

Implementation of a Web System for the Improvement in Sales and in the Application of Digital Marketing in the Company Selcom

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Summary— Globally, many companies were affected by the COVID-19 pandemic. Companies had to close their doors causing large economic losses and this caused the increase in unemployment. This research paper explains the correct application of digital marketing, a method that when applied well makes sales increase in the first two months by 20% worldwide. In the research work applied to the company SELCOM will talk about important processes that were applied in the company for the development of a new web system which made it increase sales in the company and even without the need to reopen its main point of sale since thanks to the web system developed, most of its products are positioned in an organized way in Internet search engines.

Keywords—Organic positioning, SEO, digital marketing strategy, websites, website in the first search options

I. INTRODUCTION (HEADING I)

Currently, companies are in a recovery process since most of them were affected by the global pandemic caused by the coronavirus. Companies had to close their premises due to the global health emergency, harming the sale of their products or services they offered. [1]

In the Peruvian state, the impact due to COVID-19 on the economic variables due to the restrictions and quarantines that occurred generated a setback and negative fluctuation, the measures dictated by the government between the months of March and June of the year 2020 increased the level of unemployment and informality in the country that already suffered previously these problems. [2]

The Peruvian government even gave a supreme decree enabling the perfect suspension of work for companies that could not continue operating due to unfavorable conditions to generate income and production which affects GDP. [3]

Meanwhile at the international level, because of the global pandemic caused by the new coronavirus which emerged in the Chinese province of Wuhan and expanded around the world, the economies that depended on imported products from the Asian country had a slowdown in world international trade for fear of contagion by the new COVID-19 virus and this wreaked havoc on the speed of trade between countries derived from the quarantine and others. effects. [4]

Due to what is caused by COVID-19, companies have had to make a 360-degree change, change their processes of offering the products, and thus also customers opt for other ways to acquire the products or services they are requesting. Traditional marketing methods are no longer enough to reach end consumers, so in order to survive it is necessary to reinvent new strategies and processes that lead us to a new "normal" and achieve optimal change thanks to digital marketing. [5]

The company SELCOM also had problems like all companies in times of pandemic and made the decision to close its main point of sale due to the rental and maintenance expenses generated by it.

All this caused companies to begin to digitize entering the digital market, in that way companies chose to make sales no longer face-to-face but using new technologies such as social networks and websites where they could offer their products or services they provide. SELCOM had a website and social networks, but the way they were applying digital marketing was not the right way it generated income for them.

All this caused the company to see another way to sell their products, they worked with a website, but that website did not generate income. The website they had was a template which did not have a good performance in data loading, image loading, process speed and did not let them add more modules to be able to increase the details of their products, it was a very static website.

The company sent to develop a new website with a marketing agency, but this agency took a long time to give result of the deliverables and was not a personalized website, they were also preparing a template for the company, template with which they could not compete in the world of digital marketing.

That is why I was hired by the company SELCOM for the development of a new web system that adapts to the requirements of the company, a system that has the rules indicated by SEO for organic positioning, a friendly, intuitive, easy to use, fully responsive web system which adapts to any type of device so that users have satisfactory experience when browsing the web. A website that displays the detailed information of each product offered by the company with high speed when loading the data and images.

Therefore, the objective of this research work is to publicize how digital marketing improves with the implementation of a web system and the appropriate way to apply digital marketing to attract new customers in times of pandemic nationally and internationally addressing issues such as SEM, SEO, Analytics, web page, social networks, websites, Search Console, Google Maps and tools to know where on our website are the errors that cause the website to be slow when loading data, tag errors and much more, in that way solve the problems of the web to improve in load, usability, analysis of rich content approved by Google platforms for organic positioning.

It will also talk about a series of technologies that were used for the development of the web system, technologies such as the PHP and Javascript programming language, tag language such as HTML5, style language such as CSS3, database language such as SQL and working architecture such as MVC for the development of the system. It will also be explained about the methodology used for the development of the system which was SCRUM.

II. METHODOLOGY

In order to carry out a digital marketing campaign and increase sales, it is advisable to apply the 360 web strategy. This strategy has become very important for any type of online business. In marketing, as in many other sectors, there are many branches and modalities. Companies often use unitary strategies, for example, conducting an SEM campaign, making ads on Google, or other options.

The 360 digital marketing strategy is not just one more branch, but it is a set of processes, activities of various areas. This strategy covers in a general way all the processes necessary to promote and position a brand successfully. [7] The 360 strategy offers a broad vision of consumers and in addition to this has other benefits including:

- Showcases new business landscapes
- It is possible to create a perfect alignment between channels and activities
- Establish value and real brand presence

- Improves customer retention and loyalty
- Increase brand authority and trust
- Increase leads and sales

Among the great strategies of digital marketing are the methods for website positioning. To be able to perform the positioning of a website there are two ways, SEO (Search Engine Optimization) and SEM (Search Engine Marketing). It is indicated that both have to go hand in hand since SEO is durable over time and will always be there, while SEM is a very good way to start, a good way to make yourself known.

