A Content Marketing Framework to analyze Customer Engagement on Social Media: a digital analysis of the case

*Explicas-me*

Sofia Maria do Rêgo Balio

Internship Report
Master in Management

Supervisor:
Beatriz da Graça Luz Casais

September, 2017
Biographical Note

Sofia Maria do Rêgo Balio was born in Porto on January 11th of 1994.

On the year of 2012 she enrolled the School of Economics and Management of University of Porto in the bachelor of Management. After three years, in 2015, she graduated with a final grade of 15 (fifteen) and in the same year she applied to the Master in Management in the same faculty. After being selected, she also participated in the Double Degree Program between her university and Kedge Business School in Marseille.
Acknowledgments

I would like to thank to some people who accompanied me in this journey and that made possible for me to finish this stage of my academic life.

I thank to my mentor, professor Beatriz Casais, who have helped since the beginning and that was available every time necessary. Thank you for all the suggestions and contributions that improved this work.

To my boyfriend, that always motivated me and always encouraged me to give my best. Thank you for all your help and for making me achieve my goals.

I thank to Tiago and Renato, my mentors during my internship in Explicas-me. Thank you for this amazing opportunity and for the time invested in me. I am certain I will be a better professional due to your advices and teachings.

To my friend João, I thank him for his generosity in giving me his time to help me and give guidance when I needed.

I thank to my family for all the support, understanding and for always believing in me. Thank you for always expecting the best for me.
Abstract

Building relationships with customers is vital for the success of brands, specially nowadays. The appearance of social media, in particular the social networking sites, allow for a natural environment where a two-way communication between users and brands is encouraged. Thus, brands are seeking to increase their customer engagement on social media. Therefore, understanding which factors have an influence on customer engagement becomes crucial.

Factors influencing customer engagement on Facebook have been extensively analyzed but there are barely evidences if those factors also have an effect on customer engagement on Instagram, a platform becoming important for business. Additionally, new metrics of customer engagement on Facebook, namely the number of reactions and shares haven’t yet been significantly analyzed by the current literature. Consequently, there is a gap on the academic research concerning the factors influencing customer engagement on Instagram. Moreover, current frameworks don’t capture the existence of new metrics of customer engagement on social media.

The aim of this work is to analyze how factors such as post type, time frame, message interactivity and post appeals influence customer engagement and therefore conclude the best practices that brands can apply when creating their content. Additionally, this study will propose a framework that, contrary to previous studies, includes both soft and hard criterion. A digital analysis was conducted including a content analysis of the post appeals and of the message interactivity as well as multiple linear regressions in order to explore the influence of the factors mentioned above on customer engagement.

Through the analysis of this study, it was possible to conclude which factors can be used in order to increase customer engagement on social media, namely message interactivity and certain post appeals. Furthermore, different conclusions are withdrawn when comparing Facebook to Instagram, proving empirically that different social networking sites have distinct influence on customer engagement. This work will be relevant for their content and social media strategies and will hopefully, help brands increase their customer engagement.

Key-words: Customer Engagement, Social Media, Content Marketing

JEL-code: M310
Resumo

Criar relações com os clientes tornou-se um fator crucial para uma marca ser bem sucedida no panorama atual do mundo empresarial. O aparecimento dos social media, em particular dos social networking sites, permitiu e forneceu um ambiente natural onde uma comunicação aberta entre os utilizadores e as marcas é encorajada. Desse modo, as marcas procuram criar e maximizar o seu customer engagement nos social media, ao ter em consideração quais os fatores que propiciam melhores resultados.

Os fatores que influenciam o customer engagement no Facebook têm sido analisados extensivamente, no entanto, poucas evidências existem sobre se esses fatores têm influência no customer engagement no Instagram. Adicionalmente, novas métricas de customer engagement no Facebook, como o número de reações e partilhas, ainda não foram suficientemente analisadas pela literatura atual. Consequentemente, existe uma lacuna no trabalho académico no que diz respeito aos fatores que influenciam o customer engagement no Instagram. Num outro aspeto, os frameworks utilizados nos estudos passados não incorporam a existência de novas métricas de customer engagement.

O objetivo deste trabalho passa por analisar como é que fatores como o tipo de post, o tempo, a interatividade do conteúdo e os apelos das publicações influenciam o customer engagement, e, assim, concluir quais as melhores práticas que as marcas podem adotar na criação dos seus conteúdos. Desta forma, este estudo irá propor um framework que, ao contrário dos estudos anteriores, inclui critérios soft e hard. Neste âmbito, foi realizada uma análise digital incluindo uma análise de conteúdo aos apelos das publicações e à interatividade das mesmas, bem como múltiplas regressões lineares para explorar a influência destes fatores no customer engagement.

Através da análise deste estudo, foi possível concluir quais os fatores que devem ser usados para aumentar o customer engagement nos social media, tais como a interatividade do conteúdo e certos apelos. Além disso, as conclusões retiradas para o Facebook são diferentes das conclusões retiradas para o Instagram, provando que, de facto, diferentes plataformas de social media têm um impacto distinto no customer engagement. Este trabalho irá ajudar as marcas a adaptar as suas estratégias de social media e, por consequência, aumentar o seu customer engagement.

Palavras-chave: Customer Engagement, Social Media, Content Marketing

Código JEL: M310
# Table of Contents

Biographical Note ................................................................................................................. i

Acknowledgments ................................................................................................................... ii

Resumo .................................................................................................................................. iv

Abstract ................................................................................................................................. iii

1. Introduction ......................................................................................................................... vii
   1.1 Motivation for the theme ................................................................................................. 1
   1.2 Relevance of the topic ..................................................................................................... 1
   1.3 Objective of the research ............................................................................................... 2
   1.4 Structure of the document ............................................................................................. 2

2. Literature Review .................................................................................................................. 3
   2.1 Customer Engagement .................................................................................................... 3
      2.1.1 Concept and Overview ............................................................................................ 3
      2.1.2 Metrics of customer engagement on social media .................................................. 6
      2.1.3 Determinants of customer engagement on social media ........................................ 7
   2.2 Social Media .................................................................................................................. 13
      2.2.1 Definition and Overview ......................................................................................... 13
      2.2.2 Facebook ................................................................................................................ 16
      2.2.3 Instagram ............................................................................................................... 14
      2.2.4 Advantages of the use of Social Media for brands .................................................. 17
   2.3 Content Marketing .......................................................................................................... 18

3. Methodology ......................................................................................................................... 21
   3.1 Conceptual Framework ................................................................................................... 21
      3.1.1 Dependent Variables ............................................................................................... 21
      3.1.2 Independent Variables ............................................................................................ 22
         3.1.2.1 Post Type ........................................................................................................... 22
         3.1.2.2 Time Frame ...................................................................................................... 23
         3.1.2.3 Message Interactivity ....................................................................................... 23
         3.1.2.4 Post Appeal ...................................................................................................... 24
      3.1.6 Control Variables ...................................................................................................... 24
   3.2 Digital Analytics ............................................................................................................. 26
   3.3 The company Explicas-me .............................................................................................. 28
3.3.1 The Social Media Strategy of Explicas-me ........................................ 28
3.3 Data Collection .......................................................................................... 30
3.5 Coding ........................................................................................................ 31
3.4 Sample ......................................................................................................... 33

4. Results ........................................................................................................... 34
4.1 Content Analysis ......................................................................................... 34
4.1 Descriptive analysis .................................................................................... 41
4.2 Likes model on Facebook .......................................................................... 42
4.3 Reactions model on Facebook .................................................................... 45
4.4 Comments model on Facebook ................................................................ 47
4.4 Shares model on Facebook ....................................................................... 49
4.5 Likes model on Instagram ......................................................................... 50

5. Discussion of the findings ............................................................................ 53

6. Final Remarks ............................................................................................... 58
6.1 Conclusion ................................................................................................... 58
6.2 Contributions and theoretical and managerial implications .................. 59
6.3 Limitations and suggestions for future research ..................................... 61

References ....................................................................................................... 62

Annexes ............................................................................................................ 69
List of Tables

Table 1 - Engagement definitions ................................................................. 5
Table 2 - Specific characteristics of each SNS .................................................. 17
Table 3 - Hypothesis and Research Questions .............................................. 24
Table 4 - Coding instrument: post appeals ..................................................... 32
Table 5 - Frequency of post appeals on Facebook ........................................... 34
Table 6 - Frequency of post appeals on Instagram .......................................... 34
Table 7 - Descriptive statistics of the dependent variables on Facebook .......... 42
Table 8 - Descriptive statistics of the dependent variables on Instagram .......... 42
Table 9 - Descriptive statistic of some independent variables ........................ 42
Table 10 - Estimation Results for the likes model on Facebook ....................... 43
Table 11 - Errors' Analysis for the likes model on Facebook ............................ 44
Table 12 - Estimation Results for the reactions model on Facebook ................. 45
Table 13 - Error's Analysis for the reactions model on Facebook ...................... 46
Table 14 - Estimation Results for the comments model on Facebook ............... 47
Table 15 - Error's Analysis for the comments model on Facebook ................... 48
Table 16 - Estimation Results for the shares model on Facebook ..................... 49
Table 17 - Error's Analysis for the shares model on Facebook .......................... 50
Table 18 - Estimation Results for likes model on Instagram ............................. 50
Table 19 - Error's Analysis for the likes model on Instagram ........................... 51
Table 20 - The impact of each post appeal on the dependent variables ............ 56
List of Figures

Figure 1 - Framework to analyze customer engagement on Instagram .................. 25
Figure 2 - Framework to analyze customer engagement on Facebook.................. 26
Figure 3 - Measurable components to estimate the value of the content on social media
................................................................................................................................. 27
Figure 4 - Demographic data about the Facebook fans of Explicas-me .................. 29
Figure 5 - Pride appeal on Facebook ..................................................................... 35
Figure 6 - Motivation appeal on Facebook ............................................................ 36
Figure 7 - Challenge appeal on Facebook .............................................................. 37
Figure 8 – Sad appeal on Facebook ....................................................................... 38
Figure 9 - Being Happy appeal on Facebook .......................................................... 38
Figure 10 - Humor appeal on Facebook ................................................................. 39
Figure 11 - Parenting appeal on Facebook ............................................................. 40
Figure 12 - Education appeal on Facebook ............................................................ 40
Figure 13 - Motivation appeal on Instagram ......................................................... 41
Figure 14 - Humor appeal on Instagram ............................................................... 41
Figure 15 - Response-inviting content on Instagram .......................................... 41
Figure 16 - Challenge appeal on Instagram .......................................................... 41
Figure 17 - P-P Plot of Standardized Residual (regarding the likes model on Facebook) .................................................................................................................................................. 44
Figure 18 - P-P Plot of Standardized Residual (regarding the reactions model on Facebook) ........................................................................................................................................ 46
Figure 19 - P-P Plot of Standardized Residual (regarding the comments model on Facebook) ........................................................................................................................................ 48
Figure 20 - P-P Plot of Standardized Residual (regarding the shares model on Facebook) .................................................................................................................................................. 50
Figure 21 - P-P Plot of Standardized Residual (regarding the likes model on Instagram) ........................................................................................................................................ 52
Abbreviations

SNS – Social Networking Site
SNSs – Social Networking Sites
URL - Uniform Resource Locator
OLS – Ordinary Least Squares
eWOM – Electronic Word of Mouth
GIF - Graphics Interchange Format
1. Introduction

1.1 Motivation for the theme

Several companies strive to increase their customer engagement on social media, and thus analysis is vital in order to identify what can be done better. However, it is not clear yet how factors are influencing customer engagement.

Through my internship experience in Explicas-me, it was possible to conclude that there were no quantitative analytical tools that could give insights about how certain factors were influencing the customer engagement on the social media platforms. It was observable that content wasn’t getting the same customer engagement but there was no analytical procedure in place to understand what were the factors behind that different behaviors, and thus improvements on content strategies were difficult to make.

1.2 Relevance of the topic

Social media has been increasing its presence in our daily lives and therefore it has introduced various opportunities to companies to exploit different ways of improving their business. As so, social media has also been increasing its importance in the business world (Ngai et al., 2015, Phua et al., 2017). The main advantage is the possibility of a two-way communication between companies and customers, encouraging the customer engagement on social media (Malthouse et al., 2016).

Customer engagement is crucial for brands as it allows, in the long term, to the increase of brand loyalty that would consequently influence the purchase behavior of customers. Additionally, is it through customer engagement that brands can create emotions and relationships with their customers (Barger et al., 2016). Thus, is it vital for companies to understand how they can better interact with their online community and what factors influence the customer engagement. Academic research on this field, despite being common, does not capture the continuous development in terms of metrics, features of social networking sites and new platforms (Coelho et al., 2016, Dessart et al., 2016).

Both Facebook and Instagram are constantly changing and thus the academic field is also in a permanent need to renew its conclusions and results. As so, this study enters the wide range of papers that covered the social networking sites topics, but in a deeper and more concise sub-subject that lacks in terms of academic studies: the customer engagement on Facebook and Instagram.
1.3 Objective of the research

This study aims to help managers and brands to better analyze their customer engagement, in particular, to understand the influence that certain factors have on the content that brands share with their customers.

Post type, time frame, message interactivity and post appeal were considered as the four types of factors influencing how customers express their engagement through the likes, reactions, comments and shares on Facebook and Instagram. Previous studies have only focused on likes and comments (De Vries et al., 2012, Sabate et al., 2014, Erkan, 2015, Coelho et al., 2016), and therefore, this study will contribute with more in-depth insights by adding the number of reactions and shares as metrics of customer engagement on social media. Additionally, this work will narrow the gap concerning the knowledge about how these factors influence customer engagement on social media platforms beyond Facebook, by extending the analysis to Instagram (Carah and Shaul, 2015). In summary, this study aims to upgrade the past studies according to the evolution of the social networking sites and to answer the following question:

*What factors should be taken into consideration and what is the impact of each one on the customer engagement on Facebook and Instagram?*

1.4 Structure of the document

The structure of this study will follow with a next section focused on the literature review. Concepts such as customer engagement, social media and content marketing will be explained and defined, followed by the third section where a presentation of the framework will be performed. In this section, the factors and variables used will be introduced as well as the hypothesis and research questions of this study. This section will also address the methodological aspects, encompassing information about the company, data collection, coding procedures and method. Afterwards results and managerial implications will be discussed as well as some limitations and suggestions for future research.
2. Literature Review

In this chapter, concepts such as customer engagement, social media and content marketing will be presented as well as related theories that are important for the discussion of this work. Moreover, similar studies and their findings and results will also be discussed along with the identification of the factors that have an influence on customer engagement on social media.

