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Engagement on Twitter, a Closer Look from the Consumer Electronics Industry

Danilo Garcia-Rivera [1], Sebastián Matamoros-Rojas [1], Claudia Pezoa-Fuentes [1,*], Iván Veas-González [1] and Cristian Vidal-Silva [2]

[1] Ingeniería Comercial, Universidad Católica del Norte, Antofagasta 1240000, Chile; danilo.g.rivera@gmail.com (D.G.-R.); sebamatam@gmail.com (S.M.-R.); iveas@ucn.cl (I.V.-G.)
[2] Ingeniería en Informática, Facultad de Ingeniería, Ciencia y Tecnología, Universidad Bernardo O'Higgins, Santiago 8320000, Chile; cristianvidal@docente.ubo.cl
* Correspondence: cpezoa02@ucn.cl; Tel.: +56-552-355-767

Abstract: Engagement represents the commitment and bond between a brand and its customers, and achieving high levels of engagement is now a competitive advantage for companies. Determining the engagement index was a high-cost activity for organizations and consumers in the past decade due to the time and cost of data collection. The massive use of social networks such as Twitter allows organizations and consumers to collect data without large costs, and determining the engagement rate is more feasible today. This research determines the effect of different interactions on Twitter on engagement in the consumer electronics industry. The methodology used is a mixed qualitative and quantitative, descriptive approach by analyzing (by regressions) 95,000 tweets from the 30 companies at the Consumer Electronics Show 2020. The main results show that Twitter mentions represent a relevant factor in determining engagement. The contribution of this research lies in the generation of empirical evidence on engagement in the consumer electronics industry and the identification of the key variable of mentions and their effects on Twitter.

Keywords: Twitter; social networks; engagement; consumer electronics; business practices

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1. Introduction

Since the industrial revolution in the 17th century, which generated a profound change with the creation of the steam engine, we could now revive that change with the evolution of social networks and how companies relate to their environment from unidirectional communication from the companies to their clients to a bidirectional [1].

In the 1970s, the first email was sent, and it was in the 1990s when the web and social networks transformed the types of communication reflected in changes in life, ways of running companies, ways of producing, and the way of communication. Users are better informed where engagement is an important tool for companies to achieve high levels of engagement, being an objective for organizations because it involves interactions between customers and their brands [2].

Before the 1990s without massive use of the Internet, determining engagement rates required a lot of work, either in planning, data collection, and the analysis of results. During the last decade, social networks have been part of society with new tools for companies that want to innovate in marketing and cause a higher participation rate [3], promoting the use of electronic commerce [4].

The use of the Internet also enhances the use of social networks and the use of brand engagement self-concept brand communities [4] and trust [5], focusing on the type of non-transactional behavior [6], brands deepen their presence in brand awareness, engagement, and word of mouth [7].

The latest report from the Marketing Science Institute [8] points out that Twitter is a social networking service in which users post and interact with messages known as

"tweets". Twitter is a communication tool that many organizations use today to send tweets to many users and thus gain followers for their brands. The development of a brand in this social network has become a strategic tool [9].

Due to the constant change in social media trends, there are different methods to measure engagement [10–15] through Facebook [9,10]. The literature finds a void since social networks such as Twitter can deliver exhaustive information on companies [7,16], if optimal marketing planning is carried out. Facebook [9,10] gives a partial view of the effectiveness of the analysis [17].

The differential contribution of this manuscript is related to the generation of knowledge in the area of administration from the management of engagement with the application of variables tested and studied qualitatively in the research of the authors [9]. Who Mei et al. [18] defines the key variables for measuring engagement, but the authors do not test these variables quantitatively, which is a great opportunity to study the effectiveness of the analysis.

These variables have not been tested or studied quantitatively in the consumer electronics industry, revealing an important gap in the literature related to the measurement of the key variables of engagement. This research contributes to the deepening and understanding of engagement on Twitter, through the quantitative analysis of the variables selected in the study [18]. This research also confirms the confirmation of the key variables in the management of engagement on Twitter for correct decision-making for top management and large companies [8]. Who Mei et al. [18] define the key variables for measuring engagement, but the authors do not test these variables quantitatively, which is a great opportunity to study the effectiveness of the analysis. This allowed a better understanding of the measurement of engagement on Twitter with the measurement of these key variables specifically in the consumer electronics industry.

