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Original Article

Web System Based on a Service Architecture to Improve the Management of the Sales Process after COVID-19

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Abstract - *In today's increasingly interconnected world, companies are using web systems more and more, mainly because they allow for the automation of operations, tracking of leads, and optimizing sales. In addition, they provide real-time data that helps make informed decisions and improve productivity. In this sense, it has been decided to implement a web system based on a service architecture to improve the management of the sales process, increase the degree of satisfaction of the sales process, and increase the products sold and the level of customer satisfaction. The research has a quantitative, experimental approach with a pre-experimental design. The population is 70 customers, with a total sample of 41 customers. To obtain the results, SPSS statistical software was used to analyse the key performance indicators (KPIs) linked to the effectiveness of the sales process, the quantity of products sold and the degree of customer satisfaction. With all the above mentioned in this research work, it is concluded that the implementation of a web system based on a service architecture will have a great impact because the following results were obtained: In KPI 1, referring to the degree of effectiveness of the attention in the sales process, an increase of 69.39% was obtained. In KPI 2 on the number of products sold, an increase of 142.27% was obtained, and finally, in KPI 3, referring to the degree of customer satisfaction, an increase of 143.23% was obtained.*

Keywords - *Web System, Management, Service, Sales, Key Performance Indicators.*

1. Introduction

The whole world suffered a crisis caused by the COVID-19 pandemic. This led to a significant reduction in trade. After almost 4 years, the world economy is still dealing with the problems caused by COVID-19. Thanks to the continuous advancement of technology, companies can receive several opportunities that increase their profits [1]. Currently, the number of sales on e-commerce platforms is growing significantly. Global consumer spending on online shopping is USD 3.551 trillion, representing 12.4% of total global sales [2].

Likewise, it emphasizes that Destination Management Organizations (DMOs) estimate that online sales in the United States will exceed 740,000 million dollars in 2024 (Retail e-commerce sales in the United States from 2017 to 2024). In addition, China's National Bureau of Statistics indicates that online marketing sales accounted for USD 577.7 billion in the first three quarters of 2019. This trend enables manufacturers to meet consumers' e-commerce preferences better, boosting their sales by adopting an online sales channel. In the case of Latin America, it has been driven by a small number of companies, for which the use of online stores and e-commerce platforms is related to having more exports and market diversification, as well as lower costs [3]. In addition, executives and sales representatives need to understand social media's benefits, advantages, features, and tools of social communication and know how to apply them effectively and efficiently to use the right social media tool [4]. The change of habits has influenced with difficulty the way of selling [5]. Nowadays, direct and face-to-face sales coexist with the digitalisation of sales visits. Today's sales processes typically require less effort from consumers acting as sellers than sellers in B2B and B2C sales processes. Specific sales process stages are not usually followed in this market, but transactional relationships are often used (only one). It can often be a fully digitized sales process, dried out quickly through virtual platforms [6], [7]. It is also important to create a standard process throughout the company to help the company effectively manage these sales cases because feedback on a product will influence customer decisions [8]. Also, a good sales process could help the company team manage the sales cases most effectively and help the sales manager monitor the sales cases and forecast revenue explicitly [9]. Websites offer static content, and through a content management system, they change periodically according to the needs of each company. Many desktop applications are transformed into web applications for ease of use. One of its main features is being delivered through the browser, making it an effective option to streamline functionality across multiple devices [10]. For this

reason, the present investigation seeks to implement a web system; likewise, in the data architecture, the extraction, transformation, and load of data (ETL) are vital [11]. In other countries, such as Peru, at the beginning of the pandemic, [12] although electronic commerce registered a growth of 58% a week before the social isolation of March 16, 2020, which could not be maintained because commercial operations were limited to e-commerce, except necessities, is thus that in March e-commerce only had an increase of 25%.

In April it fell by 11% respectively, in the case of shipments there was a drop of 60%. It also indicates that at that time, the president of CAPECE, Helmut Cáceda, pointed out that no country in the region, except Peru, had limited electronic commerce activity. This research aims to implement a web-based service architecture system to improve the satisfaction management of the sales process, increase the number of products sold, and increase customer satisfaction. The article has the following structure: Section II has the literature review, Section III presents the Scrum methodology, Section IV the results, Section V discusses, and finally, Section VI provides the conclusion.

2. Literature Review

For [13], the role of an integrated cross-border business management system supported by collaborative information middleware design and implementation methods was analysed. Based on the research results, an information system model to support business-to-business e-commerce activities was proposed, tailored to the background and needs of these activities. The experimental results confirmed the effectiveness of the proposed integrated management system approach for cross-border businesses based on collaborative information middleware. Meanwhile,[14], a model is proposed and designed to assess consumer confidence in e-commerce in agricultural products based on the theory of D-S evidence, and its effectiveness is validated utilizing experimental simulations.

