

Linking students with marketing companies through IT Projects

Vinculación de estudiantes con empresas de mercadotecnia a través de Proyectos De TI

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Abstract

Traditional advertising methods, such as print media, radio, and television ads, have been fundamental for small businesses and medium-sized enterprises to gain visibility. However, as these businesses have grown, it has become necessary to explore new strategies to reach a broader audience. With technological advancements, especially in mobile devices, advertising has evolved, allowing companies to reach various sectors of the population more efficiently. The growth of social media usage has facilitated connections between people from different places, driving businesses to adopt new marketing techniques. This technological and social shift requires restructuring traditional marketing strategies, focusing on tools such as website development and the use of social media to attract new customers and enhance communication interaction.



Technology, Marketing, Project

Resumen

Los métodos publicitarios tradicionales, como anuncios en medios impresos, radio y televisión, han sido fundamentales para que pequeños negocios y medianas empresas se den a conocer. Sin embargo, a medida que estos negocios han crecido, se ha vuelto necesario explorar nuevas estrategias para alcanzar un público más amplio. Con los avances tecnológicos, especialmente en dispositivos móviles, la publicidad ha evolucionado, permitiendo a las empresas llegar a diversos sectores de la población de manera más eficiente. El crecimiento del uso de redes sociales ha facilitado la conexión entre personas de diferentes lugares, lo que impulsa a los negocios a adoptar nuevas técnicas de marketing. Este cambio tecnológico y social obliga a reestructurar las estrategias de marketing tradicionales, enfocándose en herramientas como el desarrollo de páginas web y el uso de redes sociales para captar nuevos clientes y mejorar la interacción en la comunicación.



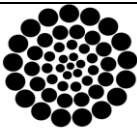
Tecnología, Marketing, Proyecto

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## Introduction

Currently, some companies try to attract customers using person-to-person techniques and, on some occasions, by setting up a stand at various events to increase their visibility. However, these methods are not suitable for professionally engaging potential customers. Different marketing methodologies have been studied to advertise and create a brand identity that identifies them and helps them reach more people.

However, in this search, it has been found that traditional marketing techniques are aggressive towards consumers, which ends up driving them away or creating an unfavorable image of the company due to third parties who have been negatively impacted and now hold a poor opinion of it. The communication channel used to raise awareness is not effective for positioning, and actions are needed to convert interested parties into clients and thus gain ground in the industry.

Technological innovation has developed rapidly, increasingly encompassing a myriad of users from different social groups with applications that simplify communication. More and more new applications are being created, but they are not correctly implemented in relation to business.

By reaching only a small portion of the population, its geographical limitation carries significant weight and negatively influences brand positioning. By not using appropriate techniques to gain recognition and being unable to use traditional methods due to their cost, the company sees its economic sustainability undermined.

In 1996, the number of Internet users was calculated for the first time, resulting in 40 million. By 2013, there are already more than 2.5 billion, most of whom reside in China. On the other hand, the expansion of the Internet was restricted for a time due to the difficulty posed by installing terrestrial telecommunications infrastructure in developing countries.

This changed with the boom in wireless communications at the beginning of the 21st century.

Thus, while in 1991 there were about 16 million wireless device subscribers in the world, by 2013, there are almost 7 billion (for a planet of 7.7 billion inhabitants). Considering the use of mobile phones in family and rural settings and the limited use of these devices among children under five years old, we can say that almost all of humanity is connected, albeit with significant differences in terms of bandwidth, service efficiency, and price.

The Internet, at the center of these communication networks, allows for the production, distribution, and use of digitized information in any format. According to a study published by Martin Hilbert in *Science* in 2010, 95% of all existing information on the planet is digitized and mostly accessible on the Internet and other computer networks.

