Original Article

Design of a Web Application to Increase the Sales of the Company Neverland in Lima, Peru

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Abstract *- Nowadays, the internet has become the most popular tool used to communicate and exchange information, but it is not very feasible due to the lack of knowledge of its proper use related to digital skills, hindering its benefits in the business part, as well as limited in the aspect of advertising and not very dynamic in the part of interaction with the customer. Therefore, the main objective that has been proposed is to design a web application to increase the sales of the company Neverland, Lima-2022. In the construction of the web application, the Visual Studio tool was used, plus the incorporation of a database in Microsoft SQL Server, where all the information within the web application is stored. The methodology applied is Scrum and Smart, which helped us to structure the project; where based on the user stories. The final product was obtained, the design of the web application of the Neverland Company. In order to measure the results, we incorporated a questionnaire for the company's clients to test its functionality. As a result, a high satisfaction rate of 96% was obtained, validating the web application for use in the Neverland Company. The conclusions show that implementing the web application generates greater productivity and control in sales orders in the company Neverland, Lima-2022. In addition to improving interaction with clients, it guarantees an increase in the number of clients and optimization of resources. In the future, the use of its own domain is contemplated.*

Keywords *- E-commerce, Web application, Online store, Database, Ventas, Sales, Scrum.*

1. Introduction

In recent months, due to the political-economic crisis that the country is going through, financial problems have arisen in companies. As a result, a considerable reduction in customers because traditional enterprises have so far had their space to market their goods and services physically, and today to cope with Covid-19, every new business or a track record in the market must use various apps to grow their business or enterprise, being that social networks and mobile devices have transformed the way of buying, selling, information and even education, as indicated by Muñoz [1].

According to the poor handling and maintenance of products in online sales orders, the customer is the one who suffers the most due to the poor transaction of their purchase. It was taken into account that "The reduction in customer loyalty", according to what the sponsor explained, is very critical because instead of building customer loyalty, it is losing some customers. After all, they feel dissatisfied with the service offered, generating monetary losses and affecting the company's image, as indicated by Anyosa and Huamantinco [2].

Another point to keep in mind is that to get closer to customers; companies should choose to implement tools and applications that are easy to use and understand for their customers. As these tools are easy to use and interact with, they will attract the consumer and can attract customers and make them loyal to the brand; all this must be accompanied by good service, payment, delivery, competitive prices, management experience, etc., as indicated by Ligarda and Portales [3].

In this context, online sales became a form of entrepreneurship to counteract the crisis; therefore, poor management of this medium generates problems in sales orders and poor organization of their products, being recurrent due to the lack of a web application that includes the requirements that the company and the customer requirements, placing, a web application is a tool of great potential for entrepreneurship, as it allows to solve the problems and needs of the same, being fast and efficient, besides being able to organize, structure and be a means of dissemination for the same.

According to the situation presented, the need for the project arises from the problem focused on the economic and health areas, where the company Neverland shows management problems, causing confusion and delays in the delivery of orders due to the poor management of the company's products.

The general objective of the research is to design a web application to boost sales for the company Neverland in Lima 2022 in order to maximize profits and generate sales.

Accordingly: How can we boost sales by creating a web application for the company Neverland?

Therefore, we determined to exponentiate sales and promote profit maximization. Implementing a web application that manages sales orders and products is necessary. This alternative solution is the most appropriate, given that it will help Neverland improve its customer service and strengthen its weak points to have a greater presence in the market.

The proposed general objective is to design a web application to exponential the sales of the company Neverland, Lima-2022.

2. Literature Review

The research is referenced through reliable information, cited by several authors who support the ideas, suggestions and position of the project, such as the research review by Barrientos et al. [4] that showed aspects of the development of a store-to-store sales system using artificial intelligence techniques, to meet the needs of a bakery, Tupan Gourmet SAS in the area of administration, production and sales, highlighting that artificial intelligence techniques are of great importance in improving information systems, as the algorithms are able to replace a high analysis of information because it allows business managers to improve the results in decision making.

In the research review by Campo et al. [5], an aggregate production planning model was developed to generate optimal production strategies in the medium term for companies in the textile sector; using the PLAG model technique, they minimized the total costs of the production plan and proposed that in the event of an increase in market demand, it is necessary to increase the production capacity and the storage capacity of process 3, due to the fact that this was identified as the restrictive process or bottleneck.

In the conference paper by Gonzalez et al. [6], the Linear Programming model was applied to the problem of maximizing the GA company's profits by setting out each constraint and using the PQM program to find the optimal number of materials needed. They identify that, from a practical point of view, some virtues of the linear programmed, with respect to the non-linear ones, are easier to define and formulate, allowing them to work efficiently with a greater number of decision variables. They are better adapted to algorithmic treatment with computers, taking advantage of the speed of calculating these. It is very important that professionals linked to SMEs develop greater skills in handling this technique, as this knowledge would give them greater possibilities of finding answers for sustainable development.

In the research review by Villarreal et al. [7], the optimization of resources was generated for companies regarding the choice of advertising media with a limited and fixed budget, using the simplex methodology technique. It was possible to demonstrate that the ease of formulation and adoption of specialized software helps to develop linear and non-linear models accurately. The professionals involved in the companies can generate the ability and skill to tackle the resolution of problems to maximize profits and minimise costs, as well as allocate time to the activities.

In the undergraduate thesis of Lozada and Yépez [8], a web application was developed for inventory control and invoicing in the company Binacom Sys S.A. and by diagnosing the current invoicing management of the company. It was possible to have the guidelines for the implementation of an invoicing system, which aims to improve the company's sales revenue, presenting an improvement of speeding up the issuance of invoices, taking advantage of automation and the power of communications provided by the Internet, aiming to duplicate them in a period not exceeding 3 years.

Chávez's thesis [9] analyzed how to reduce staff service time and improve decision-making in the optician's shop by implementing the web system in the Chávez optician's shop, optimizing process management and increasing customer satisfaction and staff satisfaction.

In Carbajal's thesis [10], a business proposal was developed for a line of women's pajamas that meets the current requirements of the target public, which will be sold through a virtual sales platform, with the expectation that the finishes and designs will be exclusive. They determined that the project is profitable since the NPV is positive, meets the established rates of return and generates additional income for all those involved in the financing.

In Huamanñahui's thesis [11], strategic planning and controls were carried out to improve the organization's problems and reduce customer service times and operating costs. According to an analysis of the sales management process, deficiencies in customer, stock and order management are evident, in which the response time in each of them took too long, making the quality of service inefficient.

In Melgarejo's thesis [12], a web-based sales and warehouse control system was implemented for the Bazán Pharmacy in the city of Chimbote, which made it possible to streamline and improve sales and warehouse control, implementing information and communication technologies for the continuous improvement of quality in Peruvian organizations, bringing improvements to these areas. The contribution made indicated that the web information system provides benefits, such as remote work and will not require an infrastructure for the system to work, but will be hosted in the cloud and can be accessed from any web browser as it is multiplatform; all this is important to minimise costs and times in the service.

In the thesis of Rojas [13], they sought to modernize, facilitate and improve the company Sajor for the management of its sales, purchasing, production, logistics and finance processes. It was verified that implementing sales management would increase sales in the company Sajor and will help to have updated information and will have the ease to keep control of the merchandise in an accurate and precise way.

