International Journal of Engineering Trends and Technology
ISSN: 2231 – 5381 / https://doi.org/10.14445/22315381/IJETT-V70I11P206

Volume 70 Issue 11, 58-69, November 2022

Original Article

Implementation of a Mobile Application: Sales Optimization in a Peruvian Company

Joel Ricardo Ligarda Motta[1], Elías Tomas Portales Ipanaque[2], Miguel Angel Cano Lengua [3], Laberiano Andrade-Arenas [4]

[1,2,3,4]*Facultad de ingeniería, Universidad Tecnológica del Perú, Lima, Perú*

[3]*Corresponding Author : mcanol@unmsm.edu.pe*

Received: 10 July 2022 Revised: 31 October 2022 Accepted: 03 November 2022 Published: 26 November 2022

Abstract *- At present, companies in the retail sector seek to expand their markets in various ways, always seeking to sell their products to more and more customers, which is why they have opted for e-commerce. Selling and buying online is today essential in every company. Moreover, most businesses opt for a mobile application because most purchases are made from smartphones. Therefore, this application seeks to help customer loyalty by providing users with an interface that motivates them to buy. The progress of the application was based on five sprints which developed the user stories, prototypes were presented, which were used for surveys in which the dimensions were included, collecting important statistical data for the development and improvement of the application. In this research work, an application was designed using the Scrum methodology to carry out sales processes using mobile devices. Additionally, this work shows, as a result, optimal Technological prototyping in which the personalization of the sales process, attractive design, recommendations, and offers are rescued, and all of this seeks to retain users to convert them into clients. In the future, the use of augmented reality is contemplated, big data and the use of AI.*

Keywords *- Mobile application, Scrum, E-commerce, Users, Sprint.*

1. Introduction

During the beginning of the pandemic in March 2020, companies in the retail sector were forced to close during the mandatory social immobilization, which the state imposed as a preventive measure for the SARS-COV-2 virus detected in the country. Initially, 15 days of immobilization were issued, but this was extended until July 2020, when the state began to authorize certain companies to resume their work under strict health measures that must be complied with. The delivery of products such as food, meals, items for personal use, computer products, etc., was also authorized. For almost 5 months, many companies could not open or make delivery sales, so they were financially affected. They did not receive the same income and had to continue paying the payroll for workers and essential services. Many companies choose to terminate contracts or opt for measures that the state facilitated so that, in some way, the company can survive and not see itself in the tragic way of going bankrupt, as indicated by Kumar [1].

Due to the Covid-19 pandemic, many businesses have been affected, from SMEs to large companies, and an available resource is technology, and an essential tool is mobile applications, optimized web pages and easy use for the end user. This was highlighted [2].

The current health tragedy that Peru faces has revealed the importance of technological tools, which have been essential so that many businesses in various fields do not go bankrupt and can continue to offer their merchandise or benefits, as well as the increase in online sales. And, of course, the digitization of many companies. Before the effects of the pandemic, 1.5 percent, equivalent to 65,800 businesses, were identified, and these were sold using electronic commerce in Peru. During the process of the COVID-19 pandemic, it produced the increase of a large number of companies that decided to opt to join electronic commerce; it increased four times more; at the end of 2020, 5 percent (more than 260 000) were found selling online as registered in Capece [3].

It should be noted that both private companies and the government, due to Covid-19, have further promoted the use of apps and web pages to carry out various procedures, creating a market for those who develop mobile applications or web pages.

Mobile applications are currently being used to help businesses sell and offer their services, and more and more people are encouraged to use electronic commerce.

So, this has already become a need. However, a percentage of customers are still reluctant to use the technological tools that many companies provide to their customers; this was also observed by Maditinos [4].

To achieve a closer relationship with customers, companies must choose to implement tools and applications that are easy to use and understand for their customers. Being tools that are easy to use and interact with, they will attract the consumer, and it is possible to attract customers and build loyalty to the brand; all this must be accompanied by good service, payment, delivery, competitive prices, managerial experience, etc. As recorded by Kabrilyants [5].

This need arises due to the impact of the proliferation of SARS-CoV-2 that has affected multiple companies, which were forced to close during the months of March to July 2020. These companies are now looking to re-emerge and take advantage of the new information technologies they have today.

Due to the lack of knowledge of many of these tools, specialists must collaborate with these companies to propose a system or methodology that helps them boost their sales and reach their customers more.