Based on an index system, the model was built to measure consumer trust in this type of e-commerce, integrating both direct and indirect trust in online purchases. In [15], a theoretical model is presented to explain firms' strategies and to develop relationships that can be simulated and quantitatively estimated once the necessary data are obtained. It is proposed to conceptualize taxonomies and demonstrate the fascination of the innovations that firms have undertaken by pivoting and co-pivoting in their complementary clusters along food supply chains.

The results of the studies point to a clear need on the part of firms for policy and infrastructural conditions that enable them to pivot and co-pivot. Finally, the shift towards e-commerce and delivery intermediation in post-pandemic developing countries needs to be explored. On the other hand, for [16], the number of acquaintances in each sample household who used e-commerce to sell goods in 2019 was assessed as an instrumental variable. For verification, a counterfeit test was applied. Among them, the valid instrumental variable significantly correlates with farmers' adoption of e-commerce without directly influencing the selling price, marketing costs, or gross price. In [17], a universal decision support system based on MCDM methods was proposed for the e-commerce sector. By incorporating this under different methodological assumptions, the suggested DSS offers an option that manifests a true compromise and is compatible with all methods involved in its determination. The author emphasizes that the results are initially shown on a sample of 20 mobile phones randomly selected from a set of 1039 alternatives and then extended to the whole group.

3. Methodology

In the present investigation of a web system based on a service architecture to improve sales process management[18], it was decided to use the agile Scrum methodology. Scrum is a framework that establishes a set of defined rules and tasks to be performed in each iteration of a software project, thus ensuring its proper implementation.

3.1. General Description of the Methodology

3.1.1. The Scrum Teams

A Product Owner, a Development Team, and a Scrum Master organize it. They are self-organizing, as they decide how best to carry out their work, and are not directed by people outside the team.

3.1.2. Product Owner

Responsible for increasing the value of both the product and the work performed by the development team.

3.1.3. Development Team

The team comprises professionals who carry out the work necessary to deliver a "Finished" product Increment, ready for possible implementation at the end of each Sprint. Only members of the development team participate in creating this Productivity Increment. Scrum originated in the 1990s when Jeff Sutherland and Ken Schwaber adapted a study on a new form of production in the software development process [18].

It also mentions that Scrum is described as a framework that establishes a specific set of rules and tasks, having as its mission to be performed in each iteration of the software project to ensure its effectiveness. Although Scrum has a lightweight approach and is easy to learn, it is challenging to master completely. A good web architecture is important because it allows users to navigate easily. In addition, it is easier for search engines to index and rank your site's content and improve your visibility in search results. It also contributes to a better user experience (UX), which increases visitor retention and, ultimately, more business, which is why a service architecture is developed, as shown in Figure 1.

