Analyzing Attitudes of Online Viewers: A Methodological Approach

Completed Research Paper

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ABSTRACT

This paper aim is to provide some insights about possible techniques to be used to test people behavior while watching videos on Internet platforms. Video has gained importance as a tool of marketing campaigns and many managers are been attributed the mission of creating specific content for this platform. In order to test some techniques, an experiment was conducted looking for data about people behavior while watching videos. For that, few subjects were observed from verbal and non-verbal perspectives while watching videos with ‘bad’, ‘neutral’ and ‘good’ connotations of a specific subject that they were passionate about. Testing non-verbal (body language and mouse tracking) and verbal (speech analysis and voice tone) reactions, we found not a single right answer but a body language “agenda”, shown that people react in different ways while submitted to distinct video contents. This is a step to fill a gap in technology and business research.

Keywords
Body Language, reactive behavior, user-analysis, verbal language, non-verbal language.

INTRODUCTION

Nowadays, some papers already highlight the importance of social media in our daily life (Blattberg et al, 2004). Watching the last episode of someone’s favorite comedy program on Netflix.com, participating on the amazing UGC (User-Generated-Content) channel on Youtube.com about sport cars (or anything) and presenting someone’s opinions (and status) on twitter.com or facebook.com feed are more natural than ever. However, this new communication paradigm is still a challenge for many companies, those which do not know how to aim at their segment and how to hit it right, in both cases companies that are subjected not only to have unnecessary expenses, but also to serious backlashes against their product and brand (Hollenbeck and Zinkhan, 2006). This reality, raise questions about the way many managers are producing specific marketing campaigns for social media platforms and how interactive content can bring contributions to the success of these campaigns.

Although we may recognize the importance of providing a wider understanding about video interaction, there is a gap in the literature about the subject, maybe justified by the fact that many could argue that the field of video consumption technology is sufficiently mature, as the same as occurs with the platforms of music interaction (Liikkanen et al, 2012). In order to contribute to fill an existing gap in technology and business research, this paper aim is to provide some insights about what are the possible techniques to be used to test people behavior while watching videos on Internet platforms. Focusing on human reactions, the paper compared different techniques of verbal and non-verbal communication.

There are several different techniques to analyze behavior, but since this paper focus on reactive actions of viewers, we used specific techniques for this proposal. To analyze non-verbal communication we have created a laboratory where people viewed specific videos and were they were recorded. The paper analyzed facial expressions, body posture and leg movements searching for specific behaviors, and mouse tracking trying to identify specific behavior through non-conscious mouse movements. To analyze verbal communication the paper used speech analysis as the only technique. As results, the paper found not a single right answer but a body language “agenda”, shown that people react in different ways while submitted to distinct contents on videos. This is an important step to fill an existing gap in technology and business research.

Looking forward to understand why and how people are motivated to share content on the Internet, after they are kept in contact with videos, we did extensive research into themes as User Generated Content (UGC) and Behavior tests, presented in...
the following sections. UGC relates to the origin of social media and its practices are related with user’s behaviors, while watching videos. They interact or reject interaction with distinct contents, generating or transmitting new and old contents. Behavior tests were researched in order to provide material for the experiment conduction.

The paper is structured as follows: section I discuss why we see User Generated Content as an important premise for instigating user to positively react to Internet videos, section II describes some techniques of behavior analyses, III presents the methodological approach of this paper, section IV presents the main results; and section V the conclusions.

CONCEPTUAL BACKGROUND

UGC (User Generated Content)

According to the Organization for Economic Co-operation and Development, (OECD, 2007, p. 4) UGC may be defined as: “Content generated by the user, which do not have professional practices, routines and objectives.”

Sung (2010) define UGC in a slightly different way, being this more objective and having specific divisions depending in which degree creativity is related to the content creation. The divisions are in a continuum from more creativity to no creativity at all, and those categories are:

- UCC meaning User Created Content, where the content is totally created by users, having no relation with previous content, for example: original songs as Chocolate Rain from Tay Zondan.
- URC meaning User Re-created Content where the content is recreated by users. Good examples are covers and other versions from famous songs.
- UMC are User Modified Content and receive this categorization because, even having some kind of creativity involved, receives less than re-created videos, for example: specific videos with different narration or translation.
- UTC means User Transmitted Content and it receives less or no creativity involved on the task. Here, only transmitting a video is considered a type of generating content.