Currently, the growth of many companies that have begun to use information system tools has benefited, and they have seen a growth in their sales. Today they can reach other places that they could not before. This increased the reach of the customers. It is one of the reasons why implementing an application, or a website is an excellent opportunity for growth in the company, which contributes to having a greater presence among the most recognized brands. Thanks to this, it is also possible to strengthen commercial processes and improve the service offered to its buyers.

What is the way to develop a mobile application to improve sales in the BFS PERU company in 2022?

The research aims to develop a mobile application to improve sales in the BFS PERU company in 2022. Appropriateness in the application helps to optimize the operation of app. During the project development, seek to answer each question, always seeking the company's benefit.

2. Literature Review

First-Order, the beginning of the investigation, has allowed us to analyze the breadth that the subject of electronic commerce entails; a wrong idea is obtained when the matter is only analyzed from a technical point of view, although, on the one hand, it is crucial to structure the implementation of electronic commerce correctly, on the other hand, many external aspects have repercussions when the features of the application are installed.

As for electronic banking, it is well-known how it is used in the environment, and although many carry out their operations using Apps, many users still prefer to go in person to make their transactions. Electronic banking will help potential users obtain greater profitability and help them carry out their day-to-day activities more comfortably.

On the other hand, consumers in Jordan are not fully prepared to be e-banking users; customers are likely to be fearful or insecure about e-service and less attracted to use the technology.

Technological advances have made it possible to provide more tools for commerce. However, despite these advances in the use of technology in commercial transactions, for example, in Jordan, Shakir Karim [6] raises the problem, which is the lack of investment for e-commerce applications and indicates that Limited banks in Jordan offer a small number of electronic services through the web.

Additionally, have to indicate that there are many similarities between Peru and Jordan in terms of electronic commerce; both are just beginning to use this platform, there is not much support from the state in encouraging the use of e-commerce, and culturally there are many people who distrust the security when buying online, so they continue to make their transactions, payments and purchases physically.

Have to emphasize that the state, private and public companies must promote the use of technology to carry out multiple operations such as transactions, purchases, documentation, etc. That way, there will be a market of customers who use the internet for purchases, which is what this project focused on.

Free shipping is a promotion for Shopee to attract shoppers; as many as (80 percent) of respondents said they used shipping costs to make purchases. Discounts on shipping rates affect respondents' interest (80 percent) in buying from Shopee.

In the same way, it is clear that a push is needed to show users the benefits of using technology and, in this case, e-commerce; however, many circumstances affect the software, for example, in Indonesia, which is a country that is booming online shopping in a study to a well-known sales portal indicated that respondents in this study (40 percent) had to spend using the "Flash Sales" function. Flash Sale recognized (60 percent) of those surveyed a greater interest in buying in Shope in order to ensure that the sales application not only serves to trade products but also to build customer loyalty, which is why it is necessary to know What motivates the customer? can find out this through a survey, taking as an example the Indonesian company Shopee of which M. Shane and his collaborators speak [7].

Likewise, the need to create value in electronic sales is rescued from promoting greater purchases to build customer loyalty. The use and use of Internet technology are expected to bring great benefits to companies, there are many things to

do, but first of all, it is necessary to implement electronic commerce in private businesses. Companies that can use electronic commerce can improve competitiveness and sales. Likewise, the increase in the use of technology in various devices and the Internet service help promote the acquisition and ordering of articles, as well as communication with customers, suppliers, workers, etc. Soegoto et al. [8]. They conducted an investigation and found that business actors' motives in applying e-commerce are to access global markets, promote products, build brands, get closer to customers, streamline communication with customers, satisfy customers, increase the number of sales and therefore increase the number of customers. On the one hand, it should have seen how various factors can influence the success of the use of electronic commerce, but it also has to do with the structure or platform on which electronic commerce is based, and a device that people use the most are smartphones, especially those with OS. Android, on the one hand, because they are cheap, and, on the other hand, they are easy to use and intuitive.

Appearance and interactivity in apps, in this case for Android devices, are very helpful for the customer to be aesthetically attracted and immersed in online shopping. Likewise, Yi Liu [9] indicated the importance of using V Layout, a layout framework for Android e-commerce applications, improving and implementing V-layout by extending its types of layouts. Furthermore, by doing this, all the relationships between view and layouts can be decoupled in this module so that the complexity and diversity of the page can be resolved and reflected on Android devices.