The speed and scope of the transformation of communications as a result of the Internet and wireless networks have prompted a variety of utopian and dystopian considerations worldwide. (Castells, 2013)

The way people connect with each other, access, and share information is changing at an accelerated pace thanks to the advancements in science and technology that provide us with new devices and tools associated with Information and Communication Technologies. In 2018, 74.3 million people aged six and older in the country reported using the Internet (65.8% of the population).

This figure represents a 1.9 percent increase compared to 2017 data (63.9 percent).

The ratio of Internet access by Urban-Rural zone shows a difference of 32.5 percentage points, with results reflecting 73.1% in urban areas and 40.6% in rural areas. The main activities conducted on the Internet during 2018 are:

- For entertainment (90.5%)
- For communication (90.3%)
- For obtaining information (86.9%)

Other activities such as supporting education/training and accessing audiovisual content show percentages of 83.6% and 78.1%, respectively.

For the Mexican population, access to the Internet has become commonplace and accompanies them in most of their activities, whether directly or indirectly. It is worth noting that frequent users—those who use the Internet one or more days per week—represent 97.1% of the total user population. Additionally, those who use it monthly (2.3%) combined with those who use the Internet one or more days per week reach a proportion of 99.4%. Users with lower frequency (less than once a month) represent 0.5 percent. (INEGI, 2019).

### Materials and Methods

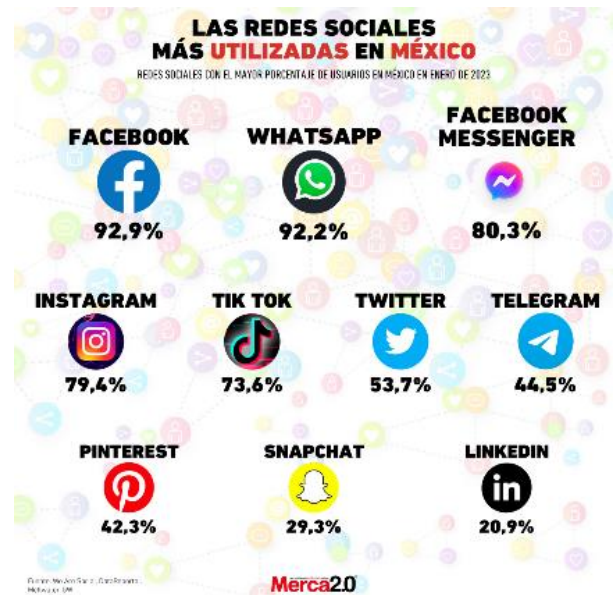
The project focuses on defining and implementing the information technologies used to restructure the marketing process by incorporating social networks such as Facebook, Google+, Instagram, Twitter, YouTube, and WhatsApp, as well as creating a website with a form and a database. Free and commercial tools in their freeware versions will be used to carry out some techniques shown in the process model and to monitor website traffic.

A technological platform will be developed and implemented with various software tools to promote the company's products or services. Additionally, the best of current marketing techniques will be identified, analyzed, and adopted to develop a structural methodology that will aid in strategic planning and decision-making within the company, laying the foundation for a process to follow in advertising so that the company can achieve its goals.

The system encompasses the use of various social networks for the attraction phase, which are used to direct users to the website so they can learn about the different activities the company carries out.

The most widely used social networks in Mexico will be taken as a reference to have a broader range of reach. Figure 1 shows the social networks with the most penetration in Mexico.

### Box 1



**Figure 1**  
Social Networks with the Most Penetration in Mexico

Facebook, WhatsApp, YouTube, Instagram, TikTok, and Twitter will be the social networks used, allowing the creation of contact lists to promote the company. In addition to creating profiles and making posts related to the company's services, users will be directed to the website.

### Tools for project support and monitoring

Some of the techniques mentioned in the phases can be carried out with the help of software tools that automate or add extra features to make them possible.

- SendBlaster:

Software for sending email chains, it will be used in its free version. General and segmented contact lists will be created based on preferences to send newsletters and promotions to different types of company users.