A. SEO (Search Engine Optimization)

It is a set of techniques that is used to optimize a website, blogs and web pages. That optimization seeks to achieve good organic positioning, generate traffic and authority for a site or blog. SEO refers to all those tasks that you can perform both inside and outside a website to optimize its positioning in search engines in an organized way. This last point is key since organic means "no payment". [8]

Figure number 1 shows the SEO architecture

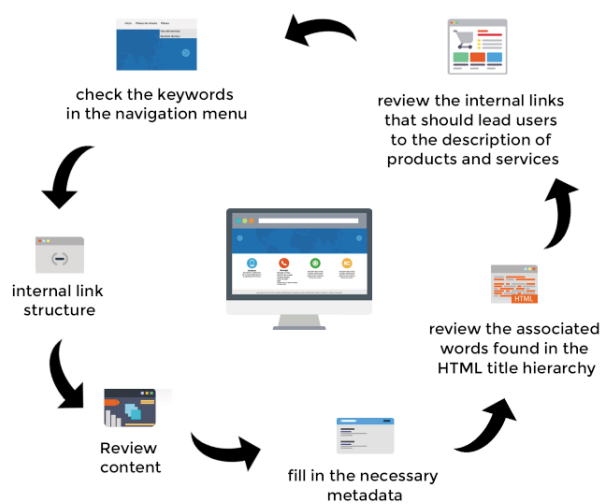


Fig. 1. SEO Architecture

B. SEM (Search Engine Marketing)

What it seeks is to appear more and better positioned among the search results of Google and other similar sites when a user searches for keywords related to our brand.

SEM is a paid positioning. It refers to those strategies that include the use of paid ads. That is, with a SEM strategy you create an advertising campaign so that when a user types a search, your site appears before the organic results in the form of an ad, as long as it matches the user's search intention. [9] Figure 2 shows the SEM architecture

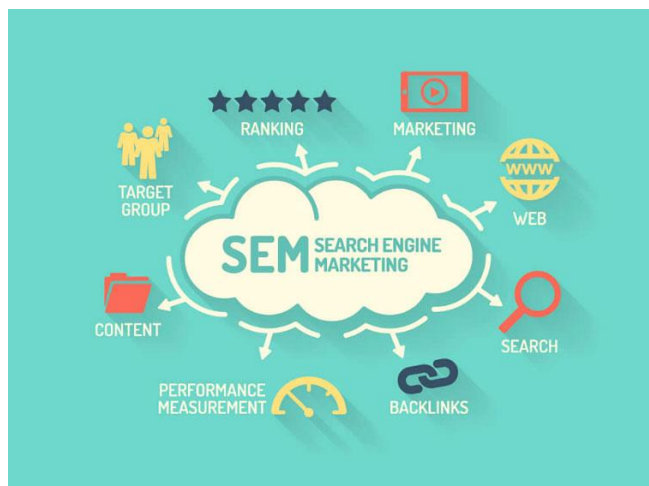


Fig. 2. SEM Architecture

In Figure 3 we can see the specific differences between the SEO strategy and the SEM strategy.



Fig. 3. Main differences of SEO and SEM

Ideally, both SEO with SEM have to go hand in hand because with an advertising campaign we will have a return quickly, but SEO does not have to be left aside, because if at any time we stop paying so that our product or service does not disappear completely, so that we continue to occupy a relevant position we have to continue working on SEO.

Figure 4 shows organically positioned websites (SEO) and websites that use paid positioning (SEM).

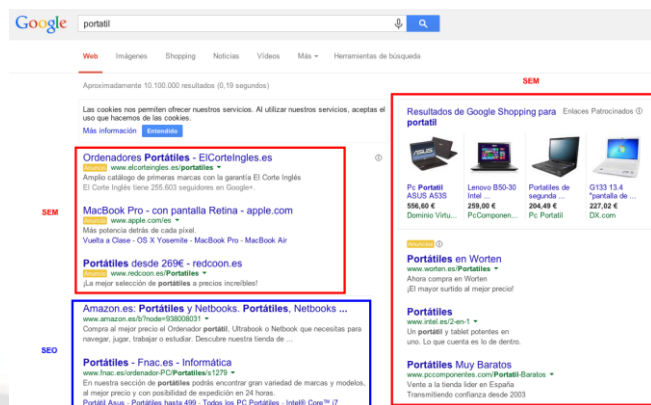


Fig. 4. Example of a figure caption. (figure caption)

C. Content Marketing

We develop intelligent, interesting and quality content to attract and satisfy your customers. We make digital content a tool to position yourself.

D. Social Media

Social Media Marketing: We manage your social networks through optimized campaigns to your potential customers, in order to obtain quality traffic by creating community between brand and user.

E. E-mail Marketing

E-mailing is one of the most important channels of our strategies, because it allows us to create high-impact campaigns towards your potential customers. This way we get your target audience to make the jump from their inbox to your website.