Likewise, suppose you intend to implement successful electronic commerce through a web page. In that case, a management information system concept is needed to perform electronic marketing to services with integrated data and be stored in its development database, the way to implement it is as indicated by Hidayat [10], who used the cascade method in his development prototype and used the Hypertext PreProcessor (PHP) programming language and the database was MySQL. Likewise, the design model used two concepts: entity-relationship diagrams (ERD) and data flow diagrams (DFD). The result of this is to be able to have a web page that users and organizers of electronic commerce can accept.

On the other hand, to implement a good electronic commerce system, specific requirements must be met that regulate various entities that belong to the state. The states' entities are in charge of establishing regulations that protect and care for the buyer and the seller, as can be read in the article by Ying Ma and Ming Yi [11]. Business computerization has a lot of inputs and risks, which is why we need all the support we can get. In this scenario, the government must support the construction of business computerization. One way to do this is through the creation of regulations. These precepts must be well formed and regulated so that they are not left empty, in which someone can take advantage of them. Rules must be made that benefit the buyer and protect the seller.

Companies are the main engine for countries, which is why many companies called SMEs still do not have the necessary drive to join commercial digitization. It is here where Iswari et al. [12] make us see their importance. They indicated that SMEs are very important in the economy of any country. Likewise, Apps help these SMEs a lot in the execution of their business processes, which is what this project seeks to make use of technological tools, a competitive advantage in small businesses, especially due to the pandemic.

It should be one of the reasons why states must also motivate entrepreneurs, in turn, educate them to join the "Boom" of the electronic market. As well as, entrepreneurs must begin to digitize their businesses to continue growing and not be left behind in the face of competition.

For example, in Arabia, it is recommended that they consider the adoption of electronic commerce in their future strategies to expand, grow and be competitive in the market, not only nationally but also internationally. Likewise, some companies have already modified their strategies to be compatible and aligned with electronic commerce. As indicated by Joman [13]. Professor of the Department of Management, of the University of Taif, in Saudi Arabia, in a 2019 study, showed with hope the importance of electronic commerce in that country. The following was mentioned "The increase in sales and users of commerce e-commerce has encouraged SMEs to adopt electronic commerce. To do this, SMEs must apply a strategic approach that helps them implement e-commerce successfully".

In the same way, it must recognize that electronic commerce was born to stay, it is an essential tool, and more so in these times of pandemic, the way of trading has changed a lot, as Kumar and José [14] referred to it, indicating that electronic commerce has altered the practice, time and technology of the business-to-business and business-to-consumer markets helping sales growth year over year including consumer behavior. It is something to take into account because many electronic businesses have increased. Likewise, the consumer and the companies offering their products and services have changed and adapted to this new form of business.

On the other hand, it could find the analysis of information generated from online purchases. All this product of IA, IOT and the Big Data generated from purchases is where the Commercial Strategy can be applied; as a result, this is rescued in an article by Malapane [15]. In this, it is commented that the world has adopted the changes that the internet of things has brought, and this concept is already part of its life. Likewise, electronic commerce is not different; using different devices to buy or acquire services is a reality.

Due to this, the increase in telephone and computer equipment that can access. So, the information generated can be analyzed, and the business strategy can be evaluated.

Another analysis of the information generated by purchases is to identify the purchasing behavior of customers; based on the information, one can know their customers and be able to reinforce or improve commercial strategies, as can be read in the article by Svobodova [16]. She indicates that using electronic commerce as a strategy allows redirecting the company so that in the long term, it increases competitive advantage in this modern era that changes day by day, indicates the benefits such as increased efficiency and long-term benefits for each company should approach the use of electronic commerce as a strategy considering the portfolio and business environment, especially in the concepts, principles and detailed plans for its development.

Based on this, companies can decide on a better orientation in their strategic planning. Each company must adopt a different strategy because the results can always differ.

Therefore, an investigation of electronic business can be more efficient if the platform on which the service is provided is reliable since a study was carried out on how SMEs should transfer the technology that is handled [17]. For owner-managers of SMEs, the decision to participate in the digital economy and invest in ICT systems to enable e-commerce, e-commerce and marketing programs to take place is no longer an option. While some industries are more affected by advancing digital technologies than others, the global trend suggests that few sectors will be able to avoid being affected. Currently, participating in the digital economy and investing in information and communications technology systems for trade programs and electronic marketing is today a must; technological progress forces companies to adopt and implement everything related to electronic commerce. Otherwise, they will not be able to continue existing, and that ranges from SMEs to large companies. This decision to join the technological world should be an additional boost for all managers who seek to expand their businesses and continue to grow in a highly competitive market, depending on their work field.