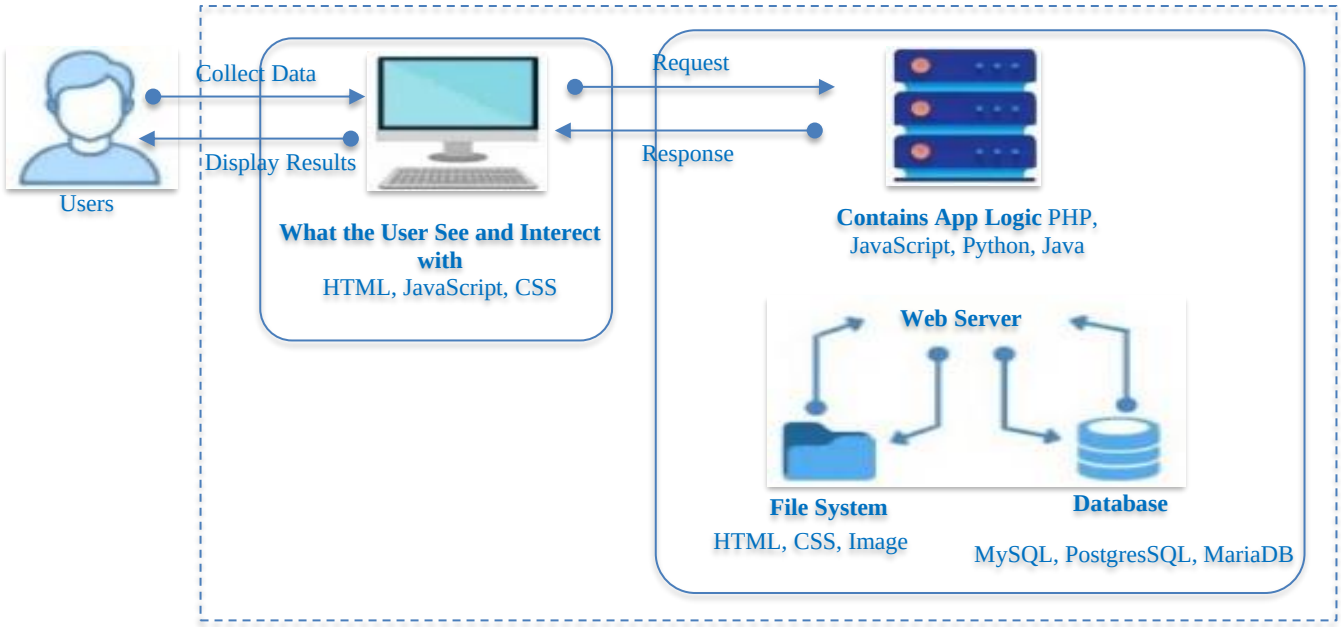

Fig. 1 Web application architecture

3.2. Application Development Tools

Due to the complexity of the work, a software methodology will be used since most projects need a set of patterns that allow for their management and development. Table 1 describes the tools to be used to develop the case.

Table 1. Application development tools

Tools	Description
IntelliJ IDEA	Integrated development environment for the development of computer programs.
MySQL	It is a relational database management system created by Oracle Corporation that operates under a dual licensing scheme: General Public License and Commercial License.
Git y GitHub	Version control and repositories.
Java	Programming language and computing platform.
Spring Boot	An open-source Java-based framework is used to create a microservice.
Trello	Trello is a project management software with a web interface.

3.3. Product Backlog

Table 2 shows the functional requirements with their user history, estimated points, and priority.

Table 2. Product Backlog built from user stories

Functional Requirements (FR)	Stories	Estimated Points	Priority
FR01: The system must allow the administrator to go through an interface to register products.	H1	3	1
FR02: The system shall enable the administrator to connect.	H2	2	1
FR03: The system shall allow the administrator to update product information.	H3	3	2
FR04: The web-based system shall allow the administrator to delete products as required.	H4	3	2
FR05: The web system must allow users to view a welcome interface or main interface.	H5	5	1
FR06: The web system must allow users to view an interface with their data (User Profile).	H6	3	1
FR07: The web system must allow users to update their passwords securely.	H7	9	1
FR08: The web system must allow the user to update their data.	H8	3	2
FR09: The web system must allow users to add the products to the shopping cart.	H9	8	2
FR10: The application must allow the user to view the payment interface.	H10	13	2
FR11: The web system must allow the administrator to view a Dashboard with the data, sales per day, best-selling products, and claims per day.	H11	21	3
FR12: The system must allow users to customise images at their convenience.	H12	8	3
FR13: The system must allow the user to register to log in.	H13	5	1

3.4. Workplan

The work plan will be made in this section, allowing the scrum team to plan and manage the fieldwork. As shown in Table 3, the functional requirements have been divided by sprint.

Table 3. Distribution per sprint

N° Sprint	Functional Requirements (FR)	Stories	Estimated Points	Priority
SPRINT 1	**FR01**: The system must allow the administrator to go through an interface to register products.	H1	3	1
	FR02: The system should allow the administrator to log in.	H2	2	1
	FR05: The web system must allow users to view a welcome interface or main interface.	H5	5	1
	FR06: The web system must allow users to view an interface with their data (User Profile).	H6	3	1
	FR07: The web system should allow users to update their passwords securely.	H7	9	1
	FR13: The system should enable the user to register to log in later.	H13	5	1
SPRINT 2	**FR03:** The system must allow the administrator to update the data of the products.	H3	3	2
	FR04: The web system must allow the administrator to delete the required products.	H4	3	2
	FR08: The web system must allow the user to update their data.	H8	3	2
	FR09: The web system must allow users to add the products to the shopping cart.	H9	8	2
	FR10: The application must allow the user to view the payment interface.	H10	13	2
SPRINT 3	**FR11:** The web system must allow the administrator to view a Dashboard with the data, sales per day, best-selling products, and claims per day.	H11	21	3
	FR12: The system must allow users to customise images at their convenience.	H12	8	3

3.5. Sprint Planning

In this section, each sprint was carried out as detailed below:

3.5.1. First Sprint

The objective of Sprint 1 is to allow the user to log into the system, view the main window (Home), view their profile, and be able to modify their password.

- FR1: An interface should be considered for the administrator to access the system to register products. Figure 2 shows the development of FR1, which is the product registration interface.
- FR2: The system should enable the administrator to log in. The prototype to be executed is visualized in Figure 3, the login interface.
- FR5: The web system must show the user a welcome or main interface. The main page is shown in Figure 4.
- FR6: The web system must grant the user an interface with his data (User Profile).
- FR7: The web system must allow the user to update his password securely.
- FR13: The system must make it easy for the user to register so that he/she can then log in.

