Increasing Sales in a Real Estate Company Using 5S and Standardization Work: A Case of Study

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Abstract

The objective of this research was to analyze the results of a service company in the real estate sector in Peru, with the aim of improving the current sales process. The study began with an initial audit where it was possible to identify the causes of why the company wasn't achieving more sales. These were the little order around work of the salesmen, a non-standardized sales process, and few control processes. These causes were identified in the diagnosis stage using engineering analysis tools such as the Ishikawa diagram, SIPOC, and Pareto diagram. After that, a model focused on the stages of the Deming cycle was used as a philosophical tool that gave us an order to apply the 5S tool and the Standardized Work tool; achieving the order of the offices, a standardized process, and finally, the implementation of simulation software named Arena let us measure the company results. After the implementation of the model, sales were projected to increase, the use of human resources was reduced by 8.54%, reprocesses in customer contact were eliminated and the percentage of sales efficiency grew by 65% compared to the leads received.

Keywords

5S, Standardized Work, Sales, Real State.

1. Introduction

The real estate sector makes a large contribution to the Peruvian GDP. In 2018 the contribution was 6.4%. The economic growth of the sector has been reflected year after year because of the housing increase demand. Lima the capital of Peru, had 18,055 homes sold in 2019, representing a growth of 15.6% over the previous year (De Paula 2018). Given the importance of the sector and knowing that the housing demand will probably increase soon, it becomes necessary to try new sales methods to increase real estate sales. In this case, we analyzed an enterprise named Innova180. This enterprise belongs to the real estate sector. The main objective of the study was to increase the number of sales of Innova180 this year. To begin with the study, we analyzed the current situation of the enterprise and defined our goals. The first goal was to increase sales and the second was to reflect the importance of the engineering tools used in the process. The third goal was to give the enterprise a process ready to be used in the future with great efficiency.

First, we identified that the process wasn't fluid. A spending increase was reflected due to reprocessing, made by the salesmen, that didn't have a supervised order while doing the process (Yik and Chin 2019). These types of problems have been identified in many types of research around the world. For example, in a medium-sized production company located in West Sumatra, Indonesia, 12% of its monthly production was defective. That generated an impact on their monthly spending since the loss of products represented approximately 360 dollars per month. After applying the 5S tool, the number of defectives was reduced to 0% in just one month (Zadry et al. 2020). Another research carried out in Tunisia, showed that in a small or medium-sized company (SME) in the textile sector, the low productivity rate was due to long waiting times due to the high cycle times in the production process, which leads to a lack of compliance with customers and losses for the medium-sized company. The application of PDCA (Deming cycle) in conjunction with DMAIC managed to reduce waiting times from 39.47 days to 30.23 days and increase production from 0.5 to 1.3. (Nedra et al. 2019). Everything mentioned above shows that mediums and small companies, regardless of the continent where they are developed, have processes that can be improved, so it is important to continue investigating new solutions to this problem. Because of that, and after evaluating the best tools for the study, we decided to use the 5S engineering tool to give the process an order. Finally, the Standardized Process tool was used to achieve our third

proposed goal. The final step was to define how we will make the study. The decision of using the Deming Cycle (PDCA) as a philosophical order was taken.

1.1 Objectives

The main objectives of the study were to increase sales at the company; prove the efficiency of the engineering tools in the study and give the enterprise a process that can be used at any time.

2. Literature Review

Different types of studies were taken into consideration to understand the best use the tools could get. The application of the 5S tool in a logistics services company allowed a 50% reduction in the shipment preparation process (Yik and Chin 2019). Implementing this tool together with a measurement of times by process and restructuring the area locations allows for developing a standardized process in which repetitive actions are reduced. Besides them, 5S can be implemented without a big investment. Particularly in the same case study, savings in H-H and an increase in the profitability of the company were evidenced. The 5S tool is one of the most used within Lean Manufacturing and can be applied in manufacturing and service companies (Roy Balinado and Tri Prasetyo 2020). This tool was originated in Japan. Its name comes from 5 keywords of the Japanese language, which are: Seiri, Seiton, Seiso, Seiketsu, and Shitsuke. The 5S tool is of great support to the management of a company and allows a synergy in different areas (Antony and Kumar 2012). An investigation carried out by Peruvian researchers (Barzola and Calderón 2019) establishes that within micro-enterprises the implementation of 5S managed to improve the level of productivity due to increasing the man-hours by up to 30%. In addition to the various benefits, the 5S methodology can be used in various settings and its development could be based on a short period due to its simple nature (Mau and Ramos 2020). According to (Realyvásquez-Vargas et al. 2018) establishes, the PDCA cycle facilitates the search for improvement opportunities, and using support tools such as Pareto and flow charts, it can increase its leadership in the face of the competition. The tool consists of 4 phases, and the first one, known as “Planning”, is the main one (Chen and Li 2019) (Langerová et al. 2021). Within this phase, investigations are carried out on the problem, key information is collected, and an in-depth analysis is given (Saxena and Srinivas Rao 2019). The tool has proven its effectiveness in sectors such as production, services, sales, and others (Franklin et al. 2019). Another important component of the tool is "Do".