On the other hand, it must also consider the application platform as how the business will be managed since multiple tools will allow us to digitize the company. Therefore, it must have a unified business model where all the company's core processes can interact without problems and under good ICT management. As indicated by author Fernández-Portillo in one of the articles, indicated that digitization is vital in a company to open up the field in process innovation, as well as the importance of ICT personnel for their implementation.

Today, the use of ICT in a company is significant; having good performance and efficient management of these was able to do business in constant change in the face of any contingency or tragedy that may occur. Therefore, adaptability is a fundamental approach.

Finally, it should be considered necessary that the system is based on a fast infrastructure to prevent the client from having a wrong perception of the services. So, Eugen Pop and Daniela Gifu [18]. They carried out performance tests of an electronic commerce platform and obtained several conclusions, one of which cites in continuous lines. For example, to see which technology is more optimal than another for the use of the internet, a comparison was made between telephone networks and WLANs; it was also concluded that WLAN networks are still better than the 4G telephone network in both response time and performance.

It is vital to compare technologies that provide the same service, in this case, the internet, to consider when developing an app and see the viability of a given technology for proper operation. The programming structure will use OOP, which is widely used in the design and implementation of Projects. However, due to reliability and code reuse issues, Process-Oriented Programming is better, as indicated by Rajesh [19], from which I personally differ since Poo can be reliable if structured correctly, just like currently reusable. A tool used in the project and applied is the simple and very effective Lean Model Business Canvas, as demonstrated by Murray and Scuotto [20]. Where we apply the theory of business architecture, the decomposition of business processes, to then identify the microservices of the processes and architecture will be presented as a proposal for the business improvement by applying patterns.

The scope of this research will be descriptive; therefore, the purpose sought is to describe the characteristics and properties of the business and its processes that must be investigated to seek improvement.

Descriptive research aims to find out the incidences and the values in which the variables are manifested. It measures a group of people or objects, allowing us to identify the variables. This can present us with an overview of the state of the variables according to the group we are analyzing.

For this development, the research project arises due to a need to find alternatives that seek to generate more sales in the company compared to larger competitors.

The purpose of the explanatory research is indicated by Hernández et al. [21]. It is through statistical or numerical data to measure the positive effect of an SME having a mobile application for its sales.

The current project uses the descriptive cross-sectional non-experimental method, which uses techniques and procedures to make it easier for us to meet the established

objective. The author Sierra Bravo [22] distinguishes this design as those who want to study the evolution of one or more variables over time. However, a single measurement is required to differentiate the population from different groups and to deduce the evolution over time of the different variables observed.

This methodology aims to analyse the state of one or more variables at a given moment, having as a single point in time.

3. Methodology

This research uses the SCRUM method, which divides the project into small subprojects known as sprints, which are developed and delivered quickly. Throughout the process, the customer interacts, and the product is delivered, which will have feedback going through an inspection and adaptation. This is vital, as explained by Dada [23]. It is common knowledge of the agility to work with objectives that this methodology has, which is very compatible in this era in which speed and flexibility are vital for clients, as indicated by Fris [24], [25], [26].

3.1. Scrum Team

3.1.1. Product Owner (P.O)

It is the person responsible for searching, maximizing the product's value and, in turn, the development team's work. Therefore, he is also responsible for managing the Product Backlog. During the management of the PO, the decisions made in management must be respected.

3.1.2. Development Team

This team comprises professionals, delivering a preview of the finished product at the end of each Sprint according to schedule. Only the Development Scrum Team is involved in creating the Increments. This team must be appropriately structured and empowered by the organization. It is essential that the team's synergy results in the optimization of efficiency and effectiveness. The development team must have multiple qualities and be multifunctional, having multiple skills necessary for developing the project. It means that if a member has specialized skills, it is not necessarily her responsibility, so the responsibility falls on the work team.

3.1.3. Scrum Master

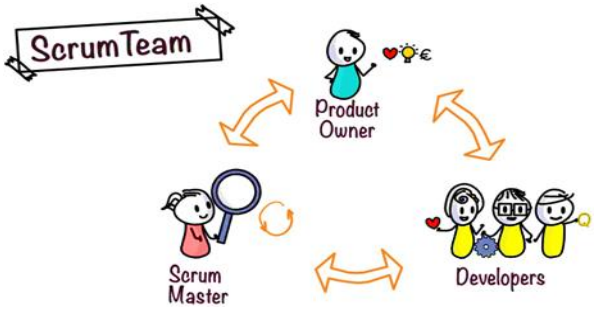

Fig. 1 Scrum Team

The Scrum Master is the person in charge of ensuring that the framework is understood and adopted. At the same time, it must ensure that the Scrum team works based on theory, practice and previously established rules. She can also help external people, the work team, to facilitate some modification in the interactions, to maximize the value of what the scrum team has developed.