The concept of UGC addresses the ideal of personal media, and since society is living informational era this concept is among us. Luders (2008) defines the concept as tools that may be used for interpersonal communication and self-expression and points its beginning from the start of 19th century with the “fanzines”, followed by personal newspaper, garage cinema, home-made videos and music recording (Davis, 1997).

The revolution (or evolution) of Social Media on the Internet was one of the main factors that contributed to the development of what is called nowadays e-UGC, or, UGC on the Internet. From Forums to Social Communities, the past 20 years changed the way people relate to the Internet and is related from it.

In 1997 online forums were called the “Big News” and in such short time we saw the evolution of complex social media. Bielen (1997, p. 10) pointed out that with the Internet we will have a new powerful tool for pharmaceutics companies, online forums…” showing that at that time, companies were already understanding the role of these new types of media. The Online forums created the background to the foundation of blogs (weblogs as they were named). At an interview for the Wired Magazine in 2007, Jeff Jarvis (creator of the first blog ten years before) defined blogs as “…The easiest, faster and cheaper tool for publishing created.” In a moment blogs were around 100 million, what showed power of this tool. Nowadays every company had their own blogs willing to communicate with costumers (Jarvis, 2007, p. 1).

The year of 1997 is emblematic, being the year of the foundation of the first social media, the Sixdegrees. Having similar functionalities to Facebook’s, the website survived only two years and was closed because there were no investors. In 2003 it was founded the Friendster, a complement of the Ryze.com (professional relationship website, similar to Linkedin.com) and it came to compete with March.com which objective was the relationship between unknown people. National Social Medias were founded worldwide and in this way Shirk (2003) used the term YASNS (Yet another Social Networking Service) for the first time.

In 2005 Mark Zuckenberg found the Facebook inside Harvard University and, five years later, the website was responsible for the biggest number of access worldwide, winning against its competitors as Google.com and Myspace.com (Facebook, 2012). influencing trends until now.

UGC found a big deal on Social Medias since it turned possible to publish and share content in an easy and funny way, a different situation from the prevailed one. In this scenario media sharing evolved, flourishing mainly pictures, music and video. Concerning pictures, there are two biggest players sharing the market:, Picasa (Google) and Flickr (Yahoo). Picasa was funded in 2002 and it was created by Lifescape and bought by Google in 2004, and Flickr , created in 2004 and bought by Yahoo in 2005. Picasa is nowadays the second place in the market and Flickr appears on third, being outsmarted by Facebook
(where till 2011 almost 15 million pictures were uploaded) (Callow, 2010). About music, Digital Music Sharing started its operations in 2006 and represents the first peer-to-peer service in the Internet, followed by Napster, Morpheus and many others. Nowadays the biggest player in the Market is Grooveshark.com that delivers free streaming music to its users worldwide (Wilhelm, 2010). Video Sharing can be classified according content in three different types:

1. Video Sharing: websites that share content via streaming. The leader here is Youtube.com. This one not being the oldest, but the one that was able to acquire biggest value in the market. According to Jones (2011), in the informational era, anyone can become a celebrity through Youtube.com;

2. Video on Demand, which is a multimedia system that enables users to select what they want to watch from a database and having same control of content as into a K7 video;

3. Live streaming that is the newest phenomenon on Video Sharing (Jones, 2011).

From all of these three, we have chosen the Video Sharing as a mean to analyze the user behavior. Youtube .com was not the first Video Sharing website and it will not be the last, but right now it is the isolated leader in the market and keeps growing not only in use but in income. Version of the history tells that employers of PayPal (and friends) found it hard to upload and share videos through the web after a party and soon decided to create their own video sharing website. None of them would know that nowadays their website (which was acquired by Google in 2005) would be responsible for around 10% of traffic at the web (Delaney et al., 2006).The website has shown the biggest advantage over others because it was the only one that made easy for people to upload and share content online and this was made using a flash player plug-in, something that did not existed earlier. In 2006 Google acquired Youtube.com and discontinued their own service (Google Videos), from there to now Youtube.com gained leadership in the market and estimates are that it will keep growing (Delaney et al., 2006).

The biggest segment on the community of Youtube.com is the digital natives but many other segments are participating actively into this website (Bull et al, 2008). The digital natives are called in this way because this generation was born accessing Internet and the way this generation behave and think are much different from the previous one. Having a more visual orientation than the previous generation this community is known for the multitasking, parallel information processing, fast gratification and low attention when forced to study and learn in unfriendly environments (Prensky, 2001).