According to researchers such as (Peças et al. 2021) establishes, the “Do” tool should be given during the implementation of the research. That said, and after having determined the tools that would help us carry out the investigation, the engineering tool called 5S was used, since it is a tool that helps to order the land to make the final improvements in the process. Researchers such as (Zadry et al. 2020) affirm that the PDCA and 5S tools can be applied to all areas jointly and in their joint application it allowed a reduction of defective products in one month from 12% to 0%. In addition, according to an investigation carried out by (Jiang et al. 2021), the implementation of the “Do” tool, allowed them to develop measures to correct the problems presented in a clinical center and the application of these measures was thanks to the 5S tool. Likewise, the implementation of PDCA allowed them to reduce errors in the delivery of blood transfusions from 0.48% to 0.22% in the same clinical center. Another important part of the Cycle is the letter C, which refers to the word “Check”. This is focused on verifying if the results are palpable and if they have been achieved effectively. That said, in the same investigation of (Jiang et al. 2021), the activity verified allowed to see if the objectives had been achieved, thus generating an ordering scheme within the investigation. The importance of verifying lies in measuring how effective the use of the implemented tools was. In our case, it will verify the effectiveness of the use of the Standardized Work and 5S. Finally, the last letter of the tool is A, which refers to "Act". This concept refers to determining if the results are as expected and if the process has been improved sufficiently (Abdelaisalam et al. 2020). That said, the research will determine the results of the process through a simulation and the use of the Deming Cycle will culminate once the new results are demonstrated. Standardized Work is a lean tool responsible for finding appropriate ways of work that are easy to implement, that guarantee good results in the application of work, and satisfaction in the worker who carries out the standardized process/work. When the implementation is well made, the benefits of the tool can be easily noticed and implementing the tool increase creativity of the workers (Mogaramedi et al. 2020). On the other hand, according to (Fazinga et al. 2019), the tool allows teams to decide the best way to organize and implement the tool, thus generating better results. This shows that the tool is easy to implement, and that team works can easily suit them, thus demonstrating the ability of the tool to be used in different work environments. Finally, the implementation of the Standardized Work in its processes reduced defective changes by 90% and generated stability and autonomy in workers (Ribeiro et al. 2019).

III. PROPOSED MODEL

The application of this model has been carried out under the Deming cycle ecosystem, in which the 4 phases of the cycle will be developed, within them, it has been proposed to work parts of each phase with tools such as 5S to improve the physical order of the work environment and Standardized Work to establish a sales process in the company (figure 1).

- Component 1: Planning & Initial Analysis

Once the goals of the company have been identified, an initial review is proposed as a diagnosis. The start is based on collecting current company data, results, indicators, and the current process. An initial audit was made to the workspace focused on the 5S methodology, the process was reviewed, the resources of the process, and how the salesmen fulfilled their tasks.

With the information collected and the engineering diagnostic tools, a confrontation table was applied to identify the main causes that are affecting the company's process, an Affinity Diagram to group the main problems of the company, a SIPOC analysis to identify how the process runs and who the main participants are, and an Ishikawa diagram to get to the root causes of the problem. With this, the root cause was identified to be a non-standardized process.

- Component 2: Do

Once the planning and data collection was carried out, the “Do” stage continued. This is the stage with the greatest development of changes within the model; many changes are made to the process.

With the root cause already identified, a study was carried out using the 5s tool, letting us determine the state of the salesmen’s workplace.

Based on the investigations (Yik and Chin 2019) (Zadry et al. 2020) the 5S tool helped us to order the customer reception area, cleaning, reducing processes that could be duplicated (searching for nonavailable tools out of hand) and the order of the activities to be carried out according to the sales process, focusing clearly on the main objective, which is to increase sales.