3.2. Scrum Steps

3.2.1. Sprint

The Sprint is a fundamental part of the Scrum, a block of time between 1 month and less. It is much more convenient if Sprint is compact during project development. Each Sprint or interaction begins when one is finished previously.

For the Sprint, a Sprint Planning Meeting is scheduled, as well as the daily scrums, the development work team and, finally, the sprint review and the sprint feedback meeting.

The Sprint cannot be longer than 1 month. Each Sprint must have a definition of what is to be built in a design and a flexible plan that will guide the construction and the final product.

3.2.2. Sprint Planning Meeting

In the planning meeting, everyone involved in the Scrum team (PO, SM and the Development Team) should participate in planning all the sprint goals in collaborative work.

To help us carry out a better planning meeting can support ourselves with the following questions: -

- What can be delivered as an increment resulting from the beginning sprint?
- How will the necessary work to deliver the increment be accomplished?

The meeting must have a maximum time of 8H for a sprint duration of 1 month. If the planning is shorter, the meeting will last less time.

3.2.2. Daily Scrum

It consists of a 15-minute meeting in which the development team synchronizes their activities and creates an improvement plan for the next 24 hours. The meeting should always be held at the same time and place to reduce complexity.

In these meetings, all the development team members seek to explain their activities carried out the previous day and analyze whether they helped the team meet the sprint objective. The following activities are also proposed to be carried out, and they analyze if they help the team with the sprint objective. Finally, if having any impediment, one must report it to overcome it and thus be able to meet the objective.

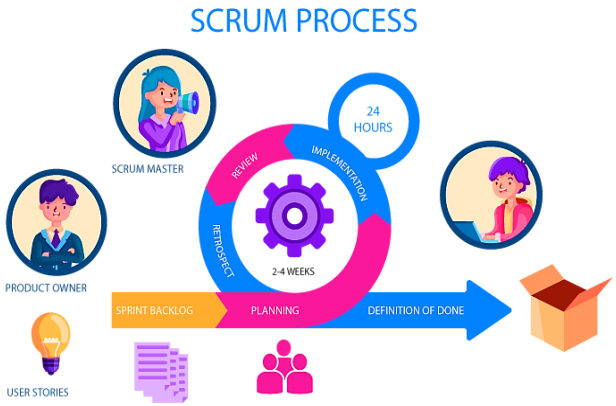

Fig. 2 Development Architecture Diagram

3.2.3. Sprint Review

The sprint review consists of inspecting the Sprint carried out. The Development Team, the PO and the key stakeholders considered participating in the review. The PO informs which element of the product backlog has been completed and which is pending completion. The development team demonstrates the finished work and is open to answering any questions they have about it.

As a final result of the sprint review, the list items for the next Sprint are defined in a product backlog review. There may be some scenarios in which the list has a general adjustment to being able to focus on new opportunities.

3.2.4. Sprint Retrospective

The sprint retrospective is the opportunity in which the Scrum team performs a self-analysis and can create a plan for improvements, which can be addressed during the next Sprint. This is after the Sprint Review meeting and before the next Sprint Planning meeting. The SM must ensure that the event takes place and that attendees understand the purpose.

The purpose of the sprint retrospective is to inspect how did in the last Sprint, as well as identify and order the most important elements that went well and identify possible improvements.

Finally, a plan must be created to improve how the scrum team performs work.

3.3. Artifacts

3.3.1. Product Backlog

It is an ordered list of everything that is known which is necessary for the product. It is the source where requirements are gathered for any changes to be made to the product. The *Product Backlog* (PO) is responsible for ensuring availability and ordering.

3.3.2. Refinement of the Product Backlog

The product backlog refinement consists of identifying the details and estimates and ordering the list according to priorities. The PO is in charge of the development and contributes to the details.

Table 1. User History

N°	User stories
H1	I want the system to allow me to register with my account from Gmail.
H2	I want the system to help me identify which products people are interested in.
H3	I want the system to present the user with the products that framework in interest.
H4	If there is not a product that the client wants to present, an optional one with similar characteristics.
H5	I want an easy-to-use system.
H6	That the payment method uses yape and plin.
H7	That allows you to attach a screenshot of the payment.
H8	That the application is friendly, as well as dynamic and fun.
H9	Have a connection to the internal stock system.
H10	Have a feedback option to improve the service.
H11	I want the system to display a detailed description of the product.