The idea of virtual community already exist in the mind of this digital native generation and some of the reasons why they spend less time into television is because they have more control at computers and Internet. Trier (2007) considers the Youtube.com as the online community that empowers users. On the homepage they make available the viral videos and the ones with biggest number of comments segmenting the topics by interest. In this way people have power through the videos with their commenting and video response features so they feel like part of a real community and the uploader receives a kind of “celebrity” status (Chershire, 2007). Nielsen (2006) points out that from all content on the Internet, 90% is uploaded by 1% of the users and the other 10% are shared into community groups. According to Kim, the celebrity effect is one of the motivations for people sharing and creating contents. That means that with youtube.com people finally had a place to try their “10 minutes of fame”: “Many YouTube users upload videos not because they wish to share something creative; they also want to attract attention of others” (Kim, 2010, p. 49)

This content creation is focused on distinct kinds of messages. Cheng et al. (2010) used a crawler to analyze around 2 million videos and got some data about what types of videos people shared on Youtube.com (Table 1).
Table 1: Categories of Youtube Videos
Source: Cheng et al. (2010)

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autos and Vehicles</td>
<td>66,878</td>
<td>2.5</td>
</tr>
<tr>
<td>Comedy</td>
<td>323,814</td>
<td>12.1</td>
</tr>
<tr>
<td>Entertainment</td>
<td>475,821</td>
<td>17.8</td>
</tr>
<tr>
<td>Film and Animation</td>
<td>225,817</td>
<td>8.4</td>
</tr>
<tr>
<td>Gadgets and Games</td>
<td>196,026</td>
<td>7.3</td>
</tr>
<tr>
<td>Howto and DIY</td>
<td>53,291</td>
<td>2.0</td>
</tr>
<tr>
<td>Music</td>
<td>613,754</td>
<td>22.9</td>
</tr>
<tr>
<td>News and Politics</td>
<td>116,153</td>
<td>4.3</td>
</tr>
<tr>
<td>People and Blogs</td>
<td>199,014</td>
<td>7.4</td>
</tr>
<tr>
<td>Pets and Animals</td>
<td>50,092</td>
<td>1.9</td>
</tr>
<tr>
<td>Sports</td>
<td>258,375</td>
<td>9.7</td>
</tr>
<tr>
<td>Travel and Places</td>
<td>58,678</td>
<td>2.2</td>
</tr>
<tr>
<td>Unavailable</td>
<td>24,068</td>
<td>0.9</td>
</tr>
<tr>
<td>Removed</td>
<td>14,607</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Music ranks first place, with around 23% and entertainment ranks second, followed by Comedy. The three categories together represent around 53% of all videos uploaded since 2005 and from those videos around 90% were 10 minutes length.

Not only empowerment, acquired by sharing content, can justify the adhesion to video sharing modality. Usability is also an important factor, if we analyze Youtube. Albertin (1999) advocates that users access websites because they’re available but they only come back if they realize some value on the website and if those are easy to user. Website Usability is also inside a much bigger area: the Information Architecture, which universe has the role of organizing information in a way to make it easier for users to accomplish their objectives and enable transactions and relationships (Rosenfeld and Morville, 2002). Once in a website, the researcher, in order to understand its usability, needs to seek for cognitive evaluations that are mental effort, physical effort, performance, perception, interpretation, evaluation, knowledge, learning and memorization (De Souza, Leite, Prates and Barbosa, 1999). The usability evaluation take into account priority usability features and experiments are realized looking forward insights to understand behavior of users. One of the suggested techniques is the engineering of usability in which the designer (system or website) select specific features to test and look for insights about these specific features (Newman and Lamming, 1995). For communication the evaluation uses semiotics looking for sentences and interjections that could demonstrate specific behavior (De Souza et al., 1999). Another suggestion is eye tracking that permits usability evaluation through the use of video recordings (Andre et al, 2006).

Analyzing Behavior

Considering the aforementioned elements of empowerment and usability, in this section we will consider the extensive research that was developed in the way to understand why and how people react. Many of these analysis look for insights into different reactions as presented on the paragraphs bellow. According to Almeida (2011), human behavior may occur in several ways and is generally divided into three groups:

1) “Reflexive”: this behavior is associated to speech, aesthetics and historic. Humans need to internalize knowledge and then behave. Speech Analysis (used on this paper) is associated with this type of human behavior and how they happen when people watch videos on youtube.com.

2) “Behavioral”: these are behaviors that need some kind of internal process to happen. We can point out facial expressions and usability as forms of analyzing “behavioral” behaviors. This paper used both facial expressions and usability report as techniques of behavioral analysis.

