

Examining Interactivity in Television Ads as an Effect of Social Media Brand Presence

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Abstract

Social media marketing is often studied in the context of consumer-brand relationships. This is because the interactive and personal nature of social media has led to major changes in how brands communicate with their consumers, and subsequently, how brand messaging is conveyed as a whole. This research aims to study the ripple effect that these changes have had on traditional mediums, specifically, how the shift in brand-consumer relationship established by the rise of social media marketing has impacted the ad strategy of Superbowl advertisements from 1980 to 2023. Preliminary results suggest that information content and formality of ads have decreased over time, consistent with the hypothesis that the intimacy of brand-consumer relationships cultivated on social media has spillover effects on traditional advertising mediums.

1 Introduction

The landscape of advertising has changed significantly over the past half-decade. The introduction and subsequent boom of social media and digital advertising has drastically shifted the perceived relationship between brands and consumers. More specifically, digital channels of advertising have drastically increased the level of perceived interactivity in consumer-brand relationships (Deighton and Kornfeld, 2009) [6]. This is due to both the loss of control over brand stories, forcing brands to integrate consumer-generated brand stories into their imaging (Gensler et al., 2013) [7], as well as the nature of communication on social media, which allows consumers to directly engage with a company or brand through likes and comments (Bóveda-Lambie and Hair, 2012) [2].

Brands on social media can be seen as more personified as they interact with customers on social media, and successfully leveraging social media can yield high benefits for a brand, such as increased brand loyalty and positive network effects (S. Hudson et al., 2015) [11]. Digital marketing is also often cheaper with a higher return on investment than its traditional counterpart [21]. However, although digital marketing channels have undoubtedly surpassed traditional methods in popularity, with around

72% of yearly marketing budgets being spent on digital, traditional mediums remain a crucial element in a brand’s comprehensive marketing strategy, and remain a fixed occurrence in many people’s lives [20].

Although the format of traditional advertisement mediums such as television has not evolved at nearly the same pace as digital advertising has, the content and strategy of television advertisements have both changed in meaningful ways. While these changes are likely due in part to general changes in cultural attitudes, world events, and economic developments, I hypothesize that the changes in television advertising have changed in part due to the changing brand-consumer relationships coincident with the rise of social media. For my thesis, I propose to conduct analysis on the “interactivity” levels of television advertisements over the last 40 years. More specifically, I will seek to answer the following questions: Do we see evidence that the increase in intimate and interactive brand-consumer relations, coincident with the rise of social media and digital advertising, has expanded beyond the digital realm?

To answer these questions, this study aims to look at Super Bowl advertisements from 1980 to 2023. More specifically, I am looking for evidence that supports the hypothesis that the level of “interactivity” in ads has undergone significant changes in the last 4 decades. I propose 3 measures that, together, can measure the interactivity levels of video advertising and provide evidence of the change in brand strategy over time. These measures are the number of collective pronouns present in advertisements, the formality of ad messaging, and the information content in advertisements.

Through these analyses, I hope to find evidence consistent with the hypothesis that the change in brand-consumer relationships coincident with the rise of digital platforms has also altered brand strategy with respect to traditional advertising mediums. My results will outline important shifts in traditional advertising mediums, and more importantly, how changing strategies optimized for one realm can bleed into another.

2 Literature Review

My work builds upon previous literature that explores the effects of social media marketing on brand-consumer relationships. Social media has risen as one of the primary methods in which consumers receive information from and interact with the brands they monitor (Qualman, 2012, Sohaib and Han, 2023) [19] [23]. More specifically, the advancement of information and communication technologies has helped foster consumer and brand interactions on a scale that was previously impossible (Pavlou and Steward, 2000; Lavrakas, 2010) [25] [16]. Subsequently, brands’ social media activities, known collectively as social media marketing, have become a major part of overall brand strategy (Chakraborty, 2019) [3]. Social media marketing is defined as any marketing strategy that uses social media to share or monitor brand-related content

(Godey et al., 2016) [8]. Notably, utilizing social media marketing creates opportunities for enhanced consumer-brand interaction (Kamboj et al., 2018) [12] by providing a highly interactive and direct environment for consumers and brands.

The effect of social media marketing on consumer-brand relationships

One of the well-established effects of social media marketing is the establishment of strong relationships between brand and consumer (S. Hudson et al. 2012, Labrecque 2014, Gutierrez et al., 2023) [11] [15] [9]. This is important for overall brand equity, as strong customer-brand relationships can form the basis for a loyal customer base (Bhattacharya and Sen, 2003) [1]. On social platforms, consumers view brands as if they are a person that they are interacting with. Labrecque 2014 labels this as an increase in parasocial interactions, engagements that lead people to believe they are engaged in a direct two-way conversation as if the brand entity is talking directly to him or her [15]. MacInnis and Folkes 2017 further describe it as an anthropomorphism of the brand, a phenomenon that describes how consumers humanize brands by perceiving them as engaged in a relationship with themselves [18]. Altogether, through social media marketing, brand-customer relationships have become stronger and more interactive.

