



REVISTA

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Redes sociales en universidades del país. Análisis descriptivo y planteamiento de una posible solución para mejorar el impacto en la actividad académica

*Social networks in universities of the country: Descriptive
analysis and approach to a possible solution to improve
the impact on academic activity*

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Resumen

El uso actual que dan los estudiantes universitarios a las redes sociales, y la postura de los centros educativos al momento de incorporar estos medios a sus planes académicos, es el objetivo y fundamento que justifica este trabajo para que se analice el uso de la data que proviene de publicaciones extraídas de *FanPages* de tres universidades de Quito, además de los comentarios y reacciones de los usuarios a dichas publicaciones. La comparación entre el uso para lo académico y para el ocio es el principal eje que se examinó, mostrando sus resultados a través de gráficos y estadísticas. En base en este análisis se plantea un posible recurso basado en la tecnología de los *chatbots* para generar un mayor compromiso y fidelidad por parte de los universitarios hacia su centro de educación.

De la investigación realizada se pudo comprobar que los estudiantes buscan en las redes sociales generar experiencias y sentimientos, por lo cual interactúan más con las páginas de ocio que con las académicas. Ahí encuentran una cantidad de palabras y publicaciones que les permite identificarse y convertirse en un seguidor fiel, que tiene como característica principal, el compartir, comentar y reaccionar con la mayoría de los posteos.

Palabras clave

Academia, canales conversacionales, compromiso, ocio, redes sociales.

Abstract

This manuscript aimed to examine the use made by university students to social networks and the position held by educational centers when incorporating such means to their academic plan, being the latter the objective of this study in order to analyze the data based on publications taken from *FanPages* of three universities in Quito, in addition to comments and reactions by users of such releases. Comparison between the use for academic purposes and for leisure is the main parameters considered, and results were shown through graphics and statistics. Based on such analysis, a possible resource was proposed, based on chatbots technology in order to generate more commitment and loyalty by university students to educational establishment.

It was found that students use social networks to generate experiences and feelings, for which an interaction is generated mostly with leisure websites in comparison to academic ones, where a great amount of words and publications are found, allowing to identify themselves and become a follower, whose main characteristics is share, comment and react with most of the postings.

Keywords

Social networks, engagement, academy, leisure, conversational channels.

1. Introduction

In this research other types of qualitative and quantitative data will be considered, thus forcing a different type of analysis for the collection of unexplored information. New technologies that have emerged for the analysis of unstructured information will be used in order to measure behavior and impact on students and to propose a possible solution that promotes academic knowledge using the network Facebook. This will be a huge advantage on the part of schools to impact positively on the students and make the most of the functions of booming social media by college students.



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Taking as a premise the current state of knowledge, the hypothesis that the engagement (commitment) in the Academic *FanPages* by the university students of Quito does not exceed the third of the engagement generated by pages dedicated to leisure and entertainment.

The objective is to study the behaviors and expectations of the use of social networks by students from three known universities in Quito. The data will be collected from the *FanPages* of the universities selected and their peers dedicated to leisure; this data will allow to observe the use that the authorities and students give to this network. The comparison between academic and leisure use will be the main axis in this work, which will be presented in statistical results, and solutions that provide to university educational entities. The limitations that the work will have are that the data extracted for further analysis will be only from the social network Facebook. The data to be examined will be from the last three months.

This study is descriptive. Its objective is the identification of causes and evaluation of their effects so that it will allow to analyze the variables posed, control and measure any change in an efficient and orderly way. This study summarizes the most important elements and considerations that were developed in the thesis work of (Gordon-Salcedo and Noguera-Vásquez, 2018).

This document is structured as follows; the introduction contains the theoretical basis; the methodology describes each step taken in the research; the discussion of the results presents an analysis of the measurements found in the field and in the consultation; the conclusions summarize the findings as well as possible future lines of research.

1.1 Theoretical framework

1.1.1 General Concepts

- **Digital social networks**

Among some authors, a digital social network is defined as a web environment, whose objective is to make it easier for people to establish relationships with each other, create communications, organize communities, and form sites with different content, with the main objective of sharing information from anywhere in the world, and anyone being a potential information creator (Bustos, Flores, and Flores, 2016). Young people have great knowledge in social networks and a willingness to use them for teaching purposes, in this way, they interact and have fun with them, they generate an academic value consolidating forms of cooperative study (Espuny et al., 2011). The study carried out by (Gómez et al., 2012) points out the main reasons for the use of social networks, and these are: general environment (friends, family) 75%, entertainment 61.8% and educative 24.7%.

- **Influence of social networks in the academic field**

Despite the great potential shown by digital social networks, these can become a major threat if they are not given due use, as they can become a distraction for students and youth in general, in whom the average use for entertainment is 7 hours, reaching in many cases up to 14 hours (Bustos et al., 2016). Huang's analysis (2018) supports these arguments in which the correlation between the use of digital social media and student academic performance was calculated, and a very small negative correlation was found. All these factors are necessarily detracted during the study time for students, directly affecting academic performance; for these reasons, many universities have been reluctant to use social media in educational settings, claiming that they encourage leisure and that publications lack a good scientific basis (Rodríguez and Patricia, 2012). However, social networks have great



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potential to improve cognitive and educational activities, using proper supervision by teachers (Bustos et al., 2016).