3) “Reactive”: this behavior means that some of our own behaviors do not need any kind of psychological actions and happens as reactive signals. It is the most primitive behavior that humans have. To analyze reactive behavior in this article, we will study reactions through body language.
Speech Analysis usually is of two specific types of analysis: tone and speech. Tone analysis studies how people's voice change while in contact of experimented object. Speech analysis tests what people say and make a compilation of words that represents attitudes. When used together, both tone and speech, scientists acquire up to 70% to 75% clarity about people attitudes (Busso et al., 2004). Dellarte (1996) conducted an experiment where he analyzed different tones of voices into statistical methods and looked forward to recognize emotions.

Another way of analyzing behavior is through the analysis of facial expressions. This is not only a difficult task, but also expensive. Recently, open-source software is available to analyze facial expressions and utilizes an open database to match expressions and the five basic emotional archetypes (Jung, 1981). Recent study found that using facial expressions as data can be reliable if it is complemented and supported by data from speech analysis (in which reliability can rise to 85%) (Busso et al., 2004).

Analyzing body language is still much more an art than a science, but several different sources already utilize this data as reliable and there are specific research centers with this focus (Center for non-verbal studies). Not only management papers are addressed in this area but also psychology papers. As an example, one may cite de Gelder and Hadjikani’s paper, which described reactions of patients presenting cortical blindness (de Gelder and Hadjikani, 2006). The center for non-verbal studies published a dictionary of body behaviors and if not 100% reliable for understanding people attitudes, it provided good insights about elements to be observed and searched during experiments (Givens, 2013).

Kleinsmith et al. (2004) analyzed several different papers about body language and proposed an interesting categorization:

- **Illustrative**: is a kind of body communication that illustrates spoken works, for example when someone is giving directions or demonstrating the size of something. The yes/no head movements in western cultures are also examples of Illustrative language.
- **Regulatory**: these are expressions used for controlling speaking and listening fluxes. The eye contact and also raise hands when wanting to speak are examples of this type of expressions.
- **Iconic**: these represent physical objects, real or imaginary, for example drawing a heart or a circle in the air with the hands or eyes.
- **Metaphoric**: it is the representation of abstract concepts as when someone shows something rolling or when a process is developed into a business conversation.
- **Demonstrative**: it is the act of pointing something around the conversation as an acquaintance or phone ringing.
- **Punch**: this represents involuntary hits in the rhythm of music or in the rhythm of spoken words.

Finally, it is relevant to mention that behavior analysis methodology is often divided into two groups: unimodal and multimodal. Unimodal analysis refers to analysis that only accounts one type of methodology and multimodal -which is the case of this paper-, that accounts more than one type of methodology into its broad, as we will present on the next topic.

**METHODOLOGY**

Taking into account the objective of this paper and previous research, an experiment was conducted looking for data about people behavior while watching youtube.com videos.

The chosen group for the study was a Boy Scout group from the city of São Paulo. This group was selected because its members are passionate about Boy Scout movement and therefore would react more to specific videos about the subject selected then other groups of people. From this group, the research selected 20 people with age between 18 and 35 years old, and whose Boy Scout movement represented an important part of their lives for more than five years. The number of subjects in the experiment is according to Nilsen’s (2012) recommendation for site usability tests that involves the interaction of users with sites and their reaction, aspects that are similar to ones we want to analyze in this paper. According to the author, five users are enough for a usability test.

The videos were selected based on their content and connotation. Three videos were chosen considering contents with likely positive, negative and neutral connotations of the Boy Scout movement and its members. The video number #1 had positive connotation and was motivational and informative, the video number #2 were neutral and informative and video #3 were comic and it had really bad connotation when referring to the Boy Scout movement and all its members (even referring to them as stupid, idiot and other bad names).

The idea behind choosing three different videos with the same subject was to look for real reactions of people during the time of the interview.
Katz et al.  Discovering viewers attitudes using verbal and non-verbal analysis

The order which the movies were showed changed, each time we presented them for each subject in order to reduce the comparison factor when reacting to different videos.

All the interviews were recorded and filmed, all audio and video were analyzed and their data were studied. During the videos presentation, people had chance to use mouse and point it whatever they wanted, and the screen was recorded using ScreenCam program. Between the movies presentation, there was an enquiry about subjects attitudes among the video previously watched.

After all data were gathered, the analyses of specific techniques were made. The results will be presented on the next session.