F. Web development

It plans, designs and develops a website or landing pages focused on your business objectives and user experience, guaranteeing a first class navigation.

To be able to create a web system it is necessary to have a series of technological tools such as programming languages, tag languages, style language, language for animations, language to manage the database where all the information of the web system is stored and much more as graphic design tools for the development of the images that will appear on the web.

1) PHP (Hypertext Preprocessor)

It is a very popular open source language especially suitable for web development and can be embedded in HTML. Php code is enclosed between the special start and end tags `<?php` and `?>` that allow you to enter and exit the "PHP mode".

2) HTML (Hypertext Markup Language)

It is a markup language (which is not the same as a programming language) that serves to define the structure and semantics of our website (later we will see what this means). HTML was created and is maintained by a non-profit organization called W3C. The W3C is a consortium formed by more than 400 companies (including those that develop

the main browsers such as Google, Microsoft, Mozilla, Apple ...), etc.

3) *CSS3*

CSS is a style language used to define the presentation, formatting, and appearance of a markup document, whether html, xml, or any other. It is commonly used to visually format html or xhtml documents that function as web spaces. It can also be used in xml formats, or other types of marking documents for the subsequent generation of documents.

4) *JavaScript*

Javascript is the programming language used in the development of web applications by the client. Recalling a bit of history, Javascript as a language was born in 1995 thanks to Netscape Corporation, which incorporates it as a scripting language in its first version of the WWW client. At the same time, Microsoft starts the development of its WWW client, Internet Explorer, and copies the Netscape language but changing the name to jScript. Really the two languages are very similar, but different.

5) *SQL*

SQL is an acronym for Structured Query Language. A Structured Consultation Language. A type of programming language that allows you to manipulate and download data from a database. It has the ability to do advanced calculations and algebra. It is used in most companies that store data in a database. It has been and continues to be the most widely used programming language for relational databases.

For the development of the project, the SQL database was used:

MySQL is considered the most popular open source database in the world.

6) *Bootstrap*

Bootstrap is a framework (CSS libraries) that facilitates and standardizes the development of websites. From version 3.x it has been implemented thinking that it adapts to both desktop screens and mobile phones and tablets. Bootstrap has been developed and maintained by the company Twitter and has released it as an Open Source product. It has a very intuitive philosophy for website layout that can be quickly learned by developers who do not come from the world of web design.

Para llevar un orden del proyecto se utilizó una arquitectura de programación como la MVC

7) *Arquitectura Modelo-Vista-Controlador (MVC)*

For a better organization of the source code, one way to do this is through the organization with an MVC-type architecture, which consists of three layers. Figures 5 and 6 show the interaction between the layers of MVC architecture.

Each of the layers that make up the architecture is described below in Figure 5:

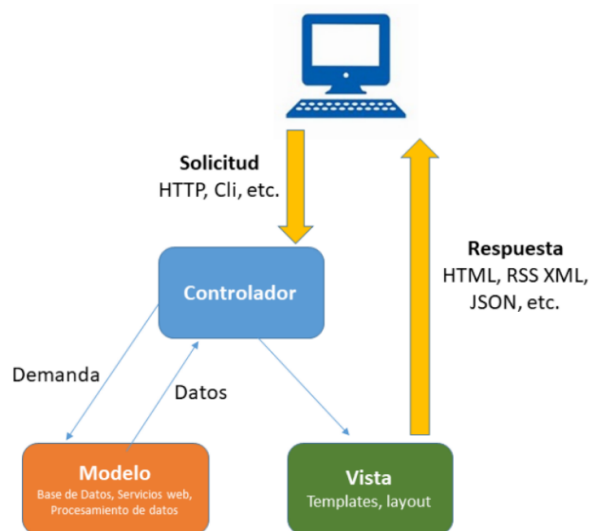


Fig. 5. MVC Architecture

- **View.** The same called user interface, which is composed of the information that is sent to the client and the mechanisms that allow interaction with it. This layer is represented through HTML files, which internally will make use of and reference files that support interaction with the controller layer.

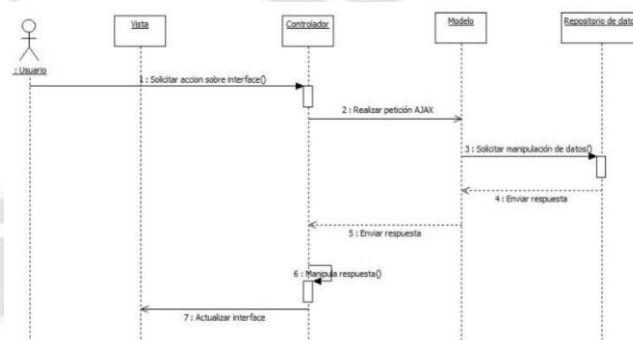


Fig. 6. Processing sequence via AJAX

The files you upload internally are as follows:

- Drivers (Javascript language files).
- Style Sheets (CSS Language Files -Cascading Style Sheet).
- **Controller.** It acts as an intermediary between the Model and View layers, managing the flow of information between them and the transformations to adapt the data to the needs of each one. The controller layer has two main functions:

- Drivers (Javascript language files).
- Style Sheets (CSS Language Files - Cascading Style Sheet).