A filter was implemented to define which leads were the first ones to be called. This filter was based on the customer record with a format to identify customers in the process of service and avoid rework, categorizing the customers by their possibility of buying the house based on their profile.

The improved process and a detailed consultation manual were developed, thereby seeking the implementation of the process and its standardization through the Standardized Work tool.

- Component 3: Check

To make a periodic review of the company's progress, the number of sales each month and the action plans that the company needed, a sales dashboard was developed. It was a graphical interface that showed the most important information.

- Component 4: Act

Finally, with the results obtained after the simulation, a “before and after” comparison was made between the process of the previous year and the current one, which contained the implementation of the 5S tools and Standardized Work. These will be shown in Table 2. Likewise, using the 5S tool, continuous improvement is sought by implementing brief surveys for the people who showed points of improvement or shortcomings that are presented to the client's perception.

3. Methods

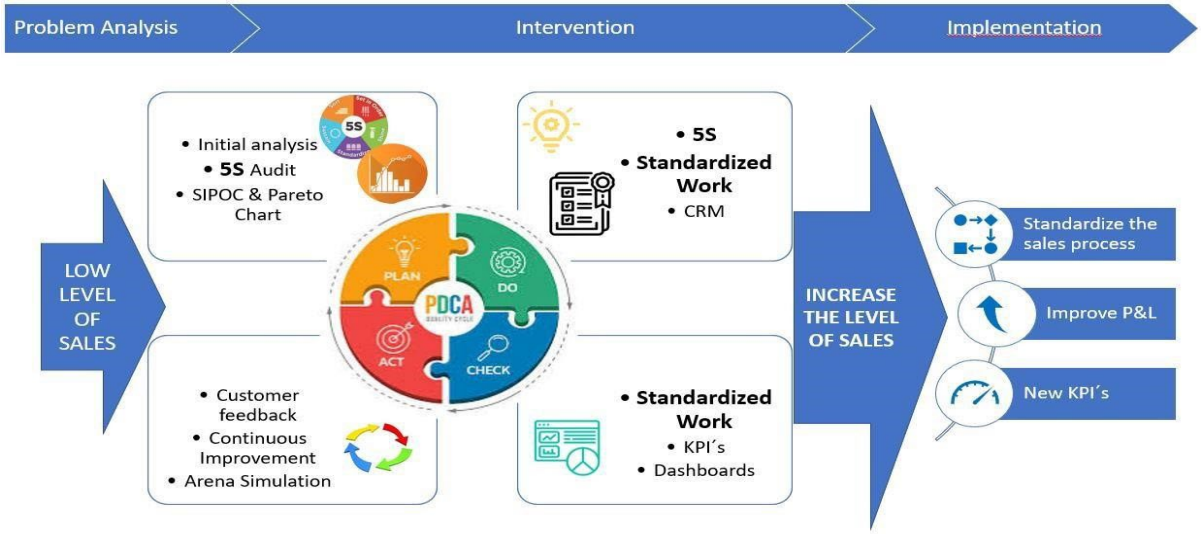

Figure 1. Proposed model

4. Data Collection

In the first instance, the current sales process, assigned tasks, and resources used were reviewed. The company process was the one above:

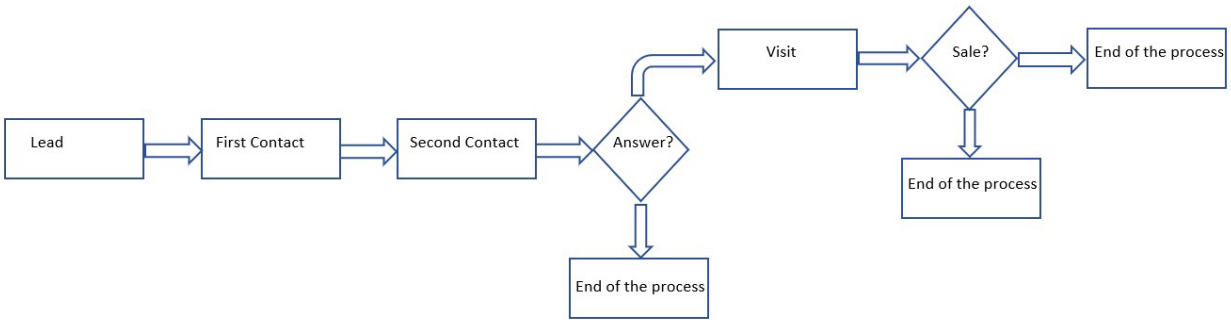

Figure 2. Current process

Business performance requires approximately 200 leads to achieve a sale within a month of attention (Figure 2). Similarly, an analysis was performed to identify the problem (why the number of sales is not bigger?). a) Lack of a standardized sales process.
b) Mishandling of clients at closing
c) Little interest in the project
d) Little marketing management (Table 1)