2.1 Customer Engagement

2.1.1 Concept and Overview

One of the key factors of success for business nowadays is the ability to create and maintain long term relationships with customers. This has been a concern and a goal for managers and brands since a long time but the appearance of social media and the evolution of Web 2.0 highlighted the importance of establishing interactions with customers (Malthouse et al., 2016). Thus, customer engagement is a relevant topic for managers across all industries and companies.

Customer engagement presents several advantages for brands since it is seen as a factor that drives better organizational performance, increases sales, profitability and customer loyalty (Bowden, 2009). Gambetti and Graffigna (2010) also argue that customer engagement plays a key role in having a competitive advantage and that due to the change of customers’ role in the buying process, companies have to adapt and respond to their new needs (the desire of co-create brand content, interact with other customers and have emotional experiences). Similarly, Verhoef et al. (2010) discuss that the role of customers has changed over the past few years as they have become more active and participate, not only in the buying process but also in activities provided by brands and/or initiated by themselves.

As pointed out by both van Doorn et al. (2010) and Sashi (2012), customer engagement goes beyond the simple act of purchase as customers now are deeply involved with brands. For instance, customers who are engaged and have a relationship with the brand are more likely to give good feedback about their experience with family and friends which generates word-of-mouth about the brand. Consequently, they could become brand advocates that generate value for the brand. Thus, customer engagement isn’t static, but instead, is a process of interactions that goes beyond the moment of the purchase (Verhoef et al., 2010).
Nevertheless, customer engagement can also have a negative impact on brands. As stated before, if customers start sharing negative eWOM, for instance, brands will suffer negative publicity and potential customers could be pulled away. Thus, it is crucial for brands to properly manage customer engagement (D. Hollebeek et al., 2014).

Despite its relevance on academic literature and on the business world the concept of engagement has not yet one definition. Instead, it is the aggregation of several concepts that are linked, as it can be seen in Table 1.

First and foremost, the concept of engagement itself has already more than one interpretation or definition. Frequently, when defining engagement, authors refer to a “psychological state” (Wang et al., 2017, p. 150). Higgins (2006) posited it as the action of “being involved” and “interested in something” (p. 442). In the context of social media, there is also the concept of user engagement that is defined as the willingness of people in participating in conversations with their friends, online (Oliveira et al., 2016).

Likewise, customer engagement has also been having a long journey in the academic field. Over the last decade it has been appearing as a topic of interest repeatedly and has been analyzed by countless authors in different areas (Maslowska et al., 2016). One of most in-depth definitions was suggested by Brodie et al. (2011) in which customer engagement was described as a psychological state that needs some specificities to happen and that is caused through an interaction between customer experiences and an object (that could be a brand, for instance). It is also suggested that a co-creative dimension is present. Morgan et al. (2012) also contributed for the academic field and stated that customer engagement could be triggered by the organization but also by the customer and defined this term as the “intensity of an individual’s participation” (p. 133) with the activities provided by the company or with its offerings.
<table>
<thead>
<tr>
<th>Authors</th>
<th>Concept</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowden (2009)</td>
<td>Customer Engagement Process</td>
<td>The psychological process that models the underlying mechanisms by which customer loyalty forms for new customers of a service brand as well as the mechanisms by which loyalty may be maintained for repeat purchase customers of a service brand.</td>
</tr>
<tr>
<td>Higgins and Scholer (2009)</td>
<td>Engagement</td>
<td>The state of being involved, occupied, fully absorbed or interested in something, generating the consequences of a particular attraction of repulsion force.</td>
</tr>
<tr>
<td>van Doorn et al. (2010)</td>
<td>Customer Engagement Behaviors</td>
<td>The customer’s behavioral manifestation toward a brand or firm, beyond purchase, resulting from motivational drivers.</td>
</tr>
<tr>
<td>Gambetti and Graffigna (2010)</td>
<td>Engagement</td>
<td>The marketing-based concept of engagement is defined through sub-forms: consumer, customer, brand, advertising and media engagement.</td>
</tr>
<tr>
<td>Hollebeek (2011)</td>
<td>Customer Brand Engagement</td>
<td>The level of a customer’s motivational, brand-related &amp; context-dependent state of mind characterized by specific levels of cognitive, emotional and behavioral activity in brand interactions.</td>
</tr>
<tr>
<td>Brodie et al. (2011)</td>
<td>Customer Engagement</td>
<td>A customer’s psychological state induced by the individual’s specific interactive experiences with an engagement object (for example, a brand).</td>
</tr>
<tr>
<td>Morgan et al. (2012)</td>
<td>Consumer Engagement</td>
<td>The intensity of a consumer’s participation and connection with the organization’s offerings and/or its activities</td>
</tr>
<tr>
<td>Hollebeek et al. (2014)</td>
<td>Consumer Brand Engagement</td>
<td>A consumer’s positively valenced cognitive, emotional and behavior brand-related activity during, or related to, specific consumer/brand interactions.</td>
</tr>
</tbody>
</table>

Source: Adapted and extended from Brodie et al. (2011) and Hollebeek (2011)
2.1.2 Metrics of customer engagement on social media

As suggested by previous studies (Pletikosa Cvijikj and Michahelles, 2013, Sabate et al., 2014, Kim and Yang, 2017), users can engage on Facebook through three distinct behaviors: liking, commenting and sharing. Regarding Instagram, the main behaviors of engagement are liking and commenting (Erkan, 2015, Coelho et al., 2016).

Notwithstanding, it is proposed by Kim and Yang (2017) that these behaviors don’t have the same weight and don’t represent the same level of engagement. Neither for the customers nor for the algorithms of Facebook and Instagram. Consequently, it is relevant to include all of them when studying the costumer engagement on an environment such as social media.

Both social networking sites (from now on SNSs) have an internal algorithm that is in charge of analyzing each post that is made. Based in that analysis, the algorithm then ranks them and decides which posts will appear in the News Feed or Timeline of users. This algorithm is constantly changing and always incorporating new variables, but one of the key criteria is the user interaction which is determined by the number of likes, comments and shares that a post receives. Furthermore, it is thought that a share is equivalent to 2 comments and that each comment is equivalent to 7 likes (Wagner et al., 2017).

In regard to the customer effort, Kim and Yang (2017) also propose that these three behaviors require a different amount of intensity. The like is the behavior that requires the lowest cognitive effort, once that it can be done through a simple click. On the contrary, a comment needs more commitment from the user, since he will have to express himself through words or emojis. Sharing represents the highest level of effort. On one hand, when a user shares a post, it will appear both on the News Feed and on his profile, while when someone comments a post, it will only appear in the News Feed and disappear after some time. On the other hand, as the shared post will appear on the profile of the user, it could indicate that it is part of the user’s self-presentation. Online users tend to be very careful when it comes to their self-presentation. Therefore, it could indicate that a higher level of effort is required as it may be a strategic and thought behavior.

It could be argued that through the like button on Facebook, users can express a variety of emotions since happiness and sympathy to disappointment and anger (Wang et al., 2017). And, in fact, recently, Facebook has launched a new engagement featured called the Reactions. Reactions are a variation of the like button. Instead of the traditional like button that could mean a wide range of emotions, now users can directly and
publicly demonstrate what emotion do they feel towards a post. This new feature of Reactions includes *Like, Love, Haha, Wow, Sad* and *Angry* (Facebook, 2016).

Reactions are a powerful measure and are a more precise indicator of how users feel about a given content. This is particularly important for brands, once they can get a deep knowledge on how their products are perceived online or how their community feels about their content strategy. Consequently, brands will have more opportunities to adjust and to exploit different approaches of communication. This feature was launched in 2013 and in April of 2016, Facebook added the Reactions metrics into the public API (application programming interface). This is an indication that indeed reactions are now part of the metrics that should be analyzed and that brands should pay attention to them (Socialbakers, 2016b).

As it was suggested by Swani and Milne (2017) it would be interesting to investigate the effect of this new type of interaction on customer engagement on social media. Also, as there are more forms of engagement beyond likes and comments, it is crucial to include and analyze this matter more extensively. However, barely no literature was found on the thematic of establishing this relationship.

Most the authors so far still only consider the number of likes and comments as their dependent variables (Sabate et al., 2014, Erkan, 2015, Coelho et al., 2016, Kim and Hull, 2017). More recently, authors such Wagner et al. (2017) and Wang et al. (2017) also incorporate into their conceptual framework the shares as a dependent variable, which, as explained above, is one of the behaviors that users have to engage on SNSs.

### 2.1.3 Determinants of customer engagement on social media

In terms of previous research regarding customer engagement and social media, several studies were conducted. De Vries et al. (2012) were one of the first academics analyzing empirically what were the factors that drive brand post popularity. Prior to their study, this topic had already aroused the interest of others academics. Yet, the studies were mostly descriptive and didn’t have an empirical perspective.

In the conceptual framework proposed by De Vries et al. (2012), the brand post popularity was measured through the number of likes and the number of comments. As determinants of it, they suggested that the vividness and interactivity of the brand post should be taken into consideration as well as the position of the post in the brand fan page. Additionally, they argued that the valence of comments could also have an impact on the brand post popularity, as a positive comment could improve the interest of a post. Finally,
as the content of a post could be either informational or entertaining, the model also incorporated this dimension.

In respect to the results they found out that in order to increase the number of comments, managers should create highly interactive posts, such as posts with a question to encourage the response of users. However, it was also empirically proven that this type of posts are negatively related to the number of likes. This study made a crucial contribution to the academic field and contributed with important insights for managers but they also pointed out some limitations such as not incorporating other SNSs (De Vries et al., 2012).

De Vries et al. (2012) wasn’t the only work on this field as other studies followed and several factors emerged as determinants of the customer engagement on social media. Sabate et al. (2014) even made a distinction between soft criterion and hard criterion. The first one takes into consideration semantic and interpretation aspect behind the message of the post. On the other hand, hard criterions are the ones that don’t require a subjective interpretation and that can be quantified.

A group of studies have focused only on soft criterions and have analyzed the effect of such post categories as advertising, fan, events, information and promotion (Coelho et al., 2016) or the post appeals as emotional and utilitarian (Wagner et al., 2017). Another group only analyzed hard criterion by studying the content richness taking into consideration if the post was an image, a video or a link and the time frame depending on the time of publication and the day of the week of publication (Sabate et al., 2014). Some who went deeper, developed their conceptual framework including both soft and hard criterion. For instance, Kim and Yang (2017) studied how different message features could impact the engagement on social media. They argued that both the form (text, photo, audio, video) and message interactivity defined as if the message was response-inviting or not, should be criterions in their framework, for example.

### 2.1.3.1 Post Type

Concerning post type, which is a hard criterion, it has been studied by a few authors. The results concerning its impact prove its relevance once that most of the studies show that this category is a significant predictor of the measures of customer engagement (Pletkosa Cvijikj and Michahelles, 2013, Sabate et al., 2014, Kim and Yang, 2017, Swani and Milne, 2017). However, when analyzing the results of these studies, it is also possible to see the variety of different conclusions. For instance, Kim and Yang (2017) showed
that photos have a negative impact on the number of comments while Pletikosa Cvijikj and Michahelles (2013) showed the opposite. These specific studies had focus on different industries and companies as the object of study, which may explain the contrary conclusions, among other factors. Nevertheless, this indicates that this kind of study is relevant through the years and the academic research still needs different industries and countries incorporated in the analysis, in order to have more solid results.

In past studies, post type, have been related with the vividness of the posts. Academics argued that vividness represents the richness of the features of a post (De Vries et al., 2012). In other words, this richness is the breadth and depth of a message that stimulates different senses of the user. For instance, when a brand posts an image with contrasting colors or an interesting link to another website, the attractiveness of the post can increase. By stimulating different senses, the different post types can potentially condition the behavior towards the posts which consequently, affects customer engagement (Sabate et al., 2014).

De Vries et al. (2012) suggested that the vividness of each post should be divided into different levels. The low level of vividness was defined as a photo or image, the medium level was an event and the highest level was a video. One could argue that defining different levels of vividness can lead to potential subjective bias, because there is no certainty on how users will perceive it (Sabate et al., 2014).

2.1.3.2 Time frame

Previous research has also studied the effect of time on customer engagement, as it is of extreme importance for brands to know when to post on SNSs, as pointed out by the literature (Pletikosa Cvijikj and Michahelles, 2013, Sabate et al., 2014). Academics have studied time frame through mainly, three different perspectives: the first one takes into account either the post is published on weekdays or during the weekend; the second one argues about the influence of the time of publication (hours) and finally, the third one considers the seasonality of the post through the analysis of the different months of the year.

Regardless the different views and results, the consensus among the authors is that, in an environment such Facebook or Instagram, where the News Feed or Timeline is always receiving new content, brands must take into consideration the influence of time on customer engagement (Pletikosa Cvijikj and Michahelles, 2013, Coelho et al., 2016).
The most frequent perspective is the contrast between weekdays and weekends. Wagner et al. (2017) and De Vries et al. (2012) included this as a control variable and Sabate et al. (2014) and Pletikosa Cvijikj and Michahelles (2013) studied it as one of the independent variables of their models. Some studies showed that this variable had no impact while others showed that posts during weekdays had more customer engagement. Moreover, although Sabate et al. (2014) had included both weekdays and time of publication, their model was only able to establish a connection between the time of publication and the number of comments. This indicates that, despite previous efforts, work on this field is still needed.

The second approach was implemented on the work of Sabate et al. (2014) and Pletikosa Cvijikj and Michahelles (2013) who suggested that users were more active on the Internet during peak hours (the period when users were more active on SNS). Contrary to what was expected, on the work of Pletikosa Cvijikj and Michahelles (2013), it was found that posts during peak hours have a negative effect on engagement. The authors state that this probably happens because during peak hours, users want to interact with their friends and not with brands. As a consequence, it is suggested that companies should post during the period with low activity (off peak hours) in order to increase customer engagement.

Coelho et al. (2016) applied the third perspective and studied the seasonality as a control variable. The work included months from January to August and showed that different months implied different behaviors, proving that customer engagement is influenced by the month a post is published. On Facebook, some months had a positive effect while others a negative one. In the case of the number of likes, months such as March, April, May and June had one of the most powerful increases and the number of comments also increased during February, March, April and July. The authors believe that this results could be explained by the existence of a national holidays and the vacation period of the country of the companies surveyed. On Instagram the impact, although not the same for every month, was all positive.

2.1.3.3 Interactivity

There is a massive amount of content on social media, but not all receive the same engagement. Another key factor is the perceived interactivity that a user have (Kim and Yang, 2017). In other words, the perception that an online user have on the
communication that he or she can establish with the brand is decisive to create engagement. This communication should happen in a two-way dialogue, be responsive and controllable (Mollen and Wilson, 2010).