3.3.3. Sprint Backlog

This was born as a result of the refinement of the product backlog, where the Sprint that will be advanced for the development of the current Sprint has been identified. This would look like Figure 3.

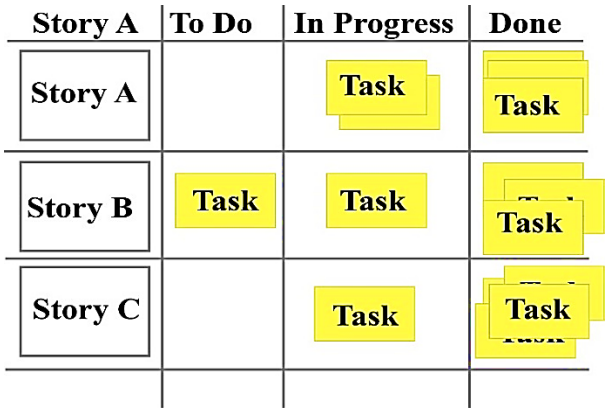

Fig. 3 Product Backlog Dashboard

3.4. Planning Stage

3.4.1. Analogous Estimation

For this project, an estimate of complexity has been made for the development of stories, using a rating range of 1 to 6, where 1 is the least complex and 13 the most. Starting the estimation, H1 is considered the base, from where the Login

development begins. H2 is also considered complexity level 1. Where we can find a difference in complexities is also in H5 and H8, whose rating is 6.

This same logic was applied to the other user stories. Through this estimation, an idea can be given for the functional development of the project. All the estimations of the stories can be seen in Table 2.

Table 2. Analog Estimation

	1	2	3	4	5	6
H1	Login					
H2	Login					
H3		2 Login				
H4		2 Login				
H5						6 Login
H6				4 Login		
H7			3 Login			
H8						6 Login
H9					5 Login	
H10		2 Login				
H11				4 Login		

3.4.2. Creation of the Product Backlog

To make the Backlog in its entirety, ordering by priority and estimate was required. This information is taken from the analog estimate table and user story prioritization. Table 3 shows the Product Backlog.

3.4.3. Defining Sprint Velocity and Story Points

To tabulate the following, the development team decided to split the sprints into five and detail the user stories about each Sprint.

For example, H1 belong to sprint 1. sprint 1 has only one point. On the other hand, sprint 2 has stories H2, H3, and H4. They have 3 points which is the speed of the Sprint, which is determined by the development team. There are 30 story points and an average of 30-speed points. The estimated duration of the project is 4 months; Table 4 shows the duration of each Sprint and the estimated time to develop each functionality.

Table 3. Product Backlog

User stories	Priority	Estimate
H1: I want the system to allow me Please sign in with my Gmail account.	1	1
H2: I want the system to help identify which products people are interested in.	2	1
H3: I want the system to present the user with the products I mark as interests.	3	2
H4: If there is not a product that the customer wants, me to present an optional one with similar characteristics.	4	2
H5: I want a system that is easy to use.	5	6
H6: The payment method used is Yape and Plin.	6	4
H7: That allows them to attachment capture the payment screen.	7	3
H8: The application is friendly, as well as dynamic and fun.	8	6
H9: Have a connection to the internal stock system.	9	5
H10: It has a comment option to improve the service.	10	2
H11: I want the system to show a detailed product description.	11	4

Table 4. Sprint Backlog

Interface	Duration
sales app	4 months
Sprint 1: Creation of the login interface (registration, start interface) (H1)	2 weeks
Sprint 2: Creation of the interface with the user's interests and products with similar characteristics (H2, H3, H4)	2 weeks
Sprint 3: The system must show the stock of the products (H9) and a detailed description of the product (H11)	4 weeks
Sprint 4: Payment Options Method and attachment of proof of payment (H6 and H7). In addition to issuing proof of purchase.	3 weeks
Sprint 5: The system must be simple for user management and predictive of user tastes. You must also be open to receiving complaints and suggestions. (H5, H8, H10)	6 weeks

The estimated duration of the project is months; Table 4 shows the duration of each Sprint and the estimated time to develop each functionality.

4. Results and Discussion

4.1. Development of Prototypes by User Stories

Sprint presentation: During this development phase, prototypes of the application are presented, categorized by Sprint and its estimation. Each image specifies to which story it belongs and the criteria they have to create the design.

4.1.1. Primer Sprint

As seen in Figure 5, The first Sprint includes the H1 story, which will be described below.