- **Analysis of social networks**

Social networks offer the ability to find patterns and properties in user interactions to be studied in order to understand the relationship and behavior between the actors involved by applying some techniques use of networks and graphical theories (Dakiche et al., 2018). One technique for these studies is to identify how communities, or clusters are established, i.e., a high density of interactions between individuals in the same group and a low density of interactions between individuals from different groups (Leskovec et al., 2008). Another technique is content analysis, the characteristic that consists on giving information about unstructured data and the fluidity in the semantic text of publications (Antolín-Prieto, 2012), helping to establish predominant characteristics of messages to frame publications on different topics (Onieva, 2017).

- **Engagement.**

The term *engagement* has evolved over the time, being a measure of the subsidy that exists between customers and the company (Erat, Desouza, Schäfer-Jugel and Kurzawa, 2006). While there is a wide variety of conceptualizations of this measure, many researchers agree that *engagement* is a state of mind, which leads a subject to focus on a brand or service and engage in frequent and ongoing interactions with the focus object, which go beyond making a purchase or transaction (Thakur, 2018). Its measurement is obtained by observing the degree of participation that users have towards the brand or service, whether consuming it, sharing it, publishing it, etc (Wagner and Majchrzak, 2007). This engagement is based on a collage of experiences, which are the beliefs a subject has on how he/she can adapt a website with his/her life (Calder et al., 2009). The high level of satisfaction generated by these experiences leads to the loyalty of the person, observed in the reacquisition, in the form of support or in the form of word of mouth propaganda (Anaza and Zhao, 2013). Another factor associated with customer engagement is trust in the company (Kim et al., 2009), which leads to user involvement not only to make an immediate acquisition, but to be in touch with the brand. According to (Achen, 2016) creating the engagement is important for obtaining information about the exchange of products and services of a particular company.

- **FanPages**

These are pages that allow users to interact and affiliate with a brand, just as they interact with other private user profiles (Perez et al., 2018). Thus, people have a channel to follow their favorite brands, with the option to share and recommend their interests to their friends, because when a customer likes one of these pages, he/she already becomes a fan of it, and this information becomes visible in the user's profile. *FanPages* have an appearance of individual user pages, but have the unique advantage of sending messages quickly to a large number of followers, reason for which many companies use them as a business communication tool for constituting continuous dialogues with the customers (Kudeshia et al., 2016), which are being widely accepted, achieving a significant increase in sales for organizations (Pöyry et al., 2013).



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1.2 Social networks and their apps

- **Education**

The new global trend for education is MOOC (Massive Open Online Courses), based on collaborative interactions between all users while developing digital skills, with free access to all information and resources needed, without requiring classroom attendance, with the advantage that students will advance at their own pace and at the most appropriate times for each. Economically, these courses reduce teaching expenses by combining tutoring services with free online learning and social media. All this makes this new form of education very attractive to students all over the world. MOOC providers are: Coursera, edX, Udacity, FUN, Iversity, FutureLearn, Rwaq, Edraak, among others (Brahimi and Sarirete, 2015).

- **Marketing**

Nowadays social networks have also positioned as ideal environments to publicize a brand, a service or a product by using the various features they offer, such as: the ability to upload information, the ability to share and publish written content or multimedia files, the ease they provide to create networks of people around the world, the customization of commercial pages to create a representation of their own identity (Gonzales and Hancock, 2010), and the ability to track user reactions with a product, thereby increasing the ability a business has to make decisions based on the results obtained (Herrera-Torres et al., 2017).

- **Artificial intelligence on the social media**

One of the most important aspects in social networks is the establishment of conversational channels, interactions that are not only one-way but two-way, developing in the user a positive feeling towards service, brand or page (Onieva, 2017). To create these communication channels, new technologies can be used, such as virtual conversation agents based on artificial intelligence, which allow to create university environments conducive to communication between teachers, students and staff. Even today, the full potential of this technology is not exploited, but some success stories have already been carried out, such as the AgentSocialMetric tool, which helps the teacher to be aware of the current state of the classroom (Kuz et al., 2015).

For the development of this tool they used a smart chatbot or chatbot software agent. A chatbot is a software that uses natural language to interact with users, thus simulating a human behavior based on models and patterns of dialogue of people to act as mediators in the distribution of cognitive tasks between machines and people. There have been several terms to refer to these programs, such as: virtual agent, chatterbot, dialogue system, among others. Today a wide range of chatbots have been developed for many services and their use continues to increase (Ciechanowski et al., 2018).