For the study, we define online sales and how we will optimize the management of the company for better customer service and satisfaction, situating it as e-commerce as the practice of buying and selling products over the internet, virtual shops, a digital version of physical shops that sell their own products online, or both e-commerce and physical shops, as indicated by Cardona [14].

An online shop has a shopping cart where the user's desired products or services are added. Once the purchase is completed, the order is confirmed, and the desired payment method provided by the website is chosen, such as bank transfer, payment by credit or debit card, PayPal, or payment in a physical shop, among others, as indicated by Retablo Web [15].

According to Alvites [16], the advantages are time savings, cost reduction, compatibility with most devices, access from many devices simultaneously, scalability, higher availability and data security.

For the experimental aspect, the application development tool Visual Studio will be used, which according to the advantages indicated by Rodriguez [17], can collaborate much easier with other users, shows the possibility to edit and debug code in real-time with improved search and a list of templates, faster, working with Git repositories.

Likewise, for the database, the use of Microsoft SQL Server was employed using the Server Management Studio (SSMS) extension to manage the company's product inventory, where the importance of incorporating the database lies in organizing and storing information regarding the company's products and sales orders. A database is an integrated data structure that physically contains the logical representation of a set of entities and relationships that represent the model of the information needs of an organization, as indicated by Portilla and Bernal [18].

Part of the methodology of the work represents the stages of the research work in which it is imperative to use theoretical positions that will soon be put into practice according to concrete methods, as indicated by Concept Definition [19].

The research design is experimental, consisting of subjecting an object or group of individuals to certain conditions, stimuli or treatment in order to observe the effects or reactions produced, as indicated by Guevara [41].

The type of research is applied, which provides us with information and alternative solutions to problems, as indicated by Nicaragua [21].

The work is oriented towards a quantitative approach, where it uses observation of the process in the form of data collection and analyses the data to arrive at answers to its research questions, as indicated by Ortega [22].

The methods to be applied in the project, the basis of the programmed structure for an optimal and effective program, are presented, such as SMART, which allows the definition of objectives and is an acronym from which the basic characteristics of SMART objectives are explained. They should be specific, measurable, achievable, realistic and time-bound, as Martins [23] points out.

3. Methodology
In the present work, the Scrum methodology was applied, a process to carry out a set of tasks on a regular basis with the main objective of working collaboratively, that is, to promote teamwork, as indicated by Redacción APD [24]. The figure indicated by Barrionuevo and Silva [25].

3.1. Scrum Team
3.1.1. Product Owner (P.O)
Ensures that the project is being developed in accordance with the business strategy. Write User Stories, prioritize them, and post them in the Product Backlog. It is necessary to know the team's speed to estimate when the needs will be implemented in the product, as indicated by López [42].

3.1.2. Scrum Master
It is necessary to participate in the meetings and make sure that they meet the time and the established goal. Eliminate the obstacles that prevent the team from fulfilling its objective. It is also responsible for ensuring that the entire team follows the Scrum methodology and is understood by all, as indicated by López [42].
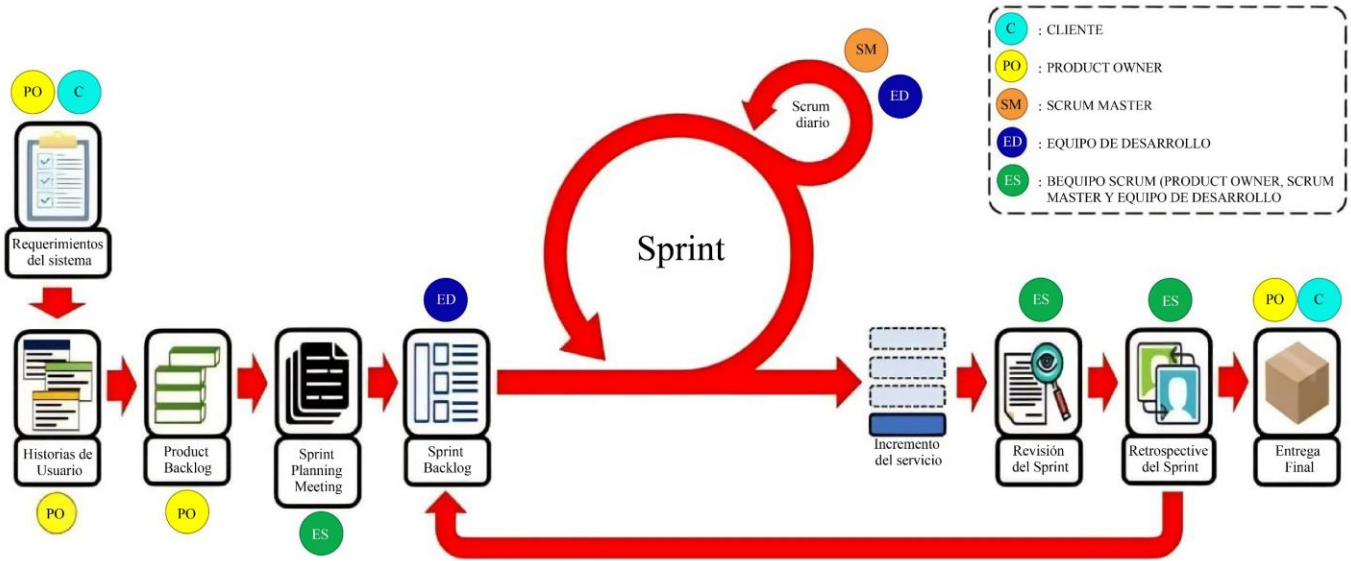
Fig. 1 Phases of the Scrum Methodology

3.1.3. Development Team Member

Those in charge of creating the product so that it can be ready with the necessary requirements, as indicated by López [42].

3.2. Scrum Steps

3.2.1. Sprint

It is a container for the rest of the Scrum events, its duration should not change while the development of the product is in process, and it can be interpreted as a measure of constant rhythm; it allows for the reduction of complexity and comparison results throughout different Sprints. In addition, it allows transparency and inspecting and adapting the other Scrum events, as indicated by Deloitte Spain [27].

3.2.2. Sprint Planning Meeting

A meeting is held at the beginning of each sprint where the entire Scrum Team participates; It is used to inspect the Product Backlog and for the development team to select the Product Backlog Items to work on during the next sprint. These are the ones that will make up the Sprint Backlog, as indicated by Deloitte Spain [27].

3.2.3. Daily Scrum

Daily 15-minute meeting in which the Development Team participates exclusively. It refers to the practice that allows inspection and adaptation through the team's self-organization, as indicated by Deloitte Spain [27].

Table 1. Scrum Team

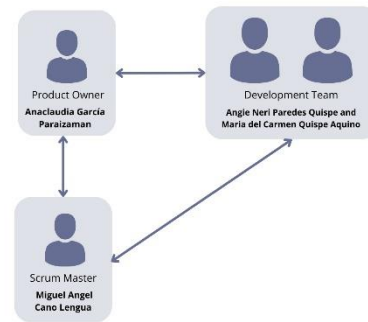| Roles	Names
Product Owner	García Paraizaman Anaclaudia
Scrum Master	Cano Lengua Miguel Angel
Development Team	Paredes Quispe Angie Neri Quispe Aquino Maria del Carmen

Fig. 2 Scrum Team

3.2.4. Sprint Review

It consists of carrying out an inspection of the outlined sprint, with the participation of the development team, the PO and the key stakeholders. The PO informs which product backlog item has been completed and which ones are pending completion. The development team demos the finished work and is open to answering questions about it. Finally, the items on the list for the next sprint are defined, as indicated by Ligarda and Portales [3].