Interactivity has been a topic of interest for the past few years and a lot of definitions and categories were suggested and added to the discussion. Although there is no agreement on the definition, there is a consent about its importance in communication and in the maintenance of relationships (Kim and Yang, 2017). Ariel and Avidar (2015), show that there are three common perspectives about interactivity: it could be seen as a “perception-related variable”, as a “process-related variable” or as a “medium characteristic”. From their point of view, interactivity is part of the communication process. This is, as interactivity is “an attribute of the process of communication itself”, it is present on traditional media as well as in new media platforms. It is acknowledged that new media can facilitate the interactivity but the main predictor of the degree of interactivity will rely on the “process of message transition and reciprocity”. Go and Bortree (2017) also believe that social media enables message interactivity by providing several ways in which organizations can communicate with their audience.

In an environment as Facebook and Instagram, where all the organizations have the same opportunities in terms of technological aspects in order to influence interactivity (Kim and Yang, 2017), the perceived interactivity does not depend on technology but on the degree to which brands decide to take actions and use the tools available to engage in a two-way communication (Lee and Park, 2013).

2.1.3.4 Post appeal

Post appeal have also received attention from the academic field and its relationship with customer engagement have been suggested as well as tested. The first authors trying to study how the message appeal can influence the way consumers are persuaded, focused on two main approaches, that although being different aren’t mutually exclusive.

One of the approaches had its focus on the importance of factual information. In this view, the rational, functional and informational dimensions lead to a positive behavior of users by sustaining their decisions on logic and reason (Puto and Wells, 1984). The other approach had the emotions as the focus and in this case, the content could take advantage of emotions. Brands could try to provoke feelings or emotions
associated to the product and people would adjust their buying behavior accordingly, either emotions were positive or negative (Bagozzi et al., 1999).

Academics continued to study and analyzing what kind of appeal, either rational or emotional would be the best, but the question remains controversial. Nevertheless, what has been proven is that, beyond the type, message appeal as a whole has an effect on message perception, which consequently results in an effective communication (Wagner et al., 2017).

Present studies, still utilize this categorization of functional and emotional appeals in order to contribute to the literature (Liu et al., 2017). However, as suggested by Swani et al. (2017) it would be beneficial to go further and to also analyze the categories of emotional and functional appeals such as humor, love, and so on and so forth. This was already attempted by some studies but it is still at its early stage of analysis.

Wagner et al. (2017) was one of that studies. Through the proposed framework, it was also conclude that the main factor of success on communication is the “overall theme of a post”, or as it was posited, the post appeal. As suggested by the authors, post appeal can affect the attitude of a user toward a post, once that every post has a theme and it is perceived by SNSs users. Consequently, depending on the attitude, an action such as liking, commenting or sharing can be generated. Thus, the post appeal constitutes an important factor on the study of customer engagement.

Results from the studies of Wang et al. (2017) and Liu et al. (2017) corroborate that post appeal have a significant effect on social media engagement. The first one only included likes and shares as the metrics of engagement and the second one incorporated likes, comments and shares.

In the work of Wang et al. (2017) the motivation arouse because there was a significant difference between the engagement of the posts. Notwithstanding, the relation of post appeals with engagement has barely been analyzed.

Both studies showed that some themes or topics have a positive effect while others have a negative effect. Additionally, some appeals have a more significant effect than others. What is curious is that, Wang et al. (2017) also found out that the most frequent themes are not the ones which create more engagement. This could mean that brands are not defining their strategies taking this important information into consideration and this way they are missing out the full potential of SNSs and customer engagement.
2.2 Social Media

2.2.1 Definition and Overview

Despite only becoming a topic of interest in the past few years, the concept of social media is not that new. In fact, it is believed that the first form of social media appeared in 1959 when an online community was created to join online diary writers in just one platform. As so, the definition of this concept is also relatively recent in academic work.

Andreas M. Kaplan and Michael Haenlein (2010) pointed out the lack of consensus and understanding about the term of social media and therefore made a study about its roots, evolution and its opportunities to companies.

As said before, social media seems to have its start in 1959 but it was only after, approximately, 40 years that it gained real presence and was considered a phenomenon changing the World Wide Web. Social media continued to evolve and two main factors contributed to its growth: the development of the availability of high-speed internet and the increased number of internet users. This consequently led to the creation of more social media platforms such as Wikipedia, Facebook and YouTube. It kept growing and the most recent addition to this concept were online environments simulated by computers, or the virtual worlds where people can find avatars.

Regarding the concept definition and still according to these authors, there are two main concepts that are usually related with social media: Web 2.0 and User Generated Content. The first one concerns to a new way of using the World Wide Web. In the Web 2.0 era, the collaborative perspective is added and the content that is introduced isn’t produced in an individual character but instead by groups and in a constant development where everyone can participate and give inputs. On the other hand, User Generated Content is used to describe several forms of content that are produced by end-users and available in public.

Taking in consideration these two concepts and their meanings, one of the most broads definitions of social media was produced: “Social Media is a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content.”(Kaplan and Haenlein, 2010).

Another definition was made and it is clear the relationship between social media, user-generated content and the idea that the content is co-created: “Social media employ mobile and web-based technologies to create highly interactive platforms via which
individuals and communities share, co create, discuss, and modify user-generated content.” (Kietzmann et al., 2011).

Since new types of sites and different forms of platforms appear every day, it is hard to have a strict definition of the concept, and so, to help and give guidance, 6 types of social media are frequently used. Therefore, it is common to divide the social media platforms in the following types: collaborative projects, blogs, content communities, social networking sites, virtual game worlds and virtual social worlds. (Kaplan and Haenlein, 2010).

Additionally, another way to clarify the diversity of social media is to focus on the functionality of each platform. Seven functionalities are suggested by Kietzmann et al. (2011) identity, conversations, sharing, presence, relationships, reputation, and groups. It is expected that with this framework, companies can easily understand and analyze the implications of the different types of social media.

2.2.3 Instagram

Instagram, despite not being as relevant as Facebook in terms of monthly active users, is still one of the most popular social media platforms and it has already been called “the future of social media” (Kim and Hull, 2017, p. 221). With 700 million monthly active users (Statista, 2017), Instagram allows photo and video sharing.

Every SNS has its own specific characteristics and one of the most unique features of Instagram is the existence of filters which allows the users to edit their pictures and videos before posting them online. Moreover, posts can only be done through smartphones or tablets (Erkan, 2015). Contrary to what happens on Facebook where users add each other’s through a friend request, on Instagram users select who they want to follow in accordance to the process of Twitter. Additionally, in the year of 2013 a new feature was launched. It was called Instagram Direct and consisted of allowing users to exchange private direct messaging through photos and videos (Geurin-Eagleman and Burch, 2016).

Companies are also paying attention to this new SNS as Instagram is becoming an important platform for business. Some studies even pointed out that Instagram engagement rate per follower is ten times greater than Facebook, which also explains its increasing popularity among brands (Kim and Hull, 2017). It is said that more that 80% of top brands are currently present on Instagram with their official accounts (Erkan, 2015).
The interest of Instagram has been growing over the past years in the academic field and as a consequence some studies have been conducted. For instance, Dumas et al. (2017) studied the motivation of emerging adults in joining Instagram and what factors would differentiate the like-seeking behavior. It was found that both narcissism and peer belonging had influence on that behavior. Moon et al. (2016), while studying the relationship between narcissism and Instagram users’ self-promoting behaviors, also proved that users with higher levels of narcissism were more likely to post photos on Instagram more frequently and spend more time when compared with peers. The cultural effect on the motivation for the use of Instagram was also analyzed (Sheldon et al., 2017). Hendrickse et al. (2017), on the other hand, investigated the relationships between the use of Instagram by female university students and the drive for thinness and body dissatisfaction. The results showed a positive link.

More topics were analyzed, specially concerning the potential influence that Instagram could play in the business world. Geurin-Eagleman and Burch (2016) while studying the self-presentation of Olympic athletes on Instagram also tried to understand how these users use this platform and a tool for build their personal brand through communication. The results point out that, as these athletes rely on their own brand-building efforts, it is important to be present on a platform such as Instagram. Latiff and Safiee (2015), analyzed why home-based business owners choose Instagram in order to start building their brand positioning. The findings suggest that characteristics such as the popularity of this platform and its allowance for eWOM are crucial for this preference. The impact of celebrities and personalities on purchase behavior was also studied while analyzing how Instagram could affect the consumer buying intention. Results from the work of Djafarova and Rushworth (2017) show that indeed celebrities on Instagram influence young females during their buying decision. In regard to engagement, Carah and Shaul (2015) studied how hashtags and cultural intermediaries could affect it and found out that they were positively related.

The majority of the topics concerns on how the users use the platform, why they use it and its effects on users’ behavior. Thus, the studies focus on the perspective of users and it’s impacts on them. To complement, some explore the opportunities for brands if they start using Instagram. Nevertheless, it could be argued that academic work on Instagram it still on its early stage (Sheldon and Bryant, 2016), specially concerning the study about Instagram and customer engagement.
2.2.2 Facebook

Facebook, which accounts with more than 1.94 billion monthly active users worldwide, as of March 31, 2017 can be seen as one of the most relevant and popular social networking sites (Socialbakers, 2017). It was founded in 2004 and in the same year it reached its first million active users, proving its value. Users on Facebook are invited to create their profile to be able to communicate and interact with other users. Those interactions can be posting photos, commenting and liking them; sharing content; sending and receiving messages, being part of groups and participating at events, among others (Oh et al., 2017). This SNS also allows companies to create their profiles and to be part of this community, being able to reach out to all these users (Wagner et al., 2017). Additionally, Facebook provides detailed analytics about the performance of the brand page to the company. This facilitates the management of the page and help companies to create better content (Sabate et al., 2014).

Facebook has evolved a long way since its creation and it now provides several solutions for business through applications and social plug-ins, but it still can be defined as “an online meeting place that allows people to communicate efficiently with friends, family, and co-workers around the world.” (Pereira et al., 2014, p. 695).

Regarding the SNS used to study the customer engagement, Facebook is by far the favored choice. Authors acknowledge its popularity and see Facebook as the largest and most used social media platform (Sabate et al., 2014). Moreover, it is a useful tool for researchers once it enables the gathering of solid measures like comments, shares and likes that are metrics of engagement (Kim and Yang, 2017). Nevertheless, as suggested by De Vries et al. (2012) it would be relevant to include more SNS to this thematic. Coelho et al. (2016) in their study include both Facebook and Instagram as they admit the possible mediating role that the different SNS could have. Instagram has already demonstrated its popularity and has growth rapidly into the strategies of organizations. Consequently, it is crucial to also analyze the customer engagement in this context, as managers are using this platform progressively (Virtanen et al., 2017).
Table 2 - Specific characteristics of each SNS

<table>
<thead>
<tr>
<th></th>
<th>Facebook</th>
<th>Instagram</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Launched in</strong></td>
<td>2004</td>
<td>2010</td>
</tr>
<tr>
<td><strong>Monthly active users</strong></td>
<td>1.94 billion</td>
<td>700 million</td>
</tr>
<tr>
<td><strong>Primary metrics</strong></td>
<td>Likes</td>
<td>Likes</td>
</tr>
<tr>
<td></td>
<td>Comments</td>
<td>Comments</td>
</tr>
<tr>
<td></td>
<td>Shares</td>
<td></td>
</tr>
<tr>
<td><strong>Specific characteristics</strong></td>
<td>More than one user can be added to a conversation</td>
<td>Content can only be posted through smartphones or tablets</td>
</tr>
<tr>
<td></td>
<td>Creation of groups, pages and events</td>
<td>Tools for editing photos and videos (up to 60 seconds)</td>
</tr>
</tbody>
</table>

Source: adapted from Coelho et al. (2016)

2.2.4 Advantages of the use of Social Media for brands

Not only organizations are paying attention to Instagram, they are also being attracted to all kinds of social media. Many scholars have already identified the advantages of having an online presence through SNSs, which really has transformed how businesses are managed (Kaplan and Haenlein, 2010, Kietzmann et al., 2011, Pereira et al., 2014, Tiago and Veríssimo, 2014, Parveen et al., 2015, Guesalaga, 2016, Weinstein and McFarlane, 2016, Kim and Hull, 2017).

Companies are exploring social media and creating their profiles and fan pages in order to raise more attention to their brands and to build and maintain relationships with customers and potential clients (Parveen et al., 2016). The truth is that these online channels serve several goals for companies and it was already admitted by managers that social media is becoming a crucial strategic tool as it could be used for branding, market research, promotion and advertising, cementing customer relations and in sales (Parveen et al., 2015, Guesalaga, 2016, Song and Yoo, 2016).

Furthermore, when comparing social media to other traditional communication channels, it presents a higher level of efficiency that translates into a low-cost way of establishing connections between the business and the customers through a direct and time saving approach. Consequently, it becomes clear that companies must embrace this new era if they want to succeed (Kaplan and Haenlein, 2010).

It is not only about the cost efficiency, building relationships with customers and the advantages mentioned above. Social media has been associated with innovation and entrepreneurial orientation as well. This is an important characteristic because this innovation takes place through the performance and trend analysis (developing new
features according to customer surveys) that are needed to have a competitive advantage and proper use of social media (Sidorova et al., 2016). By having an open communication with customers and paying attention to their opinions and feedback, organizations can be seen as innovative and on their way to being leaders of the market (Parveen et al., 2016).

Regarding Facebook and Instagram, they also serve different businesses goals and achieve distinct objectives. Nevertheless, the most frequently identified by the academics is the engagement that companies can have with their online community (Pletikosa Cvijikj and Michahelles, 2013, Kumar et al., 2016, Lacoste, 2016, Malthouse et al., 2016, Oh et al., 2017). Both SNSs allow brands to connect with their customers and create online communities and stimulate brand advocates. In fact, some managers believe that the truly purpose of social media accounts is to engage with their customers and not to sell the product or service (Kim and Hull, 2017). In their perspective, the financial concern is still present but the main goal and advantage of the use of social media is to create customer engagement and both Facebook and Instagram have the environment and conditions to do it (Coelho et al., 2016).

2.3 Content Marketing

Nowadays, traditional marketing is not sufficient in order for brands to remain competitive, the paradigm has shifted and strategies must be adjusted. This era is known as the new digital era and content marketing is one of the key factors of success and one of the crucial tools of digital marketing. Consequently, is it important for companies to understand what is this concept about and how to incorporate it in their marketing efforts.