Fig. 2 Product registration interface

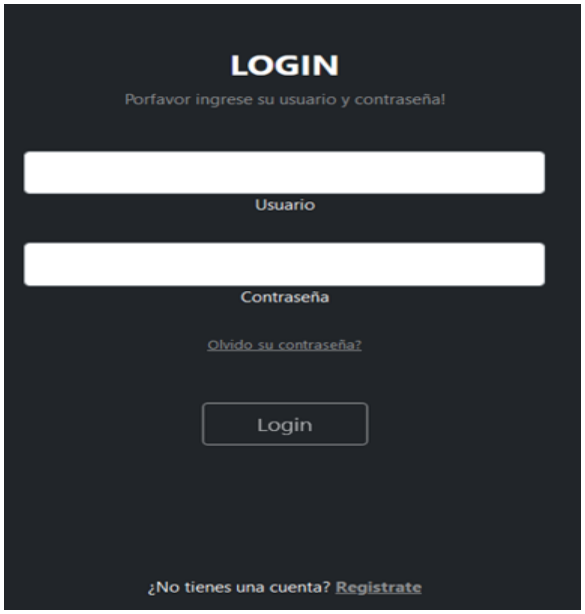

Fig. 3 Login interface

Fig. 4 Main interface (Home)

3.5.2. Second Sprint

In sprint 2, the objective is to allow the administrator to maintain the products. Also, it allows users to modify their data (User profile) and be able to manage their purchases.

- FR3: The system shall enable the administrator to update product information.
- FR4: The web system shall allow the administrator to delete products as required. Figure 5 presents the interface that allows updating and deleting products.
- FR8: The web system shall allow the user to update his information.
- FR9: The web system shall allow users to add products to the shopping cart. Figure 6 shows the interface implementation for adding products to the cart and displaying the products in the cart.
- FR10: The application must allow the user to view the payment interface.

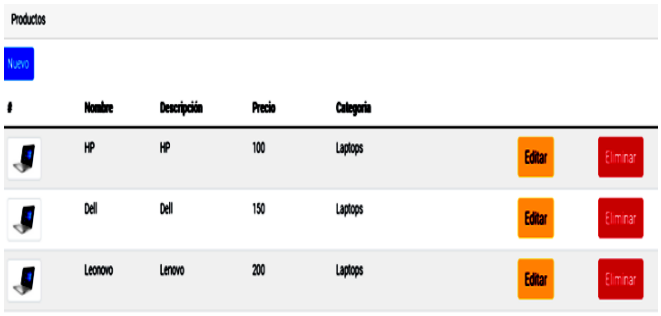

Fig. 5 Interface for product upgrades and eliminating products

(a) **(b)**

Fig. 6 Interface Shopping cart: (a) Add products to the cart (b) Showing the products in the cart

3.5.3. Third sprint

Sprint 3 aims to allow the manager to analyze the sales, products and claims data in detail. Also, it allows the user to upload a profile photo.

- FR11: The web system must allow the administrator to view a Dashboard with the data, sales per day, best-selling products, and daily claims. Figure 7 shows the dashboard that allows for the analysis of sales per day, best-selling products, and claims per day.
- FR12: The system must allow users to customise images conveniently.

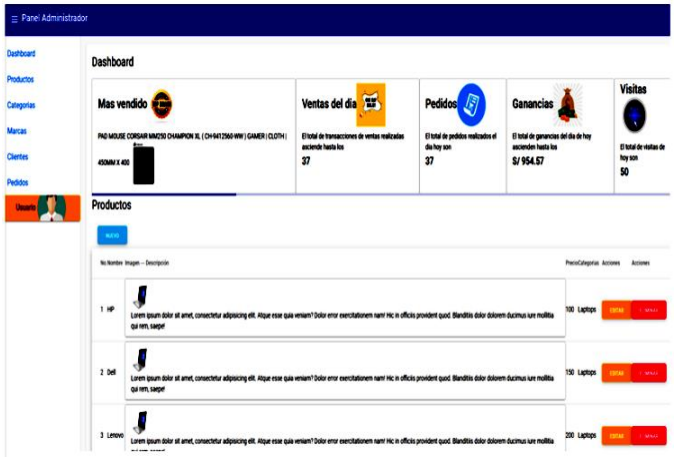

Fig. 7 Dashboard panel implementation

4. Results

4.1. KPI 1: " Degree of the effectiveness of attention in the sales process "

In this section, a descriptive analysis of the indicator has been carried out, "Degree of the effectiveness of the attention in the sales process" The comparison was made between the levels of attention in the sales process, either in the pre-and post, as shown in Table 4.

