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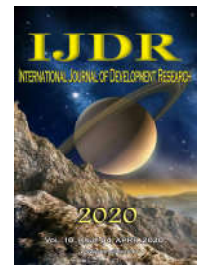
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RESEARCH ARTICLE

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## DEVELOPMENT OF AN APPLICATION FOR CONTROL OF SEMI-NEW VEHICLES HISTORY – LIFECAR

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### ABSTRACT

The study in the area of semi-new car sales, allowed the idealization of LifeCar, its development is focused on the life history of vehicles, being of great use for those who purchase vehicles without being aware of all the maintenance already carried out. Through the mixed methodology and the help of forms, we obtain the necessary information for its development, with the documentary research we obtain data that aggregate contents related to the facts presented for the application and the referential research to obtain scientific knowledge on the subjects covered. The results presented have a great contribution to the evolution of LifeCar, where the need for the application and the contribution to customers and dealerships are understood. In the sale of semi-new vehicles, the image of the vehicle is a priority, but expectations can turn into inconvenience, as time passes, the vehicle can generate problems not presented, thus generating setbacks. The idea comes from the principle that automobiles have become a daily necessity of the population and their market has been gaining space, with this, it generates spaces for malicious people, who take advantage of customers without knowledge in the mechanical area, in this context the LifeCar giving total certainty of the best vehicle and its cost benefit.

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## INTRODUCTION

One of the biggest difficulties when buying of a semi-new vehicle, is to know the history of maintenance, besides that, is not everyone that cover the mechanical notion necessary to know how to check if all the components are in accordance with the presented and those which may have problems, "because there are many ways to hide some imperfections that have occurred and can be disguised through reforms and in certain cases the mileage can be tampered with (TJDFT, 2017). "Having presented this scenario, we can also link the losses that this practice can cause between the dealerships and their future buyers, but, it's obvious that the buyer always gets the worst of this situation, let's say that after making the purchase, the vehicle starts to presents some problems, and it is taken to the mechanical workshop and they realized that they are not simple problems, and from that, the expenses with the car will only accumulate, because people have the habit of going in any workshop and not a specialized one due to the services are more expensive, thus ending up paying cheaper and only temporarily resolving the problem.

Buying a new vehicle is everyone's dream, but we know that the current economic scenario is not at its best in the moment. That's because having a zero vehicle is more expensive, which leads most of people to choose a used or a semi-new car. Proof of this is that "this market showed growth of 24.5% in sales in July/2019 in comparison with the previous month, according to data from the sales balance of the National Federation of Associations of Motor Vehicle Dealers. In July, 1,334,032 vehicles were sold, against 1,071,220 in June. In the first seven months of the year, a total of 8,184,309 units" (Fenauto, 2019). We have already started 2020 with a positive balance comparing with the previous year in the sale of semi-new cars, with 4.6%, according to data collected by Fenauto, and this information shows that there is a range of people who constantly increase the profitability of this market. In this way, we can clearly see that there is a need for tools to assist at the time of purchase, as often, the information of the vehicles is stored only in the workshops where the maintenance were done and the customer ends up not being informed about the real condition of the vehicle and with over time, generates dissatisfaction on the part of the buyer. One of the known

companies in Manaus in the sale of semi-new cars, presents a series of related complaints about the vehicles sold (RECLAME AQUI, 2020), as previously presented, the buyer dissatisfaction generates problems and the most posted complaint is about misleading advertising, involving the value beyond the real condition of the vehicle, problems that were not presented at the time of sale and mandatory maintenance that are simply not performed. These problems are basically accumulated according to the lifetime of the vehicle, because when it cannot be returned or the service cancellation has passed the allowed period, the person who makes the purchase, with all dissatisfaction, puts the vehicle up for sale again and so causes a new resale cycle. The aim is to alleviate this problem caused by disorders that can often be avoided, with a quick research related documents are found where they show various schemes of: camouflage defects at the time of sale, adulteration of mileage, little corrective maintenance and etc. From these situations, it usually causes dissatisfaction in the purchase and even most of the time, they end up choosing to put the vehicle on sale again. The lack of control over the useful lifetime of the vehicles becomes a factor to be studied, because, as it is presented, the market is formed by different groups of society, where we can make use of the information, aiming to improve the process of selling semi-new cars. With this panorama we idealized to bring an application where every time a maintenance is carried out, be it preventive or adjustments, this information is passed as a kind of checkup of the vehicle, presenting all maintenance, thus delivering a real history of the situation of the vehicle while it is running. Avoiding this rework, reducing the negotiation time with clear information that is seen by the buyer, to analyze whether, in fact, it is worth closing the deal, showing that the vehicle has its cost benefit according to its state.