This research brings together 30 major companies in the consumer electronics industry presented at the Consumer Electronic Show 2020. More than 95,000 tweets were statistically analyzed using linear regressions. Since the consumer electronics industry publishes its new products on Twitter and through the different interactions seen in this study, it is possible to determine the engagement and measure the impact of these products among their followers, determining which interaction is more important to highlight compared to the others.

This work is organized as follows: Section 2 is the review of the literature that delves into social networks, Twitter and engagement. Section 3 describes the methodology, sample, data treatment and procedures, and data analysis. Section 4 highlights the results obtained from the descriptive analysis and multiple linear regressions. Section 5 shows the main pros and cons of the results obtained to end the discussion and ends with Section 6 where it is possible to make visible the conclusions, limitations, and future lines of research of the manuscript.

2. Materials Theoretical Background

2.1. Social Networks

Social networks are platforms that people use to establish networks or relationships with other people with whom they share some affinity, career, or connection in real life [19,20]. Thanks to the Internet, social networks have spread to new media such as mail, chat, forums, and communication tools in which people have an easier time keeping in touch [21]. With the explosion of the Internet [4], social relationship networks have evolved into large organizations and new media [10].

With the emergence of social networks, there is a time when we no longer talk about the mass media, but rather about the media outlets. These forms of communication include virtual spaces in which social networks and technological mechanisms of interaction between people are located [22]. Ros-Martín [23] defines the social network service on the Internet as "a web platform whose purpose is to create online communities by representing the personal connections in which users have one another" (p. 554). According to

Celaya [24], social networks are places on the Internet where various information is shared, which can be personal and professional, with acquaintances or anyone who is part of the network. Additionally, social networks have also managed to position themselves as the global electronic commerce station, where it is possible to share information about a brand and have a greater impact on the consumer through the use and attitude that the service or product delivery [25].

Social networks give a sense of identity to people through their characteristics. Thus, companies also took a role in this innovation of the Internet. Social networks give and restrict opportunities for the choice of each person and organization with which they wish to interact, and thus, the same people and organizations can create and destroy relationships, being through their actions that determine the structure of their own network [26].

In the areas of administration and management, social networks have become very popular, bringing a greater interest from marketing professionals [7], as it currently represents a transversal marketing channel that could be integrated into traditional marketing plans as a mix [6]. Becoming a competitive advantage for the company. Specifically, some attributes of companies' social media posts that elicit higher levels of consumer engagement help improve their social media marketing approaches [27]. For this reason, companies need their social networks to be included in their brand and communication strategies [28] since, in addition to giving access to thousands of people [11], social networks accentuate the opportunities for interaction between companies and their customers or consumers [3]. Thus, it is said that social networks function as an entertainment system [29], but also as an information system, assuming the characteristics of traditional media, but incorporating the interaction factor that it contributes to the business model [21].

2.2. Twitter

Twitter is a microblogging platform created in 2006 [30], which has received much attention for its ability to spread information to a large audience [31]. According to [30], Twitter is a microblogging platform created in 2006. They define microblogs as "brief comments that are usually delivered to a network of partners". Twitter became a tool for companies by delivering messages with a maximum of 280 characters and sharing them instantly to a network of followers or potential clients. Jansen et al. [24] explain how companies use microblogs in these three ways:

- Pre-purchase: using microblogs to read what customers want to say in the market research.
- Purchase: another way of using microblogs by the company is to send advertising and brand reinforcement messages.
- Post-purchase: refers to customer service, where companies can turn to these microblogging sites for continuous improvement in customer service and claims management.

According to [25], other characteristics define Twitter as a real-time platform since broadcast messages or microblogs are instantaneous. It is simple since users do not have to fill out tedious forms since they only answer questions when creating an account on the platform. You do not have to pay to use the Twitter platform to create and consume microblogs or messages. Twitter is a multiplatform system that we can access from any device with the Internet. That leads Twitter to a network of many levels since it helps different companies to grow by promoting their products on Twitter, which forms a pseudo-corporate network where Twitter is the center of this network. An important feature that Twitter offers is the free use [25] of APIs used to develop applications, create marketing strategies, or conduct research by extracting information directly from the source.