- Social Networks:

To monitor social network activity, the metrics used will be "likes," "+1s," "retweets," and the number of times the company's posts have been shared. This will give us a measure of the company's reach and its acceptance among unknown users.



- Web Page Trends:

Google Analytics will be used to monitor website traffic, using a script provided by Google that allows us to measure how many times someone has visited the page, how long they stayed on it, the device from which they accessed it, their geographical location, and much more data. However, the only metrics that will be considered are the number of visits and the type of device since the page is adaptive. This makes the visualization on different devices a factor to consider for improvement.

Tools for project development

Brackets was used as the code editor for its development. The website was built using HTML, CSS, jQuery, and JavaScript. Techniques were employed to make the page responsive and free of visual defects on different technological devices. The necessary files for database connection and data insertion were created in PHP.

- HTML, JAVASCRIPT, and CSS:

Markup language is used for building web pages; it is the foundation of their structure and will be used to create the company's website. Like any language, it has undergone revisions and version changes; currently, version 5 allows the use of semantic tags that make the organization and review of the site's structure easier.

However, it is only supported by modern browsers, although the standardization among them is not symmetrical, and some functions are not compatible with all. JavaScript was used to display alert messages on the website.

It was decided to use it only for this purpose because, despite being a powerful language, there is the inconvenience that users can disable its use in the browser, and everything done with it would stop working.

This could lead to security errors if, for example, form validations were done in JavaScript. Cascading Style Sheets (CSS) give originality to a website; they control the styles of text, images, and other elements that need a more specific visual change.

Very elaborate effects and even some types of animations can also be achieved. The current version of CSS is 3, and like HTML, compatibility with browsers is not fully achieved.

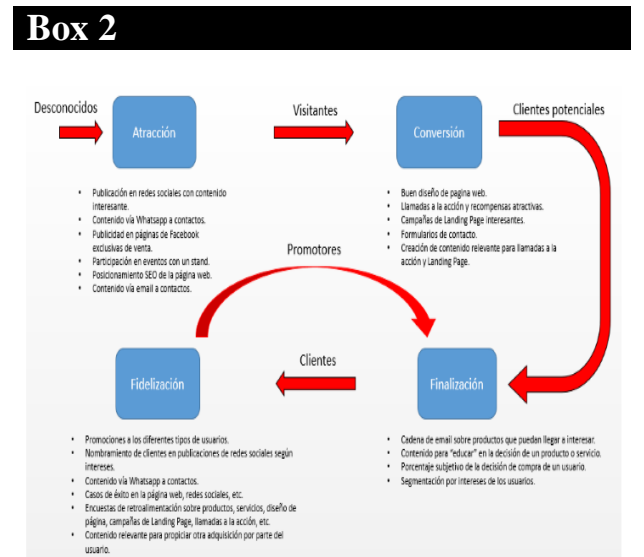
- PHP:

PHP is a server-side programming language that allows data or requests to be sent to the server and received for display in the browser. The latest stable version of this language is 7.0.12. It was chosen for its power, simplicity, varied documentation, and open access, meaning no license is required for its use, and because the hosting server works with Apache.

Technological platform

The developed marketing model is shown in Figure 2 and consists of four phases: attraction, conversion, closing, and loyalty. Users pass through each of these phases and acquire a category: strangers, visitors, potential customers, customers, and promoters.

Some techniques used in each phase have mechanisms to measure their reach. It should be noted that all techniques in each phase can be used, or only some, such as the stand at events, which is occasional. It should be considered that the fewer techniques used, the lower the reach of the corresponding phase.



**Figure 2**  
Marketing Model

Data Analysis

To measure the traffic generated on the website, the Google API called Google Analytics was used.

This is a script with a unique identification number for the page that sends visit data to the control panel for management. This allows us to measure the effectiveness of converting strangers into customers.

Figure 3 shows the number of visitors the page received during a period from October 28, 2023, to November 6, 2023, during which a link to the website was advertised on social networks.