Next, the histogram for pre- and post-effectiveness was created, as illustrated in Figure 8.

Table 4. Frequency of the Indicator for the Degree of Effectiveness of Attention in the Sales Process

		Efect. Pre	Efect. Post
N	Valid	41	41
	Lost	0	0
Mean		.49	.83
Median		6.00	1.00
Mode		0	1
Desvest		.506	.381
Variance		.256	.145
Minimum		0	0
Maximum		1	1
Sum		20	34
Percentile	25	.00	1.00
	50	.00	1.00
	75	1.00	1.00

Table 5. Mcnemar test for the Indicator "Degree of Effectiveness"

Test Statistics[a]	
	Efec_Pre and Efec_Post
N	41
Exact Sig. (2-tailed)	.001[b]
a. McNemar Test	
b. Binomial distribution used.	

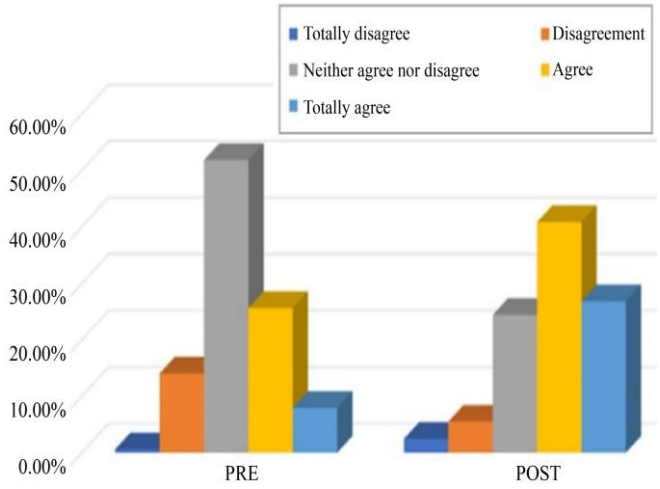

Fig. 8 Statistics of the indicator "Degree of the effectiveness of attention in the sales process"

According to the results in Table 4 and Figure 8, the "Level of satisfaction" showed an average value of 0.49 in the pre-test and 0.83 in the post-test, reflecting an increase of 69.39%. This increase could be interpreted as an improvement in customer satisfaction, which is measured by the percentage of cases successfully resolved in the first interaction, indicating greater efficiency in attention and quick resolutions that contribute to the positive perception of the service. Subsequently, hypothesis testing was carried out using McNemar's test. Based on what is observed in Table 5, using the non-parametric test for McNemar qualitative variables, it is concluded that the web system based on service architecture positively influences the effectiveness of the management of the company's sales process.

4.2. KPI 2: " Number of Products Sold"

This section presents a descriptive analysis of the "Number of products sold" indicator, and a comparison was made between the number of products sold in the sales process, pre- and post, as shown in Table 6.

Table 6. Frequency of "Products Sold" Indicator

		Sales Pre	Sales Post
N	Valid	41	41
	Lost	0	0
Mean		14.95	36.22
Median		15.00	35.00
Mode		15	34
Desvest		4.914	8.347
Varience		24.148	69.676
Minimum		6	19
Maximum		24	54
Sum		613	1485
Percentile	25	11.00	29.50
	50	15.00	35.00
	75	19.50	42.50

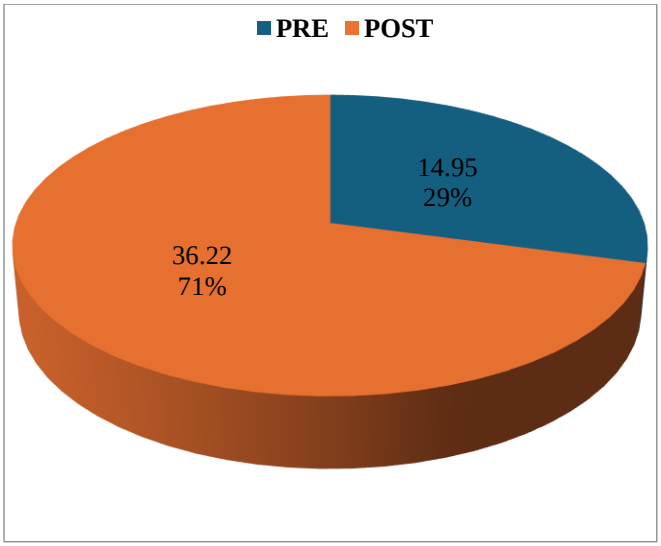

Fig. 9 Statistics of the "Number of products sold" indicator"