The conversational interface software agent used in this tool was one named Albert, who acts as a mediator in the relationship between the teacher and the students. Thus, the AgentSocialMetric tool manages to distinguish the questions of users and then elaborates the appropriate response, creating lines of collaboration and an excellent environment for the development of pedagogical works. An important feature of this tool is the possibility that the teacher can talk to Albert to extract information about the social climate of the classroom, thus finding profiles of students such as: the annoying, the leaders, the friends, among others. In this way, a comfortable environment for learning is developed. For future studies, it is intended to expand the methods of communication with the conversational agent, with channels suitable for people with visual disabilities, implementing audio functions to the chatbot (Kuz et al., 2015).



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1.3 Case studies

Currently several analyses of the use of social networks in different fields have been carried out, such as: sport, academia, commerce etc. Below are some of these cases that set several examples for later studies.

1.3.1 Digital engagement and social identity of sport fans

The case of Premier League Teams on Facebook (Herrera et al., 2018). The objective of the study was to analyze the level of fanaticism by fans to the main *Fanpages* of Premier League teams, through the correlation between interactions and the page posts. The user interactions that were taken into account were: like, comment and share.

These three types of reactions, according to the study, indicate a different degree of commitment, for example, when responding to a post with a *Like*.

1.3.2 Use of social networks by Andalusian Public Universities. Content analysis of the official Twitter account (Onieva, 2017)

This study analyzed how Andalusian universities used social media to reach the public. Two types of audiences were established: internal (teachers, students, administrative and service) and an external audience (other companies, alumni, students seeking to enter the university and the public in general). To reduce the field of study, only Twitter official accounts of the universities were analyzed in the months of February 2014, 2015 and 2016. Similar to the study conducted on football teams, this study identified in each Twitter message the interactions by users, which would be the actions of: like, indicating a basic interest in the message, or retweeting, indicating the desire to make the message known to others.

Content analysis was an important aspect to establish the characteristics of messages that predominate in social networks by universities in the Andalusian region. It was observed that the most common topics were related with courses, conference information, conferences and open houses, and the topics less covered were about employment, student information, social and voluntary works, thus, confirming the communicative problem mentioned by (Paniagua et al., 2012) that universities have adopted Internet and social networks as means of information and have not emphasized communication with their students, professors and administrative staff. This study also advises that universities should consider the idiosyncrasies of each social network to establish their own themes, in order to better capture the attention and commitment of internal clients and post user-friendly content from each network and not send messages just by filling up with posts, which could even be detrimental to the page as mentioned by (Onieva, 2014).

1.3.3 Impact of social networks on the academic performance of students of Universidad de la Guajira (Colombia) (Martelo et al., 2017)

This study aims to find the influence of digital social media on the academic performance of university students. The methodology used is non-experimental, descriptive and transversal, conducted in a sample of 368 students from the first semester of Universidad de la Guajira in Colombia, in 2016. The analysis was based on a hypothesis test as far as sample ratios, comparing and obtaining variation in grades between two time periods; one by making use of social media, and the other without making use of these websites. As results it is noted that there is a great negative influence of social networks on the academic performance of students, results that corroborate the studies of (Junco, 2012). It could also be seen that the most commonly used social network is Facebook, followed by Twitter, Instagram and YouTube.



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2. Methodology

This research is applied-type with a simple descriptive design and retrospective longitudinal cut; therefore, the design to be used relates time, action and audience, dimensions that help to conceptualize the process of study-impact research (Willet, 1974). By observing and measuring the incidence of the use and management of the FanPages of the universities to be studied, as well as the pages dedicated to leisure called MEMES, corresponding to each university center. The steps to follow are:

- **Sample selection and characteristics**
Determine the ideal sample of publications to be examined, which allow to find trends, behaviors, characteristics and interactions made by students from the three most important universities in the country.
- **Definition and characteristics of the variables**
Based on the current state of knowledge and the hypothesis stated, determine the variables and interactions necessary for the descriptive analysis of this research.
- **Choice and use of the support tool**
Compare social media analysis and Benchmarking tools that facilitate data extraction and analysis.
- **Analysis and recognition of data patterns.**
At this stage of research, the statistical variables of FanPages should be compared through filters, charts, tables, to determine common traits that college students seek to interact and become Fans.
- **Possible solution for a better impact in the academic area**
Once determined the traits and behaviors that allow to make greater interaction between students and FanPages, a prototype software is developed to improve and position the educational pages.

3. Calculations and results

3.1 Sample selection

The study group corresponded to the students belonging the three universities - public and private- with great significance in Quito: Universidad Central del Ecuador for being the university with the most history in Ecuador, Escuela Politécnica Nacional by being a benchmark of high academic level in the country, and Pontificia Universidad Católica del Ecuador for having the 71st place in the ranking of Latin American universities in QS *Latin 3American University* Ranking 2018. The total average of conglomerate people who would interact with all *FanPages* is about eighty thousand users between men and women, as seen in Table 1.



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Name	Students	Gender	
		F	M
Universidad Central del Ecuador	65.259	38.133	27.126
Escuela Politécnica Nacional del Ecuador	9.114	2.734	6.380
Pontificia Universidad Católica del Ecuador	14.445	8.667	5.778

Table 1. Comparative table of universities and the number of students

The use percentage of these universities were taken into account for the selection of the social network to be studied, as seen in Figure 1. The network used for the research is the social network Facebook, by being in a very high range of acceptance among university students and because of the advantages it presents when extracting and classifying the data.