Interactivity

In this paper, interactivity is defined loosely as the existence of a perceived two-way communication between consumer and marketer. An advertisement or advertising strategy with higher levels of interactivity is more likely to lead a consumer to believe that they are talking to another person rather than an abstract entity. This is similar to the definition used by Song and Zinkhan (2008), and Labrecque (2014) [15]. Social media marketing is characterized by its high levels of interactivity (Song and Zinkhan 2008; Stewart and Pavlou 2002; Yadav and Varadarajan 2005) [24] [25] [27]. For example, brands often directly engage with their consumers through comments or messages (Labrecque 2014). Brand messaging often contains second-person pronouns that speak directly to the consumer (Cruz et al., 2017), and brand content has shifted to include consumer-generated brand stories (Gensler et al. 2013) [5] [7].

3 Data Collection

To start, I created a database for all of the Super Bowl advertisements from 1980 to 2023. The videos are pulled from adland.tv, a database of commercials with Super Bowl advertisements available to download dating back to Super Bowl III in 1969. However, videos for consecutive years are only complete from 1979 onwards. In addition to the

videos themselves, there was also information on the brand and category of the product being advertised.

Our unit of observation here is each unique advertisement that was run during the Super Bowl from 1980 to 2023. One brand could have multiple advertisements within or across years, and those would be counted separately. Additionally, two different ad creatives that advertise the same product will also be counted separately. If two of the exact same ad were run in the same year, this would count as one observation, while if the same identical ads were run in different years, it would count as two.

After downloading the video files, I extracted audio from each advertisement and, using OpenAI's Whisper neural net, transcribed each audio into a text file. Separately, I extracted individual frames from each video. The transcription, audio file, video file, and image frames are what I will work with going forward.

4 Methods and procedures

To investigate the changes in interactivity level, I identify 3 dimensions that I hypothesize will all vary with interactivity. For each dimension, there are 1 to 2 metrics that I hypothesize are good estimators of the respective dimension. After completing data collection, I should have 4-5 measures to represent interactivity. To check validity, I will compute Cronbach's alpha for the full group of metrics, as well as every subgroup of $n-1$ metrics. This is done to ensure that metrics that I purport to be measures of an ad's interactivity level are indeed good measures of said level. Lastly, I will analyze the changes in these measures from 1980-2023 and observe any noticeable patterns. This will conclude my analysis.

As stated before, the three dimensions are the presence of collective pronouns in advertisements, the formality of ad messaging, and information content in advertisements. In the following sections, I briefly discuss how I define each dimension, what preliminary work has been done, and what future work I plan to do in each area.

4.1 Collective Pronouns

First-person plural and second-person pronouns acknowledge the consumer and reinforce the idea that the brand and the consumer co-exist within the same space. Thus, I refer to them throughout this paper as "collective pronouns". Using these pronouns thus decreases the metaphorical distance between brand and consumer, leading to higher perceptions of interactivity.

There are already several papers regarding how the use of pronouns in brand messaging can impact consumer's perceptions of the brand. For example, Labrecque et al. (2014) posits that the use of first-person plural and second-person pronouns can

facilitate brand relationship connections. Specifically, they find that the use of these pronouns can perpetuate the perception of a relationship. I hypothesize that the use of first-person plural and second-person pronouns has increased over the past 4 decades. This finding would support the hypothesis that brand relationships have shifted towards a two-way dialogue.

To accurately gauge the presence of first person plural and second person pronouns (referred to hereonout as FPSP) in advertisements, I have several proposed methods. The first is a simple count of advertisements including the use of FPSP pronouns in their transcripts. From this, we can see if more advertisements are choosing to include these pronouns.

Another measure is to calculate the proportion of all pronouns that are FPSP in each video. This would allow us to see whether advertisers are choosing to use FPSP over other pronouns within advertisements.

There are several drawbacks to the usage of explicit pronouns in my analysis, namely that there exist relationships within advertisements that do not include the viewer at all. For example, Charmin advertisements commonly feature a family of bears and their affinity for soft toilet paper. However, when the mother bear says something to the effect of “I told you not to get the other paper”, the use of “you” is not in reference to the viewer. Contrast that with Old Spice’s “The man your man could smell like” campaign, where the use of “your” is in fact directly speaking to the consumer [14]. To mitigate this inconsistency, I plan to further explore the dimension of collectivism beyond just pronouns.

4.2 Information Content

Information content in advertisements can be defined as content that stresses factual information or utilitarian consequences of product use or brand engagement. An advertisement would score high in information content if the primary strategy of the ad direction is to inform the user about the benefits of using the product/brand advertised. Contrast this with an ad that relies on humor or celebrity endorsements rather than factual information about the product—this would score low in information content.