3.2.5. Sprint Retrospective

He reflects on the last sprint and identifies possible improvements for the next one. It is common for different Scrum team members to rotate the role of facilitator during the retrospective, as indicated by Deloitte Spain [27].

3.3. Artifacts

3.3.1. Product Backlog

It is an essential tool for project management; it consists of preparing a list of all the tasks we want to carry out during the development of a project; thus, they are visible to the entire team. Thanks to its use, a generic view of everything

we have to do in the coming days or weeks to achieve it successfully is obtained, as Molina indicates [28].

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, as indicated by Ligarda and Portales [3].

3.4. Lean Model Canvas
The business model canvas is a commercial tool used to see components when a person wants to start their own business, including clients, as indicated by Ligarda and Portales [3].

3.5. Software Development Tools
3.5.1. Visual Studio
A set of software development tools based on components and other technologies to create powerful and high-performance applications as indicated by Livias [29], a

powerful, efficient and favorable source code editor developed by Microsoft, free and cross-platform software, available in Windows that has countless extensions, which basically gives the possibility of writing and executing code in any programming language, as indicated by Flores [30].

3.5.2. Microsoft SQL Server
It is one of the main relational database management systems on the market that serves a wide range of software applications for business intelligence and analysis of corporate environments, as indicated by Darias [44].

3.5.3. JavaScript
It is a programming language in charge of providing web pages with greater interactivity and dynamism; it works natively in browsers (interpreted language without the need for compilation). Therefore, it is used to complement HTML and CSS to create web pages, as indicated by Ramos [32].

The Business Model Canvas				
Key Partners	**Key Activities**	**Value Propositions**	**Customer Relationships**	**Customer Segments**
- Delibery of online shop products	- Online sales management - Creation of a web platform	- Didactic page, easy to understand. - Online. - Quality. - Client experience. - Improves the ordering process. - Improves product management.	- Products sorted by collection and category - Marketing - Web promotions - Online payments.	Persons over 18 years of age, men and women, who require the product.
Key Resources			**Channels**	
- Audiovisual content - Internet - Social media - Based on company information			- Website - Online pyjama shop - Product inventory database - Order through the website	
Cost Structure		**Value Propositions**		
- Fixed costs: Internet, electricity - Maintenance costs - Variable costs: Programmer hours: 3 programmers: 300 - Initial investment per partner: 73.33		- Card/Account - Bank transfer - Price: Depends on purchase and delibery		

Fig. 3 Lean Model Canvas

4. Development of the Methodology

Table 2. User History

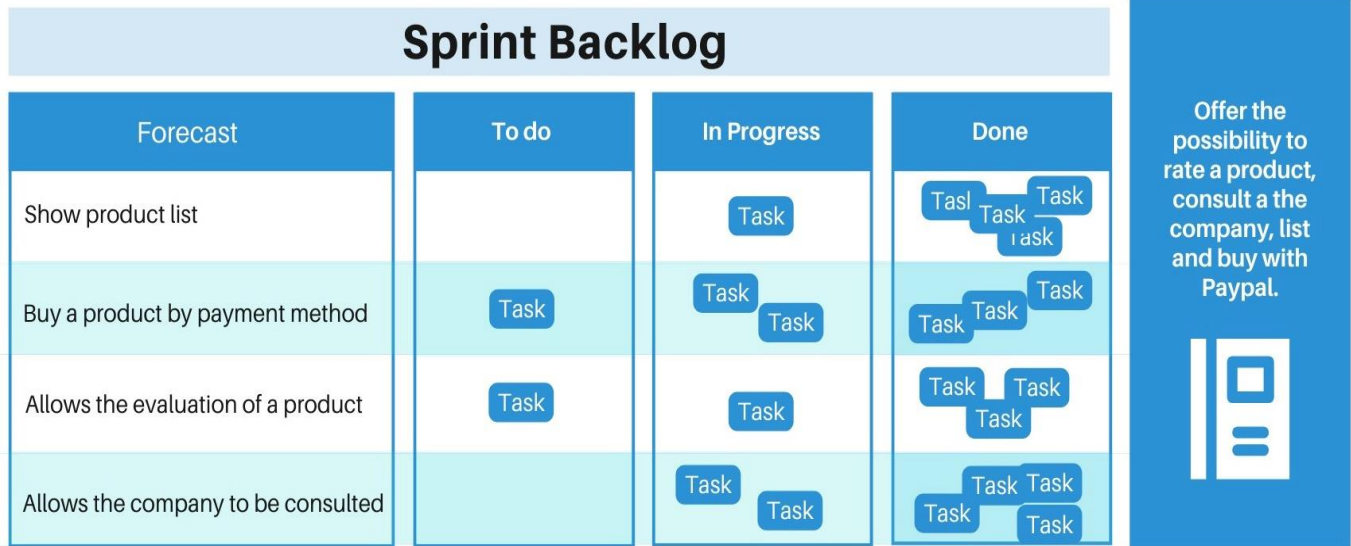| N°	User stories
H1	The system makes use of information about the company, its products and sales.
H2	The design of the web application will have a color palette representative of the company.
H3	The system has a database of the company's products.
H4	Access the platform without prior registration.
H5	You need a means of payment to make the purchase.
H6	You can display information about the company and the products it offers according to categories, collections, and different labels.
H7	You can view the availability of the product.
H8	You can comment and rate a product.
H9	The system has a simple and dynamic interface.
H10	The system presents information on product details.
H11	You can make enquiries to the company.
H12	The system has a shopping cart.

Fig. 4 Product Sprint Backlog

Table 3. Product Backlog

Users Stories	Priority	Estimate
H1 : The system makes use of information about the company, its products and sales.	1	1
H2 : The design of the web application will have a color palette representative of the company.	2	2
H3 : The system has a database of the company's products.	3	4
H4 : Access the platform without prior registration.	4	1
H5 : You need a means of payment to make the purchase.	5	4
H6 : You can display information about the company and the products it offers according to categories, collections, and different labels.	6	5
H7 : You can view the availability of the product.	7	3
H8 : You can comment and rate a product.	8	4
H9 : The system has a simple and dynamic interface.	9	3
H10 : The system presents information on product details.	10	3
H11 : You can make enquiries to the company	11	2
H12 : The system has a shopping cart.	12	5

Table 4. Sprint Backlog

Interface	Duration
Web application to boost sales	14 weeks
Sprint 1: Creation of the Home Interface (H4)	1 week
Sprint 2: Creation of the category and collection interface, products with similar characteristics are displayed. (H3, H6 y H7)	3 weeks
Sprint 3: The system presents detailed product information; you can comment on and rate the product. (H1, H8 y H10)	3 weeks
Sprint 4: The system features a shopping cart, which counts the pajamas selected by the customer. (H12)	2 weeks
Sprint 5: Presents methods of payment options. (H5)	3 weeks
Sprint 6: The system should be user-friendly and dynamic. It should also be open to complaints and suggestions. (H2, H9 y H11)	2 weeks

3.5.4. HTML

It is a computer language that is part of most web pages and online applications, text that is used to link to other text. In contrast, a markup language is a series of marks that tell web servers the structure and content of the web style of a document, as indicated by B. [33].