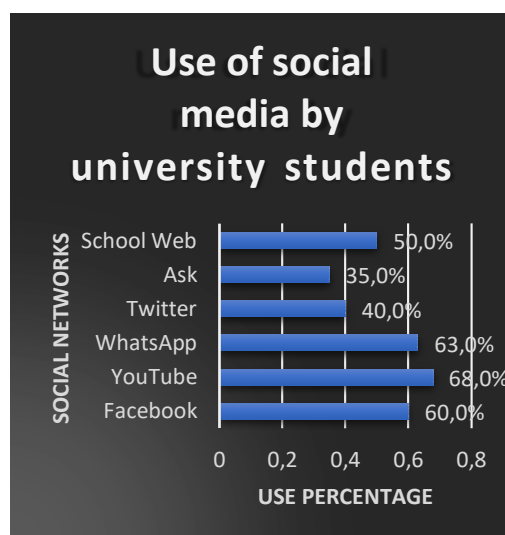


Figure 1. Use percentage of social media by university students (BrahimiySarirete, 2015).

3.2 Definition and characteristics of the variables

For the research, variables have been established to corroborate the statistics of the hypothesis, and were stated based on the case studies presented in the methodology, with guidance on the behaviors and trend of young university students when interacting on social networks (Facebook), grouping them into 3, presented as follows:

- **Independent variables**
Those variables that allow to establish a direct relationship between the publication and the opinion of the students have been established in this group.
- **Digital interactions**
These are the actions that can be performed on a post, comment, link, or video on Facebook, where the number determines how strong their engagement with the community has been, determining whether it was successful, or simply went unnoticed in the. Interactions have been classified hierarchically, as shown in



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Figure 2, the most desirable being the option to share, followed by comments and reactions.

- **Dependent variables**

Here the two main axes of research have been determined, being the union the universe of study to determine the behavior and use of young university students on Facebook, each being dependent on the interactions that are subjected posts made by their administrators. The groups are:

- **Academic**

This includes the official FanPages of each of the universities to analyze, where their objective is to inform and rescue remarkable news from their institutions, wanting to improve their image in the social sphere.

- **Leisure**

Emphasized in FanPages that perform a social critique through memes and generally humorous content, where their goal is to criticize the characteristics that define the other universities, such as the problems they have, being very volatile in time.



Figure 2. Relevance of interactions

- **Intervening variables**

All variables that can interfere with the results have been defined, starting with the element that characterizes young university students, being a susceptible variable in time, called Emotion. The emotional, as an element that is emphasized in young university students, makes them feel identified with the options of digital interaction; therefore, there is space for fans or followers. The fans of those who tap Like to everything that a brand publishes, almost without further knowledge of the content of what has been published, because once it has won its emotions, digital interaction prevails impulsive; while followers keep watching each post waiting to be important to them, now, probably being a follower is probably the previous step to becoming a fan.

A university student's age range varies from 18 to 35 years old and have been classified into three subcategories that are:

- **Initial period**

Those who take a propedeutic level, where the goal is to have a better image and adaptability with the group, letting themselves be greatly influenced by the trends and opinions of the whole.

- **Medium period**



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Those students who are in the middle levels, having a better-formed criterion of everything that has been presented in their university career, defending and supporting their academy in each of the posts.

- **Advanced period**

Those students about to graduate with trained characteristics, where their focus no longer depends on general opinions, where their intention is to learn in order to build their professional and educational career.

3.3 Election and use of the support tool

Choosing an optimal tool for the study to be carried out is essential, since the data obtained from it will be the basis of all the analysis. Several tools were compared to choose the most suitable for the study to be performed and it was determined to make use of the *Business Intelligence* (BI) tool for *Social Scan* of the company Golden Communications.

It has been selected for the ease it offers when recognizing and analyzing the social media metrics present on the Facebook pages of a company and its competition. The information can be presented in an intuitive and dynamic interface, since this tool automatically converts the data that has been extracted to statistical graphs for its best understanding. In addition, it has the functions of timelines, and *drill-down* and *roll-up* data filtration that provide a great help for information management, thus increasing the understanding of the results.

Social Scan allows to recognize and analyze the polarity in user comments and perform a content analysis on all posts that are required of a *FanPage*, which will be very positive when analyzing the behaviors of users and universities on the social network. The tool also provides great skill for real-time data extraction at high speed, saving time in data detection, extraction and visualization. And unlike other tools, it has local support in Ecuador.

3.4 Analysis and recognition of patterns in the data

With the definition of all the variables and with the help of the chosen tool, it has been determined to build a custom board, focused on each of the topics to be analyzed, emphasizing and determining what are the opinions, interactions and reactions that motivate people to have a better *engagement* of the main axes that are Leisure and Academic.

- **General Positioning**

Due to the study of the aforementioned sample, the location of the FanPages to be studied has been embodied, observing in Figure 3 which of them generates more interaction in the social field.