Twitter interactions are diverse, but the main one is the tweet that has the name of the message or microblog, making it the main Twitter communication tool. A tweet allows a maximum of 280 characters and the possibility of sharing photos, videos, and links to draw even more potential clients' attention. Another interaction is the retweet. This function allows expanding the original tweet, granting recognition to the original tweet's author,

and being responsible for the messages being quickly vitalized. Another interaction is the hashtag, which users use to search for the topics they are interested in, which, if people search for it sufficiently, becomes a trending topic [12]. According to Lovejoy et al. [26], certain interactions allow us to measure or explain the influence of a user on Twitter and which are also directly influencing engagement. These interactions are new mentions, number of public lists, new tweets, new retweets, number of tweets, and the age of the Twitter account.

2.3. Engagement

Engagement has been studied in different fields of science, from psychology [32], education [33], and management [28]. In marketing, engagement has focused on studying customer engagement with a particular brand [34,35].

Consumer engagement can be defined as "a psychological state that occurs through interactive experiences and mutual value creation of the consumer with a specific agent or focal object" [36] (p. 260). However, this new concept is subject to different interpretations, considering its motivational component and variable intensity [37]. The following table (Table 1) shows the different conceptualizations of the engagement concept from the consumer's perspective.

Table 1. Definitions and evolution of the consumer engagement concept.

Author	Page	Definition
[34]	(p. 256)	Engagement is defined as "the manifestations of a customer's behavior that has a brand or firm focus, beyond the purchase, because of motivational drivers".
[36]	(p. 260)	Engagement refers to "a psychological state that occurs by virtue of an interactive customer and mutual value creation of experiences with a focal agent/object (for example, a brand) in focal service relationships".
[35]	(p. 555)	Engagement is defined as "The level of motivational mental state, related to the brand and dependent on the context of a client, characterized by specific levels of cognitive, emotional, and behavioral activity in the interactions of the brand. It includes the themes of immersion, passion and activation".
[38]		Engagement refers to a psychological state and process that could lead to customer loyalty.
[14]		Engagement can be conceptualized as the state of being engaged, connected, involved, and interested in something.

Source: Own elaboration.

According to Table 1, we can deduce that consumer engagement is associated with a psychological state, the driver of a certain behavior toward a certain focal goal, resulting in customer loyalty. That is, consumer engagement implies a particular object (for example, a brand) and a subject (for example, consumer), and a valence (positive or negative) [36–39].

The increasing prevalence of social media represents an opportunity for an emerging approach from both academics and professionals to the concept of engagement on social media platforms [15,38] point out that engagement in social networks goes beyond transactions and can be defined as the manifestations of customer behavior focusing on social networks beyond the purchase due to motivational drivers. In other words, engagement is what customers feel about social media content and then what they do about it [40], which includes searching, commenting, and sharing content online [41,42]. Engagement represents a transition from the unidirectional reception of messages to the user's active participation in the response, creation, and distribution of information [43–45].

Recent research shows that customer engagement with companies improves customer relationships, brand attitude, corporate reputation and generates higher future purchase intentions and word of mouth [5,41–43,45,46].

3. Materials and Methods

In order to respond to the research objective, a descriptive study with a mixed approach (qualitative–quantitative) was developed. The qualitative approach was used to determine the companies that were part of the sample, their tweets, as well as the number of their followers, and their follow-up information. For the selection of the companies, the number of followers and their level of participation on Twitter were used as a reference. The research sample consisted of 30 companies (in Appendix A; Table A1) belonging to the consumer electronics industry, which presented at CES 2020. To determine the tweets, the number of followers, and follower information of the accounts of the selected companies, the Twitonomy tool was used (explained in the following section). Subsequently, under the quantitative approach, a descriptive statistical analysis was performed to obtain a count of the interactions generated by the companies. After this, the formula of Herrera-Torres et al. [47] was applied, where the engagement values of each company were obtained. Finally, Pearson's correlation coefficient was performed to determine the relationship between the variables under study, and then regressions were performed, using interactions and engagement. Minitab 18 and SPSS 25 statistical software were used for the analysis.

3.1. Data

The accounts of 30 companies (Appendix A, Table A1) and their tweets were selected. The 30 accounts are LG Electronics@LGUS, Huawei @Huawei, Samsung Electronics @Samsung, Sony @Sony, Xiaomi @Xiaomi, Motorola @Moto, HP @HP, ASUS @ASUS, Nokia @nokia, Microsoft @Microsoft, Dell @Dell, Lenovo @Lenovo, Intel @intel, Google @Google, AMD @AMD, Amazon @amazon, NVIDIA @nvidia, Logitech @logitech, Canon USA Corp. @canonusa, TCL USA @TCL_USA, Toshiba @toshibausa, OnePlus @oneplus, Philips @philips, Nintendo of America @nintendoamerica, NikonUSA @nikonusa, Bose @bose, Kodak @kodak, Panasonic Corp. @panasonic, Hitachi @hitachiglobal, Pebble @pebble.