Although its relevance has been growing only in the past decade, the truth is that content marketing was already present in the early nineties. In fact, some business owners were developing their brands through this approach. For instance, André Michelin, launched the Michelin Guide which featured information about how to repair tires and a list of hotels and city maps. This magazine instead of being commercialized was given for free. Other examples exist and the common aspect about them is that, these businessmen were already building brand stories as a way of creating an emotional connection that hopefully would result in the sales of their product or service (Patrutiu Baltes, 2015).

The lack of consensus about a universal definition of content marketing is pointed out throughout the literature. However, there are several attempts and inputs regarding the explanation of this concept. One of the most used definition is provided by the Content
Marketing Institute and it is argued that content marketing is used to attract, acquire and engage with a well-defined public through the distribution of relevant content. Additionally, it is stated that the final goal is to lead to a desirable customer action which could be seen as the purchase of the product of service of the brand that employed the content marketing strategy.

Rowley (2008), whose work focus on providing insights about the nature of content marketing, proposed that this concept could be defined as a process conducted by a company with the objective of making profit by using digital content that is distributed through electronic channels. Through this process, companies should determine, examine and satisfy customers. Content marketing can also be seen as a form of providing information and persuading the public through attractive content with the final goal of increasing the awareness of a brand (Angel Wong An and Rashad, 2015).

The difference between content marketing and advertising was also established. It is stated that advertising has its focus on sales and motivating purchase whereas content marketing is more about establishing relationships with the customer and using storytelling in order to fortify their brand messaging and positioning (Angel Wong An and Rashad, 2015, Patrutiu Baltes, 2015).

Moreover, content marketing serves several objectives such as increasing brand awareness, attracting news leads into the business, building relationships with the customer as well as enhancing customer loyalty, among others. Nevertheless, if these advantages for companies aren’t trackable and measurable, they would never know when the goal is fulfilled. As a consequence, some metrics are required in order to validate the approach of content marketing. There are four different types of metrics that could be used, namely consumption metrics, sharing metrics (likes, shares, among others), lead and sales metrics (Holliman and Rowley, 2014, Patrutiu Baltes, 2015). Ahmad et al. (2016) also pointed out that metrics such as liking, hashtagging, retweeting, commenting and sharing the content that brands post online are measures for analyzing the effectiveness of content marketing.

Additionally, Ahmad et al. (2016) also stated that social media platforms are useful tools for gathering such measures. If in traditional marketing it was sometimes difficult to measure the impacts of strategies, in the era of digital marketing it is easier to analyze results. It is thanks to the technology of Web 2.0 that brands can follow the outcomes of their marketing efforts, as it is the case of monitoring the customers’ behavior through their engagement on social media.
Content plays a crucial role on the marketing world and as emphasized by some studies, having a valuable and relevant content can help driving engagement on social media. On the other hand, engagement itself also helps to increase the effectiveness of content marketing once it is easier to influence costumers’ perceptions on a brand or product if they are indeed engaged and paying attention to the content. Otherwise, it is difficult to really accomplish objectives such as establishing relationships with customers and increasing brand awareness (Angel Wong An and Rashad, 2015).
3. Methodology

In this section, it will be explained how the empirical work was performed. In the previous section, it was identified that the literature calls for a framework that is capable of explaining the influence of certain factors on the customer engagement on Instagram. Additionally, it is relevant to complement the current literature concerning Facebook by incorporating new metrics of customer engagement. On the other hand, this empirical work will also be important to face the management problem found on Explicas-me during the internship: the lack of an analytical tool to analyze customer engagement on social media.

Therefore, a framework will be suggested and a presentation of the variables included as well as the research questions and hypothesis will be discussed. The method chosen will also be justified.

3.1 Conceptual Framework

The objective of this study is to provide insights about what should be taken into consideration and its impact when using Facebook and Instagram in order to understand customer engagement. For this purpose, four main categories were inducted, namely post type, time frame, message interactivity and post appeal to better explain the behaviors of customer engagement on Facebook and Instagram. Two conceptual frameworks are presented due to the differences between the two SNSs, Facebook and Instagram.

3.1.1 Dependent Variables

Taking into consideration the purpose of this study, customer engagement will be represented by the likes, reactions, comments and shares on Facebook and Instagram posts. The addition of the number of shares is relevant since the act of sharing is even more popular these days and due to the suggestion that a share has a more strategical and significance impact on Facebook algorithm as it requires more effort from the users (Kim and Yang, 2017). Concerning to the number of likes and reactions as the like continues to be one of the most used reactions from users, in this study it was decided to analyze on one hand the number of likes and on the other hand the sum of all other reactions.

These three metrics represent an interaction between the customer and an activity offered by the brand (in this specific case, the posts made on both SNSs) in agreement with the definition of van Doorn et al. (2010). Metrics are considered as the measure of a
variable and they are used by analysts to ensure that the goals are been achieved and to facilitate the control of that variable. In the case of social media and in specific the analysis of customer engagement, it is suggested by digital analytics experts that the involvement that a user have can be measured through the number of likes and comments (Zeferino, 2016).

3.1.2 Independent Variables

3.1.2.1 Post Type

The first factor that this study includes is the post type. Research shows that this is a significant category when trying to understand why some posts have higher customer engagement than others. However, it is not clear yet what is the type that has more influence on the users’ interaction on social media. This work aims to address this topic.

Post type varies according to the SNS. In the case of Facebook, at the time of writing, it allowed brands to create different type of posts such as: status, image, video, link, event, milestone, note, offer, order and page post. On Instagram, posts can only be photos or videos. As it is possible to see, the range of possibilities on Facebook is quite substantial. However, brands still mainly use the first post types that were possible to post on the early stages of Facebook: images, videos, status and links. A study from Quintly (2014) analyzed the Facebook Post Type distribution taking into consideration 72 194 Facebook pages and 49 million posts during the years of 2013 and 2014. It showed that images were the most common type representing 54% of all post types. Links and Status followed with 30% and 11% respectively. Videos only accounted for 3% and all other post types, including offer, note and event, among others, accounted for only 1% all together. A more recent study carried out by Socialbakers (2016a), analyzing 4.6 million posts from September 2015 to September 2016, showed similar insights. Photos maintained its first position with 65% and links followed with 18%. Surprisingly, videos increased its presence and represented 16% of the brands choices. Both studies demonstrate that, although Facebook allows the creation of several post types, brands still adopt images, links and videos as their main preferences.
Taking in consideration these possibilities and the previous studies, this work will address as post types: image, link and video. Consequently, the following research question was formulated:

RQ1: Which post type has more influence on customer engagement?

3.1.2.2 Time Frame

The literature shows that there are some seasonality factors that can influence customer engagement on social media (Coelho et al., 2016). These factors could be cultural but could also depend on the business area that companies operate. In the case of Explicas-me, as the business is conducted in the educational area, there is a seasonality associated that could be an influencing factor of customer engagement. Consequently, the present work intents to discover and to identify if there are some months that can increase the performance of posts on the social platforms of the company. As so, the next question is proposed:

RQ2: Which months have a positive effect on customer engagement?

3.1.2.3 Message Interactivity

The third factor that can potentially influence customer engagement is the message interactivity. As a consequence, in this study, in order to analyze the message reciprocity and the encouragement of a two-way communication by the brand, the response-inviting aspect of the message will be the focus of the next hypothesis. Kim and Yang (2017) have open the way and have also addressed this matter. Their results showed that this feature is only positively related with the number of comments. Thus, there is still a lack of academic work regarding this particular aspect and the following hypothesis was proposed:

H1: Posts with a response-inviting message may increase the number of comments and decrease the number of likes, reactions and shares
3.1.1.4 Post Appeal

Several authors over the years already showed their interest in studying the appeal of certain messages in the area of advertising. Usually, a distinction was made between emotional and functional appeals and academic research on this topic is mature. Nevertheless, it was pointed out by some researchers that it would be of interest to analyze the impact of categories within the emotional and functional appeals such as love, humor and performance, among others (Swani et al., 2017).

Having in mind that it is relevant to provide powerful insights about post appeal to brands and that this is a topic that hasn’t receive enough attention from literature, the next research questions are proposed:

**RQ3:** Which post appeals have a positive effect on customer engagement?

**RQ4:** Are post appeals with a positive effect on customer engagement the most frequently used?

<table>
<thead>
<tr>
<th>Table 3 - Hypothesis and Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RQ1</strong></td>
</tr>
<tr>
<td><strong>RQ2</strong></td>
</tr>
<tr>
<td><strong>H1</strong></td>
</tr>
<tr>
<td><strong>RQ3</strong></td>
</tr>
<tr>
<td><strong>RQ4</strong></td>
</tr>
</tbody>
</table>

3.1.6 Control Variables

The model of this study also included some control variables, as suggested by previous studies. The length of the post caption will be controlled as it was showed by Coelho et al. (2016) that this variable has a positive effect on the number of likes on Facebook and on the number of comments on Instagram. In addition, Sabate et al. (2014)
showed that this variable influence positively the number of likes. Additionally, it was also stated that posts with 80 characters or less receives more engagement.

Wagner et al. (2017) also included this variable and defined it as the number of text lines. On the other hand, Coelho et al. (2016) measured the length of the post caption through the number of characters in the description. In this study, the length of the post caption will be defined as the number of characters, in similarity with the previous mentioned author. This is due to the fact that, when considering the number of text lines, the number can vary according on the device (usually, for the same caption, the number of text lines on a mobile is not the same as on a computer screen). Consequently, the number of characters represents a more reliable measure.

The second control variable is the day of the week. De Vries et al. (2012) was one of the first proving that it is statistically the same to post during the week or during the weekend. Followed by, Coelho et al. (2016) and Wagner et al. (2017), that also included this control variable in their models and that showed the same result.

In opposing to Coelho et al. (2016) that defined the week period from Monday to Thursday, in this study, the most common definition of week will be used as the week period will be from Monday to Friday and the weekends will be Saturday and Sunday.

Figure 1 - Framework to analyze customer engagement on Instagram

Source: Author's elaboration
3.2 Digital Analytics

There are several ways of conducting science research such as surveys and experiments, among others. One could expect that there was an ideal research method, however, the choice of the method depends on the study itself and there are advantages and disadvantages for each one. In the particular case of this work, a digital marketing analysis will guide and serve as the method adopted.

Many times, digital analytics and web analytics are concepts that are seen as different and independents, however it is not the case. In fact, digital analytics is the new terminology of web analytics. This decision was made in 2012 by the Web Analytics Association and it is justified given the own evolution of the marketing industry. If before the focus was on the website, now, managers have a wide range of digital channels to explore. The aim of digital analytics is to focus on the gathering of knowledge that can be useful from brands on the digital industry. This is an industry characterized by a high volume of data, and thus it is also crucial to know what data to choose for analysis (Zeferino, 2016).
As stated before, there are several digital channels that can be the target of digital analytics. In this work, social media is the digital channel utilized with a particular focus on Facebook and Instagram.

One of the digital analytics strategies to analyze social media is through the measurement of the value of content, that plays a crucial role on these platforms. Thus, it is suggested that three main components are vital to that analysis: the type of content (text, photo or video), the reach (organic, paid or viral) and the involvement/engagement (clicks, likes and comments).

**Figure 3 - Measurable components to estimate the value of the content on social media**

1. **Content Type:**
   - Text
   - Photo
   - Video

2. **Reach:**
   - Organic
   - Paid
   - Viral

3. **Involvement:**
   - Clicks
   - Likes
   - Comments

Value of the content

*Source: Adapted from Zeferino (2016)*

The framework previously presented followed this reasoning and respected the best practices when performing a digital analysis. It is also argued that the human factor is still of extreme importance during the analysis of data and that statistical rigor is necessary in order to draw conclusions from data.

In order to test the hypotheses and answer the research questions proposed by this study, a content analysis of the post appeals and message interactivity and an empirical analysis were conducted. For each dependent variable and for each SNS, multiple OLS linear regressions were estimated. All the dependent variables were transformed using the natural logarithm in order to ensure a normal distribution of the residuals. Additionally, outliers were eliminated if the studentized residual exceeded -3 or +3. Moreover, in order to improve the explanatory power of the variable *Length of the post caption*, it was transformed by using the natural logarithm. Thus, this study tested six models, four concerning Facebook, namely $LN(Likes +1)$, $LN(Reactions +1)$, $LN(Comments +1)$ and $LN(Shares +1)$, and two regarding Instagram, respectively $LN(Likes +1)$ and $LN(Comments +1)$.
3.3 The company Explicas-me

Explicas-me, is the largest marketplace on the tutoring field in Portugal. It was created by three university students and it was launched by the end of 2014. This online platform enables students to find the tutor they are looking for. Teachers and tutors can create their public profile in the platform where they upload their curriculum vitae, their schedule, prices, subjects, location and some conditions or additional information they consider relevant.

On the other hand, students just have to enter the website and choose the subject they are looking for and their intended location. After that, they only have to choose one or more tutors to contact and schedule the tutoring class.

The tutoring market in Portugal was undeveloped and it was working through word of mouth. As a result, if someone needed a tutor, it was hard to get more than one or three suggestions. In order to simplify this process, Explicas-me has already more than 6,000 registered teachers, tutors and tutoring centers. Furthermore, Explicas-me, has incorporated a rating system complemented with reviews and comments from students. Consequently, these features made it easier for customers to trust and to see the platform as a service of reference when comparing to other solutions in the market.

Explicas-me ensures its financial sustainability from regular subscriptions tutors and tutoring centers have to submit in order to have a visible profile on the platform and to be feature in the results. When users get registered for the first time, they are offered an experimental period. During this time, the use of the platform is free of charge and it lasts until the first contact is received (a student asking for information and interested in scheduling a class). From this point on, if the tutor desires to continue in the platform, he or she will have to subscribe to a plan. Users can choose from three different plans, Basic, Professional or Premium, according to their needs and goals.

3.3.1 The Social Media Strategy of Explicas-me

Since its early stages, Explicas-me founders understood the importance of having a presence on social media. Besides being a way of getting in touch with potential clients, it was a free tool that served the purpose of spreading the word about the platform. The main goals were to increase the website traffic and to increase customer engagement. Thus, a Facebook page was created when the online platform was launched in 2014.

At the beginning, the content was aimed to reach two different publics: on one side, the students and its parents and on the other the teachers and tutors. However, it was
clear after some posts that having two types of content was not productive neither beneficial and it was even conflictual for the page followers. This is due to the difference between the communication approach and interests of students that aren’t the same as the teachers. Additionally, the majority organic public that the Facebook page was attracting were teachers and users within the adult age and so, Explicas-me decided to only direct the Facebook page for teachers, tutors and parents.