- **Model.** It contains a representation of the data handled by the system, its business logic, and its persistence mechanisms.

Understanding all these concepts requires a set of pedagogical elements that allow them to be capsular to acquire a very particular skill. In the next section, the approach used in this work is described, which is microlearning.

G. Tools to verify the dendimiento of a website

1) Gtmetrix

GTmetrix is a tool that allows you to know in detail the loading process of your website or blog. It indicates the download time of each element, which allows optimizations, so that the user has the best possible experience with respect to speed. The tool is free, which is impressive, considering the quantity and quality of the features offered. You can do analysis without necessarily having to register, although it is more advantageous to create an account.

Figure 7 below shows the process of loading a web system.

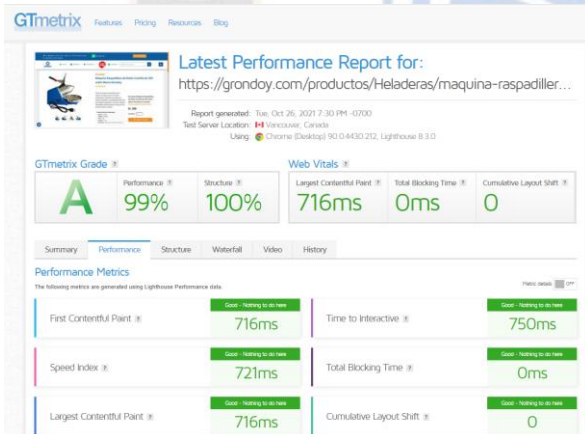


Fig. 7. below shows the process of loading a web system.

2) PageSpeed Insights

It is a free tool created by Google that allows you to analyze a website to evaluate its loading speed, but in addition to this, it is able to offer a series of suggestions and associated tools to improve the results.

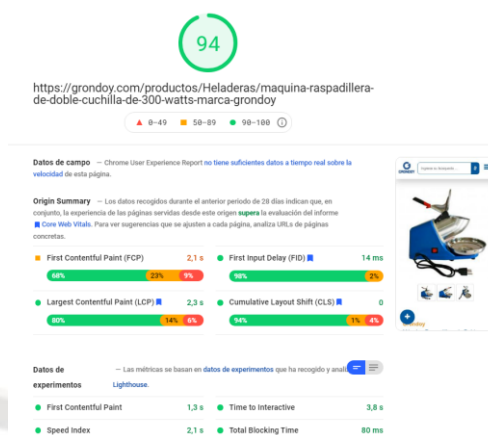


Fig. 8. Process analyzing a website using PageSeed Insights

3) Structured Data Testing Tool

Google recommends that you start with the Rich Results Test to see which rich results can be generated for your page. For schema generic validation, use the Schema markup language validator to test the entire shema.org markup language, without google-specific validation.

There are several tools to perform structured data tests, these tools will ask us for the url of the website that is going to be analyzed or they can copy the structured code that one made there and verify if you have any error in the syntax. Among these tools is:

a) Test of enriched results

Which is an official Google tool for testing structured data in order to see what google rich results are generated from structured data.

Figure 9 shows the result of an analysis of a website.

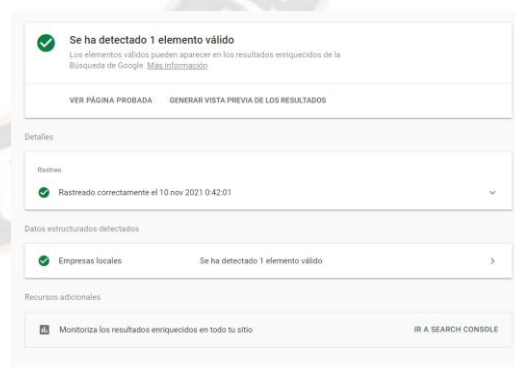


Fig. 9. analysis of structured data using Google tool

a) Schema

Schema is a vocabulary that makes it possible for search engines to understand the meaning behind different topics (entities) on the web and, as a consequence, serves to provide a better experience for internet users.

So also schema has its tool to perform structured data analysis as shown in Figure 10.

