:

1. Does the length of the videos impact users' engagement levels?
2. Do the presence of tags influence users' levels of engagement?

In order for genuine and relevant information to be extracted from the research, the level of users' engagement is defined as the number of comments, and the number of tags. The number of comments shows how much users engaged and participated with the content that was presented to them, while the number of likes shows how much users enjoyed, took value from, or favoured the video.

The central idea behind the study is to explore importance of tags and the length of videos on a users' engagement levels. By incorporating an understanding of previous research in similar and related topics, the combined information can offer useful and relevant information on how to create the best supporting features outside of the content itself in order to create the most engaging videos.

It is from this prior exploration surrounding factors influencing YouTube engagement and the researches desire to explore the importance of tags and video length, that the research's hypothesis was derived. Based on the surrounding literature, it is hypothesized that:

- *H1: YouTube videos with more tags will have a higher level of user engagement, &*
- *H2: Shorter YouTube videos will have a higher level of user engagement.*

4. Methodology

While a large body of research exists surround YouTube and various effects of the networks design characteristics (Marcus, Perez, 2008) and other attributing factors of user engagement, there has been less empirical research surrounding the length of videos and the effects of tags. The purpose of this study is to use a sample of the Motor Vlogging community to explore these factors on user engagement.

In this research, data taken from manual extraction of YouTube users and then analysed. The data set was collected from conducting a general YouTube search for Australian Motor Vloggers.

Motor Vlogging is an activity which has been exponentially increasing in popularity, largely attributed to the ever decreasing price and increasing availability of action/extreme video cameras. Qualitative research on such a huge body of data would be time consuming, complicated and provide limited insights into the direct influence of tags and the length of a video and how this impacts on user engagement. This is one of the reasons that quantitative research methods were implemented and a sample of only Australian Motor Vloggers was used for this research. Tags are important for the users who upload the videos, as this is how YouTube provides relevant search results based on the keywords a user inputs when searching for a video they would like to watch.

Because this research analyses user engagement, the video samples that were selected for analysis consisted of 6 videos (2 of the most popular, 2 of the least popular, and 2 mid-popular videos) from 10 different Australian MotorVloggers, in order to retrieve information pertaining to videos of varying popularities from multiple individuals. During the gathering of the data, duplicate videos were removed from the sample, as well as collaboration videos which were created by multiple MotorVloggers as this would skew the results because the same video exists on multiple channels and is promoted by multiple users.

While the data gathered from the users is not a true representative sample (as users are selected only from Australia), it is still useful for the purpose and scope of the research. All users from the sample were male, and all 10 users had produced and uploaded at least 25 videos each. All users from the sample are active users who continue to produce and upload videos. In addition to this, other YouTube users commented and liked their videos,

thus contributing to engagement in the video, did this both in a short time period after the video was uploaded, as well as many days and months after the video was uploaded. It is expected that the sample will display a collection of individuals who hold dense friendship patterns on an internal level, and hold a wide breadth of friendships externally, which is a characteristic of a highly clustered group.

Additional limitations of the sample include convenience sampling of Australian YouTube Motor Vloggers, as well as the nature of many of the users from the sample being highly driven to evoke feedback and interaction from their followers which may have an impact on the final results.

The data that was extracted from 60 videos in the sample was analysed and coded in an attempt to explore the influence of the presence of tags in a video, as well as the impact of its length. Tags of the videos were extracted by looking at the HTML source code for each video, and searching within the HTML for 'Keywords'. Each keyword, plus the total number of keywords, plus the length of the video in seconds was collated and added to an excel file for quantitative analysis in SPSS.

The dependent variables (comments & likes) are used to model the level of user engagement in a YouTube video by linear regression and correlation analysis while using independent variables of video length, number of tags. In addition to these independent variables, views, whether a question was asked in the title and were also extrapolated for analysis.

Regression analysis was performed in order to see if future predictions can be made regarding the level of user engagement based on the number of tags and video length, while correlation analysis was conducted in order to determine if there was a relevant connection between the level of user engagement and the independent variables.

5. Results

In total, 60 videos were used in the sample, which was taken from 10 different Motor Vloggers from Australia. All users from the sample were male and videos were published from September 2011 onwards.

User engagement was measured using the two metrics of likes and comments. The correlation relationship between user engagement and the independent variables can be seen in figure 1.1. As indicated in the table, there are no strong relationships between any of the variables tested in SPSS (with the strongest relationship being only equal to .267). In addition to this, we are able to see from figure 1.1 that there are no significant correlations (Sig (2-Tailed) values) between the variables.

Figure 1.1

Correlations						
		length	NumberOfTags	Likes	Comments	Views
length	Pearson Correlation	1	-.267*	.001	-.102	.116
	Sig. (2-tailed)		.039	.991	.440	.381
	N	60	60	60	60	59
NumberOfTags	Pearson Correlation	-.267*	1	.098	.080	.077
	Sig. (2-tailed)	.039		.454	.545	.563
	N	60	60	60	60	59
Likes	Pearson Correlation	.001	.098	1	.687**	.868**
	Sig. (2-tailed)	.991	.454		.000	.000
	N	60	60	60	60	59
Comments	Pearson Correlation	-.102	.080	.687**	1	.853**
	Sig. (2-tailed)	.440	.545	.000		.000
	N	60	60	60	60	59
Views	Pearson Correlation	.116	.077	.868**	.853**	1
	Sig. (2-tailed)	.381	.563	.000	.000	
	N	59	59	59	59	59

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

RQ1 asked if the length of a video impacts the level of user engagement, and the results of the study show there is no correlation or significance between the two. RQ2 asked if the presence of tags impacted on the level of user engagement, and the results again showed no correlation or significance between the two.