Currently, the fans are 71% women and 29% men with an average age within the 35-44 interval as it can be seen in Figure 4. This is also a factor that influences the communication strategy on Facebook. As more than half of the public are women, the page also adopts content about motherhood and other topics that can be of the interest of mothers, such as the topic of family and how to raise their children.

**Figure 4 - Demographic data about the Facebook fans of Explicas-me**

![Demographic data about the Facebook fans of Explicas-me](image)

**Source:** Facebook page of Explicas-me

*Explicas-me* is a player within the educational industry and when its founders were designing the content strategy for the Facebook page they decided to maintain education as the central topic. Besides some other topics that, through time, aroused from the needs for adjust and to complement the interest of the community, education still is, today, the main theme of the Facebook page. Consequently, both the community as some peers started looking to *Explicas-me* as a solid source and a reference page on the education field.

Recently, the company decided to expand its social media presence to Instagram. It is a new platform that, in few time, had manage to catch both users and brands attention, showing several advantages of its use. As it is a quite recent platform, the users on Instagram, are, in a general way, young individuals. As a consequence, *Explicas-me* saw an opportunity to create a channel in order to communicate and be in contact with the
younger public of its platform: the students. At the end of February 2017, an Instagram account was launched having in mind to build a younger community and spread the word about *Explicas-me* to the students. The communication approach was informal and the content of the posts were mainly funny and relaxed in order to win the interest of potential users. Nevertheless, the theme of education was always present and the platform was mentioned in every post as an effort to direct users to the online platform of *Explicas-me*. The performance of the Instagram account was very positive and with organic growth only, it reached 2000 followers in two months with a level of engagement that was satisfactory when compared to similar pages.

Finally, it is also important to state that both on Facebook and on Instagram, the reach was always organic. It was a decision from the company not to promote its contents on social media.

### 3.3 Data Collection

Regarding Facebook, the data collection was performed manually during the 12th of July 2017. Posts from the 15th of August 2016 to 31st of March 2017 were selected as the data sample in order to have a relevant time frame and information on Facebook. On the 1st of August 2017, the same process was executed for Instagram and posts from the 1st of May 2017 to the 28th of June 2017 were collected. Previous research has demonstrated that one month is sufficient as a delay between the time of publication of the post and the time of the collection of the data, once it is not expected that a post would receive more interaction after 30 days. As the interaction of the users with the post, is usually very quickly, it is believed that the time span considered in this study is enough. (Sabate et al., 2014, Wagner et al., 2017). Erkan (2015) alerted for the development of the number of followers, that can change rapidly through time, and that potentially could affect the number of likes and comments. The Instagram account of *Explicas-me* was quite recent and thus the number of followers changed abruptly in the first weeks of its launch in February. With the help of a tracking document from the company it was possible to see that since May the number of followers has stagnated. After that very light variations occurred and thus, it is believed that the period chosen is adequate. On Facebook, the number of followers didn’t have any significant changes since it is already a mature page.

Screenshots were taken of each post. Concerning Facebook, screenshots were taken through the list of Published Posts from the Publishing Tools that this SNS allows
for the managers of the page. In this section, data about each post is more complete when compared to the ones available on the News Feed. In the case of Instagram, screen shots were also taken using a manager account which allows to see the statistics of each post. More than one screenshot was necessary on the case of Instagram in order to capture both post and caption and the statistics. In each screenshot, it is possible to see every variable needed, namely the number of likes, reactions, comments and shares, the date of publication and the caption, as well as the content of the post. After this collection, the data was systematized in a spreadsheet Excel software in order to facilitate its analysis.

3.5 Coding

After the data collection, posts were treated and coded for post type, time frame, message interactivity and post appeal. The first two correspond to hard criterion and enable a pragmatic coding procedure while the other ones require a more subjective analysis as it is natural for soft criterion.

Regarding post type, there were three different and mutually exclusive possibilities: image, link and video. Thus, a post could only be one type and this differentiation was intuitive to code. For the time frame, the coding procedure was also immediate as it is possible to see in the screenshots the date of publication of the post. Consequently, the month of publication was coded for each post.

Message Interactivity investigates the response-inviting aspect of the message of the post. Any message that asks or encourages a response directly will be considered as interactive. Additionally, messages that include questions (excluding rhetorical questions) or actions verbs are examples of what can be considered response-inviting. As suggested by the coding scheme of Kim and Yang (2017), in order to the post be considered as interactive, the message needs to “solicit responses from the public directly”.

The posts were also coded for its central appeal as performed on the work of Wagner et al. (2017) that, as stated before, created a coding instrument with twelve emotional appeals and twelve functional appeals. In their study, post appeals emerged from their coding instrument and their sample of posts didn’t influence it. On the contrary, Wang et al. (2017), in order to define the coding instrument, firstly read their sample of posts and after developed eleven post appeals. Swani et al. (2017), although only distinguish between emotional and functional appeals, did suggest categories of both such
as humor, romance and contest, among others. In this study, on both cases of Facebook and Instagram, a mix approach was used. A reading of the whole sample was performed before developing the appeals, but the processing of the appeals also followed the procedures suggested by the literature when generating a coding instrument.

In order to construct a valid coding instrument, it is desirable that the appeals represent wide topics because otherwise it would be difficult to distinguish clearly the categories. As a consequence, while reading through the sample this concern was already present. After having the initial list of potential post appeals, a more detailed analysis to that list was performed to secure that similar categories were grouped. As a final step all categories that weren’t immediately perceived, were eliminated. This is important because during the coding procedure it should be easy to comprehend and to code each post without questions. Moreover, the name of the appeals should also be straightforward and created using understandable language. To complete, a description of each appeal should be developed to ensure the minimum level of ambiguity (Wagner et al., 2017). Afterwards, the list was compared to the coding instruments of previous studies. From the eight post appeals proposed by this study, six of them correspond to post appeals previously used by Wang et al. (2017), Wagner et al. (2017) and Swani et al. (2017).

Table 4 - Coding instrument: post appeals

<table>
<thead>
<tr>
<th>Appeal</th>
<th>Description “The central theme/appeal of the post is…”</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family</td>
<td>Love and sense of unity and affection</td>
<td>Wang et al. (2017)</td>
</tr>
<tr>
<td>Education</td>
<td>School, exams, studying, university</td>
<td>Wang et al. (2017)</td>
</tr>
<tr>
<td>Humor</td>
<td>Joke, funny, “hahaha!”</td>
<td>Wagner et al. (2017)</td>
</tr>
<tr>
<td>Pride</td>
<td>Being proud on something or someone</td>
<td>Wagner et al. (2017)</td>
</tr>
<tr>
<td>Being happy</td>
<td>Happiness, satisfaction, contentment, joy</td>
<td>Wagner et al. (2017)</td>
</tr>
<tr>
<td>Challenge/Quiz</td>
<td>Game, contest, quiz</td>
<td>Swani et al. (2017)</td>
</tr>
<tr>
<td>Parenting</td>
<td>How to raise children</td>
<td>Proposed by this study</td>
</tr>
<tr>
<td>Motivation</td>
<td>Motivational phrases and positive messages of encouragement</td>
<td>Proposed by this study</td>
</tr>
<tr>
<td>Sad</td>
<td>Sadness, negative emotion, causing sorrow</td>
<td>Proposed by this study</td>
</tr>
</tbody>
</table>

The control variables, day of the week and length of the caption of the post, were also coded. Each post was coded as “1 = weekday” if they corresponded to days from Monday to Friday and “0 = weekend” if Saturday and Sunday were the day of publication. Regarding the length of the caption an Excel function was used (LEN) in order to facilitate
the process and to ensure the accuracy of this variable. Every caption was copied to an Excel file and then the function was executed.

The number of likes, reactions, comments and shares were documented by reading the information provided on the screenshots.

3.4 Sample

To analyze the effect of post type, time frame, message interactivity and post appeal on customer engagement on social media, posts of Facebook and Instagram were chosen as the unit of analysis.

The company used to this academic work was Explicas-me. This online educational marketplace meets the needs for the purpose of this study once it gathers the characteristics required. Explicas-me has both Facebook and Instagram pages and is an active brand on social media. Its Facebook page was created since the launched of the business and has already 89,431 followers. Concerning its Instagram profile, it is newer. It was created in February 2017 and it accounts with 2324 followers1. In addition, at least 3 posts per week were published on both SNS suggesting that, indeed, this company is actively posting on social media (Coelho et al., 2016).

From a total of 382 posts from Facebook, it was concluded that some had to be excluded. Three of them were milestones, which don’t fall into neither of the post types in this study and therefore were excluded. Another three were GIFs, and for the same reason were also excluded. One of the posts, for an unknown reason, didn’t had an available URL. As a content analysis will be performed, this post was also excluded, once it is not possible to perform a rigorous content analysis in order to identify the post appeal. Concerning Instagram, only one post was eliminated as it didn’t fall into any post appeal. Additionally, only brand posts were considered on both SNSs.

To conclude, the sample is composed of 375 posts from Facebook and 52 from Instagram.

---

1 This data was collected on 23th of July, 2017.
4. Results

In this section, an overview of the results from both the content analysis on post appeals and on message interactivity as well as the Multiple OLS Regressions will be presented. A descriptive analysis will also be conducted.

4.1 Content Analysis

As explained before, a content analysis was performed in order to infer the appeal of each post. In the section regarding coding, the procedures followed in this analysis as well as the coding instrument were presented and the results in terms of frequency are as follow on Tables 5 and 6. It is possible to see that appeals aren’t used equally in both SNSs and that on Facebook there are more appeals than on Instagram. The relationships between the appeals and customer engagement will be analyzed when performing the multiple linear regressions that will be presented at the next stage of this section. An example of each appeal will be presented in the Figures 5 to 17.

Table 5 - Frequency of post appeals on Facebook

<table>
<thead>
<tr>
<th>Post Appeal</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>41.06%</td>
</tr>
<tr>
<td>Parenting</td>
<td>16%</td>
</tr>
<tr>
<td>Family</td>
<td>9.6%</td>
</tr>
<tr>
<td>Motivation</td>
<td>8.26%</td>
</tr>
<tr>
<td>Humor</td>
<td>8%</td>
</tr>
<tr>
<td>Pride</td>
<td>7.2%</td>
</tr>
<tr>
<td>Being Happy</td>
<td>4.8%</td>
</tr>
<tr>
<td>Challenge</td>
<td>2.6%</td>
</tr>
<tr>
<td>Other</td>
<td>1.86%</td>
</tr>
<tr>
<td>Sad</td>
<td>0.53%</td>
</tr>
</tbody>
</table>

Source: SPSS

Table 6 - Frequency of post appeals on Instagram

<table>
<thead>
<tr>
<th>Post Appeal</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humor</td>
<td>88.46%</td>
</tr>
<tr>
<td>Motivation</td>
<td>9.62%</td>
</tr>
<tr>
<td>Challenge</td>
<td>1.92%</td>
</tr>
</tbody>
</table>

Source: SPSS
A content analysis on the message interactivity of each post was conducted as well. Results show that on Facebook 45.22% of the posts were response-inviting and on Instagram only 21.15% had this characteristic. Figures 8, 11, 13 and 17 are some examples of posts that were considered as response-inviting.

**Figure 5** - Family appeal on Facebook
**Figure 6** - Pride appeal on Facebook

![Image of Pride appeal on Facebook]

**Figure 7** - Motivation appeal on Facebook

![Image of Motivation appeal on Facebook]
Figure 8 – Challenge appeal on Facebook
Figure 9 - Sad appeal on Facebook

Figure 10 - Being Happy appeal on Facebook
Figure 11 - Humor appeal on Facebook
Figure 12 - Parenting appeal on Facebook

Figure 13 - Education appeal on Facebook
Figure 14 - Motivation appeal on Instagram

Figure 15 - Humor appeal on Instagram

Figure 16 - Response-inviting content on Instagram

Figure 17 - Challenge appeal on Instagram
4.1 Descriptive analysis

In Tables 7 and 8, a summary of the dependent variables used in the multiple regression models are presented. As it can be inferred, the number of shares is the metric with the highest mean on Facebook and likes outperform comments on Instagram. Moreover, although the mean of the number of comments isn’t quite different between the different SNSs, there is a significant difference between the mean of the number of likes on Facebook (M=85.54) and Instagram (M=206.4).

**Table 7 - Descriptive statistics of the dependent variables on Facebook**

<table>
<thead>
<tr>
<th></th>
<th>Likes</th>
<th>Reactions</th>
<th>Comments</th>
<th>Shares</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>85.54</td>
<td>9.365</td>
<td>3.168</td>
<td>97.31</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>145.6829</td>
<td>23.11104</td>
<td>9.294127</td>
<td>486.1422</td>
</tr>
</tbody>
</table>

**Source:** SPSS

**Table 8 - Descriptive statistics of the dependent variables on Instagram**

<table>
<thead>
<tr>
<th></th>
<th>Likes</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>206.4</td>
<td>3.308</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>55.47207</td>
<td>9.762952</td>
</tr>
</tbody>
</table>

**Source:** SPSS

Concerning the independent variables, there are also some differences that should be pointed out. As expected, on Instagram the most post type used are images while on Facebook, links were the most representative, followed by images and videos. There are more response-inviting posts on Facebook than on Instagram.

**Table 9 - Descriptive statistic of some independent variables**

<table>
<thead>
<tr>
<th></th>
<th>Facebook</th>
<th>Instagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image</td>
<td>38.67%</td>
<td>88.46%</td>
</tr>
<tr>
<td>Video</td>
<td>14.93%</td>
<td>11.53%</td>
</tr>
<tr>
<td>Link</td>
<td>46.40%</td>
<td>-</td>
</tr>
<tr>
<td>Response-Inviting</td>
<td>45.22%</td>
<td>21.15%</td>
</tr>
</tbody>
</table>

**Source:** SPSS

4.2 Likes model on Facebook

The model for the number of likes is significant as a whole (F-value = 4.907, p-value <0.05) and has an explanatory power of 18% (R² = 22.6%, adj. R² = 18%).
Concerning post type, both image and video are significantly related with the number of likes. Image posts have a positive effect ($\beta = 0.462$, $p$-value $< 0.05$) as well as videos ($\beta = 1.234$, $p$-value $< 0.05$). However, attention should be paid to the greater impact of videos when comparing to images. Although both of them have a positive effect, video exert a more powerful effect.

The message interactivity is also significantly and positively related with the number of likes ($\beta = 0.313$, $p$-value $< 0.05$) in support to hypothesis 1.