3.5.5. CSS

It is a markup language focused on defining, creating and improving the presentation of an HTML-based document. It separates the structures of an HTML document from its presentation, such as a skeleton of the web, defining its basic structure. The CSS would add the entire customization layer on which the web defines its final appearance, as Robledano indicates [43].

4.1. Sprint Backlog

The Sprint Backlog is an artifact that allows viewing all the work included in the current sprint and is the responsibility of the Development Team. Its objective is to give transparency to the state of development during the sprint, as indicated by García [35].

4.2. Planning Stage
4.2.1. Analogous Estimation

Through an estimation of complexity, a rating range from 1 to 5 was used, from least to most complex, giving an idea of the functional development of the project.

4.2.2. Creation of the Product Backlog

The Product Backlog is established according to the analog estimation information and the prioritization of user stories.

4.2.3. Definition of Duration Sprints

Sprints were divided according to the detailed user stories belonging to each sprint. The estimated duration of the project is 14 weeks, and the duration and the estimated time to develop each functionality are shown.

5. Results
5.1. Validation of Functionality

Five of the Neverland Company clients were contacted. Based on the prototypes presented, the clients judged according to the criteria presented, using a survey to measure the results of the web application's functionality. Based on a Likert scale, a field research method allows measuring an individual's opinion on a subject through a questionnaire, as indicated by Hammond [36].

Based on the application of Cronbach's alpha (α), a coefficient used to measure the reliability of a measurement scale or test, where between 0 and 1, the closer it is to 1, the more consistent the items will be with each other, as Ruiz [37] indicates.

Accordingly, the item consistency analysis had a high Cronbach's alpha value of .89, being an adequate value proving the reliability of the survey.

Representing the scale of responses, the majority of respondents strongly agreed that the web application meets the criteria presented, with a representation of 80%.

According to the criteria presented, a High value was obtained with a representation of 96%, which shows that the implementation of the web application does optimize the company's resources and increases sales.
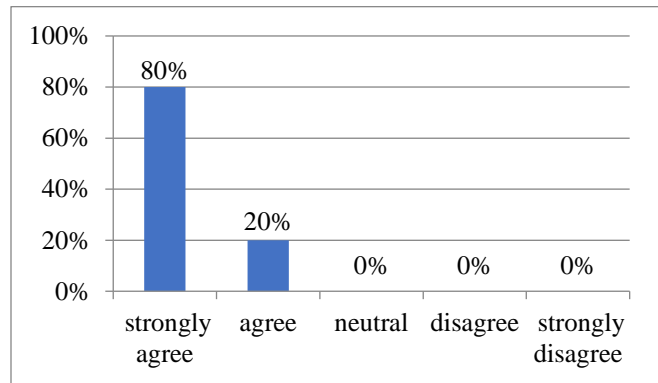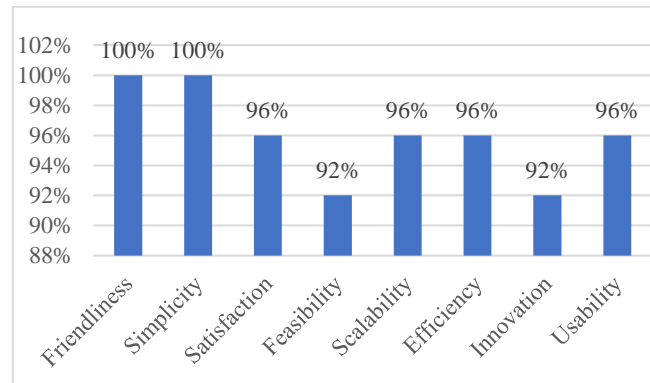

Fig. 6 Scale of responses

Fig. 7 Results of the criterions

Table 5. Criterion by clients

Criterion	Clients				
	1	2	3	4	5
Friendliness	100%	100%	100%	100%	100%
Simplicity	100%	100%	100%	100%	100%
Satisfaction	100%	100%	100%	100%	80%
Feasibility	100%	100%	100%	80%	80%
Scalability	100%	100%	100%	100%	80%
Efficiency	100%	100%	100%	100%	80%
Innovation	100%	80%	100%	100%	80%
Usability	100%	100%	100%	100%	80%

Table 6. Results

Criterion	Average	Satisfaction
Friendliness	100%	High
Simplicity	100%	High
Satisfaction	96%	High
Feasibility	92%	High
Scalability	96%	High
Efficiency	96%	High
Innovation	92%	High
Usability	96%	High
Average	**96%**	**High**

5.2. Web Application Architecture

As part of the web application architecture, the user is shown interacting with the web browser, which will request and receive information from the web server using HTML. Using the Visual Studio tool, this server will request and receive data from the SQL Server database.

The interfaces of the web application are presented and categorized by sprint. Each image specifies which story it belongs to and the criteria used to create the design.

5.3. First Sprint

The first sprint includes the story: H4: Access the platform without prior registration. For Story H4, we show the home interface of the web application, where the user can visualize Neverland's collections and products.

Fig. 9 shows the banner of the corresponding collection, as well as the Header with the different sections, such as Home, Categories, Collections, About and Contact and in Fig. 10, the Footer is shown, where the social networks and company information is presented.

5.4. Second Sprint

The sprint includes H3: The system has a database of the company's products, H6: You can display information about the company and the products it offers, according to categories, collections and different labels and H7: You can display product availability.

Fig. 11 and Fig. 12 show the categories of products the company presents in the Categories section, where you can visualize them according to the filters you wish to select by price, color or a one-word tag.

Fig. 13 and Fig. 14 show the collections presented by the company, where you can visualize the products according to the collection you select, with their price and name.
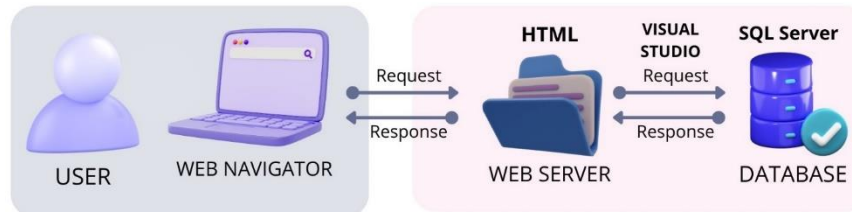