H1: As a user, I want the system to allow me to register with my Gmail account.

For Story H1, we show at the beginning of the application the interface where the user can log in. This can be seen in Figure 4.

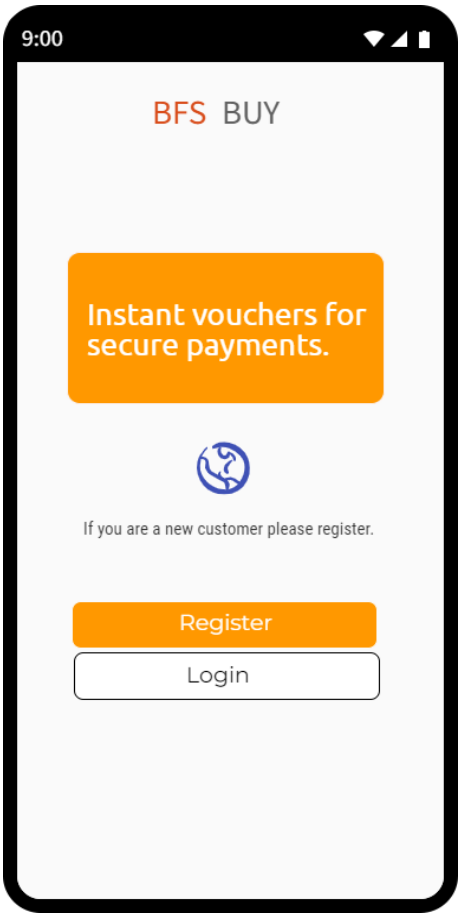

Fig. 4 Login

On the other hand, it also can register with an email account such as Gmail, as shown in Figure 5.

Likewise, the registration of information and password is highlighted in Figure 6 and Figure 7.

Fig. 5 Registration

Fig. 6 Record information.

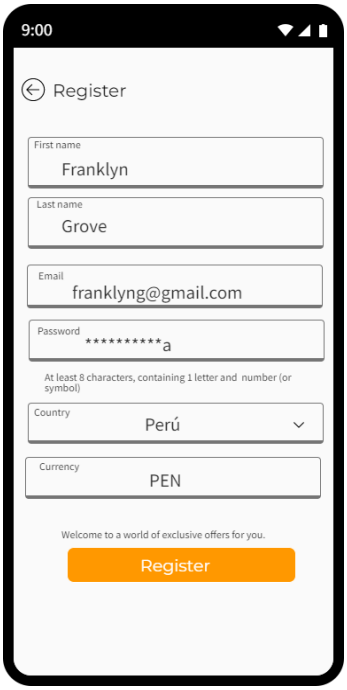

Fig. 7 Password

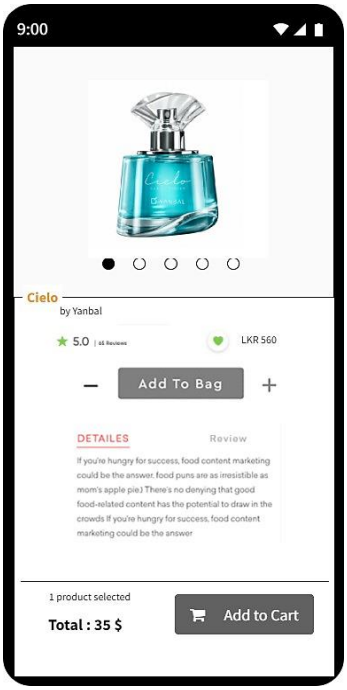

Fig. 8 Product detail

4.1.2. Second Sprint

It includes a total of 3 H2, H3 and H4 stories to identify which products people are interested in. Figure 6 shows the user registration form using their email in which personalized promotions will be sent according to user searches and purchases, identifying their interest.

H3: I want the system to present the user with the products that I mark as interests so that the user knows about the price updates of the items that interest him, as well as promotions that have to do with them.

H4: As a user, I wish that, if there is no product that the customer wants, an optional one with similar characteristics is presented; this is because I want the user to have a wide variety of options in case the product, they are looking for is not found, and that is not the case. truncate the purchase.

4.1.3. Tercer Sprint

It includes a total of 2 stories that are H9 and H11, which are detailed below:

H9: It has a connection to the internal stock system since it has an internal warehouse system that is updated and always shows up-to-date information on the availability of the products.

H11: As a user, I want the system to display a detailed product description. This is important to clear up any user doubts about the product's characteristics to be purchased and avoid possible misunderstandings or claims, as seen in Figure 8.