The information content of an ad (or lack thereof) reflects a brand’s strategy in crafting an advertisement. I suspect that, with brands positioning themselves as peers or friends, advertisers will turn away from high levels of information content in favor of content that is more emotionally engaging.

Preliminary Results

There are two measures that I have used to gauge information content. The first is by using OpenAI’s API to classify each ad transcript as either “informational” or “non-

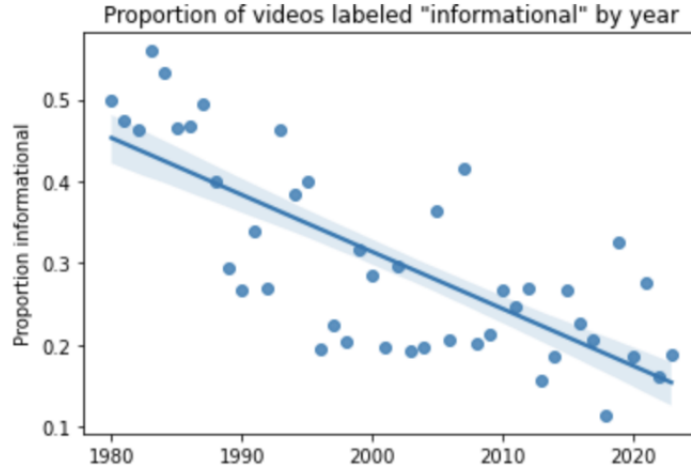


Figure 1: Output of GPT classification

informational” using the above definition. The prompt supplied for this analysis is as follows:

“Informational content is defined as content that stresses factual information or the utilitarian consequences of product use. Based on the previous definition, is the following text informational or non-informational?”

[video transcript]

“To answer, consider whether the transcript is providing explicit information about the product advertised. If it is, then answer 'informational'. If not, then answer 'non-informational'.”

The API successfully classified all videos with a valid transcript (3070) videos. Other videos that did not have a valid transcript (for example, an ad with no spoken words and only music) were automatically classified as non-informational. Figure 1 shows the plot of the proportion of videos classified as “informational” by year. Based on this metric, the information content of ads has been decreasing steadily over time.

The second metric I used to measure information content was looking at the number of unique text labels shown during the video. The reason this can be used as a proxy for information content is that text labels overlaid on video often contain information about the product, and thus, that video is more likely to

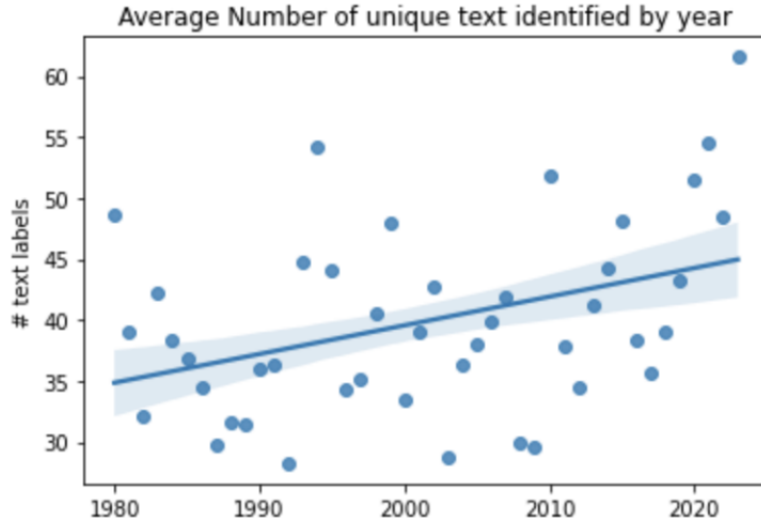


Figure 2: Graph of extracted text labels

To obtain the number of unique text labels in each ad, I ran each video through Google’s Video Intelligence API, using the “Recognize text” specification. The “Recognize text” specification performs optical character recognition on each frame of the video, which detects and extracts any text contained in the frame. Figure 2 plots the average number of unique text labels identified in a video by year. The relationship is quite noisy, and there does not appear to be a clear trend. This metric was quite error-prone, as OCR would pick up any text on screen, regardless of how faint or distorted, rather than exclusively focusing on text overlays. Thus, most text labels did not actually correspond to informative content about the product/brand.

Future Work

In the future, I hope to explore the use of a language model fine-tuned for the classification of transcripts rather than relying on question-answering language models. A pre-trained language model could be fine-tuned for the classification of “informative” vs. “non-informative”, or for aregression on “information score”, a metric that measures the level of information content in an advertisement. This concept is explored in Chandrasekaran, Srinivasan and Sihi (2017) on Super Bowl advertisements, and I believe it would work well in this context [4].