Fig. 8 Web Application Architecture
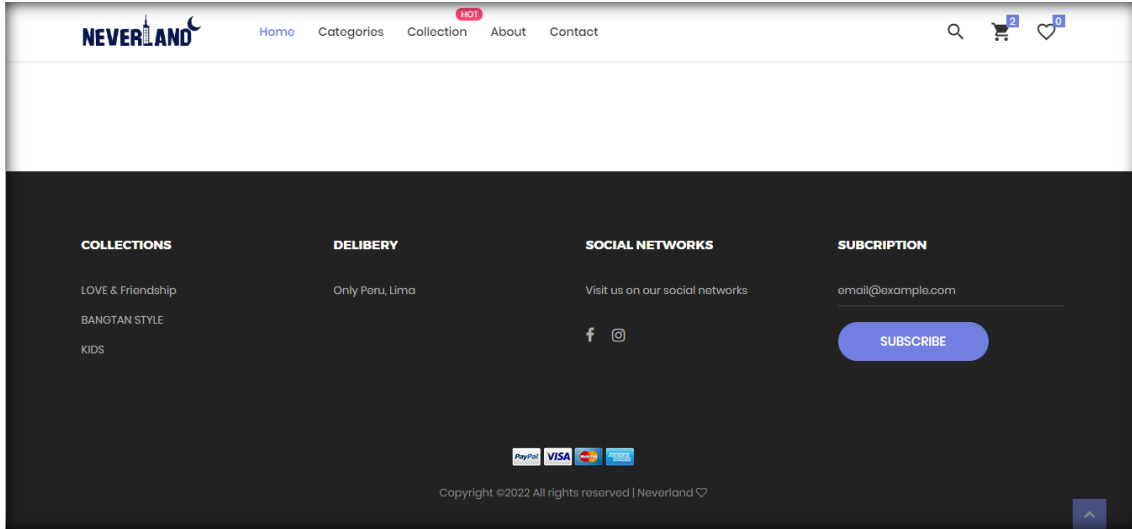

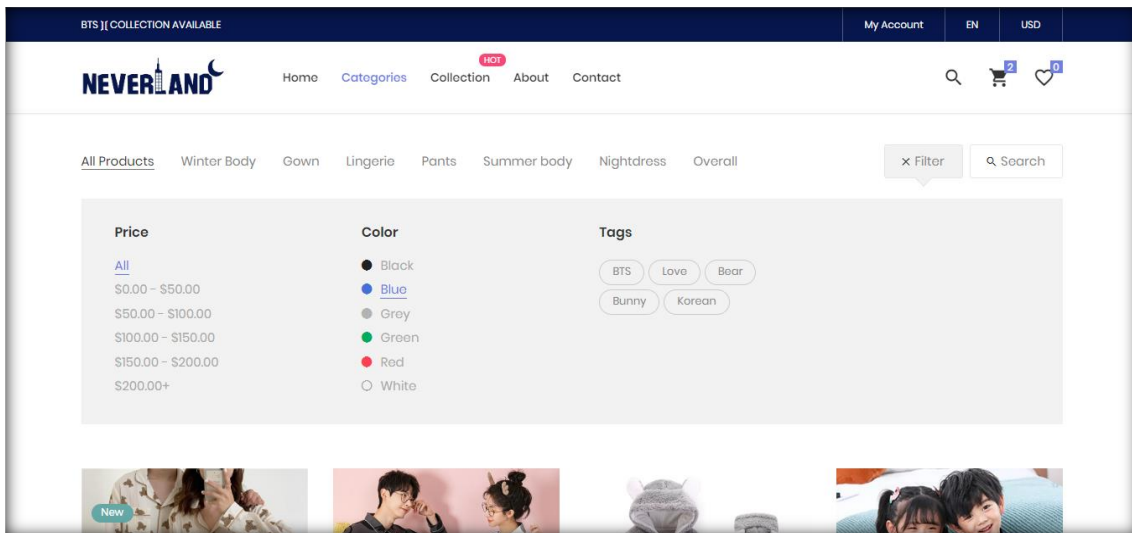**Fig. 9 Home Banner**

Fig. 10 Home Footer
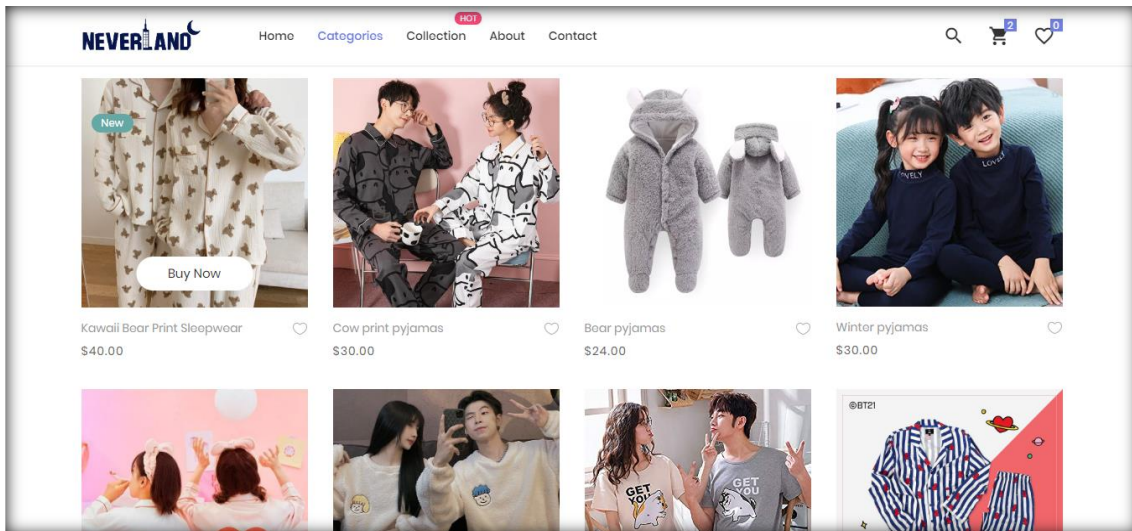

Fig. 11 Selection of categories

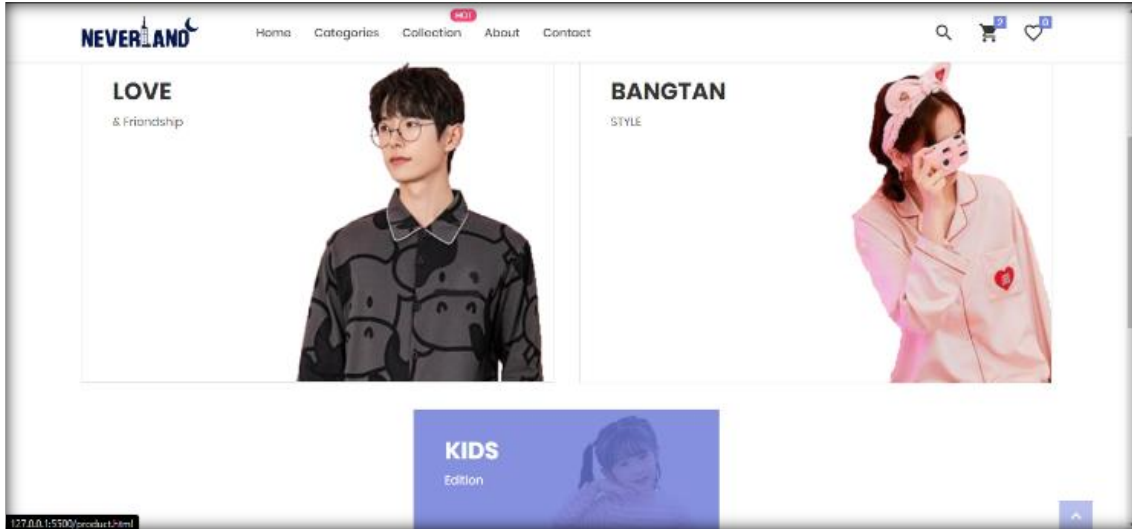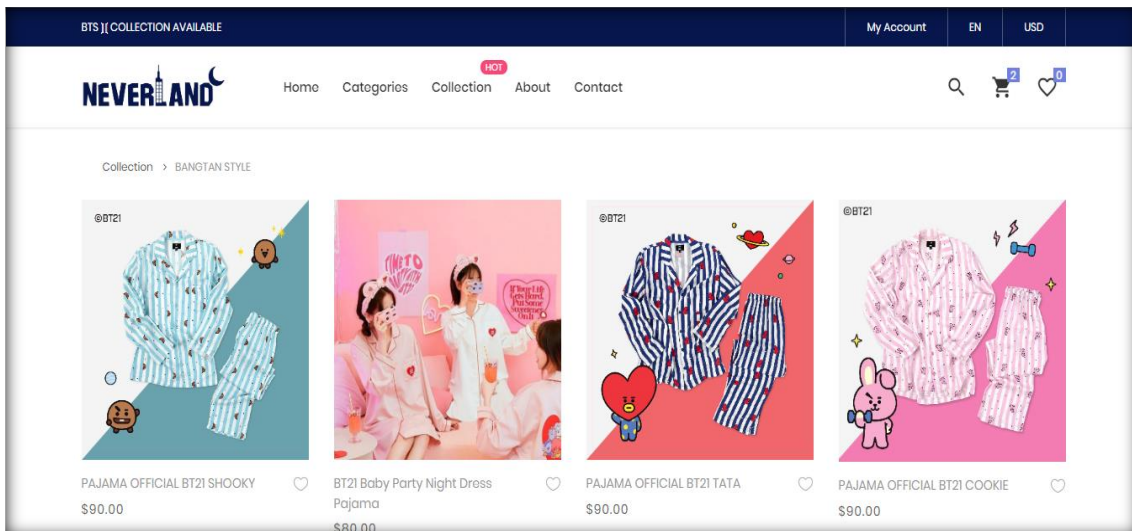**Fig. 12 Product categories**