In the rating quadrant, it has been observed that the FanPage Memes UCE Quito has the largest number, approaching 60,000 of reactions, also exceeding 2,000 comments, compared to Memes PUCE and Poli Memes being in the first hierarchies of positioning, being relegated to the other official FanPages, with the observation that PUCE_Ecuador is approaching the OCIO group.



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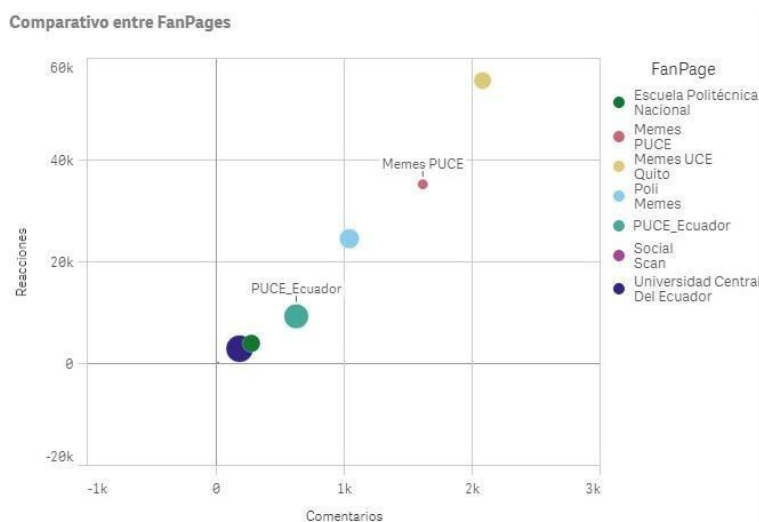


Figure 3. Positioning FanPages reactions vs comments

Based on this data a table was created showing the positions of FanPages by interactions with students establishing positions as shown in Table 2.

FanPage	N° of followers	N° of post	N° of shared	N° of comments	N° of reactions	N° of interactions
Memes UCE	40.274	140	10.540	2.079	55.745	68.364
Memes PUCE	14.427	140	28.368	1.613	35.355	65.336
Poli Memes	52.574	140	3.204	1.040	24.665	28.909
PUCE Ec	81.495	140	1.531	626	9.411	11.568
EPN	41.593	140	938	276	4.093	5.307
UCE	100.31	140	697	184	3.039	3.920

Table 2. Fanpages positioning sorted by interactions

- **Daily average publications**

In order to perform a more detailed analysis, it was necessary to create new metrics, among which is the one that was called Daily Average Publication defined as indicated in Equation 1.

$$\text{Equation 1} = \frac{\text{Count(Feed_Id)}}{(\text{Max(Date_Post)} - \text{Min(Date_Post)})}$$

Where it is clearly determined in Table 3 that the maximum number of daily posts is made by the FanPage Universidad Central del Ecuador, with more than 15 posts, and the one that publishes the least is Memes_PUCE, with a daily average of 0.12.



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Name of the pages	Daily average posts
Memes PUCE	0.12
Poli Memes	5.19
Memes UCE Quito	0.34
Universidad Central Del Ecuador	15.56
Escuela Politécnica Nacional	4.83
PUCE_Ecuador	1.05

Table 3. Daily posts by Fanpage

Among the content published by the *Official FanPages*, they have a more informative approach, being the most relevant publication among the three, the video made by *PUCE_Ecuador*, as seen in Figure 4. There is a lot of diversity of colors, motivating to leave a mark with the text of: *Celebrate every achievement obtained, revel in the built and make your mark with every step, that is to be of La Cato.*



Figure 4. Best didactic post on Facebook

It can be affirmed that *PUCE_Ecuador* is the didactic *FanPage* closest to the pages dedicated to leisure, where the texts express more colloquial phrases with the aim of allowing students to connect with the post.

3.5 Trend in the time

- **Leisure in time**

Thanks to the tool, it has been mentioned what are the trends and interactions over the time generated by each of its Post, observing in Figure 5 the individual behavior in which each has its own color.



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Figure 5. Leisure in time (April-March)

Poli Memes is the *FanPage* that publishes the most in the filtered days, generating an important *engagement* in the students, but it does not generate many shares, limiting itself to expanding and viralizing on the Social Network.

- **Academic in the time**

Although there are more academic publications, exceeding 7 daily publications on average, Figure 6 shows that its engagement rate is low, reaching 12.6% and comparing engagement with respect to Leisure in most posts it exceeds 20%, having almost twice as much interactions with their users. This difference of almost 8 points reflects the inaccuracy and little creativity of academic pages when publishing their content, with certain exceptions that have already been mentioned above.



