Is Social Media Paying Its Money?

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Is Social Media Paying its Money?

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Abstract: Businesses are seeking to achieve customer engagement through social media these days. With Facebook providing ready online places for each individual account through Facebook marketplace, it has become significantly easier for someone to build his own business on social media, a trend widely accepted and continuously rising. New smartphone capabilities are utilizing innovative ways of promoting items through social media applications. Digital influencers are working in collaboration with big brands and are seeking customer attention with appealing advertisement. Social media are offering, to identify customer segments that a business is targeting more efficiently. Facebook is offering the promotion of businesses' products for a fee and businesses require to know whether this investment will bring the required ROI. This research focuses on predicting this ROI by developing a prediction model that calculates the number of received likes of potential customers through Facebook. By utilizing a dataset with 500 different posts of a cosmetics company that uses promotions through Facebook, for a social media campaign that ran for 12 months, we have built a numeric prediction model that estimates the received number of a business "likes" in every single post that is published on Facebook.

Keywords: customer engagement, smartphone capabilities, prediction model.

1 Literature Review

1.1 Introduction

Technological advancements have led many enterprises into the usage of digital means of presence and communication such as social media. Since the advent of huge social media companies such as Facebook LinkedIn and the like, businesses did not emphasize so much into the creation of digital content through social media. At this point of time those services were considered as radical innovation because they changed drastically the way that people communicate with each other through the Internet. Until that time there were a few options, other than e-mail that were offering real time digital communication between the members of a digital community. Alt-

hough many users were creating social media accounts, the usability of those means were for limited purposes such as communication with friends, and actions such as publication of their favorite songs, quotes, or even publishing their news and updates. During the first years of Facebook very few businesses have made their appearance on social media to attract new customers. But after Facebook invented special advertisements for interested businesses with the option for selecting the customer segments where the promotion is redirected, then numerous businesses made their first appearance into the social media platforms. [1]

1.2 Social Media Strategy

The new technological environment brings strategic knowledge to the businesses via social media. Social media democratize the digital environment making more consumer oriented. This means that companies after the advent of social media have faced issues such as negative feedbacks form their potential customers for tactics that were far away from their interest. Businesses can also make a poll inside social media for customer's future buying intentions. [2] Hence those that have digital presence in social media have a competitive advantage of whether their potential customers are going to like a new upcoming product or not. The number of resources and time that can be saved for a potential new product is tremendous since it already exists a basic platform for asking whether the buyers are in favor of a new innovative business idea or not. [3]

Digital enterprises are utilizing social media, each one for different reason. Although most of the businesses have as final purpose to raise their sales, some of them have as short-term target to raise their awareness. For many entrepreneur's social media presence is an unavoidable phenomenon that can enhance the digital communication and build trust between businesses and customers. Other businesses focus on keeping a standard communication with potential or existing users to present a more appealing digital profile. Another usage that businesses are utilizing through social media is the after sales service in terms of business to end-user communication. These services have been expanded in other mobile applications such as Viber where users can optimize receiving exclusive offers with the option of subscription. [4]

There are numerous case studies where a social media strategy went wrong. Most businesses are thinking that getting little or zero customer attention is harmful for the potential of a company. But this is not the worst scenario. One well known case is the creation of a blog with content regarding specific products of a company, where individual users that were posting their positive feedback concerning a company's product were eventually fake accounts created by people from the inside of the company. [5] Such behaviors can shut down the operations of a company once and for all. Nonetheless most of the social media have taken precaution measures for such behaviors and have restricted the way that a single IP tunnel can have multiple social media accounts created in a very short period. Affiliate marketing is the most valuable way of promoting the work of a company in the social media the last years. Since Instagram was adopted by Facebook there were numerous attempts of affiliate marketing between one another. [6] Most of the companies have kept a successful roadmap since

they are investing in research and development. This also applies for the businesses that are utilizing social media for marketing usage.

1.3 Reimagining Business Marketing Strategy

Most businesses invest time and money in finding the best possible potential customers to be advertised. Businesses are implementing specific benchmarks. However, reimagining a business marketing strategy requires a different type of thinking. People are also investing their time and money in social media and are expecting a ROI. So, by seeking customer intentions through the social media usage is revealing the true intentions of user's interaction through these media. [7] For example, some people are utilizing social media for communication purposes and seek attention among their friends and colleges. Others enjoy streaming video content that is related to their personal interests. There is a part of them though that are seeking their favorite brands and since the marketing strategy of big brands has been reimagined by the existence of social influencers, usually they are following people just to get in touch with their favorite products, invite their friends into those brands and participate into exclusive contests that come with rewards to the winners. [8]

Most of the online sites are adopting social media attributes and performances just to become more sociable and more user intergraded. For example, even when large newspapers such as the New York Times are publishing a new article into their online version of the newspaper, users can go online, sign-in, add their own comment and share their opinion regarding the news. [9] People are highly attracted to a media when they can express and spread their ideas. It is also a nice feedback that can associate the publishers to perform better and improve their published content. It is also a direct mean for end-users to share the content and free publicity, and word of mouth that is working in the digital era. [10]