### Table 10 - Estimation Results for the likes model on Facebook

<table>
<thead>
<tr>
<th>LN (Likes +1)</th>
<th>$\beta$</th>
<th>Std. Error</th>
<th>T</th>
<th>VIF</th>
<th>Std. $\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Post Type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Image</td>
<td>0.462**</td>
<td>0.175</td>
<td>2.637</td>
<td>2.681</td>
<td>0.202</td>
</tr>
<tr>
<td>Video</td>
<td>1.234**</td>
<td>0.395</td>
<td>7.185</td>
<td>1.379</td>
<td>0.395</td>
</tr>
<tr>
<td>Link (baseline)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Interactivity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response-Inviting</td>
<td>0.313**</td>
<td>0.127</td>
<td>2.472</td>
<td>1.460</td>
<td>0.140</td>
</tr>
<tr>
<td>August</td>
<td>0.125</td>
<td>0.283</td>
<td>0.442</td>
<td>1.348</td>
<td>0.202</td>
</tr>
<tr>
<td>September</td>
<td>-0.056</td>
<td>0.209</td>
<td>-0.267</td>
<td>1.725</td>
<td>-0.016</td>
</tr>
<tr>
<td>October</td>
<td>-0.290</td>
<td>0.197</td>
<td>-1.472</td>
<td>1.821</td>
<td>-0.093</td>
</tr>
<tr>
<td>November</td>
<td>0.001</td>
<td>0.199</td>
<td>0.004</td>
<td>1.858</td>
<td>0.000</td>
</tr>
<tr>
<td>December</td>
<td>-0.336*</td>
<td>0.200</td>
<td>-1.678</td>
<td>1.816</td>
<td>-0.106</td>
</tr>
<tr>
<td>January</td>
<td>-0.138</td>
<td>0.216</td>
<td>-0.639</td>
<td>1.747</td>
<td>-0.040</td>
</tr>
<tr>
<td>February</td>
<td>0.144</td>
<td>0.206</td>
<td>0.697</td>
<td>1.710</td>
<td>0.043</td>
</tr>
<tr>
<td>March (baseline)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Post Appeal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being Happy</td>
<td>-0.188</td>
<td>0.273</td>
<td>-0.691</td>
<td>1.250</td>
<td>-0.036</td>
</tr>
<tr>
<td>Challenge</td>
<td>-1.630**</td>
<td>0.359</td>
<td>-4.543</td>
<td>1.229</td>
<td>-0.236</td>
</tr>
<tr>
<td>Family</td>
<td>0.588**</td>
<td>0.202</td>
<td>2.917</td>
<td>1.298</td>
<td>0.156</td>
</tr>
<tr>
<td>Humor</td>
<td>-0.214</td>
<td>0.219</td>
<td>-0.979</td>
<td>1.294</td>
<td>-0.052</td>
</tr>
<tr>
<td>Motivation</td>
<td>-0.056</td>
<td>0.223</td>
<td>-0.251</td>
<td>1.393</td>
<td>-0.014</td>
</tr>
<tr>
<td>Other</td>
<td>-0.251</td>
<td>0.395</td>
<td>-0.635</td>
<td>1.050</td>
<td>-0.030</td>
</tr>
<tr>
<td>Parenting</td>
<td>0.171</td>
<td>0.163</td>
<td>1.051</td>
<td>1.311</td>
<td>0.056</td>
</tr>
<tr>
<td>Pride</td>
<td>0.065</td>
<td>0.227</td>
<td>0.287</td>
<td>1.272</td>
<td>0.015</td>
</tr>
<tr>
<td>Sad</td>
<td>0.193</td>
<td>0.738</td>
<td>0.282</td>
<td>1.064</td>
<td>0.013</td>
</tr>
<tr>
<td>Education (baseline)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>LN (Length +1)</td>
<td>-0.005</td>
<td>0.207</td>
<td>-0.025</td>
<td>2.036</td>
<td>-0.002</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weekday</td>
<td>0.039</td>
<td>0.134</td>
<td>0.293</td>
<td>1.150</td>
<td>0.015</td>
</tr>
<tr>
<td>Constant</td>
<td>3.357</td>
<td>1.106</td>
<td>3.036</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*p-value<0.05**,  *p-value<0.10*  
Source: SPSS

Regarding the seasonality effect on the number of likes, only December had a significant effect ($\beta = -0.336$, $p$-value < 0.10) and it was a negative impact. Consequently, both August, September, October, November, January and February had no significance in this model.
The number of likes is significantly and positively impacted by the family appeal ($\beta = 0.588$, $p$-value $< 0.05$) and negatively by the challenge ($\beta = -1.630$, $p$-value $< 0.05$).

The residuals behavior was tested for normality, independence, multicollinearity and homoscedasticity in order to guarantee the statistical correctness. It is defended by some authors that the normal distribution of the residuals isn’t required when using a linear regression model but in this study, it was tested to give strength to the robustness of the model (Greene, 2003). Through the P-P plot of standardized residual analysis (Figure 18) it is possible to validate this assumption, once the dots are positioned along the main diagonal (Marôco, 2007). The independence assumption is achieved by performing the Durbin-Watson’s test. The result was of 1.984 which is in between the interval of 1.5 and 2.5, suggesting that there is no correlation among the results of the model (Sabate et al., 2014). In addition, no collinearity problems were found as all VIF values were below 3. The confirmation of the null average and constant variance can be verified by the visualization of Table 11. All these tests prove the robustness of the model.

Table 11 - Errors' Analysis for the likes model on Facebook

<table>
<thead>
<tr>
<th>Residuals Statistics</th>
<th>Std. Predicted Value</th>
<th>Std. Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>Maximum</td>
<td>Mean</td>
</tr>
<tr>
<td>-2.944</td>
<td>2.922</td>
<td>0.000</td>
</tr>
<tr>
<td>-3.113</td>
<td>2.804</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Source: SPSS

Figure 18 - P-P Plot of Standardized Residual (regarding the likes model on Facebook)

Source: SPSS
4.3 Reactions model on Facebook

The model for the number of reactions is significant as a whole (F-value = 9.781, p-value <0.05) and the independent variables explain 33% ($R^2 = 36.8\%$, adj. $R^2 = 33\%$) of the dependent variable.

Similarly, to the previous model, both image and video are significant predictors and are positively related to the number of reactions ($\beta = 0.530$, p-value < 0.05; $\beta = 1.625$, p-value < 0.05, respectively). Reactions are also influenced by the interactivity by the message once this variable is significant and positively related with them ($\beta = 0.427$, p-value < 0.05) in contrary to what was expected from hypothesis 1.

<table>
<thead>
<tr>
<th>Post Type</th>
<th>LN (Reactions +1)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>Std. Error</td>
<td>T</td>
<td>VIF</td>
<td>Std. $\beta$</td>
</tr>
<tr>
<td>Image</td>
<td>0.530**</td>
<td>0.183</td>
<td>2.892</td>
<td>2.681</td>
<td>0.200</td>
</tr>
<tr>
<td>Video</td>
<td>1.625**</td>
<td>0.179</td>
<td>9.057</td>
<td>1.379</td>
<td>0.450</td>
</tr>
<tr>
<td>Link (baseline)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Interactivity</td>
<td>Response-Inviting</td>
<td>0.427**</td>
<td>0.132</td>
<td>3.226</td>
<td>1.460</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Month</td>
<td>August</td>
<td>-0.547*</td>
<td>0.296</td>
<td>1.848</td>
<td>1.348</td>
</tr>
<tr>
<td></td>
<td>September</td>
<td>0.044</td>
<td>0.218</td>
<td>0.204</td>
<td>1.725</td>
</tr>
<tr>
<td></td>
<td>October</td>
<td>-0.457**</td>
<td>0.206</td>
<td>2.214</td>
<td>1.821</td>
</tr>
<tr>
<td></td>
<td>November</td>
<td>0.046</td>
<td>0.208</td>
<td>0.219</td>
<td>1.858</td>
</tr>
<tr>
<td></td>
<td>December</td>
<td>-0.279</td>
<td>0.209</td>
<td>-1.332</td>
<td>1.861</td>
</tr>
<tr>
<td></td>
<td>January</td>
<td>-0.025</td>
<td>0.226</td>
<td>-0.111</td>
<td>1.747</td>
</tr>
<tr>
<td></td>
<td>February</td>
<td>0.248</td>
<td>0.215</td>
<td>1.152</td>
<td>1.710</td>
</tr>
<tr>
<td></td>
<td>March (baseline)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Post Appeal</td>
<td>Being Happy</td>
<td>0.132</td>
<td>0.285</td>
<td>0.462</td>
<td>1.250</td>
</tr>
<tr>
<td></td>
<td>Challenge</td>
<td>-1.381**</td>
<td>0.375</td>
<td>-3682</td>
<td>1.229</td>
</tr>
<tr>
<td></td>
<td>Family</td>
<td>1.080**</td>
<td>0.211</td>
<td>5128</td>
<td>1.298</td>
</tr>
<tr>
<td></td>
<td>Humor</td>
<td>0.750**</td>
<td>0.228</td>
<td>3282</td>
<td>1.294</td>
</tr>
<tr>
<td></td>
<td>Motivation</td>
<td>0.274</td>
<td>0.233</td>
<td>1.174</td>
<td>1.393</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>0.133</td>
<td>0.412</td>
<td>0.323</td>
<td>1.050</td>
</tr>
<tr>
<td></td>
<td>Parenting</td>
<td>-0.049</td>
<td>0.170</td>
<td>-0.287</td>
<td>1.311</td>
</tr>
<tr>
<td></td>
<td>Pride</td>
<td>0.751**</td>
<td>0.238</td>
<td>3.161</td>
<td>1.272</td>
</tr>
<tr>
<td></td>
<td>Sad</td>
<td>1.743**</td>
<td>0.772</td>
<td>2.259</td>
<td>1.064</td>
</tr>
<tr>
<td></td>
<td>Education (baseline)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Control Variables</td>
<td>LN (Length +1)</td>
<td>0.104</td>
<td>0.217</td>
<td>0.481</td>
<td>2.016</td>
</tr>
<tr>
<td>Constant</td>
<td>Weekday</td>
<td>-0.008</td>
<td>0.140</td>
<td>-0.057</td>
<td>1.150</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.047</td>
<td>1.156</td>
<td>0.041</td>
<td>-</td>
</tr>
</tbody>
</table>

*p-value<0.05**; p-value<0.10*

Source: SPSS
In terms of seasonality, neither September, November, December, January nor February are significantly related to the number of reactions. Nevertheless, both August ($\beta = -0.547, p\text{-value} < 0.10$) and October ($\beta = -0.457, p\text{-value} < 0.05$) are significant and negatively related this variable.

Regarding post appeal, there were five that were significant for this model, namely challenge ($\beta = -1.381, p\text{-value} < 0.05$), family ($\beta = 1.080, p\text{-value} < 0.05$), humor ($\beta = 0.750, p\text{-value} < 0.05$), pride ($\beta = 0.751, p\text{-value} < 0.05$) and sad ($\beta = 1.743, p\text{-value} < 0.05$).

The robustness of this model was also tested and as in the case of the previous model, all assumptions validated its statistical correctness. The reading from the Figure 19 show that the residuals follow a normal distribution, validating the assumption of normality (Marôco, 2007). The value for the Durbin-Watson’s test was 2.068, respecting the interval from 1.5 to 2.5 and thus proving that the residuals are independent. The maximum VIF value was of 2.681, which is below 5, suggesting that no collinearity problems exist. On Table 13, it is also possible to confirm the null average and the constant variance.

<table>
<thead>
<tr>
<th>Table 13 - Error's Analysis for the reactions model on Facebook</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Residuals Statistics</strong></td>
</tr>
<tr>
<td><strong>Std. Predicted Value</strong></td>
</tr>
<tr>
<td>-2.146</td>
</tr>
<tr>
<td><strong>Std. Residual</strong></td>
</tr>
</tbody>
</table>

Source: SPSS

Figure 19 - P-P Plot of Standardized Residual (regarding the reactions model on Facebook)
4.4 Comments model on Facebook

The model for the number of reactions is significant as a whole (F-value = 7.772, p-value <0.05) and explains the dependent variable reasonably well (R² = 31.6%, adj. R² = 27.5%).

So far, both image and video had been qualified as significant predictors of the dependent variable. In this model, this is also verified. However, image is negatively related with the number of comments (β = -0.408, p-value < 0.05) and video has a positive effect on the same variable (β = 0.754, p-value < 0.05). Message interactivity (β = 0.362, p-value < 0.05), also continues to be significant and positively related to the number of comments, in conformity to hypothesis 1.

Table 14 - Estimation Results for the comments model on Facebook

<table>
<thead>
<tr>
<th>Post Type</th>
<th>LN (Comments +1)</th>
<th>β</th>
<th>Std. Error</th>
<th>T</th>
<th>VIF</th>
<th>Std. β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image</td>
<td>-0.408**</td>
<td>0.143</td>
<td>-0.2855</td>
<td>2.681</td>
<td>-0.206</td>
<td></td>
</tr>
<tr>
<td>Video</td>
<td>0.745**</td>
<td>0.140</td>
<td>5.139</td>
<td>1.379</td>
<td>0.275</td>
<td></td>
</tr>
<tr>
<td>Link (baseline)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Interactivity</td>
<td>Response-inviting</td>
<td>0.362**</td>
<td>0.103</td>
<td>3.507</td>
<td>1.460</td>
<td>0.187</td>
</tr>
<tr>
<td>Month</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>August</td>
<td>-0.145</td>
<td>0.231</td>
<td>-0.630</td>
<td>1.348</td>
<td>-0.032</td>
<td></td>
</tr>
<tr>
<td>September</td>
<td>-0.078</td>
<td>0.170</td>
<td>-0.460</td>
<td>1.725</td>
<td>-0.027</td>
<td></td>
</tr>
<tr>
<td>October</td>
<td>-0.296*</td>
<td>0.161</td>
<td>-1.839</td>
<td>1.821</td>
<td>-0.109</td>
<td></td>
</tr>
<tr>
<td>November</td>
<td>-0.020</td>
<td>0.163</td>
<td>-0.120</td>
<td>1.858</td>
<td>-0.007</td>
<td></td>
</tr>
<tr>
<td>December</td>
<td>-0.333**</td>
<td>0.163</td>
<td>-2.042</td>
<td>1.816</td>
<td>-0.121</td>
<td></td>
</tr>
<tr>
<td>January</td>
<td>-0.279</td>
<td>0.176</td>
<td>-1.583</td>
<td>1.747</td>
<td>-0.092</td>
<td></td>
</tr>
<tr>
<td>February</td>
<td>-0.166</td>
<td>0.168</td>
<td>-0.990</td>
<td>1.710</td>
<td>-0.057</td>
<td></td>
</tr>
<tr>
<td>March (baseline)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Post Appeal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being Happy</td>
<td>-0.030</td>
<td>0.222</td>
<td>-0.136</td>
<td>1.250</td>
<td>-0.007</td>
<td></td>
</tr>
<tr>
<td>Challenge</td>
<td>1.726**</td>
<td>0.293</td>
<td>5.897</td>
<td>1.229</td>
<td>0.288</td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td>0.345**</td>
<td>0.164</td>
<td>2.096</td>
<td>1.298</td>
<td>0.105</td>
<td></td>
</tr>
<tr>
<td>Humor</td>
<td>0.204</td>
<td>0.178</td>
<td>1.142</td>
<td>1.294</td>
<td>0.057</td>
<td></td>
</tr>
<tr>
<td>Motivation</td>
<td>0.009</td>
<td>0.182</td>
<td>0.047</td>
<td>1.393</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>-0.171</td>
<td>0.322</td>
<td>-0.532</td>
<td>1.050</td>
<td>-0.024</td>
<td></td>
</tr>
<tr>
<td>Parenting</td>
<td>-0.403**</td>
<td>0.133</td>
<td>-3.039</td>
<td>1.311</td>
<td>-0.153</td>
<td></td>
</tr>
<tr>
<td>Pride</td>
<td>-0.120</td>
<td>0.186</td>
<td>-0.648</td>
<td>1.272</td>
<td>-0.032</td>
<td></td>
</tr>
<tr>
<td>Sad</td>
<td>0.745</td>
<td>0.602</td>
<td>1.238</td>
<td>1.064</td>
<td>0.056</td>
<td></td>
</tr>
<tr>
<td>Education (baseline)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Control Variables</td>
<td>LN (Length +1)</td>
<td>-0.109</td>
<td>0.169</td>
<td>-0.647</td>
<td>2.036</td>
<td>-0.041</td>
</tr>
<tr>
<td>Weekday</td>
<td>0.067</td>
<td>0.109</td>
<td>0.618</td>
<td>1.150</td>
<td>0.029</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>1.243</td>
<td>0.902</td>
<td>1.378</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