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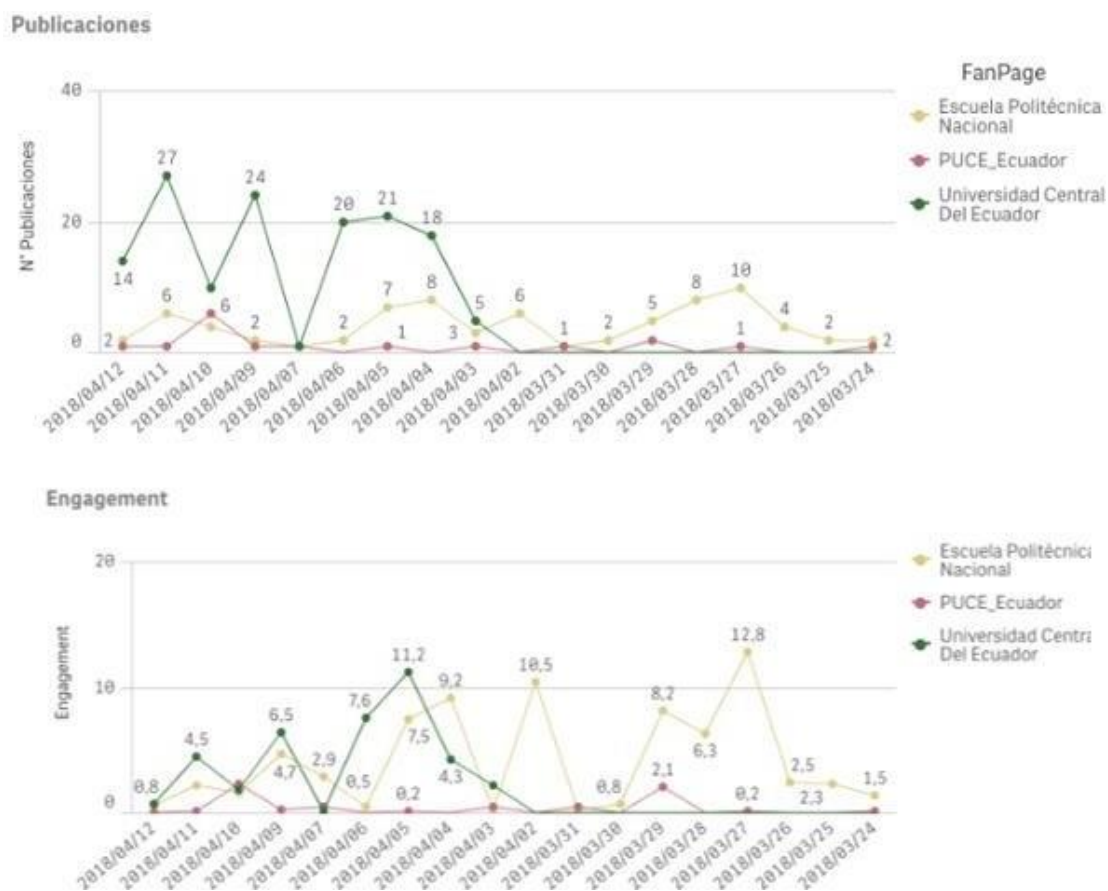


Figure 6. Academic in the time (April-March)

One of the visual forms provided by the tool is to observe all FanPages in a conglomerate way, for this analysis they have been grouped according to the dependent variables: leisure and academic. It was determined that the day where more posts have been generated by the Leisure FanPages is Tuesday; one of the reasons is the attenuation of the start of the week and the low pressure of the final tasks to complete the working days. It is noted in Figure 7 that the day with more Academic content is Wednesday, when examining its publications, it is evident the importance of announcing the events for future days over the following weeks or months, the idea is to consider that since Wednesday is a day that divides the week, it can attract more viewers.



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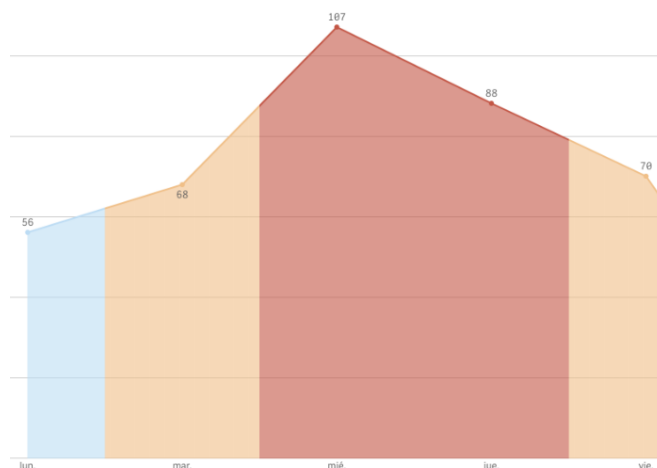


Figure 7. Days with more academic posts

- **Content strategy**

To achieve a certain number of interactions, it is necessary to consider a strategy that includes a specific type of publication, as well as a day of the week that favors and increases engagement in followers or fans. The tool suggests that publishing video-type content on Fridays should be considered to ensure more shared numbers; however, after the ignorance of those who manage these FanPages, it has been determined that there is more publication incidence of photo-type content on Wednesdays, weakening the number of expected interactions.

- **Word detection**

One of the key aspects for engagement is the appropriate use of language and linguistics, which facilitates the specific use of words in favor of captivating followers and fans. The words that are usually used are those that are trending and that can preferably be used in code or symbols, those that have a sarcastic language, or the fusion of a colloquial and indigenous language, as well as elegant words; the tool allows to determine those words that have been used the most and that have generated the greatest number of interactions.