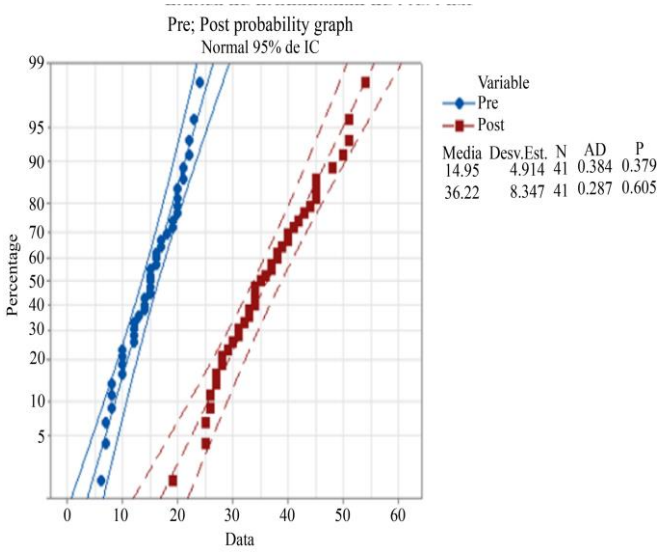

Fig. 10 Probability graph of the products sold indicator

As Table 6 and Figure 9 show, the "Level of satisfaction" obtained a mean score of 14.95 in the pre-test and increased to 36.22 in the post-test, representing an increase of 142.27%. In order to evaluate this growth more accurately, a specific time period was considered, allowing us to analyse how satisfaction metrics evolve and to observe whether this improvement is sustained over time. Then, the normality test of the KPI 2 was performed, as shown in Figure 10.

As indicated in Figure 10, the significance values for the pretest and posttest are 0.379 and 0.605, respectively. Since both values are greater than 0.05, it is concluded that the data have a normal distribution. Subsequently, the Wilcoxon test was applied for indicator 2, as shown in Table 7. It was possible to obtain a level of significance equal to 0.00, which is less than 0.05. Therefore, a web system based on service architecture positively influences a company's sales.

4.3. KPI 3: "Customer Satisfaction Level"

In this section, a descriptive analysis was conducted for the "Customer satisfaction level" indicator, followed by comparing customer satisfaction before and after the implementation of the web system, as presented in Table 8. Figure 11 shows the histogram of products sold before and after. A Likert scale was used to measure customer satisfaction more accurately and capture the customer's perception of different degrees of satisfaction.

Table 7. Wilcoxon test of indicator 2 "Number of Products Sold"

Test Statistics[a]	
	Products_Pre and Products_Post
Z	-5.581[b]
Asymp. Sig. (2-tailed)	.000
a. Wilcoxon Signed Ranks Test	
b. Based on negative ranks.	

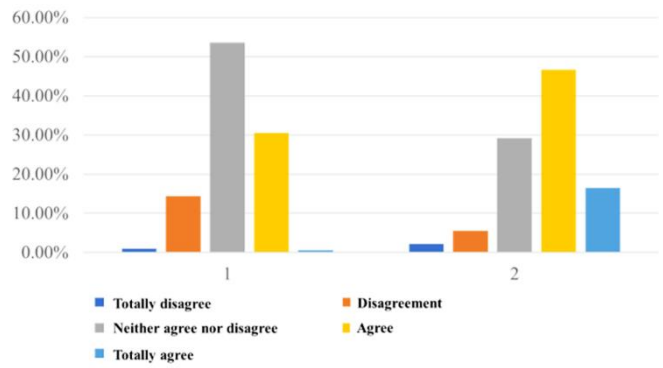

Fig. 11 Statistics of the indicator "Frequency of "Products Sold" Indicator"

Table 8. Frequency of "Products Sold" Indicator

		Satisf. Pre	Satisf. Post
N	**Valid**	41	41
	Lost	0	0
Mean		.37	.90
Median		.00	1.00
Mode		0	1
Desvest		.488	.300
Variance		.238	.090
Minimum		0	0
Maximum		1	1
Sum		15	37
Percentile	25	.00	1.00
	50	.00	1.00
	75	1.0	1.00

Table 9. Mcnemar test for the indicator "Customer Satisfaction Level"

Test Statistics[a]	
	Satis_Pre and Satis_Post
N	41
Exact Sig. (2-tailed)	.001[b]
a. McNemar Test	
b. Binomial distribution used.	