To extract the information from the Twitter accounts, the Twitonomy tool was used, which works through the Twitter APIs so the information that is extracted is limited in terms of the number of tweets that can be extracted to a maximum of 3200 tweets for each selected brand, so the research has a total of 95,820 tweets and at the same time gives us different interactions such as mentions per tweet, listed/1000 followers, tweets per day, months of account created, tweets retweeted, which will be used for multiple linear regression analysis. The period used for data extraction was from the week of 21–27 September 2020. First, the data were obtained from the Twitonomy website and once the data had been collected, the database was created with the extracted values. Finally, the engagement formula was calculated for each company, values which were also added to the database.

3.2. Data Processing

To achieve this goal, the engagement value was first determined for each of the 30 companies, through the formula proposed by [47].

$$\text{Engagement on Twitter} = \frac{\text{Favorites + Mentions + Retweets}}{\text{Number of Tweets}} \quad (1)$$

Once the value of engagement was obtained, that which was indicated by [18] was used, to determine the effect of the interactions, which were subdivided into new mentions, number of public lists, new tweets, new retweets, number of tweets, and the age of the Twitter account. As these interactions are not explicit in the Twitonomy extraction, an adjustment was made so that they are related to those of the extraction.

A regression was constructed with the different forms of interaction that is summarized in the following Table 2.

Table 2. The adequacy of interactions of the literature with Twitonomy.

Form of Interaction Mei et al. [18]	Twitonomy	Definition
New mentions	Mentions per tweet	These are the new mentions that consider how many mentions there are for each new tweet.
Public list	Listed/1000 followers	These are the new public lists. The variable "Listed" considers the tweets beyond the analyzed tweets; that is, more than 3200 tweets per company. Therefore, Twitonomy provides the option to see an average of every 1000 followers that can be considered new public lists.
New tweets	Tweets per day	These are new tweets that consider how many new tweets on average there are per day.
New retweets	Tweets retweeted	This variable considers a total of tweets retweeted according to the tweets analyzed; therefore, they explain the new retweets as it only considers the retweets of the analyzed tweets.
Twitter account age	Months of account created	This variable considers a total of tweets retweeted according to the tweets analyzed; therefore, they explain the new retweets as it only considers the retweets of the analyzed tweets.

Source: Own elaboration.

The Materials and Methods should be described with sufficient detail to allow others to replicate and build on the published results. Please note that the publication of your manuscript implies that you must make all materials, data, computer code, and protocols associated with the publication available to readers. Please disclose at the submission stage any restrictions on the availability of materials or information. New methods and protocols should be described in detail while well-established methods can be briefly described and appropriately cited.

$$\begin{aligned} Engagement\ F1 = \beta_0 + \beta_1\ Mentions\ per\ tweet + \frac{\beta_2\ Listed}{1000\ followers} \\ +\beta_3(2)\ Tweets\ per\ day \\ +\beta_4\ Months\ of\ accounts\ created \\ +\beta_5\ Tweets\ retweeted + C \end{aligned} \tag{2}$$

In Figure 1, the summary of all methodology proposed in the research is observed.