Table 1. Showdown Table

	A	B	C	D	Total
A		1	1	1	3
B	0		1	1	2
C	0	0		0	0
D	0	0	1		1

It was identified that the lack of a standardized sales process was what failed the most in the company. An analysis of the leads was carried out regarding the closing of sales in the previous months (figure 3).

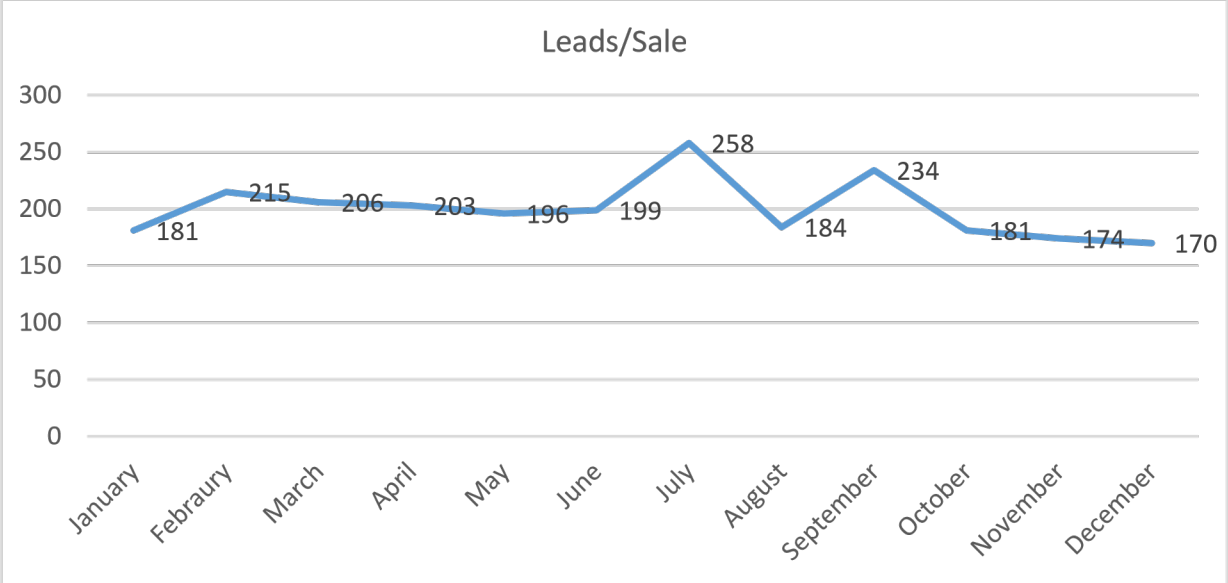

Figure 3. History of sales in the last months

5. Results and Discussion

5.1 Numerical Results

With the application of the engineering tools, the number of leads needed to obtain a sale was reduced to 70. Also, the time spent by the salesmen calling people was reduced to 24.78%, due to the application of the filter. The number of calls was reduced to 120 per month, meaning an increase of one sale per month using fewer leads. However, the number of visits was reduced, most probably due to the fewer number of leads attended per month. The effectiveness was increased to 1/70 meaning a 1.43% sales per lead, while at first, it was 0.5% (Table 2).

Table 2. Showdown Table

Indicator	Current	Improved
Leads needed for 1 sale	200	70
Seller usage time (%)	33.32%	24.78%
Calls made	200	120
Visits made	12	9
Sales complete	1	2
Sales effectiveness (%)	0.50%	1.43%