p-value<0.05**; p-value<0.10*

Source: SPSS

47
Concerning seasonality, October ($\beta = -0.296$, $p$-value < 0.10) proved to be significant as well as December ($\beta = -0.333$, $p$-value < 0.05) and both of them have a negative impact on the dependent variable. As a consequence, the remain months weren’t significantly related to the number of comments.

In regard to post appeals, parenting ($\beta = -0.403$, $p$-value < 0.05) is significantly and negatively related to the number of comments while both family ($\beta = 0.345$, $p$-value < 0.05) and challenge ($\beta = 1.726$, $p$-value < 0.05) are significant and have a positive effect on the dependent variable.

The normality, independence, multicollinearity and homoscedasticity assumptions were naturally also tested for this model. Figure 20 displays the validation of the normal distribution of the residuals since the observations follow the main diagonal. The Durbin-Watson’s test is within the interval of 1.5 and 2.5 with a value of 2.067 proving that the residuals are independent. Additionally, no problems of collinearity appear to exist once that all of the values of the VIF index are bellow 3. The confirmation of the null average and constant variance can be verified by the visualization of Table 15.

**Table 15** - Error's Analysis for the comments model on Facebook

<table>
<thead>
<tr>
<th>Residuals Statistics</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Std. Predicted Value</td>
<td>-1.579</td>
<td>3.425</td>
<td>0.000</td>
<td>1.000</td>
<td>375</td>
</tr>
<tr>
<td>Std. Residual</td>
<td>-2.101</td>
<td>3.282</td>
<td>0.000</td>
<td>0.972</td>
<td>375</td>
</tr>
</tbody>
</table>

Source: SPSS

**Figure 20** - P-P Plot of Standardized Residual (regarding the comments model on Facebook)
4.4 Shares model on Facebook

The model for the number of likes is significant as a whole (F-value = 6.409, p-value <0.05) and has an explanatory power of 23.3% ($R^2 = 27.6\%$, adj. $R^2 = 23.3\%$).

Table 16 - Estimation Results for the shares model on Facebook

| Post Type   | LN (Shares +1) | | | |
|-------------|----------------|----------------|----------------|
|             | $\beta$        | Std. Error     | T               | VIF | Std. $\beta$ |
| Image       | 0.443          | 0.278          | 1.590           | 2.681 | 0.118 |
| Video       | 2.463**        | 0.273          | 9.026           | 1.379 | 0.480 |
| Link (baseline) | -               | -              | -               | -     | -   |
| Interactivity | Response-Inviting | 0.242          | 0.201          | 1.206 | 1.460 | 0.066 |
| Month       | LN (Length +1) | Weekday        | LN (Share)     | 0.085 | 0.212 | 0.400 | 1.150 | 0.019 |
| August      | 0.097          | 0.450          | 0.217           | 1.348 | 0.011 |
| September   | -0.013         | 0.332          | -0.038          | 1.725 | -0.002 |
| October     | -0.406         | 0.314          | -1.295          | 1.821 | -0.079 |
| November    | -0.346         | 0.317          | -1.094          | 1.858 | -0.068 |
| December    | -0.482         | 0.318          | -1.515          | 1.816 | -0.092 |
| January     | -0.357         | 0.344          | -1.039          | 1.747 | -0.062 |
| February    | -0.150         | 0.327          | -0.460          | 1.710 | -0.027 |
| March (baseline) | -               | -              | -              | -     | -   |
| Appeal      | LN (Share) +1  | 1.290          | 1.173           | 1.100 | 1.064 | 0.051 |
| Being Happy | -0.561         | 0.433          | -1.296          | 1.250 | -0.066 |
| Challenge   | -2.052**       | 0.570          | -3.600          | 1.229 | -0.181 |
| Family      | 0.591*         | 0.320          | 1.846           | 1.298 | 0.095 |
| Humor       | -0.309         | 0.347          | -0.890          | 1.294 | -0.046 |
| Motivation  | -0.193         | 0.355          | -0.543          | 1.393 | -0.029 |
| Other       | -0.202         | 0.627          | -0.322          | 1.050 | -0.015 |
| Parenting   | 0.373          | 0.259          | 1.441           | 1.311 | 0.075 |
| Pride       | -0.304         | 0.361          | -0.842          | 1.272 | -0.043 |
| Sad         | 1.290          | 1.173          | 1.100           | 1.064 | 0.051 |
| Control Variables | LN (Length +1) | -0.058        | 0.329          | -0.178 | 2.036 | -0.011 |
| Constant    | Weekday        | 0.085          | 0.212           | 0.400 | 1.150 | 0.019 |
|             | 2.593          | 1.757          | 1.476           | -     | -   |

$p$-value$<0.05**; p$-value$<0.10*$

Source: SPSS

On contrary of what have been happening until this point, on this model only video is significantly and positively related with the number of shares ($\beta = 2.463$, $p$-value $<0.05$). In addition, this is the first model in which message interactivity is not significantly related to the dependent variable. In terms of seasonality, none of the months proved to be significant as well.

Regarding post appeal, challenge ($\beta = -2.052$, $p$-value $<0.05$) is significantly and negatively related whereas family ($\beta = 0.591$, $p$-value $<0.10$) is also significantly but positively related with the number of shares.
As pointed out by Marôco (2007), the independent variables can’t be correlated. Thus, it is important to test for normality, independence, multicollinearity and homoscedasticity as done for the previous models.

Normality is proven through the analysis of the Figure 21 which shows that the residuals follow a normal distribution. The Durbin-Watson’s test is, once more, between the proper interval as it showed a result of 1.944, proving that the residuals are independent. All of the VIF values were below 3, thus, it seems that no collinearity exists on this model. On Table 17, it is also possible to confirm the null average and the constant variance.

**Table 17 - Error's Analysis for the shares model on Facebook**

<table>
<thead>
<tr>
<th>Residuals Statistics</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Std. Predicted Value</td>
<td>-2.204</td>
<td>3.406</td>
<td>0.000</td>
<td>1.000</td>
<td>375</td>
</tr>
<tr>
<td>Std. Residual</td>
<td>-2.575</td>
<td>2.789</td>
<td>0.000</td>
<td>0.972</td>
<td>375</td>
</tr>
</tbody>
</table>

Source: SPSS

**Figure 21 - P-P Plot of Standardized Residual (regarding the shares model on Facebook)**

**4.5 Likes model on Instagram**

The model for the number of reactions is significant as a whole (F-value = 2.827, p-value <0.05) and the independent variables explain 20% ($R^2 = 31\%$, adj. $R^2 = 20\%$) of the dependent variable.
Concerning post type, video ($\beta = -0.217, \ p\text{-value} < 0.10$) showed to be significantly and negatively related to the number of likes on Instagram. Message interactivity wasn’t significantly and thus hypothesis 1 can’t be supported.

Regarding the impact of different months, they were also not significantly related to the dependent variable of this model. Nevertheless, one of the appeals was significantly and positively related to the number of likes: humor ($\beta = 0.268, \ p\text{-value} < 0.05$).

The likes model on Instagram was also analyzed in order to guarantee the statistical correctness. Figure 22 follows the same behavior as the previous ones and thus the normal distribution of the residuals is validated. The independence is also verified since the Durbin-Watson test result, 1.731, is between 1.5 and 2.5 (Sabate et al., 2014). Likewise, no collinearity issues were observed once that all VIF values were below 2. The confirmation of the null average and constant variance can be verified by the visualization of Table 18.

**Table 18 - Estimation Results for likes model on Instagram**

<table>
<thead>
<tr>
<th>LN (Likes +1)</th>
<th>(\beta)</th>
<th>Std Error</th>
<th>T</th>
<th>VIF</th>
<th>Std. (\beta)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video</td>
<td>-0.217*</td>
<td>0.115</td>
<td>-1.877</td>
<td>1.091</td>
<td>-0.245</td>
</tr>
<tr>
<td>Image (baseline)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Interactivity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response-Inviting</td>
<td>-0.062</td>
<td>0.094</td>
<td>-0.652</td>
<td>1.193</td>
<td>-0.089</td>
</tr>
<tr>
<td>May</td>
<td>0.027</td>
<td>0.077</td>
<td>0.355</td>
<td>1.094</td>
<td>0.047</td>
</tr>
<tr>
<td>June (baseline)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Appeal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Challenge</td>
<td>-0.407</td>
<td>0.316</td>
<td>-1.290</td>
<td>1.508</td>
<td>-0.198</td>
</tr>
<tr>
<td>Humor</td>
<td>0.268**</td>
<td>0.124</td>
<td>2.161</td>
<td>1.254</td>
<td>0.303</td>
</tr>
<tr>
<td>Motivation (baseline)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Control Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LN (Length +1)</td>
<td>-0.151</td>
<td>0.142</td>
<td>-1.064</td>
<td>1.159</td>
<td>-0.143</td>
</tr>
<tr>
<td>Constant</td>
<td>5.686</td>
<td>0.601</td>
<td>9.461</td>
<td>-</td>
<td>0.123</td>
</tr>
</tbody>
</table>

*p-value<0.05**; p-value<0.10*

*Source: SPSS*

**Table 19 - Error's Analysis for the likes model on Instagram**

<table>
<thead>
<tr>
<th>Residuals Statistics</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Std. Predicted Value</td>
<td>-4.957</td>
<td>1.009</td>
<td>0.000</td>
<td>1.000</td>
<td>52</td>
</tr>
<tr>
<td>Std. Residual</td>
<td>-3.246</td>
<td>1.903</td>
<td>0.000</td>
<td>0.929</td>
<td>52</td>
</tr>
</tbody>
</table>

*Source: SPSS*
The comments model on Instagram, sadly, wasn’t significant as a whole and thereby results can’t be analyzed.

Source: SPSS
5. Discussion of the findings

In this study, factors such as post type, time frame, message interactivity and post appeal were analyzed in order to investigate its effect on customer engagement through social media.

The first factor proposed by the framework of this study was post type and the goal was to identify which post type had more influence on customer engagement. This is an important issue, since each post type requires significantly different amount of time in order to be created. As time is a valuable asset, it is relevant for brands to know which is the best post type in terms of customer engagement. On Facebook, video was significantly and positively related to all of the metrics whereas images were only significant on the number of likes, reactions and comments. In addition, images were negatively related to the number of comments. Furthermore, it is noteworthy that video was the most important variable in every model except in the comments one, showing its relevance. Consequently, from these findings, it is suggested that video is the post type that has more influence on customer engagement on social media, followed by images.

On Instagram, results were different since video had a negative impact on the number of likes. This could be considered a normal result since Instagram is mostly known by the share of images. Videos are also a post type possible, but not the most commonly used by users. Nevertheless, the platform has already updated the video features. In the beginning only 15 second were allowed and currently videos can be uploaded up to 60 seconds. This could be an improvement from the brand in order to promote the use of videos among users. However, from the results of this work, it is suggested that images are preferred over videos on Instagram.

Regarding time frame, results were very surprising. The aim of this study was to analyze which months had a positive effect on customer engagement but instead, findings only contemplate months with a negative impact. On Instagram, it wasn’t possible to analyze this issue once none of the months was a significant variable. Concerning Facebook, December was negatively related with likes and comments, August with reactions and October with the number of reactions and comments. Although on the work of Coelho et al. (2016), the positive impact of some months were justified by the presence of national holidays, it is believe in this study, that the activity of users on social media is increased during work hours as showed by some studies. As a consequence, on periods of holidays and vacations as the case of December and August, it would be normal for
the metrics of customer engagement to decrease. The negative impact of October could be explained given the seasonality of the business areas such as Education. Since Explicas-me is an educational platform where teachers and tutors can register on the online platform, it is visible a peak on the number of registrations in September. As October is the following month, and there is a fall on the traffic of the platform, there could be a relationship between this decrease and the decrease of the number of reactions and comments on Facebook during this month.

With respect to message interactivity, the results of this study suggest different conclusions regarding the nature of the SNS. On Facebook, hypothesis 1, is partially supported. It was expected that the number of comments would be increased by the response-inviting characteristic and this was empirically proved. Additionally, it was expected that the other variables (likes, reactions and shares) would be negatively impacted by the interactivity. However, the contrary was observed. Both likes and reactions were positively related to message interactivity. It can be concluded that brands have a crucial role when creating their content because this independent variable has an effect on the majority of the metrics of customer engagement.