Based on the results in Table 8 and Figure 11, the "Satisfaction level" had a mean value of 0.37 in the pre-test and 0.90 in the post-test, indicating an increase of 143.23%. Subsequently, McNemar's test was used to perform the hypothesis test. Regarding the observations in Table 9, the non-parametric McNemar test for qualitative variables yielded a significance level of 0.00, below the threshold of 0.05. Therefore, the web system based on service architecture positively influences the satisfaction of a company's customers. The web-based system based on a service architecture achieves better results than previous advanced techniques because it allows centralised management, optimises customer service, automates processes and

facilitates personalisation. These factors improve efficiency, increase sales by 142.27% and raise customer satisfaction by 143.23%, thus outperforming traditional systems that are less adaptable and face limitations in real-time data management.

5. Discussion

After analysing the results obtained, the statistical analysis of the indicator "Degree of efficiency of attention in the sales process" can be seen in Table 4 and Figure 8, from which the results of the pre-test showing an average value of 0.49 and the results of the post-test showing a value of 0.83 can be interpreted. That is, there was an increase of 69.39%, and Table 6 with McNemar's test shows a significance level of 0.01 being less than 0.05 and thus determining that the web system based on service architecture positively influences the effectiveness of the management of the sales process of a company, in times of Covid-19. The results resemble [19], which proposes an efficient and reliable Web services-based service composition framework for enterprise integration, with architectural models and structural patterns for e-commerce. It also emphasizes overcoming security, transaction, reliability, and technical limitations. Also, in [20], the authors examine the effects of improvements made to the sales process by applying the Lean Value Stream Mapping (VSM) tool. They report that this approach optimized the sales process, resulting in a 20% increase in average annual revenue. The authors emphasize that these outcomes contribute directly to substantial cost savings in the sales process, increased employee productivity, and notable growth in both sales and revenue. On the other hand, in [21], qualitative methods are used, specifically the Soft Systems Method (SSM), which can be used to analyze the nature of the market performance model. They consider the great value of technological progress and the use of the Internet in creating business projects and how they are used in e-commerce websites. The authors indicate that the results of their research were applied, achieving a rate of 55% in improving and optimizing the web design to have more points of sale and attract more potential customers, thus impacting their sales processes.

6. Conclusion

First, it is concluded that the web system based on service architecture positively influences the effectiveness of the company's sales management process. This allowed for a reduction in attention times, which allowed for the achievement of the expected objectives. Second, it was achieved that the web system based on service architecture positively influences a company's sales. Because an increase in the number of products sold was obtained, it was finally possible to conclude that the web system based on service architecture positively influences the satisfaction of a company's customers. Well, there was an increase in customer satisfaction, with which the objectives were met. Limitations of the system include its restricted adaptability to other sectors and the lack of advanced security measures, which limits its use in other contexts. For future work, it is recommended that the system be tested in various sectors, optimised for mobile phones, and incorporated artificial intelligence to anticipate customer needs and improve sales effectiveness.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

References

[1] Rakibul Hasan et al., "Inventory Management with Online Payment and Preorder Discounts," *Industrial Management and Data Systems*, vol. 120, no. 11, pp. 2001-2023, 2020. [CrossRef] [Google Scholar] [Publisher Link]

[2] Zongyu Mu, Xiaodong Liu, and Ke Li, "Optimizing Operating Parameters of a Dual E-Commerce-Retail Sales Channel in a Closed-Loop Supply Chain," *Journals & Magazines*, vol. 8, pp. 180352-180369, 2020. [CrossRef] [Google Scholar] [Publisher Link]

[3] Carolina Aguerre, "Digital Trade in Latin America: Mapping Issues and Approaches," *Digital Policy, Regulation and Governance*, vol. 21, no. 1, pp. 2-18, 2019. [CrossRef] [Google Scholar] [Publisher Link]

[4] Khalid Abdulkareem Al-Enezi, Imad Fakhri Taha Al Shaikhli, and Sufyan Salim Mahmood AlDabbagh, "The Influence of Internet and Social Media on Purchasing Decisions in Kuwait," *Indonesian Journal of Electrical Engineering and Computer Science*, vol. 10, no. 2, pp. 792-797, 2018. [CrossRef] [Google Scholar] [Publisher Link]

[5] Marilyn L. Hau, "Ten Common Mistakes to Avoid as an Independent Consultant," *Workplace Health & Safety*, vol. 61, no. 1, pp. 11-18, 2013. [CrossRef] [Google Scholar] [Publisher Link]

[6] Rocio Rodríguez, Göran Svensson, and Erik Jens Mehl, "Digitalization Process of Complex B2B Sales Processes - Enablers and Obstacles," *Technology in Society*, vol. 62, 2020. [CrossRef] [Google Scholar] [Publisher Link]

[7] Saja Nasir, Salih Mahdy Al-Qaraaw, and Muayad Sadik Croock, "QR Based Management System for Plants Shopping Center," *Indonesian Journal of Electrical Engineering and Computer Science*, vol. 19, no. 2, pp. 931-939, 2020. [CrossRef] [Google Scholar] [Publisher Link]