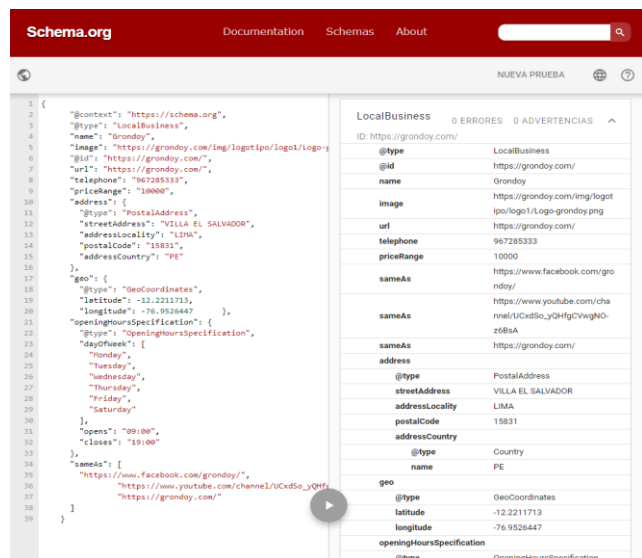


Fig. 10. Analysis of structured data using Schema

b) Prueba de optimización para móviles

Herramienta de Google que nos ayuda a verificar si un sitio web se encuentra optimizado para el funcionamiento en dispositivos móviles. En la figura 11 se muestra el resultado de una prueba a un sitio web.

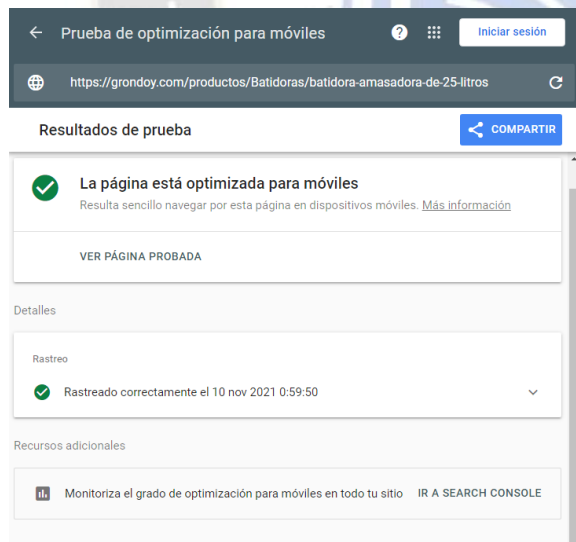


Fig. 11. Optimizacion test for mobile devices

c) Think with Google

Google tool to measure the loading speed of a website according to the selected country and the type of speed of internet. In Figure 12 we can see the result of a test performed on a website.



Fig. 12. Test of velovity of a website using think with Google

There are many tools that help us verify if our website has a fast speed when loading, if it is optimized for mobile devices, if it generates rich content, tools that tell us where in our website the errors are and much more. But there are also tools that help us with the analysis of keywords which are very important for positioning. Below we will talk about some tools that help us to filter the appropriate keywords to be able to improve in the positioning of our website.

d) Google Trends

A super tool that helps us compare the positioning of the keywords we need to analyze. In figure 13 we see the result of the analysis in a graph which shows the positioning that each word has according to the selected country.



Fig. 13. Keyword testing with Google Trends

H. Metodología Scrum

Scrum is a process in which a set of good practices are regularly applied to work collaboratively, as a team, and obtain the best possible result from a project. These practices support each other and their selection originates from a study of the way highly productive teams work. In Scrum, partial and regular deliveries of the final product are made, prioritized by the benefit they bring to the recipient of the project. Therefore, Scrum is

especially suitable for projects in complex environments, where it is necessary to obtain results soon, where requirements are changing or poorly defined, where innovation, competitiveness, flexibility and productivity are fundamental. [5]

Scrum is based on empirical process control theory or empiricism. Empiricism ensures that knowledge comes from experience and from making decisions based on what is known. Scrum employs an iterative, incremental approach to optimize predictability and risk control. Three pillars support the entire implementation of empirical process control: transparency, inspection and adaptation. [6] The Scrum Framework: Scrum is not a methodology, Scrum is based on an empirical process model, with respect for people and based on the self-organization of teams to deal with the unpredictable and solve complex problems by continuously inspecting and adapting. In

1. HIGH LEVEL AND RELAY PLANNING

a) Determine functionalities

Figure 14 we can appreciate the processes that are given to apply the scrum methodology.

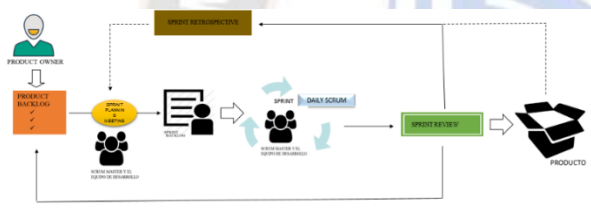


Fig. 14.Example of a figure caption. (figure caption)

1. Warehouse
2. Category control module
3. Sub category module
4. Product control module
5. Client registration/control module
6. Sales Control Module
7. Reporting Module
8. Administrator Control Module
9. Web design and positioning

Based on the client's requirements, it was determined that the project would have 9 functionalities for the proper functioning of the system.

Table 1 and 2 show the epicas according to the requirements of the project. The modules to be developed for the operation and administration of the Web System are determined.