Fig. 13 Collection

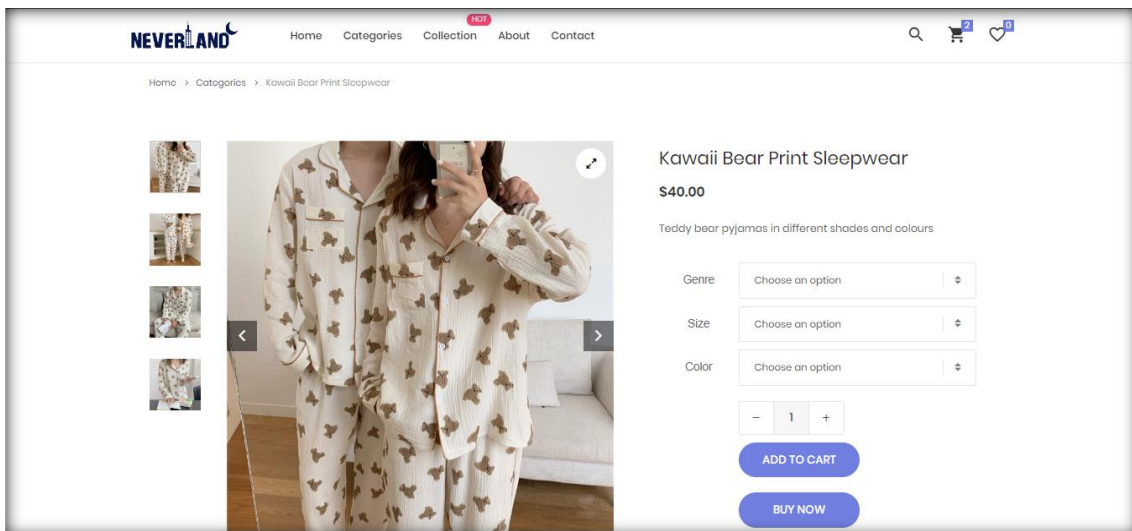**Fig. 14 Products from the Bangtan Style collection**
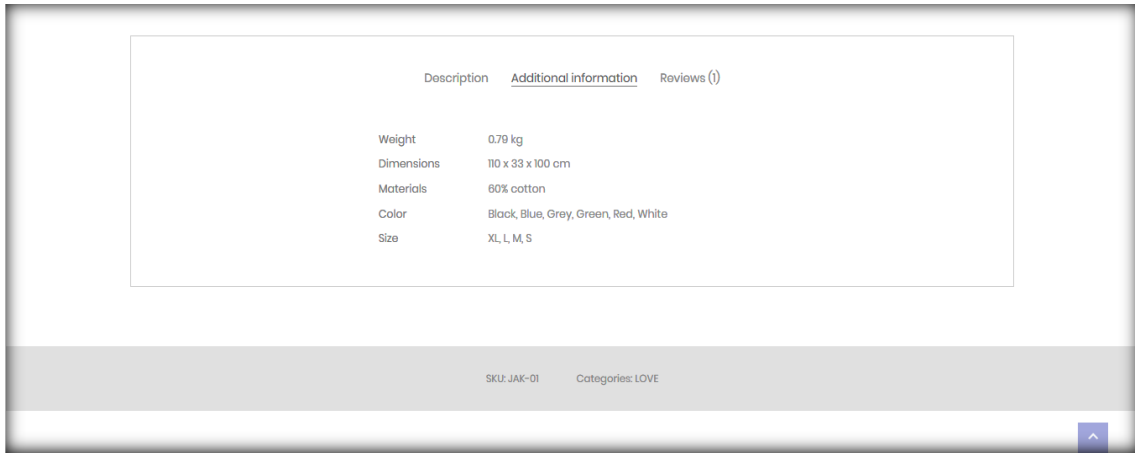