There are numerous social media companies that have selected a different strategy regarding the software that they have launched and working so far. For example, Snapchat was initially launched as a mobile application and remains as is until now. Although many competitors believed that the company would not survive so far without an online site presence the company has succeeded in all the rounds of funding and has remained as a mobile application, with the competitive advantage of owning customers that are mostly millennials, something that has attracted many investing companies that want to be advertised there. Similar path was chosen by Viber that is a major choice for many smartphone users who want to communicate through the Internet, but some years later they launched an application that is compatible with all the software's that are currently run by pcs. Both two social media are leading in terms of success and profitability so much that Snapchat has denied Facebook proposals for a buyout. They also keep a low profile of what business model they are using during the years and the profitability that they are producing. [11]

2 Methodology

Traditional ways of measuring digital marketing success always deliver some qualitative results that seem promising but fail to deliver productive results. Most of these are failing since they cannot predict the way that people are reacting on marketing related posts on social media. And this is happening due to the huge number of variables that are playing a vital role to the acceptance of most of the social media users. We have utilized a social media campaign dataset that was implemented by a cosmetics company through Facebook for 12 months to improve business digital performance.

The main goals of this study are the following:

- Implementation of a model that predicts the number of likes in a company that uses social media post publications
- Explore correlations between the attributes that are playing vital role in the model building of a social media post.

2.1 Dataset Implementation

We have gathered a dataset from UCI Machine Learning Repository with 19 variables that are participating in the result in a marketing social media post of a company. There are 500 different Facebook posts that have made a social media marketing campaign and have measured those 19 variables [12]. Some of them are paid Fakebook posts to attract more potential customers and some of them are not. In the following table we present the attributes that were utilized in our model.

Table 1 Description of Model's Attributes

Attributes	**Description**
Page total likes	Total Likes
Type	The type of the Facebook Post (photo, status, video, link)
Category	action, product, inspiration
Post Month	The month of the year that the post launched
Post Weekday	The day of the week that the post launched
Post Hour	The hour of the day that the post launched
Paid	Paid and non-paid posts
Lifetime Post Total Reach	The number of people who saw a page post (unique users).
Lifetime Post Total Impressions	Impressions are the number of times a post from a page is displayed, whether the post is clicked or not. People may see multiple impressions of the same post. For example, someone might see a Page update in News Feed once, and

	then a second time if a friend shares it
Lifetime Engaged Users	The number of people who clicked anywhere in a post (unique users)
Lifetime Post Consumers	The number of people who clicked anywhere in a post.
Lifetime Post Consumptions	The number of clicks anywhere in a post
Lifetime Post Impressions by people who have liked your page	Total number of impressions just from people who have liked a page.
Lifetime Post reach by people who liked your page	The number of people who saw a page post because they have liked that page (unique users).
Lifetime People who liked your page and engaged with your post comment	The number of people who have liked a Page and clicked anywhere in a post (Unique users)
Comment	Number of comments on the publication
Like	Number of "Likes" on the publication.
Share	Number of times the publication was shared.
Total Interactions	The sum of "likes," "comments," and "shares" of the post.

After a first examination we saw that there might be some correlation between the above attributes and that's why we decided to use a linear regression to export a model that predicts the number of likes of a social media campaign of a digital enterprise. From the initial database we excluded the attribute "type" since it was a non-numeric attribute and therefore it cannot be utilized in a linear regression method. After using 10 cross validation folds and a percentage of 66% splits, we managed to build our model. [13]

2.2 Initial Hypotheses

The following are the initial hypotheses that led us to the model creation:
H1: The number of likes is positively corelated to the number of total interactions
H2: The number of total interactions is positively corelated to the number of shares
H3: The number of shares is positively corelated to the number of likes
H4: The number of likes is positively corelated to the number of comments
H5: The number of shares is positively corelated to the number of comments
H6: The number of total interactions is positively related to the number of comments
H7: The number of Lifetime Post Consumptions is positively related to the number of Lifetime Post Consumers
H8: The number of Lifetime People who liked your page and engaged with your post is positively related to the number of Lifetime Post Consumers

H9: The number of Lifetime Post Consumers is positively related to the number of Lifetime Engaged Users
H10: The number of Lifetime People who liked your page is positively related to the number of Lifetime Engaged Users
H11: The number of Lifetime People who liked your page and engaged with your post is positively related to the number of Lifetime Engaged Users

2.3 Model Creation

The final model of Regression analysis is the following:
like = (-0.204) * Category + (-0.0536) * Post month + 0.0715 * Post Weekday + 0.0066 * Lifetime Engaged Users + (-0.0065) * Lifetime Post Consumers + (-0.9969) * comment + (-0.9717) * share + 0.0024 Total Interactions + (-1.5295)

Table 2 Cross Validation Summary

Correlation coefficient	1
Mean absolute error	0.5438
Root mean squared error	2.2538
Relative absolute error	0.3769 %
Root relative squared error	0.6947 %
Total Number of Instances	500

2.4 Results and Discussion

According to the results it seems that there is a high correlation between the total number of likes and the total interactions of a single Facebook post. The higher the number of digital interactions within a post, the higher the number of likes that a digital business is receiving. In a similar way, the rest of the initial hypotheses are confirmed and working inside the digital company and can be utilized from companies for KPIs improvements and for further research. Knowing that the increase or improvement of a specific attribute will improve the performance of others has significant impact in the performance of a digital company. From the model creation we also can confirm the fact that the most significant role on a like result are the “comments” and the “share” attributes. On the other hand, the month that a post is published, and the Lifetime Engaged Users are having the less important role into “the return of a like”.