[8] Ramos Somya, Edi Winarko, and Sigit Priyanta, "A Hybrid Recommender System Based on Customer Behavior and Transaction Data using Generalized Sequential Pattern Algorithm," *Bulletin of Electrical Engineering and Informatics*, vol. 11, no. 6, pp. 3422-3432, 2022. [CrossRef] [Google Scholar] [Publisher Link]

[9] Ruey-Sheng Horng et al., "Sales Process Management of Project-Based Telecom Services," *Proceeding APNOMS 16th Asia-Pacific Network Operations and Management Symposium*, Hsinchu, Taiwan, pp. 1-4, 2014. [CrossRef] [Google Scholar] [Publisher Link]

[10] Jay Kiruthika et al., "User Experience Design in Web Applications," *Proceedings 2016 IEEE Intl Conference on Computational Science*

and Engineering (CSE) and IEEE Intl Conference on Embedded and Ubiquitous Computing (EUC) and 15th Intl Symposium on Distributed Computing and Applications for Business Engineering (DCABES), Paris, France, pp. 642-646, 2017. [CrossRef] [Google Scholar] [Publisher Link]

[11] Seddiq Q. Abd Al-Rahman, Ekram H Hasan, and Ali Makki Sagheer, "Design and Implementation of the Web (Extract, Transform, Load) Process in Data Warehouse Application," *IAES International Journal of Artificial Intelligence*, vol. 12, no. 2, pp. 765-775, 2023. [CrossRef] [Google Scholar] [Publisher Link]

[12] Peruvian Chamber of Electronic Commerce, Ecommerce Growth Peru and Latin America 2009-2019, 2009. [Online]. Available: https://www.inteligenciaparanegocios.com/wp-content/uploads/2020/02/Reporte-Oficial-de-la-Industria-Ecommerce-en-Peru.pdf

[13] Ying Luan, and Zhuo Zhang, "Research on e-Commerce Integrated Management Information System of Cross-Border Enterprises Based on Collaborative Information Middleware," *Information Systems and e-Business Management*, vol. 18, pp. 527-543, 2020. [CrossRef] [Google Scholar] [Publisher Link]

[14] Abuduaini Abudureheman, and Aishanjiang Nilupaer, "Research on Consumer Trust Measurement Model for Agricultural Products e-Commerce Based on D-S evidence theory," *Acta Agriculturae Scandinavica, Section B - Soil & Plant Science*, vol. 71, no. 4, pp. 273-283, 2021. [CrossRef] [Google Scholar] [Publisher Link]

[15] Thomas Reardon et al., ""Pivoting" by Food Industry Firms to Cope with COVID-19 in Developing Regions: E-commerce and "Copivoting" Delivery Intermediaries," *Journal of the International Association of Agricultural Economists*, vol. 52, no. 3, pp. 459-475, 2021. [CrossRef] [Google Scholar] [Publisher Link]

[16] Min Liu et al., "The Adoption and Impact of E-commerce in Rural China: Application of an Endogenous Switching Regression Model," *Journal of Rural Studies*, vol. 83, pp. 106-116, 2021. [CrossRef] [Google Scholar] [Publisher Link]

[17] Aleksandra Bączkiewicz et al., "Methodical Aspects of MCDM Based E-Commerce Recommender System," *Journal of Theoretical and Applied Electronic Commerce Research*, vol. 16, no. 6, pp. 2192-2229, 2021. [CrossRef] [Google Scholar] [Publisher Link]

[18] José Gaete et al., "Agile Implementation Approach with Serum, Lean and Kanban," *Ingeniare Chilean Engineering Journal*, vol. 29, no. 1, pp. 141-157, 2021. [CrossRef] [Google Scholar] [Publisher Link]

[19] Ying Huang, and Jen-Yao Chung, "A Web Services-Based Framework for Business Integration Solutions," *Electronic Commerce Research and Applications*, vol. 2, no. 1, pp. 15-26, 2003. [CrossRef] [Google Scholar] [Publisher Link]

[20] Zoran Kunkera, Nataša Tošanović, and Nedeljko Štefanić, "Improving the Shipbuilding Sales Process by Selected Lean Management Tool," *Machines*, vol. 10, no. 9, pp. 1-27, 2022. [CrossRef] [Google Scholar] [Publisher Link]

[21] Anik Handayani, and Iphov Kumala Sriwana, "Online Sales Improvement System Design Using Soft System Methodology (SSM)," *International Journal of Research and Review*, vol. 6, no. 5, pp. 310-322, 2019. [Google Scholar] [Publisher Link]