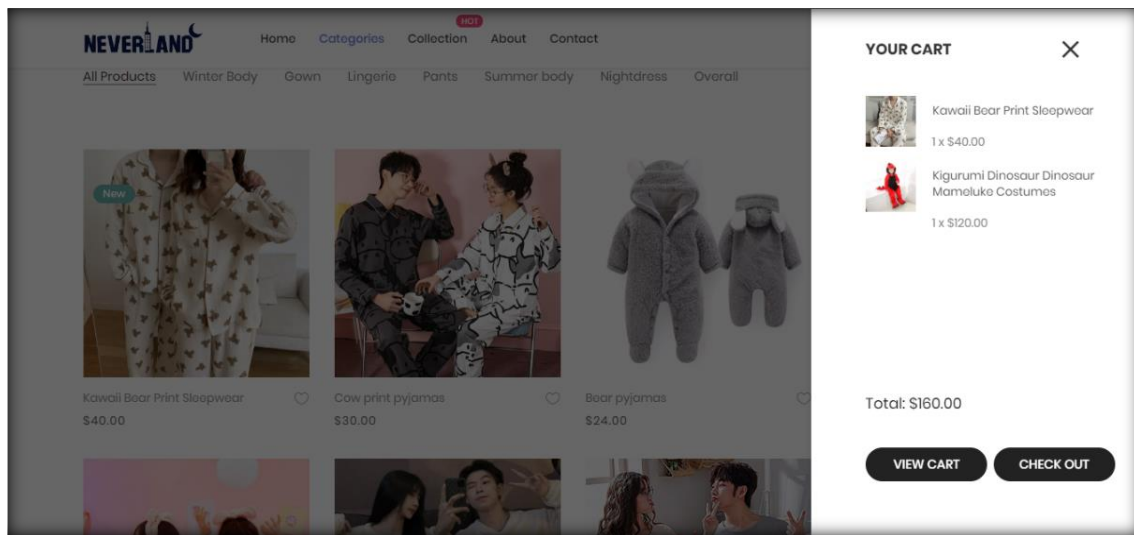**Fig. 15 Product selection**

Fig. 16 Product detail
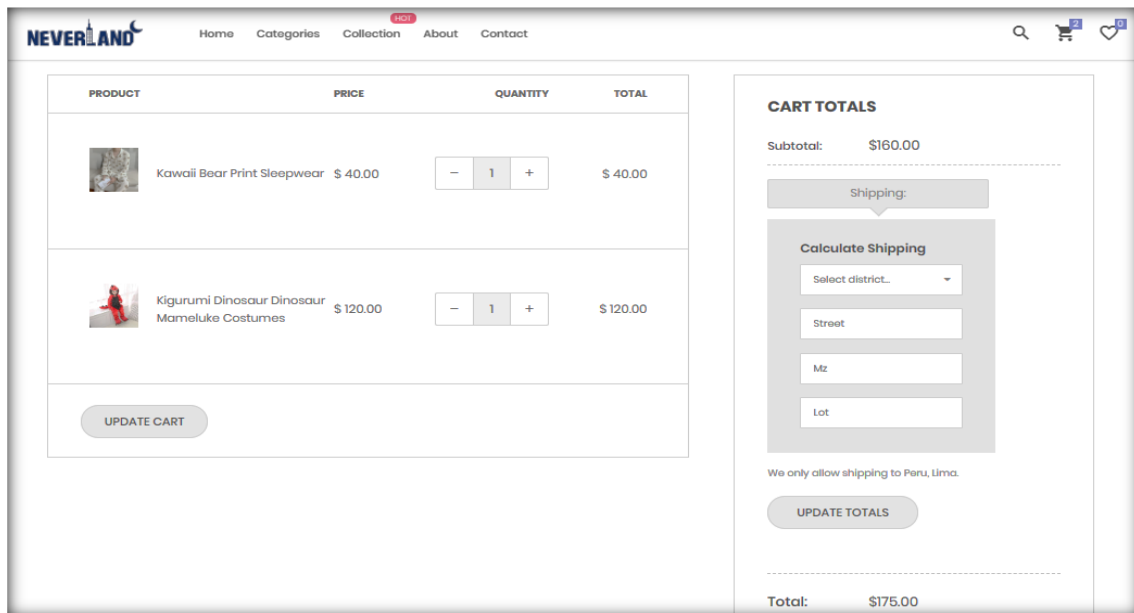

Fig. 17 Shopping Cart Window
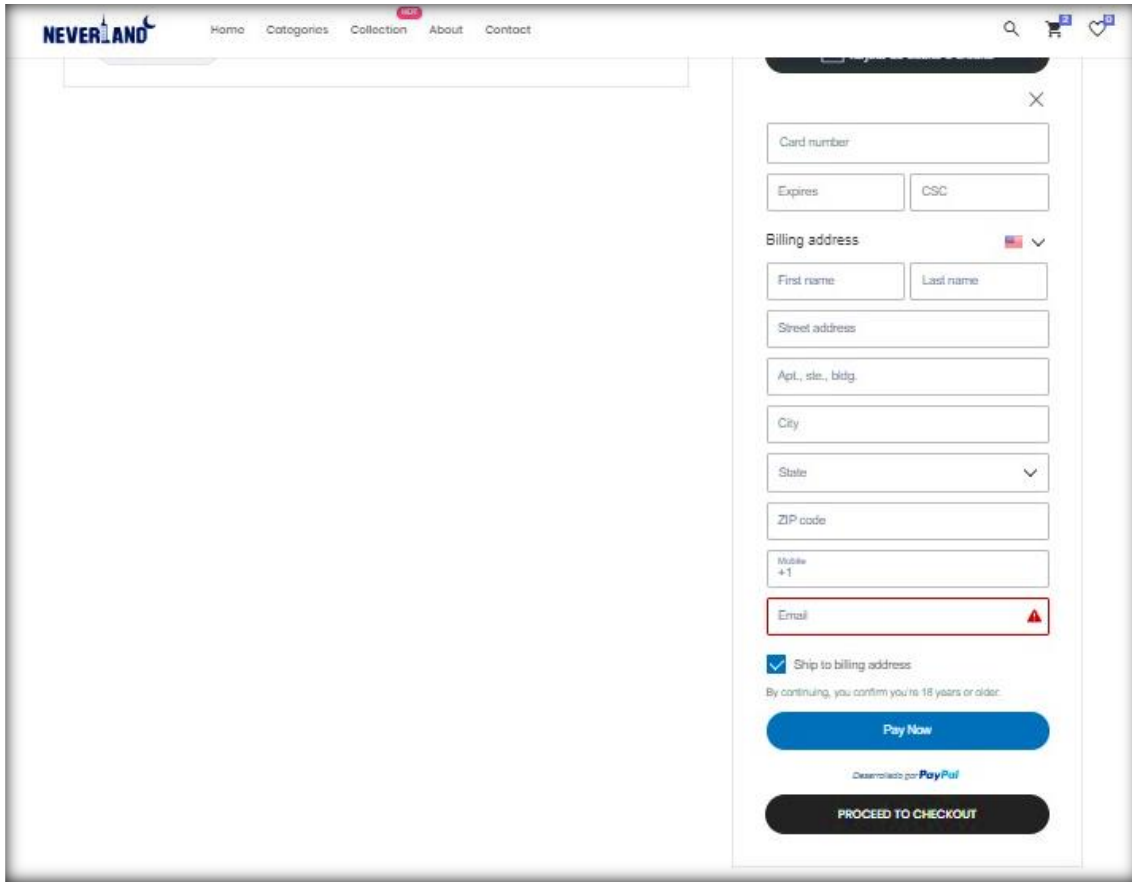

Fig. 18 Product Purchase
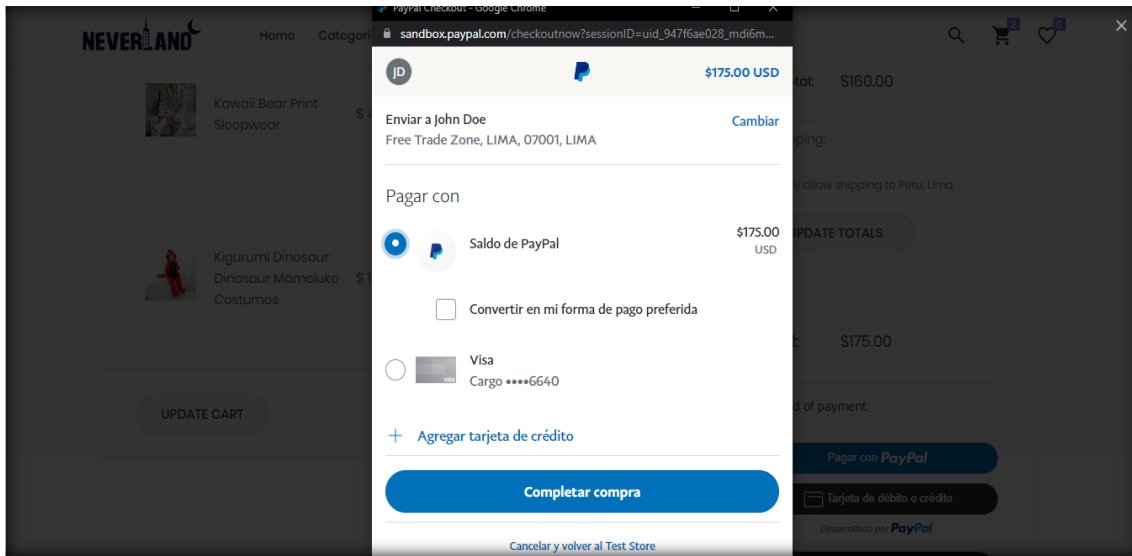
Fig. 19 Card payment methods

Fig. 20 Payment method Pay pal

5.5. Third Sprint

The sprint includes H1: The system makes use of information about the company, its products and sales, H8: You can comment on and rate a product and H10: The system presents detailed product information.

