

Big Data Analytics in the Framework Analysis of Social Media Marketing and Branding of

Electric and Hybrid Cars on Customer Engagement

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Introduction

The proliferation of social media has changed how companies are marketing their products and interacting with their customers. Accordingly, there have been new challenges and opportunities in the marketing and branding of electric and hybrid vehicles. In the last 10 years, companies have increasingly adopted social media to exploit its huge potential of enabling companies to connect with customers (Jin, 2012). In this regard, companies need to understand how they can use social media to engage and influence customers buying decisions and behaviour using social media.

There have been various studies between brands and social media marketing efforts and customer engagement, however, I have not come across one that focuses on fuel-efficient vehicles. The volatility in fuel prices, as well as the need to protect the environment, is increasingly making more individuals interested in electric and hybrid cars. The value proposition in these cars is their low fuel consumption and low air emission level when compared to ordinary vehicles. Accordingly, it is essential for these companies to properly package their marketing campaigns for them to establish the desired brand image among its target clients.

Traditional methods of assessing customer engagement only focused on behavioural intentions of customers rather than the actual behaviour, however, big data offers opportunities to overcome these challenges (Liu, Shin, & Burns, 2019, p. 1). Big data enables the inclusion of unstructured behavioural data such as textual and non-textual data, which are included in social media marketing to enable companies to interact with customers and share information.

Research Objective

This research aims at using big data to examine the effects of social media marketing and branding of electric and hybrid cars on consumer engagement. This research will adopt the “dual perspective of customer engagement” approach by Kunz et al. (2017). Importantly, this approach will show the role of customers in creating value that has the overall benefit of benefiting both them and the firm.

Literature Review

Brand Sentiment Analysis

There are growing interests among marketers to understand branding issues on social media because more companies are becoming interested in the power of social media to engage with potential customers and promote brands. On the other hand, customers publicly share their feelings and views on various brands through these platforms. Huberty (2015) opines that it is indeed reasonable to assume there is a stable link between online and offline attitudes of consumer behaviour regarding particular brands. To influence consumer behaviour through online platforms, it is paramount for firms to have insight into the effectiveness of their branding and marketing campaigns on social media platforms. In a study by Smith Fischer, and Youngjian (2012), it was established that there is a relationship between customers' brand sentiments on user-generated content across various social media platforms. In this regard, information on customers' brand preference from social media platforms is vital for marketing.

Brand Authenticity Concept

Brand authenticity refers to the extent to which clients regard a particular brand as being genuine to meet its sales proposition. Since there is no standard acceptable definition of authentic in literature, their definition of this word often varies among scholars. According to Beverland (2005), brand authenticity is an inherent attribute of a product that arises from the relation between

the object and organizational form that is given by marketers or customers. A study by Assiouras, Liapati, Kouletsis, and Koniordos (2015) established there is a positive relationship between brand authenticity and brand attachment. Further, Kadirov (2005) suggested that brand attachment influences consumer behaviour and helps in promoting the brand. Supporting this view, Johnson, Thomson, and Jeffrey (2015) concluded that consumers views on a brand's authenticity influence their perspective on its quality and willingness to refer the item to their peers. Accordingly, the success of major brands lies in their operational ability to create positive perceptions among their current customers.

Brand Authenticity Dimensions

For companies to establish their authenticity, they always maintain openness on social media. Brands quality commitment is an essential determinant of their authenticity (Napoli et al., 2014). Therefore, by manufacturing the highest quality products or offering the highest level of standards for services, consumers perceive companies has been committed to offering quality products and services. Also, brands can arouse connections with specific places, time, production method, and style, all of which create the varying perception to the customer (Spiggle, Nguyen, & Caravella, 2012). The perception of uniqueness can also influence customers' consumer behaviour (Shirdastian, Laroche, & Richard, 2017). A product's symbolism is also an important aspect of authenticity that influences the value that customers attach to the brand (Napoli et al., 2014).