5.2 Graphical Results

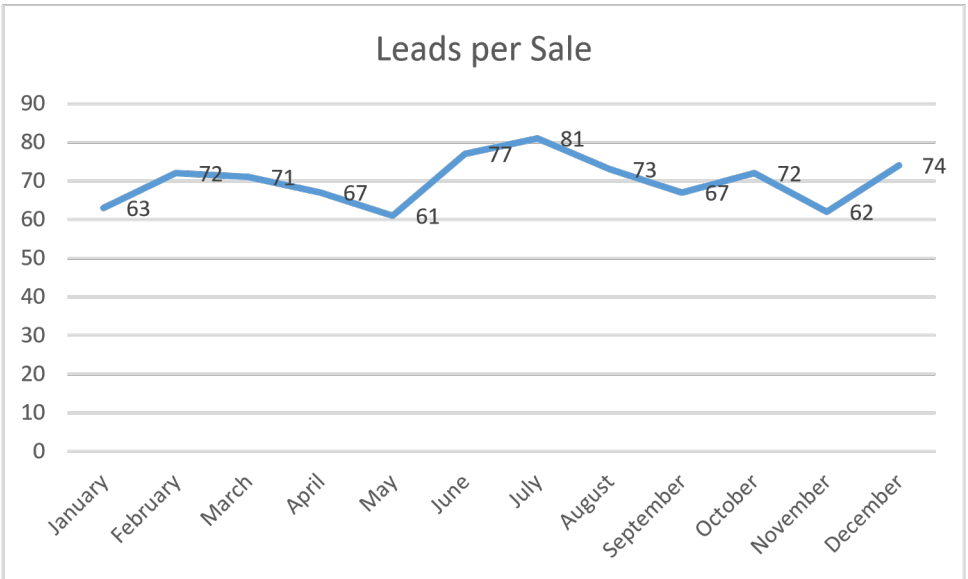

Figure 4. Projected sales by simulation

The projections achieved with the platform Arena gave us 70 leads required per month per sale on average (Figure 4).

5.3 Proposed Improvements

The proposed improvements were adding a new work schedule for the salesmen because it was important to call the people after their work (they won't answer the phone while working). Also, giving the salesmen the necessary information to talk with complete knowledge of the process. Another improvement was using a "filter" to determine which potential client (lead) was more probable to buy a house. That was determined by using marketing knowledge, based on the characteristics of the process and the profile of the lead (that was due to the possibility of the bank giving the potential client the credit to buy the apartment). Finally, calling the possible client less than 30 minutes after their request for information let us give them the necessary information while they have the project in their heads.

5.4 Validation

The simulation of the improved process was carried out in the Arena software, to measure the effect on the process of the tools used during the work. Through the simulation, it was possible to check the quality of the mentioned proposals, and improvement was noticed.

- Initial diagnosis

When making the diagnosis of the current situation of the company, the main problem was not taking advantage of the opportunities for sales the company could make. The number of leads needed to achieve a sale was 200. That gave us a 0.50% conversion rate. After that, we implemented a Pareto diagram to determine why the company wasn't taking that opportunity. The main problems were determined. These were a) disorganization at the sales office and b) little follow-up to the process. The following are the results after applying the proposed model, as well as the indicators that were under evaluation.

- Validation of the design and comparison with the initial diagnosis

From the PDCA approach, within the first component, initial planning and analysis of the current situation were carried out, unnecessary tools and processes that do not generate value in the operations were identified and with 5S the findings are ordered/organized. For the second component to do, a customer service control record was implemented to avoid re-processes, improvements are executed in the most important parts of the process and thanks to the work standardization tool the new process was standardized together with a detailed manual of the process. As part of the third component verify, control processes are established, and a dashboard was made to verify in real-time the progress of operations as an internal audit format. Finally, in the fourth component act, all the previous implementation is reviewed, and a survey tool was implemented to measure the client's perception of the improvements applied and in

case of identifying shortcomings to be able to act and thus be in search of continuous improvement. With that, the number of sales doubled.

- Simulation of the proposed improvement

The simulation of the model was developed with the Arena software. To corroborate its efficiency, 2 simulations were run, one of the current processes and the other of the proposed improvement. For this, the tools of the model presented were used.

For the sales process, the Standardized Work was used to be able to leave the process in use and standardized, and thus benefit the company from the proposed improvements.

It is important to mention that past research has shown similar positive results by applying the tools proposed in the model. This research is shown in figure 5.