Fig. 15 and Fig. 16 show the interface where you can customize the product you want to buy, where you can see detailed information about the product according to its dimensions, sizes and colors, as well as the possibility to comment and rate the product.
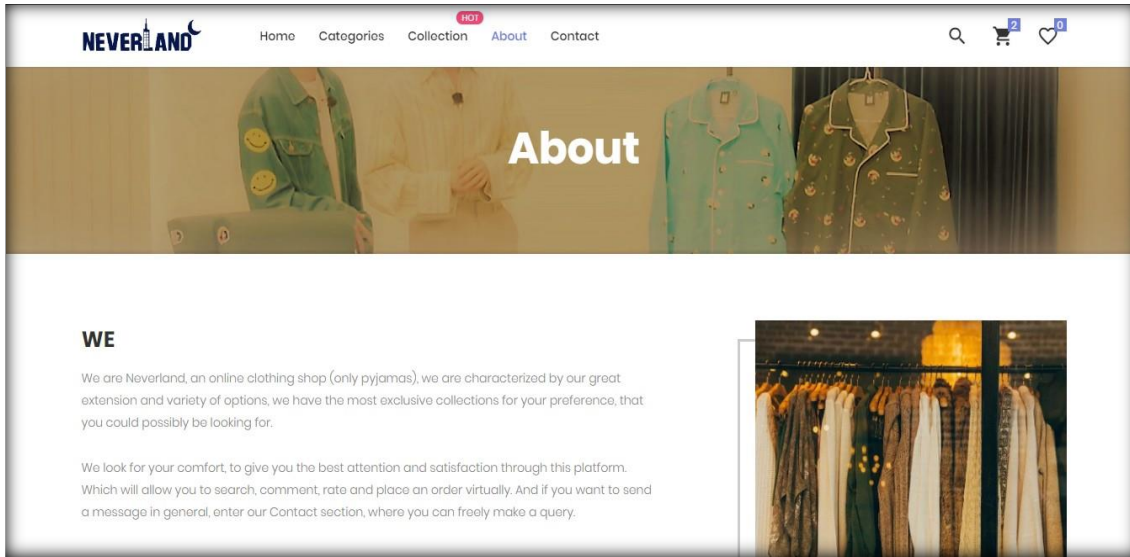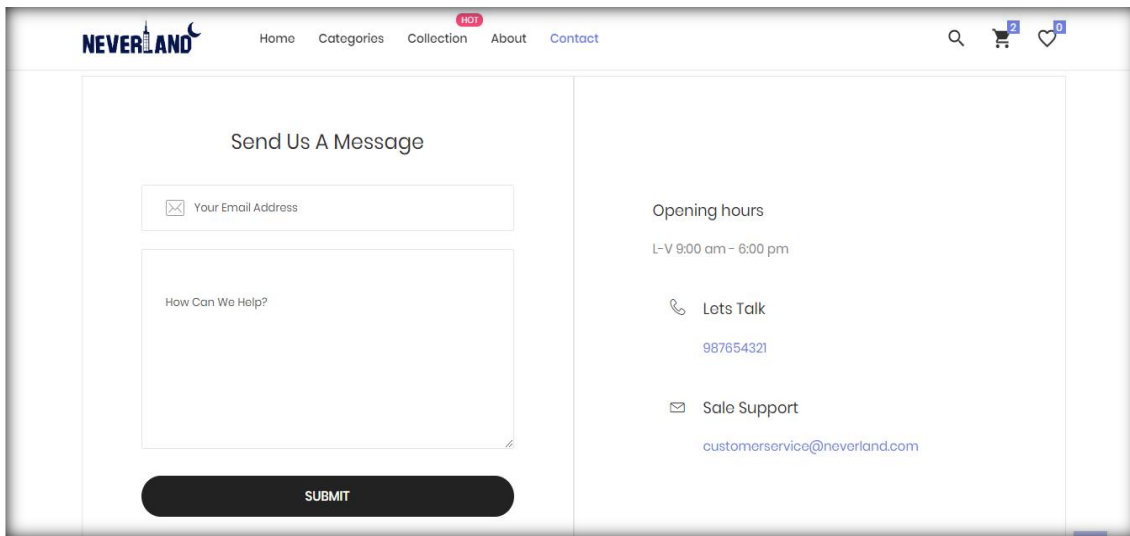
Fig. 21 About

Fig. 22 Contact

5.6. Fourth Sprint

Included in the Sprint: H12: The system has a shopping cart.

Fig. 17 shows the window on the right side where the shopping cart can be displayed according to the products selected by the customers; it counts the pajamas selected and shows the price of each one and the total price.

5.7. Fifth Sprint

Included in the Sprint: H5: You need a means of payment to make the purchase.

In fig. 18, fig. 19 and fig. 20, the interface of the product purchase is displayed, where it is divided by the details of the pajamas selected by price, quantity and total, plus the total of the cart according to the customer's address, and data of the payment method you want to select, by card or Pay pal.

5.8. Sixth Sprint

The sprint includes

H2: The web application design will feature a color palette representative of the company,

H9: The system features a simple and dynamic interface; and

H11: You can make queries to the company. Fig. 21 shows the interface of the About section, where you can view information about the company according to its history and about themselves.

Fig. 22 shows the interface of the Contact section, where the means of contact that the customer can make with the company will be displayed; in addition, the customer can send a message freely just by typing his email and the message he wants to send.

6. Conclusion and Recommendations

With what has been done in the project, we can conclude that by using and applying the basic concepts of programming, mathematics and writing, it was possible to design a web application to increase the sales of the company Neverland, Lima 2022, efficiently.

In this respect, the company has greater control over the sales orders they generate and the products they store. In addition to generating a greater and better interaction with the customer, allowing to increase the number of customers and optimize resources in the company Neverland. The benefits of this are the accessibility of the client to the web application, the security of the purchase and obtaining the product, as well as having a history of the client's purchases.

As part of the recommendations, in the visual aspect of the web application, it is recommended to use interface templates. To apply the own domain in the web application to be able to visualize it directly to implement the use of a sophisticated chatbot to improve the quality of customer service and in the aspect of database modelling, it is suggested to use a more detailed representation in the diagrams.

It should be noted that the SCRUM referential framework was used due to the important results that are obtained; see [38 – 40].

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