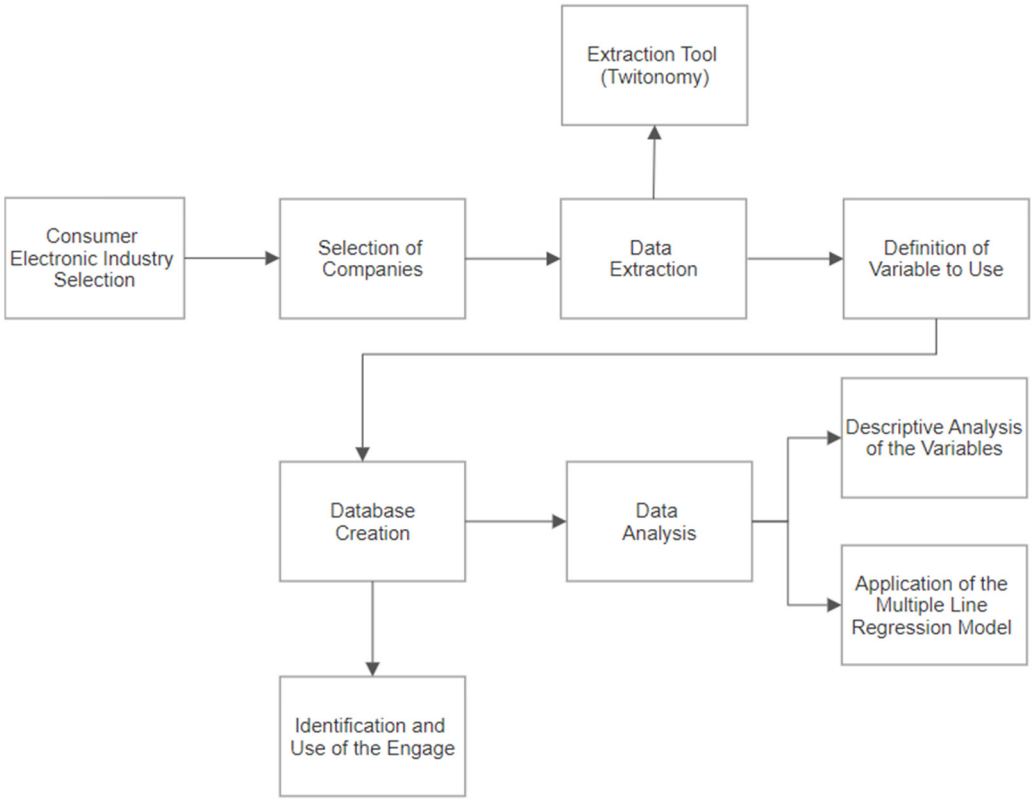


Figure 1. Methodological flow of the research.

4. Results

A descriptive analysis of the interactions mentioned by [26] and the engagement calculated by the formula of [35], and then multiple linear regression models are presented to analyze how interactions can explain engagement.

4.1. Descriptive Analysis of Variables

Table 3 presents the descriptive statistical analysis of the variable analysis in the study.

Table 3. Descriptive analysis of variales.

Descriptive Statistical	Number	Minimum	Maximum	Media	Standard Deviation	Variance
Engagement F1	30	1.095	1.9225	1.3932	0.2570	0.066
Months of accoumt create	30	57	163	123.10	26.655	710.507
Tweets retweeted	30	102	2892	1434.13	844.956	713,949.913
Mentions per tweet	30	0.1	1.06	0.6510	0.30937	0.096
Tweets per day	30	1.27	68.09	8.3980	14.0683	197.918
Listed/1000 followeres	30	0.71	20.92	5.3677	4.8984	23.9940

The interaction "Months of account created" allows you to see that the age of the accounts varies between 2 years and 2 months (Average = 123.10 and DE = 26,655); "Tweets retweeted", there are accounts that make a large number of retweets with a maximum of 2892 retweets (Average 1434.13 and DE = 844.956); "Mentions per tweet" (Average = 0.6510 and DE = 0.30937) is such that a mention is achieved every 2 tweets; "Tweets per day", there are accounts that achieve a maximum of 68 tweets in one day (Average = 8.3980 and SD = 14.0683); and finally, the interaction "Listed/1000 followers" has a minimum of 0.71, so there is an account that is not relevant (Average = 5.3677 and SD = 4.8984).

4.2. Pearson's Correlation Coefficient

When analyzing the result of the Pearson correlation coefficient, it is possible to determine which of the variables can have a positive or negative correlation depending on its coefficient. As shown in Table 4, there are variables whose correlation is negative, that is, if one increases the other would decrease, such as engagement F1 and tweets per day with a coefficient equal to −0.271 but note that its *p*-value is 0.148 so it is not statistically significant. However, the correlation between the variables mentions per tweet and retweeted tweets achieves a correlation of −0.758 and a *p*-value of 0.000 so it becomes statistically significant, which highlighted that these variables and tweets per day and retweeted tweets have a correlation of −0.531 and a *p*-value of 0.003 that is statistically significant, this shows that these variables are relevant to the study but does not demonstrate the objective of the study that is to demonstrate the relationship of engagement with different variables.

Table 4. Pearson's correlation coefficient.