These findings are partially in accordance with the previous work of Kim and Yang (2017) since in their study, the positive effect was only on the number of comments. Additionally, both this study and past studies confirm that having posts encouraging the response from users can increase the number of comments which is an expected result since it is the action the post aims for. Nevertheless, through the work of the present study it was proven that the number of likes and reactions were also positively affect by the response-inviting aspect of the message. This could mean that users also feel more encouraging to demonstrate their feelings about a post when the brand asks for their opinion. Through the reading of the Facebook posts of Explicas-me, it is visible that it was very frequently that the brand simply asks if the users agreed with the message on the post. Consequently, as it could be only a yes or no answer, the yes could be demonstrated simply by a like on the post, leading to the increased of the number of likes and reactions.

On Instagram, message interactivity had no influence on the number of likes and as the model for the number of comments wasn’t significant as a whole, hypothesis 1 is not supported on this SNS.
Regarding the study of post appeals, interesting findings were observed. On Facebook, both challenge and family were significant for all customer engagement metrics on social media.

Challenge was only positively related to the number of comments which is an understandable result. The reasoning is similar to the one previously used on the formulation of hypothesis 1. It was expected that, as the behavior stimulated by the response-inviting aspect is commenting, this variable would be the only one positively influenced as the other ones would be cannibalized. This wasn’t what happened to interactivity. However, it happened for the challenge appeal. The difference, as discussed above is that the response-inviting aspect can indeed encourage different types of responses from the users. In the case of challenges, as the only way of participating is through comments, it is natural that this behavior is increased while others are decreased. Family, on the other hand, was a positive influence in every metric, proving that it is an important and crucial appeal. The explanation behind this result could be related to the fact of relatability and identification. It is easy to establish connections with users through the thematic of family, once it is one of the most powerful memories and it is a big part of one’s life. Additionally, this is also a natural result given the public of Explicas-me on Facebook. As stated before, the great majority of the fans are women between the age of 35 to 44 that, most probably, are moms interested in the education of their children. Consequently, the topic of family is also of their interest and it is close to their hearts.

The metric that was influenced by more appeals were the reactions. Challenge, family, humor, pride and sad were those appeals and in exception from challenge, all the remaining ones had a positive influence on the number of reactions. Interestingly, these appeals can be easily related to the options for reactions on Facebook. For instance, humor is translated as the Haha reaction and sad by the Sad one. In addition, family and pride can both be associated to the love feeling represented by the Love reaction, which through the reading of the sample from Facebook, was one of the most frequent reaction. These results, also prove that, in fact, users perceive the main appeal of the post as they have associated them to corresponding reactions as suggested by the framework of Wagner et al. (2017).

Parenting was only significant on the comments model and had a negative influence on this variable.

In summary and in response to the third research question, the post appeals that have a positive effect on customer engagement can be seen on Table 20.
A frequency analysis was performed in order to analyze if the post appeals with a positive effect on customer engagement were the most frequently used as formulated on the fourth research question. This study reports mixed results depending on the type of SNS. On Facebook, more than half of the post are only about two topics: education and parenting. As stated previously, the second one is related to the decrease on the number of comments. Additionally, family, which the only appeal that impacts positively all customer engagement metrics, is solely used 9.6% of the times, which is reasonably low. Humor and pride are also seldom used as it could be seen on Table 5. Sad, which accounts for less than 1% also proved to be positively related with the number of reactions. It could be though by brands that using sad emotions is prejudicial for customer engagement, however, when used properly, it can have a positive impact. Additionally, the challenge appeal which is the most important variable in the comments model, meaning that it is the most powerful factor, is barely used. Towards these findings, it could be argued that brands could be more data driven and should include the study of post appeal on their analysis. Moreover, making use of the appeals that are similar to reactions is also a behavior that could be beneficial to improve customer engagement on social media.

On Instagram, humor showed to be a positive influence on the number of likes and it is, in fact, the most used appeal. The appeals used on each SNS aren’t the same, however, the one they have in common, humor, when significant, has a positive effect on both Facebook and Instagram. Thus, attention should be paid to this appeal by brands.

In terms of managerial implications, it is advised for brands and their managers to consider each SNS as independent. This is, while it is true that having presence in multiple platforms is beneficial (depending off course on the type of company and its goals), it is necessary to recognize that the same strategies or the same content won’t have the same results on both platforms. For instance, if on Facebook users potentially prefer

---

**Table 20 - The impact of each post appeal on the dependent variables**

<table>
<thead>
<tr>
<th></th>
<th>Facebook</th>
<th></th>
<th>Instagram</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Likes</td>
<td>Reactions</td>
<td>Comments</td>
<td>Shares</td>
</tr>
<tr>
<td><strong>Challenge</strong></td>
<td>(-)</td>
<td>(-)</td>
<td>(+)</td>
<td>(-)</td>
</tr>
<tr>
<td><strong>Family</strong></td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
</tr>
<tr>
<td><strong>Humor</strong></td>
<td>-</td>
<td>(+)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Pride</strong></td>
<td>-</td>
<td>(+)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Sad</strong></td>
<td>-</td>
<td>(+)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Parenting</strong></td>
<td>-</td>
<td>-</td>
<td>(-)</td>
<td>-</td>
</tr>
</tbody>
</table>

(-) post appeals with a negative effect; (+) post appeals with a positive affect
videos, on Instagram, the best way to reach the audience is through images. While on Facebook, response-inviting content seems to be relevant and have a positive impact on customer engagement, on Instagram this aspect doesn’t appear to be significant. In fact, on Facebook, response-inviting was relevant for both the number of likes, reactions and comments which turns this factor into one of the most important of the framework presented in this work. For brands, this is important, once they can really focus on developing the ability of establishing a of and it will have a positive impact on most of the metrics of customer engagement on social media.

The framework proposed by this study also contributes for the literature and future research as it showed to be relevant and therefore can be applied to different situations. Additionally, it incorporates both soft and hard criterion which is an important contribution since both types of factors should be taken into consideration when studying customer engagement on social media.
6. Final Remarks

6.1 Conclusion

The aim of this study was to provide insights for managers and brands about how they can increase their customer engagement on social media and what factors should they take into account when defining their content strategies. Also, this work intended to contribute to narrow the gap on the literature on the theme of customer engagement on social media by providing up to date findings.

The importance of customer engagement has already been recognized by companies, but with the appearance of social media and the evolution of Web 2.0, the interest in customer engagement has increased. This is due to the features of social media that naturally create an environment conducive for the interaction among users and brands and between users. Since it is a place where customer engagement is motivated, social media has also gained the attention of brands as they seek to exploit these new platforms as a way to establish connections with their audience.

This relationship between brands and users on social media is achieve through the content and activities that brands display in their pages or even initiatives started by the users themselves. Thus, a central aspect of this dynamic is the content. Content can have multiple types such as video, photo or link, induce several appeals and arouse different emotions. It can also be more response-inviting or not, depending on the posture adopted by the brand. Consequently, there are considerable factors that can potentially have an effect on the performance of the content, that, in turn, will have an impact on customer engagement.

Therefore, as there were several challenges still to be analyzed through a scientific perspective, some factors were analyzed in order to identify if they indeed had an influence on customer engagement. That relationship was also measured to enable the characterization of the nature of the impact (positive or negative). To answer the research questions and to validate or not the hypothesis, a digital analysis was conducted. A content analysis was performed as well as a quantitative analysis through the multiple linear regressions. The study was conducted taking into consideration the case of Explicas-me which is an educational online platform in Portugal.
6.2 Contributions and theoretical and managerial implications

The findings of this study suggest that all four factors, namely post type, time frame, message interactivity and post appeal have influence on customer engagement.

Through the results from the message interactive factor, it is important to notice that brands play a crucial role in setting the tone and the type of communication that is established with users. This was a factor that had an influence on 3 out of 4 metrics of customer engagement on Facebook, proving its relevance. Not only brands encourage comments by posting response-inviting content but also encourage likes and reactions from users. This proves that brands should promote an open dialogue between them and customers (Mollen and Wilson, 2010) and that they should be the first showing they are open and interested in having a dialogue and caring about the opinions of customers.

Post appeal also proved to be of extreme importance. Users want to be involved and connected with brands and they want to have unique experiences. Creating such a feeling and a connection is not easy, and thus, understanding what post appeals work best in terms of customer engagement is important. From the results of this study, it is possible to conclude that family and challenge are the most salient appeals regarding Facebook. This is interesting because the challenge appeal is related to the message interactivity. In other words, it could be argued that users, indeed, like and have a positive response to content that requires their active participation. This is also in agreement with what is thought about the new role of customers as they seek for a more active role in the buying process and their desire to co-create value with the brand (Gambetti and Graffigna, 2010). Consequently, brands should definitely take this results into account and try to incorporate message interactivity in their content and make customers feel that their opinion is valued. Regarding Instagram, humor proved to be a positive influence on the number of likes which also impacted positively the number of reactions on Facebook. Thus, when significant, this appeal also stood out by being a positive influence on customer engagement.

Furthermore, this work showed that depending on the SNS, factors have a different impact on customer engagement, and so, the conclusions withdrawn for
Facebook aren’t the same for Instagram. Coelho et al. (2016) has already pointed out the potential mediating role that distinct SNSs could have on results and with the findings of this study, it is possible to corroborate its suspicion and contribute to the literature on this topic. Although every SNS such as Facebook, Instagram, Twitter and LinkedIn have a common base, the goals, the audience that brands can reach and the features within the platforms are different. Therefore, due to these aspects it is possible that the impact of certain factors can differ. Thus, this is also a managerial implication since it is important for managers and brands to understand that their strategies must be adapted for each social media or that, even having the same content on multiple platforms, it would be normal not to have the same results in terms of customer engagement.

Regarding post type, as stated before, the existent literature reports mixed results. In this study, it can be inferred that on Facebook, video is always more significant than images and thus it is recommended for brands to make use of videos. This is a conclusion that is in agreement with the most recent studies, which could signal that through time, videos have gained more relevance and importance within Facebook and its users. On Instagram, the implication isn’t the same as the impact of video on the number of likes is negative. Thus, in order to increase customer engagement on Instagram it is recommended to brands to use images.

With respect to the time frame, the goal of this study was to identify which months had a positive effect on customer engagement. On the contrary, only months with a negative influence were identified. Given that those months were August and December, which are characterized by being a period of vacations and holidays, it could be argued that users have more online presence and activity during the work period.

Attention should be paid to the importance of the reactions as they are gaining relevance and use among users. As stated before, it can be a powerful measure for brands, as they can better understand how their customers feel and how they react towards their content and products. Additionally, as showed by this study, it was one of the metrics of customer engagement that suffered more impact from the factors included in the framework, specially by post appeals. This emphasizes its relevance as a powerful data that should be analyzed by brands. For the academic research this is also an interesting contribution since, at the time, there is barely any literature that considers the number of reactions as a metric of customer engagement on social media.

To summarize, in order for brands to increase their customer engagement, it is suggested that, on Facebook, they make user of videos, response-inviting content and
utilize both family and challenge appeal. On Instagram, images should be the first option combined with the humor appeal.

6.3 Limitations and suggestions for future research

It is important to acknowledge that this work incorporates some limitations which can signal future research directions.

First and foremost, this work had its focus on solely one sector and country and targeted a specific context. The case of Explicas-me suited the goals of this study but it would be relevant to compare results between different cases. Additionally, this study could be applied to other sectors of activity and countries to see if the results would be the same.

Secondly, a limited number of brand posts were included, specially regarding Instagram. The data collected is enough to perform an empirical investigation, however, future studies could incorporate a more solid database and include a bigger time frame. Furthermore, this study only focused on the main post types used by companies (image, videos and link). As a suggestion, forthcoming work, may want to extent the categories used as post types and include events or offers, among others.

Moreover, only emotional appeals emerged from data and thus the findings are focused on this particular type of post appeal. As showed by the literature (Wagner et al., 2017), functional appeals are also a possibility, and future studies may include both emotional and functional appeals. In addition, the coding procedure was performed solely by the author instead of more than one training coder.

This study showed that results were different between Facebook and Instagram which opens the way for questioning if other social networking sites would also have different results or if they would have a similar behavior to one of these. Thus, it is also encouraged, that future researchers study other social networking sites such as LinkedIn or Pinterest. Additionally, more evidences are needed regarding Instagram, once that there are few studies concerning customer engagement on this platform. Consequently, future work could apply the framework presented in this study to other companies on Instagram and compare the results obtained.
References


Journal of Strategic Marketing, 19, 555-573.

Engagement in Social Media: Conceptualization, Scale Development and 
Validation. Journal of Interactive Marketing, 28, 149-165.

HOLLIMAN, G. & ROWLEY, J. 2014. Business to business digital content marketing: 
marketers’ perceptions of best practice. Journal of Research in Interactive 
Marketing, 8, 269-293.

KAPLAN, A. M. & HAENLEIN, M. 2010. Users of the world, unite! The challenges and 

Social media? Get serious! Understanding the functional building blocks of social 

KIM, C. & YANG, S.-U. 2017. Like, comment, and share on Facebook: How each 
behavior differs from the other. Public Relations Review, 43, 441-449.

KIM, J. K. & HULL, K. 2017. How fans are engaging with baseball teams demonstrating 
multiple objectives on Instagram. Sport, Business and Management: An 

KUMAR, A., BEZAWADA, R., RISHIKA, R., JANAKIRAMAN, R. & KANNAN, P. 
K. 2016. From Social to Sale: The Effects of Firm-Generated Content in Social 
Media on Customer Behavior. 80, 7.

LACOSTE, S. 2016. Perspectives on social media ant its use by key account managers. 
Industrial Marketing Management, 54, 33-43.

on Social Media – Instagram. Procedia Computer Science, 72, 13-23.

Management and Organizational Reputation. Journal of Public Relations 
Research, 25, 188-206.

LIU, J., LI, C., JI, Y. G., NORTH, M. & YANG, F. 2017. Like it or not: The Fortune 
500's Facebook strategies to generate users' electronic word-of-mouth. Computers 
in Human Behavior, 73, 605-613.

Evidence that user-generated content that produces engagement increases 


PATRUTIU BALTES, L. 2015. Content marketing - the fundamental tool of digital marketing. 8, 111.


PHUA, J., JIN, S. V. & KIM, J. 2017. Gratifications of using Facebook, Twitter, Instagram, or Snapchat to follow brands: The moderating effect of social
comparison, trust, tie strength, and network homophily on brand identification, brand engagement, brand commitment, and membership intention. *Telematics and Informatics*, 34, 412-424.


Annexes

Annex 1 – Screenshot from Facebook where all variables collected are visible (number of likes, reactions, comments, shares; date of publication to identify the day of the week and the month; content in order to code for post appeal and message interactivity and the caption to measure its length)
Annex 2 - Screenshots from Instagram where all variables collected are visible (number of likes and comments; date of publication to identify the day of the week and the month; content in order to code for post appeal and message interactivity and the caption to measure its length)