Table 1: Table of Epicas

Determine Epics				
Stock	Categories	Sub categories	Product Control	Client control
As a manager I want to have a warehouse module to be able to have a control of the stock I have in each of my warehouses and in case I have a new local to create a new warehouse and modify the data if necessary.	As a manager I want a category module to be able to have a classification of my products.	As a manager I want a sub-category panel to have a more detailed classification of the products we have.	As a manager I want a module to be able to register my products and enter the detailed information of each of them.	As a manager, I want a form where my clients can register in the sales system to be able to make their purchases online.

Table 2: Table of Epicas

Determine Epics			
Sales control	Reports	Administrator	Diseño web y posicionamiento
As a manager, I want the system to be able to make online sales to have another form of entry into the company.	As a manager I want to have reports on the control of sales that my company has in order to make decisions that improve the organization.	As a manager I want to have a panel to be able to register my administrators in the system so that they can use the system.	As a manager I want to have a web system with an innovative design that complies with the standards in web positioning to be able to attract potential clients.

In table 3 and 4 the user stories for the development of the project are defined. In each user history, what is requested by the client for the operation of the web system is reported.

Table 3: Defining user stories

Determine Epics			
Stock	Categories	Sub categories	Product control
As an administrator I want a form to be able to register and modify the data of the warehouses in the system that allows specifying the address generating the ubigeo and in turn updating these. As an administrator, I want a button that helps to unsubscribe a warehouse that is registered along with all its content, in order to be able to keep track of only the active warehouses.	As an administrator I want a form where I can register and modify the data of the categories to be able to group our products and update them for a better view of the design. As an administrator I want a button that helps unsubscribe a category that is registered along with all its content in order to have control of the categories.	As an administrator I want a form where I can register and modify the data of the sub categories to be able to group our products in more detail and keep them updated. As an administrator, I want a button that helps to remove a sub category that is registered and all its content in order to have control of the sub categories.	As an administrator I want a form to register new products with all the detailed information of each of these so that they can be seen on the client side of the web system so that customers can buy them. As an administrator I want a form which is a filter by product name and by categories in order to speed up the search times of the products registered in the system. As an administrator, I want a form to be able to make changes to the products registered in the system so that customers are up-to-date with the information of our products.

Table 4: Definicion de historias de usuario

Defining user stories				
Customer control	Sales control	Reports	Administrator	Web design and positioning
As an administrator I want a form so that clients can register through which they have access to the system and interact with it. As administrator I want a login so that the customer can access the system safely and make their purchases through the web system. As an administrator I want the client to have a panel where they can see their history of purchases made in order to make better decisions regarding their expenses.	As an administrator, I want the customer to be able to make purchases through the system and for it to generate a receipt for the purchase made where all the selected products are with the customer's information.	As an administrator, I want a module where I can generate reports of the sales that are made in the system so that, based on this, I can make decisions for the improvement of the company	As a manager I want to have a form to register my workers who will be in charge of administering the web system and can perform the registration, update and deletion of the data.	As a manager, I want to have a web system with an innovative design to be able to capture the attention of clients. As a manager I want to have a web system that is well positioned so that it appears among the first search options in browsers.

III. RESULTS

1. Results of the web system

Figure 15 shows the main page of the web system that was developed, which has a high load performance and is currently in production.



Fig. 15.Home of the web system

In order to manage the web system, a series of modules was developed as shown in figure 16. Modules such as web design where images of the slider are uploaded, client

that supports the company, registration of social networks, sub categories to show in the index of the page, SEO per web page, services offered by the company among others. We also have the sales modules where they have the purchase history of customers, registered customers, sales reports, etc. I also develop the storage modules for the management of products on the web.



Fig. 16.Home of the web system

For the operation of the web system, a series of modules was developed, including the warehouse module to have a grouping of products by warehouse. Figure 17 shows the warehouse form with the fields used and a list of the registered warehouses.

The 'Agregar Almacen' form includes the following fields: 'Nombre Almacen' (text input), 'Dirección' (text input), 'Departamento' (dropdown menu), 'Provincia' (dropdown menu), and 'Distrito' (dropdown menu). Below the form are 'Guardar' and 'Limpiar' buttons. Below the form is a table with the following data:

N°	Almacen
2	Almacen 2
Ubigeo	150110
Dirección	todo lima
Acción	Modificar Eliminar

Fig. 17. Warehouse module

Among the modules developed in find the one on categories to have a grouping of products in the System, categories that are used as filters in the Web System. Figure 18 shows the category registration form.

The 'Agregar Categorías' form includes the following fields: 'Nombre de la Categoría' (text input), 'Ícono de Categoría (Medidas Al:80px An:80px)' (file upload button), 'Fondo de Categoría (Medidas Al:600px An:680px)' (file upload button), and 'Selección Imagen Fondo' (file upload button). Below the form are 'Agregar' and 'Limpiar' buttons.