Box 3

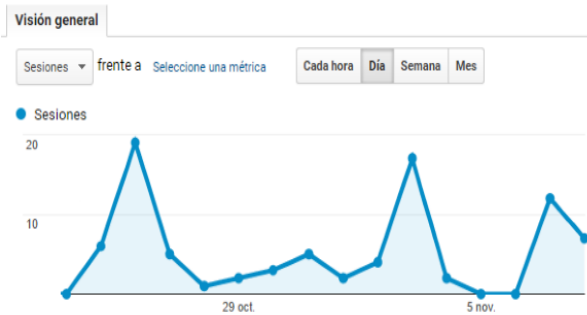


Figure 3  
Number of Visitors

We can also obtain data about how many new visitors there have been or if they were users who had previously been on the website, as shown in Figure 4.

Box 4

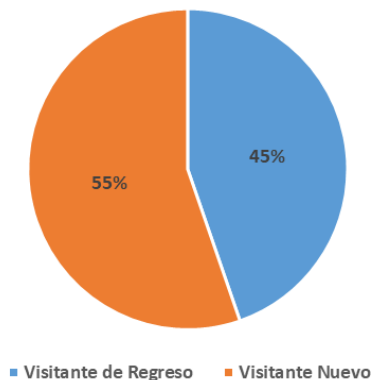


Figure 4  
Website Visits

In Figure 5, we can see the type of device used to visit the website. This is important because the site design must provide a good experience for users regardless of the device they use to connect.

Box 5

Categoría de dispositivo ?	Sesiones ? ↓
	85 % del total: 100,00 % (85)
1. mobile	44 (51,76 %)
2. desktop	41 (48,24 %)

Figure 5  
Type of Access Device

A good way to promote a business is to integrate social networks, which was one of the important initiatives and steps considered to increase the company's publicity.

After creating and implementing social networks as an important part of the marketing strategy for this project, we obtained very favorable results, showing us the significant impact these technological tools have on people's daily lives and how they help more people get to know us. Figure 6 shows the percentage of activities performed by Facebook users with the content published by the company; this data was taken at different time periods.

Box 6

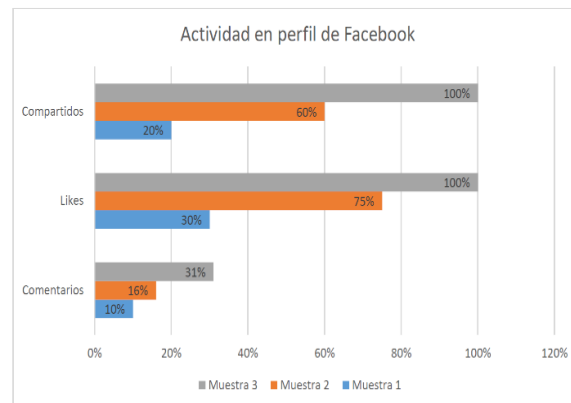
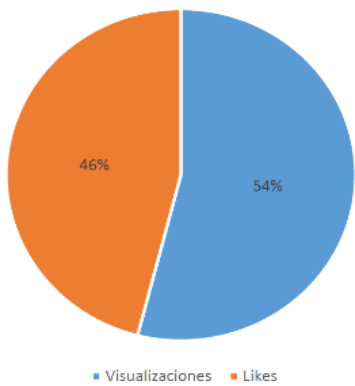


Figure 6  
Activity Registered on Social Networks (Facebook)

To reach a broader audience, a YouTube account was created to showcase the content created to advertise to different customers. It was shown that there is also good acceptance through visual media, such as video creation. Figure 7 shows the percentage of "likes" based on the visits obtained.