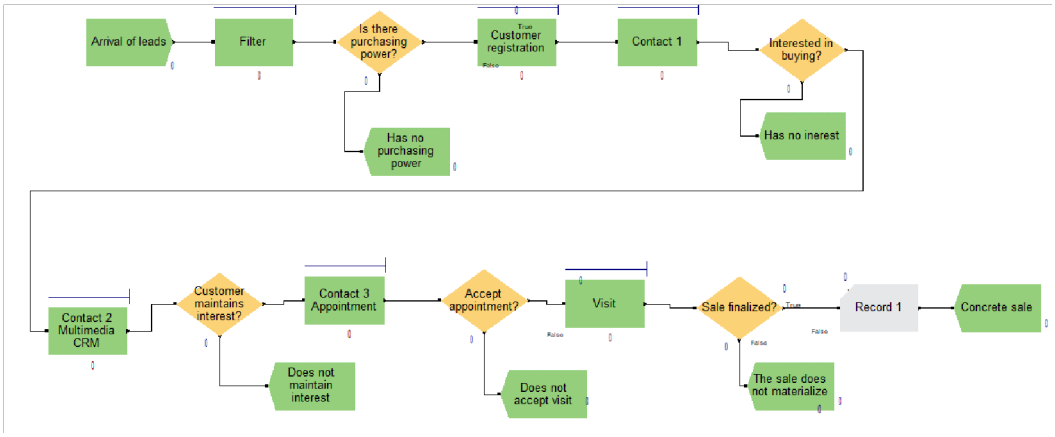

Figure 5. Improved process review

6. Conclusion

The importance of the study was demonstrated by achieving the results as expected. Using these engineering tools was key to achieving great results.

The number of sales was doubled, while the leads needed for one sale went from 200 to 70. Thus, the improvement in sales efficiency was notorious. The standardization of the process using work tools has made it possible to organize workers, establish control measures to execute action plans at the right time and make better use of the company's resources. The process shows that engineering tools are applicable to these types of companies, if the company continues to grow it is important to continue reviewing concepts and processes to achieve the desired continuous improvement. A study of this nature was never made before. The importance of the engineering tools used in the real estate sector in a third-world country was demonstrated in the study. This type of analysis can be used in any sector to create more efficient processes, and that will contribute to the development of this type of nation.

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Biographies

Alberto Flores-Pérez holds a doctorate degree in Education from Universidad de San Martin de Porres. Master's degree in Supply Chain Management from Universidad ESAN. Engineer in Food Industries from Universidad Nacional Agraria La Molina. Currently working as an undergraduate professor at Universidad de Lima and postgraduate professor at Universidad Nacional Agraria. Professional, consultant, businessman, and professor with more than 27 years of experience in project implementation, quality management, and safety and agro-industrial plants' management. Expert in Supply Chain (supplier management, storage systems, transport modeling, and distribution systems), Supply Chain, and Operations. Specialization in integrated management system audit and Shortsea Logistics at the Escola Europea Short Sea Shipping. Leader of transformational projects, productivity, and change generator. Specialist in the implementation of Continuing Improvement Projects, PDCA, HACCP, BPM in the agro-industrial sector, trainer of national government institutions and the United Nations (UNDP). Development of a highperformance team. Member of IEEE, SCEA Ohio, IOEM, and CIP (College of Engineers of Peru).

Martín Collao-Diaz at ESAN University and Industrial Engineer from the University of Lima specialized in supply chain management and operations. Leader with more than 25 years of a local and international experience in national and multinational companies in the industrial, hydrocarbon, and mass consumption sectors. Broad experience in supply chain management (purchasing, inventory, suppliers and supply sources management, logistics: transport, distribution, and warehouse management), operations (planning and control of production and maintenance), and integrated system management (ISO 9001, ISO 14001, and OHSAS 18001). Business alignment based on sales and operations planning (S&OP). Besides, continuous search for improvements in profitability based on process optimization and saving projects using tools such as Six Sigma methodology among others focused to be a High-performance Organization (HPO). Development of a high-performance team. Member of IEEE and CIP (College of Engineers of Peru).

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Rafael Robello Ponce graduated from Universidad de Lima, where he studied industrial engineering from 2016 to 2021. Currently working in logistics at a mining company, he previously worked at a marketing company for 2 years in sales, where he learned the psychology of sales and decided to improve the process of the company, thus gaining experience in these types of studies. With knowledge of SAP, Data analysis tools, and a certificate in "How to invest in the stock market" at Universidad de Lima, he is gaining experience in almost every area. Currently researching the impact of psychology in sales and how to improve the number of sales in a company to create a more stable business in the region.

Carlos Miller Verano finished Universidad de Lima in 2022, with 23 years old. He is an industrial engineer currently working as an intern in logistics at MSD company, in the health sector. Interested in sales, decided to do research to develop a new sales process that can be used in south America, with the main goal of increasing productivity for the continent. Expecting to publish his research in IEEE standard, hopes to enter the conference.