	Engagement F1	Months of Account Created	Tweets Retweeted	Mentions per Tweet	Tweets per Day
Months of account created	0.173 0.361				
Tweets retweeted	0.046 0.809	−0.209 0.268			
Tweets per tweet	0.468 0.009	0.232 0.217	−0.758 0.000		
Tweets per day	−0.271 0.148	0.172 0.363	−0.531 0.003	0.385 0.036	
Listed/1000 followers	0.224 0.234	0.162 0.393	−0.037 0.847	0.116 0.540	−0.149 0.431

Source: Own elaboration.

Table 4 shows the model for the analysis of the study of the influence of interactions on engagement. It stands out that for the proper development of the regressions, the interactions were normalized through the Box–Cox transformation since both interactions did not present a normal distribution so in the following tables they will be shown as "Norm. Tweets per day" and "Norm.Listed/1000 followers".

4.3. Regressions

As shown in Table 5, the 1st model has an R-squared of 62.04%, which means that the model is largely explained by the interactions described. This first model highlights the influence of the variable "Mentions per tweet," with a coefficient of 0.967 and a value of *p* 0.000, which makes it statistically significant. To corroborate the importance of the interaction "Mentions per tweet," the interaction will not be considered in the following multiple linear regression model (see Table 5).

Table 5. First model summary.

S	R-Square		R-Square (Adjusted)		R-Square (Pred)
0.1740	**62.04%**		**54.13%**		**40.09%**
Concept	**Coef.**	**EE of the Coef.**	***t*-Value**	***p*-Value**	**FIV**
Constant	0.157	0.246	0.64	0.528	
Norm. Tweets per day	0.210	0.254	0.83	0.415	2.89
Norm. Listed/1000 followers	−0.0077	0.0507	−0.15	0.881	1.60
Mentions per tweet	0.967	0.164	5.91	0.000	2.45
Months of accounts created	0.0011	0.00131	0.88	0.388	1.18
Tweets retweeted	0.0002	0.000073	3.43	0.002	3.67

Source: Own elaboration.

Table 6 shows the interactions used previously (1st model) except for the "Mentions per tweet" interaction. This has been eliminated to check the real influence of the variable in the regression proposed in the methodology. Thus, it is observed how R-squared has decreased considerably to 6.88% and that none of the other interactions is statistically significant.

Table 6. Second model summary.

S	R-Square		R-Square (Adjusted)		R-Square (Pred)
0.267151	**6.88%**		**0.00%**		**0.00%**
Concept	**Coef.**	**EE of the Coef.**	***t*-Value**	***p*-Value**	**FIV**
Constant	1.056	0.296	3.56	0.002	
Norm. Tweets per day	0.122	0.388	0.31	0.757	2.88
Norm. Listed/1000 followers	0.0416	0.0767	0.54	0.593	1.55
Months of accounts created	0.00165	0.00201	0.82	0.419	1.17
Tweets retweeted	0.000008	0.000093	0.09	0.932	2.51

Source: Own elaboration.

In both Tables 4 and 5, it is concluded that the interaction "Mentions per tweet" has a significant influence on engagement when conducting a regression analysis. The latter, after putting into practice two regression models, one including the aforementioned interaction and the other model, excluding it.

5. Discussion

To establish the results, the research has determined that the "Mentions per tweet" have great importance when determining the engagement on Twitter and to obtain the engagement we have used the formula proposed by Herrera-Torres et al. [47]. Currently, this formula has remained in force, as in the work of [48] where they have applied it. Beyond this, the fact that there is a Twitter profile and that it interacts with users, i.e., with mentions, will generate more engagement in the network users. Therefore, the community and brand of the company on Twitter go hand in hand, especially as they interact with each [37].

There are other studies that also relate engagement with co-promoting the brand on Twitter, i.e., the official account of the brand and users that interactions [49]. The work of Itakura and Noboro [16] reviews the impact of multiple factors (31) on a smaller number of publications for the consumers' engagement with companies in ten sectors. Read et al. [49], based on the Hierarchy of Effects (HoE) theory, explore how relevant B2B companies use content goals (why), strategies (how), and tactics (what) on Twitter for the users' engagement. Similarly, Sabate et al. [8] apply Twitter to identify relevant factors such as extension, components, time slots, and themes of the publications for improving the customer engagement with Spanish automotive brands, specifically. Hence, two key actions within the application needed to generate a retweet of the publication and a mention of the official account, thus giving greater strength to the research already proposed. Even though we can clearly appreciate a relation between Twitter and consumer engagement, the work of Juntunen et al. [50]. Vinerean and Opreana [51] uses Facebook for measuring customer engagement considering various components such as involvement, commitment, customer participation, and loyalty.