Using Big Data to Reinforce Customer Engagement in Social Media

Social media platforms have played an important role in enabling customers to engage with firms, and this has made them active co-producers or destroyers (Verhoef et al., 2010). According to Kunz et al. (2017), customer engagement in social media is a combination of both the customer and the firm's perspective. Customer engagement is a multi-dimensional concept that is composed

of behavioural, emotional, cognitive, and emotional aspect (Hollebeek, 2011). These aspects are significant in social media because these platforms provide critical behavioural metrics such as ratings, comments, sharing, and liking features, which have the potential of influencing other potential clients (Barger et al., 2016). According to Shivinski et al. (2016), social media content represents varying levels of engagement that are displayed in various ways such as consumption, contribution, and consumption.

Hypothesis

Hypothesis 1

H0: Social media branding enhances customer engagement.

H1: Social media branding does not enhance customer engagement.

Hypothesis 2

H0: Social media enhances brand authenticity

H1: Social media does not enhance brand authenticity

Research Design and Methodology

We will choose Twitter as the source of big data to analyze the impact of electric and hybrid cars social media marketing on brand development and customer engagement. As a popular and large social media platform, Twitter has a larger number of corporations that use the platform as an integrated marketing and communication channel. Using data from Twitter will broaden the understanding of electric and hybrid vehicles in social media marketing.

Data transformation will be done by downloading raw tweets through Twitter API in the format of JavaScript Object Notation (JSON). We will then use Java programming language JSON parsers to extra information (Twitter, 2018). Stop words such as “the”, “to”, and “in” are the removed to clean the data. After this, Stanford CoreNLP is used to tokenize and tag all words of

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electric and hybrid cars. The quantitative data is then integrated and loaded to MySQL. During the aggregation process, we will consider three critical variables: TweetType, CompanySN, and TimeOfCreation. TweetType will show if the tweet was created by a brand or consumer, CompanySN will identify the name of an electric or hybrid vehicle, and TimeOfCreation will help in the categorization of tweets into monthly intervals (Schwartz, Zaitsev, & Tkachenko, 2012).

Electric-Hybrid Vehicles	Twitter Accounts	Account Creation Dates	Number of Followers	Number of Following Accounts	Number of Firm Tweets	Number of Consumer Tweets Mentioning the Product
Toyota Prius						
Tesla						
Chevrolet Bolt						
Toyota Avalon						
Honda Accord						
Hyundai Sonata						
Ford Fusion						
Kia Optima						
Honda Clarity						
Nissan Leaf						

The final analysis will consider interaction, brand authenticity, and customer engagement.

Interaction will refer to the degree that a luxury's brand social media account is interactive. In this study, we will measure interaction based on the sum of tweets created by the brand and the number of mentioned hashtags.

Customer engagement will measure proxies of the various customer engagement behaviours. We measured this metric using a number of customer tweets mentioning the product and number of followers.

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Brand authenticity will be measured using the number of times a brand is mentioned in customer tweets.

Analysis

An ANOVA analysis of the quantitative data will inform if there is any relationship between social media marketing and brand authenticity and customer engagement

$$\text{Number of Tweets (Brand)} = \alpha + \beta_1 \text{Customer Engagement} + \beta_2 \text{Brand Authenticity}$$

Conclusion

The research expects to find a positive correlation between social media marketing and customer engagement, as well as a positive correlation between social media marketing and brand authenticity.

Time Schedule

Time	Activity
March 10, 2020- March 25, 2020	Introduction: An overview of the research topic. A detailed description of the research problem and research question.
March 26, 2020-April 15, 2020	Literature Review: A detailed analysis of related past research on the topic. Establishment of the relevant hypothesis for analysis.
April 16, 2020-May 15, 2020	Research Methodology: Establishment of the appropriate research method and research tools. Collection of appropriate quantitative and qualitative data for analysis.

May 16, 2020-June 15, 2020	Research Analysis: Classification of data to appropriate groups. Analysis using appropriate tools such as ANOVA, fixe-effects methods, correlation, and regression method.
June 16, 2020- July 15, 2020	Findings and Conclusion: Review of the results from the research analysis. Comparing the results with those of other scholars. Writing a final conclusion of the research.

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