3 Conclusions and Future Work

First and foremost, the most significant conclusion that is coming from this research is the predictions of the number of the receiving likes of a single Facebook post. Although this database is from a cosmetic related digital company, the prediction model

can be exploited by similar businesses that are utilizing Facebook for marketing related posts to raise their awareness or traffic into their online site. Since all the initial hypotheses were confirmed businesses can utilize the positive correlations between the variables to better understand how they impact one another and keep focus on improving those that are corelated with the ones that they matter mostly for the business. They can also keep better track of their KPIs on Facebook and utilize other business tools to automatically measure all 19 attributes to keep track of KPIs for performance measuring and can be combined with the model results for better social media performance.

Another interesting question regarding benchmarking inside social media is what percentage of social media accounts are original or doubled ones or even fakes ones. This is a crucial question since there might playing an important role on any research or measurement that is conducted from an institution or a company. A new trend with major influence is the fake news, that fake Facebook accounts are producing in a daily basis for propaganda purposes. It would be interesting for research and entrepreneurship purposes a prediction model that will locate the Facebook accounts that are fake. Finally, the current database from UCI repository can be used from another researcher by utilizing the database and apply classification algorithms for another potential prediction model for future work.

References

1. Kane G. C. (2015). Why Social Engagement May Be More Important Than Marketing. *MIT Sloan Management Review*, *57*(1), 0. Retrieved from http://search.proquest.com/docview/1719450826?accountid=143960

2. Sashi C. M. (2012). Customer engagement, buyer-seller relationships, and social media. *Management Decision*, *50*(2), 253–272. https://doi.org/10.1108/00251741211203551

3. Ismail A. R. (2017). The influence of perceived social media marketing activities on brand loyalty: The mediation effect of brand and value consciousness. *Asia Pacific Journal of Marketing and Logistics*, *29*(1), 129–144. https://doi.org/10.1108/APJML-10-2015-0154

4. Kietzmann J. H., Hermkens, K., McCarthy, I. P., & Silvestre, B. S. (2011). Social media? Get serious! Understanding the functional building blocks of social media. *Business Horizons*, *54*(3), 241–251. https://doi.org/10.1016/j.bushor.2011.01.005

5. Yoshida M., Gordon B. S., Nakazawa M., Shibuya S., & Fujiwara N. (2018). Bridging the gap between social media and behavioral brand loyalty. *Electronic Commerce Research and Applications*, *28*, 208–218. https://doi.org/10.1016/j.elerap.2018.02.005

6. Hoffman D. D. L. D. L., & Fodor M. (2010). Can You Measure the ROI of Your Social Media Marketing? *MIT Sloan Management Review*, *52*(1), 41–49. https://doi.org/10.1287/mksc.1120.0768

7. Habibi M. R., Laroche M., & Richard M. O. (2014). The roles of brand community and community engagement in building brand trust on social media. *Computers in Human Behavior*, *37*, 152–161. https://doi.org/10.1016/j.chb.2014.04.016

8. Hult M. (2017). Dynamic Marketing Capabilities - Organizational Renewal Towards Social.

9. Clark M., Fine M. B., & Scheuer C.-L. (2017). Relationship quality in higher education marketing: the role of social media engagement. *Journal of Marketing for Higher Education*, *27*(1), 40–58. https://doi.org/10.1080/08841241.2016.1269036

10. Papa A., Santoro G., Tirabeni L., & Monge F. (2018). Social media as tool for facilitating knowledge creation and innovation in small and medium enterprises. *Baltic Journal of Management*, *13*(3), 329–344. https://doi.org/10.1108/BJM-04-2017-0125

11. Wang Z., & Kim H. G. (2017). Can Social Media Marketing Improve Customer Relationship Capabilities and Firm Performance? Dynamic Capability Perspective. *Journal of Interactive Marketing*, *39*, 15–26. https://doi.org/10.1016/j.intmar.2017.02.004

12. Moro S., Rita P., & Vala B. (2016). Predicting social media performance metrics and evaluation of the impact on brand building: A data mining approach. *Journal of Business Research*, *69*(9), 3341–3351. https://doi.org/10.1016/J.JBUSRES.2016.02.010

13. Eibe Frank, Mark A. Hall and Ian H. Witten (2016). The WEKA Workbench. Online Appendix for "Data Mining: Practical Machine Learning Tools and Techniques", Morgan Kaufmann, Fourth Edition, 2016.