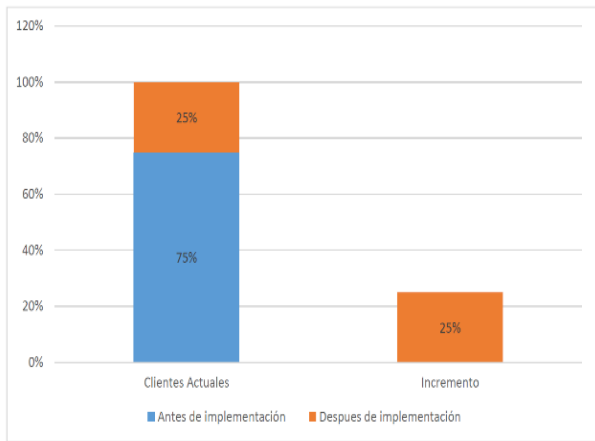
Box 7



**Figure 7**  
Percentage of Views and Likes

With the technological platform and client management in implementation, data was obtained to determine which of the hypotheses of this research was fulfilled, acquiring a total of 34 new customers, representing a 25% increase.

Box 8



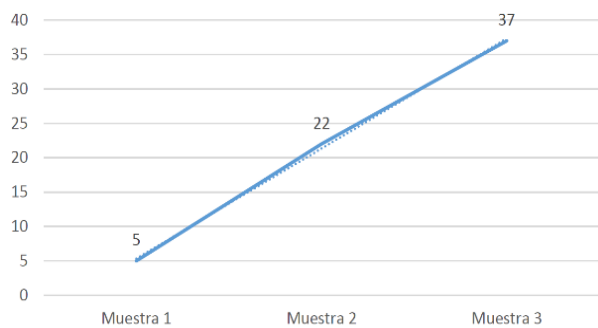
**Figure 8**  
Increase in Customers

The company's customer portfolio increased with the implementation of the technological platform and the launch of marketing techniques.

However, it was noticed that the amount of traffic on the website to attract new customers only increases during promotion campaigns or new product launches.

This indicates that continuous work on new content and improvements is necessary to achieve even more significant results.

Box 9



**Figure 9**  
Registered Customers

Analyzing the data, it is found that 91.8% of users who registered became customers.

Conclusion

It is determined that continuous training is required to learn how to configure and adapt projects according to each team's needs. Regarding teamwork, it has been observed that when faced with this type of project, students leave their comfort zone and are forced to maintain constant communication to progress according to the initial plans.

This differs from the usual practice where each person develops a module separately and they are merged at the end.

Statements

Conflict of Interest

The authors declare that they have no conflicts of interest. They have no known competing financial interests or personal relationships that might have appeared to influence the article reported in this paper.

Authors' Contribution

*Duran-Belman, Israel:* contributed the project idea, technique, method and research.

*Magdaleno-Zavala, Juan Antonio:* contributed method, expert translator, writing of the article.

*Gallardo-Álvarez, Dennise:* expert graphic designer, article writing.

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## Abbreviations

CSS Cascading Style Sheets

HTML HyperText Markup Language

PHP Hypertext Preprocessor

API Application Programming Interface

## References

Du, D., Baird, TJ, Bonella, S. y Pizzi, G. (2023). OSSCAR, [una plataforma abierta para el desarrollo colaborativo de herramientas computacionales para la educación en ciencias](#). Comunicaciones de física informática , 282 , 108546.

Wessel, M., Mens, T., Decan, A. y Mazrae, PR (2023). [Los ecosistemas de automatización del flujo de trabajo de desarrollo de GitHub](#). preimpresión arXiv arXiv:2305.04772. de Leeuw, JR, Gilbert, RA y Luchterhandt, B. (2023). jsPsych: habilitar un ecosistema colaborativo de código abierto de experimentos de comportamiento. Revista de software de código abierto , 8 (85), 5351.

Tiwary, A. (2023). [Content marketing Fundamentals](#) (pp. 10–23). Book Bazooka Publication.

Tiwary, A. (2023). [Social media marketing Fundamentals](#) (pp. 133–135). Book Bazooka Publication.

Johnson, B. (2015). [Professional Visual Studio 2015](#) (pp. 327-360). John Wiley & Sons.