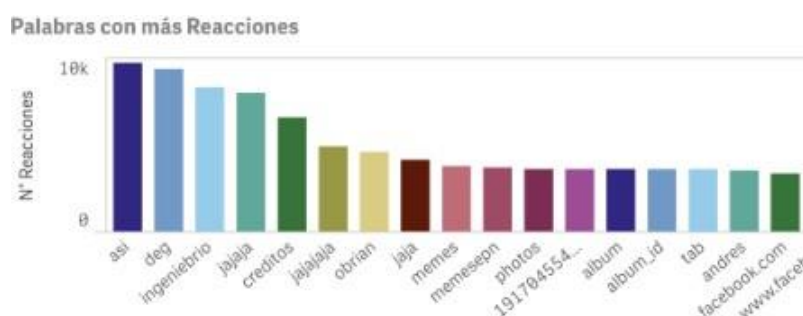


Figure 8. Most used words of leisure

In the long list that has been analyzed, in Figure 8 impact words are found in hierarchical order from the highest to lowest, such as: memes, vos, combats, engineering, key, etc., all with the same approach to grant confidence to their followers or fans to feel identified, accepted to become a member of a big digital community.



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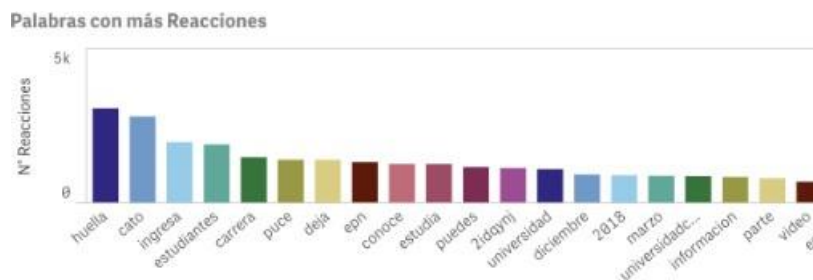


Figure 9. Most used academic words

On the other hand, in the pages intended for academics in Figure 9, relevant words have been found such as: information, study, students, enters, participates, knows, we invite, career, science, process, etc., where their interest is clearly informative, leaving creativity aside, becoming texts full of common words. It is worth highlighting the work that PUCE_Ecuador is doing by using more striking and colloquial words and phrases, such as: La Puce, la Cato, sowing, footprint, life, feeling, unique, generating an emotion in students, standing out in front of the other Academic FanPages, as it appeals to a much-needed sense of appropriation and identity in the university life.



Figure 10. Leisure analysis

It should be noted that leisure generates more than 4000 comments, most of which are done to defend and show the university where they belong, and at the same time discredit and mock the other Universities, as seen in Figure 10; there is 22.4% of negative comments where there is evidence of complaints and rude words. These kinds of defensive and even affective behaviors mark a convenience agreement even between followers and administrators to gain the attention of more followers or fans, through positive and negative discussions in the networks.



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Figure 11. Academic analysis

Educational FanPages generate a small number of comments, and as shown in Figure 11 they are mostly neutral with 40% requesting more information in courses, trainings or events. The idea is to publicize the academic offer of the universities, and that a greater number of participants can be consolidated in the different activities.

3.6 Proposed solution for a better impact in the academic area

- **Sustenance for the proposal**

From the analysis made to publications, it can be observed that university students tend to respond in a more positive way to comments or phrases that are managed in a colloquial language with a common formal language in University posts. Funny texts are widespread among university students, and it should be noted that they can even contain very important information in them.

Content analysis also determined which keywords draw much more attention to young people, and which ones are not found in their lexicon. In addition, it was possible to determine that the videos and images are the content that generated the most interactions by the students.

From the current state of knowledge it can be mentioned that one of the very important aspects that generate positive feelings in users is the possessing conversational channels with interactions that are not only one-way but two-way (Onieva, 2017).

Tools that *chatbots* have used for the educational environment have generated very positive responses, such as the *AgentsocialMetric* tool which manages to distinguish users' questions and then elaborates the appropriate answer to the sentence, creating lines of collaboration and an excellent environment for the development of pedagogical work.

- **Proposal**

Based on the results obtained in the analysis and the theoretical framework found, a prototype virtual conversational agent based on artificial intelligence was raised. As a first step, it was necessary to design a Facebook *FanPage* for the Central University of Ecuador, with the name *virtual didactic ECU* in which a *chatbot* developed with the online *Chatfuel* was deployed, providing many facilities when creating *chatbots*, especially for Facebook Messenger, because it has a block sequence for its construction, to which can be attached videos, images, audios, sequences, and even email *plugins*.

The aspects that were taken into account for the development of the *chatbot* were to answer common questions from college students and to provide information about relevant events at the University.