Fig. 18. Category module

In order to have a more detailed grouping of the products, a sub-category registration form was developed as shown in image 19 where, according to the category previously registered, a sub-category can be created.

The 'Agregar Sub Categorías' form includes the following fields: 'Categorías' (dropdown menu), 'Nombre Sub Categoría' (text input), and 'Guardar' and 'Limpiar' buttons.

Fig. 19. Sub Category Module

2. Search Console results

Among the results that the Google Search Console tool gives us, as shown in figure 20, are a series of statistical data such as the number of total clicks per web page, total impressions, Average position according to a selected time. It also indicates the keywords with which visitors can find us organically and this data that it gives us is by queries, pages, countries, devices, appearance in the search engine and by dates. [10]

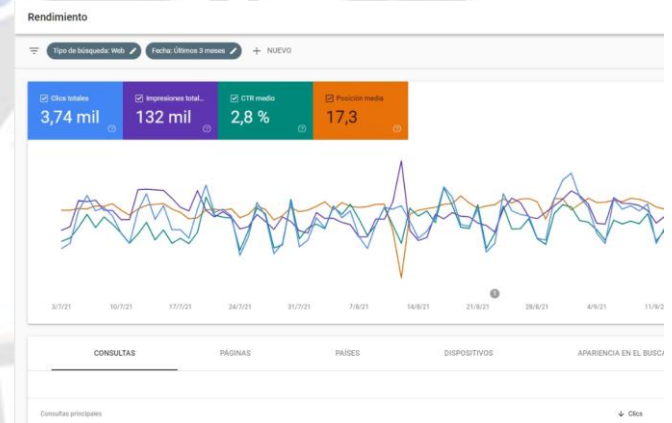


Fig. 20. Web performance

The tool also allows us to send the route where we have published the Sitemaps or website map. It is a list where the pages accessible by search engines and users are found. It is an XML file which has to be published on the server where the web system is installed.

Search Console performs a sitemap crawl and indexes all the pages and images it finds which is very helpful for organic positioning.

Figure 21 shows the google form to send the url of our sitemp

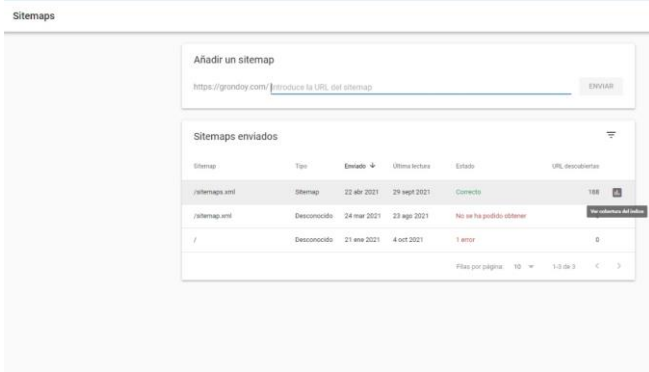


Fig. 21. Web performance

The Search Console also indicates the user experience by pages and devices, which helps us to improve the pages that have some flaws and achieve optimal performance of our web system. Figure 22 shows the statistical data of usability by devices that the web system has.

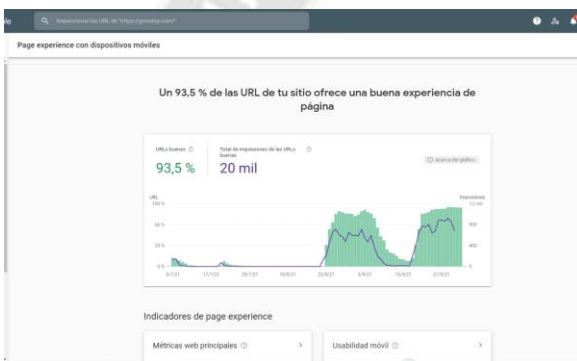


Fig. 22. User experience

Having web performance data in mobile usability is very helpful since one of the important requirements for organic positioning is that our website has a good performance on mobile devices. Mobile usability is increasing, people daily visit many websites from their mobile devices, so good performance is very important. In figure 23, the mobile usability performance of the website of the selcom company is shown.

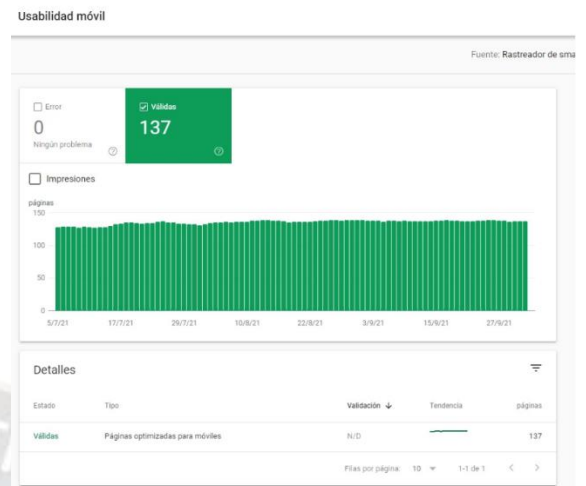


Fig. 23. User experience

When we implement structured data on our website, the Search Console interprets the data and gives us a series of statistical results that shows us if the implementation was carried out correctly. In case the implementation is not adequate, it sends an error alert and indicates the affected pages to be able to solve it.