4.1.4. Fourth Sprint

It includes a total of 2 stories that are H6 and H7, which are detailed below:

H6: As a user, I want the payment method to use Yape and Plin. This is because purchases are generally retail and small amounts, so these payment methods are widely used for it, in addition to the fact that their use is well known.

Fig. 9 Payment

H7: As a user, I want the application to allow me to attach a screenshot of the payment. Due to a security issue for both the user and the company, being able to attach the screenshot is essential to guarantee transparency in the payment, as detailed in Figure 9.

4.1.5. Fifth Sprint

It includes a total of 3 stories that are H5, H8 and H10, which are detailed below:

H5: As a user, I want an easy-to-use system to be able to make purchases simply and intuitively; the faster the purchase, the better; this can be seen in Figure 10.

Fig. 10 Main environment

H8: As a user, I want the application to be friendly, dynamic, and fun.

H10: As a user, I want you to have a comment option to improve the service since it can always be improved if there is something that needs to be corrected, I would like to know that the opinions were heard.

4.2. Tool Validation

4.2.1. Dimensions of Analysis

The analysis of the surveys is based on 5 dimensions that are detailed in Table 5.

4.2.2. Reliability

The instrument's reliability was measured using Cronbach's Alpha of the survey carried out on 32 users, resulting in the value of 0.939, giving the instrument's reliability as approved, since, by theory, it should be greater than 0.7. The value of Cronbach's Alpha is more significant than 0.7 if the lowest element is removed.

4.2.3. Average Dimensions

According to the survey data, the average percentage of dimensions considering the range of 1-5 in all dimensions were very favorable functionality 3.92, design 3.77, consistency 4.01, security 3.91 and usability 4.01, with design being the lowest and consistency and usability being the highest.

Table 5. Dimensions Table

Variable	Dimensión	User indicators
Application mobile e-commerce BFS	1.-Functionality	1.-The purchase process is simple.
Application mobile e-commerce BFS	1.-Functionality	2.-The purchase process is fast.
Application mobile e-commerce BFS	1.-Functionality	3.-The application options meet my expectations.
Application mobile e-commerce BFS	2.-Design	4.-The application motivates me to continue buying.
Application mobile e-commerce BFS	2.-Design	5.-The application is visually interactive and fun.
Application mobile e-commerce BFS	2.-Design	6.-The application details information important to the product.
Application mobile e-commerce BFS	3.-Consistency	7.-The application worked correctly-mind on purchases.
Application mobile e-commerce BFS	3.-Consistency	8.-the purchases were made No problem.
Application mobile e-commerce BFS	3.-Consistency	9.-The application is installed correctly-mind on your Smartphone.
Application mobile e-commerce BFS	4.-Security	10.-I feel satisfied with the application security mechanisms.
Application mobile e-	4.-Security	11.-The requirements of complexity

commerce BFS		in the password help the security of the application.
Application mobile e-commerce BFS	4.-Security	12.-Create the account linking with your email provides greater security as far as your information is concerned.
Application mobile e-commerce BFS	5.-Usability	13.-The application is friendly
Application mobile e-commerce BFS	5.-Usability	14.-The application is easy to use
Application mobile e-commerce BFS	5.-Usability	15.-The options and menus are intuitive

5. Conclusion and Future Work

In conclusion, in this research work, it was possible to design an e-commerce application with the help of prototype and statistical tools and apply the Scrum methodology. The functionalities requested by users have been designed and structured through striking and intuitive graphics. The development of this application will help increase the company's sales, as well as the loyalty of users through exclusive and personalized benefits for the client. In future work, improvement in the design will be sought so that it is attractive to all types of public, as well as seeking to add the app to new technologies such as augmented reality.

Through the surveys, it was identified that the predesigned interfaces should be improved and adapted with the colors according to the brand; with this, it is possible to improve the attraction of the clients. This is because customers feel more identified with the brand's colours, which attracts them much more. In addition, it sought to generate a much more friendly interface for the client.

To generate a massive campaign in which the client is expected to buy the brand's products, the aim was to improve the client's expectations and motivate them to continue buying while facilitating a quick purchase.

For future work, it can be improved by applying AI that allows users to feel that they have a commercial advisor and can guide them to select a specific product, which sometimes can be difficult for some customers to choose.

Big Data technology can also be applied, through which the information and searches carried out in the application are collected. The analysis of this information is vital for the company, which helps to generate customer-oriented advertising. However, always be careful not to be invasive advertising.

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