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This *chatbot* will allow to obtain a two-way conversational channel, trained in understanding and answering questions expressed in a colloquial language that young people use and understand. In addition, the most popular words used in the lexicon of university students will be included in the questions and answers, to be able to interact with them in a friendlier and familiar way. Another important aspect is that the *chatbot* handles multimedia content (videos, audios and images) in its communication, thus generating more marked experiences and feelings in the users.

This software will serve as an impetus to develop in students a positive feeling towards the page, thus creating a university environment conducive to communication among teachers, students and staff.

4. Discussion

It is clear that *FanPages* generate great acceptance by users, and the degree of *engagement* depends on several factors that have been analyzed in this research, confirming the results of studies prior to this work that show a lack of skill on the part of universities to generate fidelity in students.

All these results have served as the basis for the structure of a possible solution, in order to ensure that knowledge is presented in a free, simple, pleasant and easy way for teachers and students.

The *FanPages* of the three universities analyzed have significant differences in the number of their followers, and in the same way they show that the level of interaction does not have a direct relationship with the number of followers, noting that the official *FanPages* of universities, despite having a significant number of followers, generate very little interaction. Positioning in the last places in the interaction table compared to leisure *FanPages*, which with few followers generates a lot of interaction.

Research has proved that the number of daily posts is not a determining factor in obtaining more interactions as discussed in the theoretical framework on the study of universities, contradicting a common and empirical knowledge that the more posts, there will be more interactions.

4.1 Topics of students for students in the social media

It is clear that young people have a high knowledge and use of social media, being currently a concern due to the great negative influence on the academic performance of students, but there is also a positive aspect in favor which is that young people have a great acceptance and willingness to use these social networks for an academic purpose. In addition, it can be stated that the most welcoming words are those with academic definitions fused with a burlesque touch, always with a focus on entertainment, the novel and colloquial. It is observed in the official *FanPages* of the three Universities their firm stance of governing in a formal state, where most of their posts are simple and mere informational ads that do not generate any attractive user experience, so that they feel unidentified, without the confidence and excitement to become a fan, while in the three *FanPages* of leisure, their criticisms of the academic, social and what is trending are done in a funny way, full of visual content with the aim of entertaining, leading the student to a state of mind that allows him/her to feel identified, reflecting many of his/her prospects or longings on the screen.

4.2 Social media in education

Today, the world's leading universities have chosen to structure a collaborative platform in which there is a global contribution by sharing knowledge among students and teachers, where courses are also taught, as in the *Mooc's* platforms. In the calculations and results, the



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search engine words were course, homework, books, projects, etc, all of them related to the topic of education, noting that the official *FanPages* are reluctant to use social networks for educational purposes, limiting themselves to informational topics of little interest.

4.3 Response to publications

The comments on the leisure pages are 4 times more numerous than those made on the official pages of the universities. According to what is researched and proposed in the methodology, it is believed that this is because of the emotion of feeling identified, generating a mostly positive polarity unlike the officials, in which a neutral position is reflected to their publications by students.

4.4 Student behaviors on social media

Issues such as personal identity or the expression of the *self* are put at stake when the user defines himself/herself in being a fan or follower, because the university students, in the construction of an image of acceptance, allow themselves to be attracted by their tastes and affinities until even elaborate a *mask* that allows them to project themselves for fun rather than academic matters; therefore, the official pages of higher education institutions do not end up approaching the recognition of this way of digital interaction marked by the population of university students.

The behaviors will vary and will respond to their environments, contexts, ideologies, artistic attachments, but with a common aspect: *the emotional*. The uniqueness of the digital makes the user build his/her identity through a character that he/she can select, control with the mitigating of the *idealization* of himself/herself, since there is no such face to face encounter with the *other*; likewise, it does not respond necessarily at the simultaneous terms of the temporality of the *real* or physical world; therefore, these elements distance it from reality to such an extent that there is a risk of creating a virtual universe parallel to what would be called *real space*.

5. Conclusions

It could be observed that university students do not feel a real commitment to the official Facebook pages of their universities, while the *engagement* generated by their peers dedicated to leisure and entertainment is considerably higher.

It was possible to determine that audiovisual content is a great element when it comes to generating feelings and experiences, although not real in people's minds, thus, forging a solid *engagement* with the pages that use these resources.

Surprisingly, it was observed that the number of followers and posts of a *FanPage* is not a determining factor when conceiving interactions by users.

Finally, it was found that universities have used social media as simple means of publishing newsletters, something like a flyer board, thus ceasing to harness the full potential offered by these channels to capture the students' interest. Therefore, depending on the objective being pursued, it can be thought of a hybrid model that combines the two SQL and NoSQL technologies, where if greater consistency is needed it can be stored in a relational way, while databases would be used for immediate or recurrent queries.

6. Recommendations and future lines

Universities are encouraged to use graphic and audio elements in advertisements presented in their *FanPages* in order to generate more enjoyable and lasting experiences in students. There is a need to analyze different social networks in future studies, such as Twitter,



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YouTube, Instagram, etc., in order to find greater features in the users, depending on the characteristics of each network. It is recommended to create more channels of two-way communication between universities and students, since it has been observed how they can enhance the relationships between the two destinations.



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