According to the type of website, the appropriate structured code is implemented. Figure 24 shows the reviews that are valid on our website.

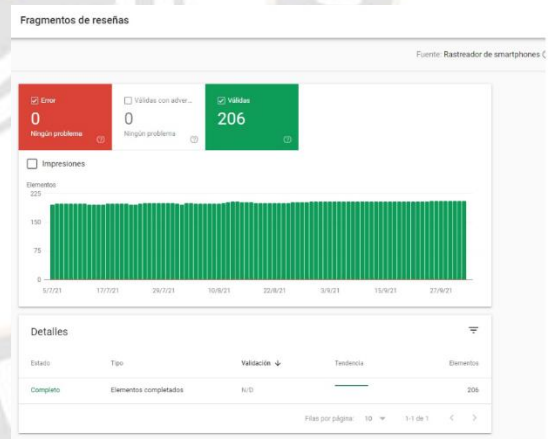


Fig. 24. User experience

According to the amount of structured data that you are implementing from your website, the options appear in the Search Console. In the first instance, no statistical results of structured data appear. Figure 25 shows the valid frequently asked questions that appear on our website.

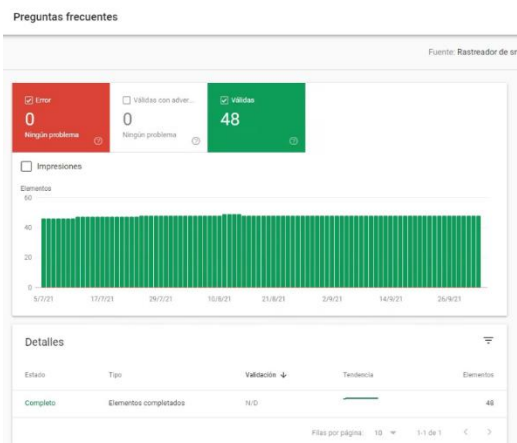


Fig. 25. User experience

The Search Console also tells us if we have problems regarding the security of our website as shown in figure 26.



Fig. 26. Security problems

The Search Console also helps us segment the market where we want to increase our web positioning. This only applies with domains that do not belong to the geographical top level such as domains in Peru that end in ".pe". The Search Console allows you to modify the country where you want to improve the positioning as long as the domain ends in ".com" as shown in figure 27.



Fig. 27. International segmentation

Among the results chosen, one of the most important are the metrics that the Google Analytics tool gives us as shown in figure 28. It gives us information on the users who enter the web system at international levels, by device, by language and much more.

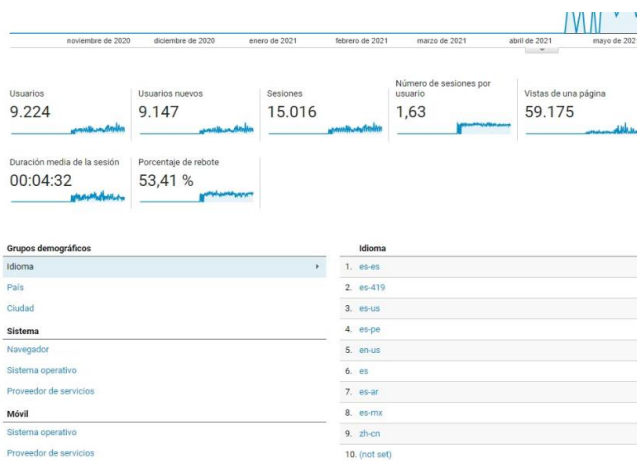


Fig. 28. Google Analytics

IV. DISCUSSIONS

This research work, compared to other work carried out, reveals the fundamental tools for organic web positioning, with which companies will be able to make their products appear among the first search options on the internet, increasing the sale of products, increasing economic income, modernizing sales processes and applying new ways of making sales. At work, the way to optimize the images was indicated to upload it in our web system. Very important process to ensure that our website performs well on any type of device.

There are many more tools that give us more minute details of the performance of a website, structure of a site, loading speed and more processes. Each tool gives you a better report on a certain metric that helps us improve even more. But in the present work I speak of the most important, outstanding ones with which one can achieve to optimize a website.

V. CONCLUSIONS

The main objective of the project was achieved, which was to improve the application of digital marketing in the SELCOM company, which resulted in an increase in sales through digital media, its main brand of the company became known much more nationally at the national level. which is GRONDOY and the brand was made better known in international media thanks to the application of digital marketing and the 360 strategy. Future research projects will reveal how the system that today helps the company was programmed SELCOM.

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