Additionally, in the consumer electronics industry, it becomes relevant to include mentions in tweets to generate greater engagement in their followers. The results of the study by Itakura and Sonehara [16] indicate that "influencers" are the most mentioned and are the ones that generate greater reach in terms of reaching more people, so a strategy to achieve greater engagement is to use mentions of "influencers" such as famous people. As an example of this, Samsung does it through its advertising by making an alliance with the famous Korean group BTS to be part of their products or to be the face of the brand.

With this, they manage to reach a greater number of people and at the same time generate greater engagement.

6. Conclusions

There is a great change in the way marketing is conducted and how firms communicate with their customers, the research responds to the goal of determining the effect of different Twitter interactions on the engagement of the consumer electronics industry. With this, the interaction with the greatest influence, in the measurement by using engagement regressions, is "Mentions per tweet". The above is verified by two different models and an engagement formula, that its value is used as a dependent variable.

This research shows that Twitter is an important tool for companies in the consumer electronics industry, as they use Twitter as a marketing medium. In the social network, companies in the industry publish their new products through verified accounts, also being used as an instant and easy customer service platform.

When observing the results of the regressions, it is interpreted that in the first engagement model (F1), the "Mentions per tweet" stands out above all other interactions. However, it is found that when removing this interaction ("Mentions per tweet") in the second regression model, engagement (F1) is considerably reduced in terms of its R-square. Therefore, it is concluded that the interaction "Mentions per tweets" is relevant when using the engagement formula (F1). Thus, at the time of performing the engagement, companies part of Twitter must pay special attention to the mentions since, based on this study, they are the ones that generate the main interaction in the engagement.

For the correct use of the company's resources, it is suggested to academics, decision-makers, and managers to perform engagement management since it is a tool that provides great information about their clients, favoring loyalty and trust.

In conclusion, the research responds to the goal of determining the effect of different Twitter interactions on the engagement of the consumer electronics industry. With this, the interaction with the greatest influence, in the measurement by using engagement regressions, is "Mentions per tweet". The above is verified by two different models and an engagement formula, that its value is used as a dependent variable.

The limitations of the study lie in the cross-section of the data with its limited time of an industry, which is the consumer electronics industry, which does not allow a comparison with different firms with different economic activity, nor to track the variables over time, only one social network was taken which was Twitter, leaving out social networks such as Facebook, Instagram, Linkedln, Snapchat, and the amount of data that was possible to extract with the Twitonomy tool. That allowed 3200 tweets per account.

For future research, it is recommended to try new engagement formulas to check the real influence of the mentions in the calculation, especially formulas that do not contain the mentions within them. It is also recommended to investigate new variables (interactions) that were not considered in this study, mainly because no literature was found to support these variables. Some that were excluded were hashtags or links. Additionally, it is recommended to try the statistical models developed in this research in different economic sectors, since the variables can behave differently in other types of industries as well as in different social networks such as Instagram and Facebook.

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Appendix A

In the following table, it is possible to see the name of the company with its respective active Twitter account.

Table A1. Active Twitter accounts.

Names of the Companies	Names on Twitter
LG Electronics	@LGUS
Huawei	@Huawei
Samsung Electronics	@Samsung
Sony	@Sony
Xiaomi	@Xiaomi
Motorola	@Moto
HP	@HP
ASUS	@ASUS
Nokia	@nokia
Microsoft	@Microsoft
Dell	@Dell
Lenovo	@Lenovo
Intel	@intel
Google	@Google
AMD	@AMD
Amazon	@amazon
NVIDIA	@nvidia
Logitech	@logitech
Canon USA Corp.	@canonusa
TCL USA	@TCL_USA
Toshiba	@toshibausa
OnePlus	@oneplus
Philips	@philips
Nintendo of America	@nintendoamerica
NikonUSA	@nikonusa
Bose	@bose
Kodak	@kodak
Panasonic Corp.	@panasonic
Hitachi	@hitachiglobal
Pebble	@pebble

Source: Own elaboration.

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