RESULTS

Speech Analysis

During the video presentations people concentration were used specifically on watching the videos. It was interesting that during the video with negative connotation, people kept repeating to themselves affirmation words as ‘no’, ‘not’ and ‘stop’, and this happened with around 50% of the subjects. From the interviews that happened between video presentations, data showed that people opinions about videos were almost always the same of the video connotation. Video #1 was related as ‘awesome’, ‘incredible’, ‘great music’ and people said they would watch it again for sure. Video #2 was related as ‘informative’, ‘obvious’, ‘boring’ and people said they would not watch it again but they would share it because of its informational function. Video #3 was related as ‘funny’ ‘unwatchable’, ‘terrible’, ‘awful’ and people said they would not watch it again, and they would only share it with people that know about the Boy Scout movement (as a joke).

Facial Expressions

As mentioned before, facial expression recognition is not only an expensive, but hard technique of realization. Two of five archetypes of emotions could be easily spotted on people. These archetypes are happy and anger, characterized by smiles (and laughs) and grim (with movements of eyebrows) (http://center-for-nonverbal-studies.org/browlow.htm). During the videos, it was possible to spot smiles during videos #1 and #3. We believe that this phenomenon occurred on video #3 because of its comic language, and because of grim during video number #2. On #3 it occurred because of the content and connotation (video number two was considered boring from almost all subjects).

It is important to highlight that even people that referred video #3 as ‘unwatchable’ and ‘terrible’ laughed during their presentations, giving an interesting insight about what people thinks and what people says about the same video.

Body Language

The body was divided into separated parts for analysis: legs, chest and arms (with hands).

Legs

In 1994s book “What every BODY is saying”, John Navarro (FBI ex-agent) and Ph.D. Marvin Karlin pointed out the important role our legs have on body language, and those being at a primitive level, are much more reliable than the rest of our bodies into non-verbal communication. From the 20 subjects, the study found relatively similar behavior on 11 subjects during the positive video, being this behavior the separation of the legs (which according to the book and the dictionary represents a not defensive position while seated). During neutral video, all participants kept crossed legs for almost all the length of the video presentation, and three of the subjects locked their feet on chair feet as a signal of searching for protection (demonstrating a defensive behavior). During the negative video, the number of people whose reaction was to lock their feet on the chairs feet increased even more, being frequent in seven cases.

Chest

There were not much data on chest reaction, but watching carefully the videos, it is possible to notice that people bended over during positive and neutral videos and bended out during negative video, pointing a quite common behavior among the research participants.

Arms and hands

During the three videos, it was possible to notice that highest people crossed arms. During the positive videos presentation, they crossed arms more at belly height and during negative on the chest height. The dictionary points the second behavior as highly defensive once it is the way of “protecting” vital organs as hearth and lungs.

During neutral informative video, subjects often showed the “Thinker Position” (where hands hold heads) maybe showing that
the video was less exciting and more informative. It’s important to point that this behavior only occurred during the presentation of videos with neutral connotation.

**FINAL CONSIDERATIONS**

It was possible to realize that the technique that brought the best results was the non-verbal analysis. The results of non-verbal analysis, despite the fact that there were no consensuses for all interviewed subjects, still presented interesting insights about the way people behaved watching the videos, revealing a standard behavior for positive, negative and neutral videos.

Verbal analysis presented only few data, so it is not possible to make inferences about behavior of Internet video watchers. Here, the main result is that people do not realize how they are acting while watching video. It was not possible to notice something specific but there was a behavior agenda when people watch positive, negative and neutral video.

Regarding body language, we concluded that it is possible to recognize attitudes among watcher of Youtube.com videos. For the positive connotation video it was found that people usually bended themselves in the direction of the video, legs and arms were more spread and not crossed like we noticed in the negative videos. We also noticed had movements with affirmation connotation during this video. During the neutral video exhibition, it was found that people were less opened to the video and less interested. Since it was a journalistic video, many of the subjects adopted a “thinker position”. During the negative video presentation, despite the fact most of people laughed at it, there was a series of negative behaviors, such as the negative movement with the head, crossed legs and arms and also some of the subjects locked their legs under their chair, interpreted by us as a very defensive movement.

As could be seen in this paper, the power of the Internet instruments, such as video sharing is a force to not be unwarranted and every organization should address it methodologically, as presented herein. There are already a couple of different techniques to understand and analyze behavior and they show different points from those conventional ones, in a way they could even be used together to allow a deeper look in the way people behave face to a specific product communication.

**REFERENCES**