We are able to see that there is a relationship that does exist between views and likes as well as a relationship between views and comments. This means that the more views a video has, the more likes and comments it has.

Figure 1.2

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.868 ^a	.753	.730	401.31716

a. Predictors: (Constant), PublicatioDate, NumberOfTags, Views, Questions, length

ANOVA ^a					
Model		Sum of Squares	df	Mean Square	Sig.
1	Regression	2.604E7	5	5207873.970	.000 ^a
	Residual	8535939.369	53	161055.460	
	Total	3.458E7	58		

a. Predictors: (Constant), PublicatioDate, NumberOfTags, Views, Questions, length
b. Dependent Variable: Comments

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	15358.018	30736.948		.500
	length	-.491	.245	-.149	.050
	NumberOfTags	-.471	13.372	-.003	.972
	Views	.001	.000	.877	.000
	Questions	170.350	175.923	.067	.337
	PublicatioDate	-1.110E-6	.000	-.034	.626

a. Dependent Variable: Comments

Figure 1.2 shows that the variables tested in the regression analysis (Adjusted R Square = .730) accounts for over 70% of the total variability of user engagement. However, the ANOVA table indicates that the model has no explanatory power ($\text{Sig.} = 0.00 < 0.05$).

The relationship between the independent and dependant variables can be seen in the Coefficients section of figure 1.2. RQ1 asks if the length of the video impacts on user engagement. None of the independent variables have a significance value of less than 0.05, therefore they are not significant and have no predictive ability for the dependant variable. Number of tags are shown to have negative relationships, which falls against theory presented that tags can help users more easily find relevant and useful content.

Figure 1.3

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.891 ^a	.795	.775	1470.52343

a. Predictors: (Constant), PublicatioDate, NumberOfTags, Views, Questions, length

ANOVA ^a					
Model		Sum of Squares	df	Mean Square	Sig.
1	Regression	4.432E8	5	8.863E7	.000 ^a
	Residual	1.146E8	53	2162439.161	
	Total	5.578E8	58		

a. Predictors: (Constant), PublicatioDate, NumberOfTags, Views, Questions, length
b. Dependent Variable: Likes

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	-323976.117	112627.635		.006
	length	.000	.896	.000	1.000
	NumberOfTags	57.969	48.999	.078	.242
	Views	.005	.000	.853	.000
	Questions	164.625	644.624	.016	.799
	PublicatioDate	2.379E-5	.000	.184	.006

a. Dependent Variable: Likes

Figure 1.3 also shows that the variables tested in the regression analysis (Adjusted R Square = .775) accounts for over 77% of the total variability of user engagement. But it also has no explanatory power as shown in the ANOVA table (Sig. = 0.00 < 0.05).

The relationship between the independent and dependant variables can be seen in the Coefficients section of figure 1.3. RQ2 asks if the use of tags impacts on user engagement. None of the independent variables have a significance value of less than 0.05, therefore they are not significant and have no predictive ability for the dependant variable.

6. Discussion

After analysis of the results of the study, we can see that there is no significance that can be drawn from the data. In order to produce statistically significant results, a higher number of videos would need to be used when gathering the data, or instead to conduct a qualitative analysis of the types of keywords used and whether this has any impact on user engagement. Because of the non-significant results produced from the research, H1 and H2 are rejected.

H1 and H2 were based on prior research that indicated various impactors of user engagement in social networks, and it was assumed that some supporting data would emerge from the study. Data from the correlation statistics indicated very minimal impact of the length of a video and its user engagement, and the negative relationship (-0.102) does support the H2. The presence of tags is also supported by the data showing marginal increases in user engagement, which both supports existing research in the field as well as supporting H1.

Much can be done in order to improve the research, including a much larger number of videos to be used for analysis. As well as this, qualitative research would be a valuable addition of future research work surrounding the nature of the tags themselves, and how relevant/helpful they are to the video itself.

Another weakness of the research is the sample. Because the videos were taken only from Australian Motor Vloggers, it is not a true representative sample and future research could include Motor Vloggers from other parts of the world to better enhance the sample. Also, only males were included in the study, which is another potential weakness of the research and an area which can be improved on by further research with an improved sample.

Future researches could also examine the impact of the length of a video by dividing a user's long, medium and short videos in sub groups, and then comparing these between users and then analysing user engagement. In addition to this, some YouTube Motor Vloggers have a degree of corporate sponsors. For example, the user AdjrianNickelodeon has a deal with AVG helmet suppliers. Future research should control for this in order to produce more reliable data and results.

7. Conclusion

This study investigated the impact of tags and video length on user engagement for video blogs by Australian Motorcycle Vloggers. By analysing the data and performing regression and correlation analysis, no significant relationship was found between video length and user engagement, or the use of tags and user engagement.

Although the study did not prove the influence of tags or how length impacts on user engagement, it explored an area in social network analysis that has until now not been heavily researched or investigated. With the improvements on future research implemented based on the related literature review outlined in this paper, a relationship could be found or more specific research conducted on the relevance and usefulness of tags on user engagement.

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