To train such a model, I will try two methods: The first method is using a transformer encoder classification model, and the other is to fine-tune a pre-trained encoder such as BERT with a dataset that has advertisement transcripts labeled as either “informational” or “non-informational”. The model would be trained on cross-entropy

loss and judged by accuracy. The second method is to use a pre-trained encoder to convert advertising transcripts into embeddings that can be fed into another classification model, such as XGBoost. The embeddings would represent the words in the transcript, as well as semantic and relational complexities that cannot be captured by using individual words as tokens alone. The benefit of using word embeddings as predictors in a separate model is that we are able to add additional predictors relating to the advertisements' length, complexity, saturation, etc., thereby increasing the model's predictive power.

Fine-tuning an open-source model requires two main resources: data and computational power. Although I currently do not have any labeled datasets, I am confident that there is a publicly available dataset that suits this context, given the robust literature in this area. If not, manual labeling is a possibility, as fine-tuning requires as little as 1000 labeled data points. As for computational power, I will investigate if MIT or MIT Sloan can provide computing resources that are able to handle the computational load of fine-tuning. If not, Google Colab offers a free GPU that is likely able to achieve this task.

4.3 Formality

Formality in advertising can be defined as a tone that is polite, respectful, and professional. A formal advertisement would avoid using slang, jargon, or colloquialisms. I suspect that changing brand relations would cause advertisers to assume a more informal tone in their advertising, as social media equalized the level of control over brand image between consumers and brands. It is important to note that this does not necessarily mean that every brand will adopt an objectively informal tone; Rather, brands will become more informal relative to their own prior messaging. This is consistent with the hypothesis established in literature that states that the digital paradigm encourages brands to view their relationship with the consumer as a friend whom the customer chooses to interact with (Deighton and Kornfeld 2009).

Preliminary Results

To gauge formality, I used OpenAI's API to classify each ad transcript as either "formal" or "informal" using the above definition, similar to the method used for information content. The prompt supplied for this analysis is as follows:

"Formal tone is a type of tone that is polite, respectful, and professional. It follows the rules of grammar, punctuation, and spelling, and avoids slang, jargon, or colloquialisms. Informal tone is a type of tone that is casual,

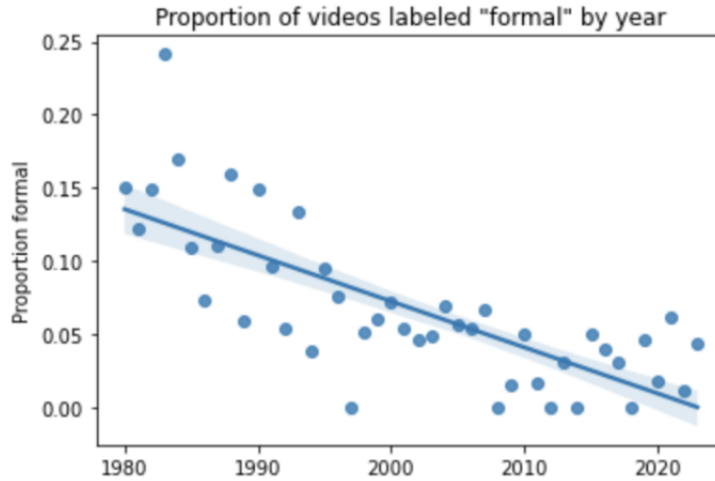


Figure 3: Caption

friendly, and conversational. It breaks some of the rules of grammar, punctuation, and spelling, and uses slang, jargon, or colloquialisms. Based on the provided definitions, is the following text formal or informal?"

[video transcript]

The API successfully classified 3300 videos. Figure 3 shows the plot of the proportion of videos classified as “formal” by year. Based on this metric, the formality of ads has been decreasing steadily over time.

Future Work

In the future, I would like to work on obtaining a more robust measure of formality in video advertisements. One idea, like the information content measure, is to use a language model trained for the classification of “formal” vs. “informal”. This would require a language model that is fine-tuned to this particular context. Unlike the information content dimension, this dimension is less explored in marketing literature, and thus I am unsure if there are any available datasets to work with. Even so, manual labeling is still an option, as stated before. I hope to explore this further in the upcoming semester.

5 Timeline

Feb-May 2023 (UROP) Data collection and preliminary analysis: Separated data into different mediums, experimented with APIs to extract information.

Sep-Oct 2023 Data extraction and analysis: Focus on measuring diversity in advertising,

Oct-Nov 2023 Data extraction across other dimensions: Information content, emotional tone, energy level, etc.

Nov-Dec 2023 Thesis proposal: Hypothesis construction and literature review

Jan-Mar 2024 Data extraction: Implementation of proposed processes, exploration of other metrics.

Mar-Apr 2024 Final data extraction, analysis of collected data, construct validity and purification.

Apr-May 2024 Write thesis

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