## THEORETICAL REFERENCE

In 2019, a system was introduced that contributed to the application of LifeCar, in which we can analyze that the maintenance control system is necessary due to some factors such as: The lack of awareness of the owners, the changes that the vehicle is at mercy of clandestine workshops, maintenance that does not completely solve the problem and the lack of control over this information. According to Wernke (2015) "(...) despite the fact that each consumer uses objective or subjective criteria at the time of purchase, buyers should consider several factors related to the total costs of vehicle ownership". In this context, we often understand that the owners always look for ways to point out the maintenance costs, among other determining factors of a vehicle, in an attempt to estimate how much resource will be needed for each of the items. In terms of globalization, where adaptations are becoming increasingly necessary, it is essential to have something with the ability to be advantageous and competitive within a company. And with that there is also the need for a more agile, objective and especially quality of service. "The secondary car market is important for expanding the range of goods available to consumers (GAVAZZA et al., 2014)." The semi-new car market is considered as a secondary option, as if it were a continuous maintenance of the sale of new vehicles and with this information we know that LifeCar can be an immense contribution in the issue of semi-new vehicles, enabling new features and a long lifetime. "A series of partial substitutes for new vehicles was introduced (ESTEBAN; SHUM, 2007)."

A fact that we can see and observe that has been alive for a long time is that this semi-new car market has only been growing, since 2007 data and studies have been presented that prove the effectiveness of selling semi-new cars, maintaining a life cycle that extends and more and more people are gaining their trust, that's why the idea for the creation of LifeCar came up, being composed of a vast market and with the thought of its evolution to become the first application to contain such features presented in this paperwork. "The purchase of the vehicle is the second main expense for families, after the acquisition of their own home (ANDRIKOPOULOS; MARKELLOS, 2015)." Information that we can perceive in people's daily lives, as a vehicle has the capacity to cover various needs and thus becomes a necessary expense to maintain, along with the need for home ownership. "The existence of a used car market has implications for vehicle manufacturers, because in situations of economic instability, consumers can decide on a used vehicle, postponing the purchase of a new car (DAVIS; KAHN, 2010)." The following is information about the tools used to obtain knowledge. Flutter is Google's user interface toolkit for creating beautiful, natively compiled apps for mobile, web and desktop from a single code base. Dart is a client-optimized language for fast applications on any platform Visual Studio Code is a lightweight yet powerful source code editor that runs on your desktop and is available for Windows, macOS and Linux. It comes with built-in support for JavaScript, TypeScript and Node.js and has a rich ecosystem of extensions for other languages. Google Forms is a free service for creating online forms. In it, the user can produce multiple-choice surveys, ask discursive questions, request evaluations on a numerical scale, among other options. The tool is ideal for those who need to request feedback on something, organize event registrations, invitations or ask for evaluations. Google Drive is the new virtual disk service, allows the storage of files in the Google cloud and has applications for synchronization for Windows, Mac and Android.

## METHODS AND MATERIALS

We used a total of three methodologies: the mixed methodology was used in the creation of the forms to deal with the research done with the interested parties, because it obtained the necessary data to understand what are the main points that lead a person to acquire a semi-new vehicle. Using a questionnaire containing ten questions related to the needs of a consumer when buying vehicles, the Google Forms tool being of great contribution, the questionnaire seeks from people, for example: if they understand what it is really important to know about vehicles, if they know how to analyze if everything agrees, if they have confidence in the information provided by the salespeople and if the application would bring considerable advantages. The questions were divided into objectives and multiple choices, thus obtaining data that would not be complemented only in selected questions, offering the option where the client exposes all his opinions. The documentary research methodology aims to obtain subjects that justify the problem and that make the best presentation of the necessary information, due to the lack of scientific articles that already contain the approach to the subject, we preserve the posted documents, with reliable sources, that address various issues related to the sale of semi-new vehicles, adulteration and target audience estimates. And finally, for scientific complementation, we use the bibliographic research methodology, building the knowledge bases for the main

development, which will address: historical systems and control methods. With these two themes, we can have the necessary background to compose the information that is presented. Flutter framework - the choice of the flutter is because it is a hybrid framework, which has its own tools and widgets to facilitate the creation of LifeCar interfaces, offering a quick application development. Dart language - as we use the flutter framework, there was a need to study the DART language, for manipulating the tools that were used for the development of the application. Visual Studio Code - As this IDE brings extensibility, we can develop the application on several platforms, modifying it according to the future need and its evolution. Google Forms - as was implemented a necessary research for the results, Google Forms was used to obtain information from the target audience, to verify the viability of LifeCar. Google Drive - To save changes in clouds where you can check and change the document quickly, therefore it allows the research to be edited and making all changes controlled at the time of creation.

## RESULTS AND DISCURSIONS

The sale of semi-new vehicles is in constantly growth, due to society's daily need for mobility and that makes this market grow according to the demand of orders, providing a wide area to add applications that assist the total number of customers, contributing to the entire process is summarized in a few words and demonstrated easily the life history of the desired vehicle, this behavior has occurred due to a demand for market, where generally is considerate the semi-new vehicle's value and its time of use, as we know that to acquire a good in cash, is far from the reality of many people, in this scenario, there is a readjustment in the factories by several reasons, one of them, the high of dollar, which ends up making the raw material with a much higher value than predicted. Through research, we can see that at the time of negotiation, most people do not understand the subject and end up believing only in the information given by the seller, given the above, generally, certain aspects are taken into account, such as: value, conservation and the year of manufacture. All this information is presented at the time of the sale, but it is not clear what has already been done with maintenance, if there is a possibility of tampering, if the workshops that carried out services are reliable and various other information that can be disguised, LifeCar brings the idea that all this data is clearly presented and that the final resale value is according to the vehicle's history, where the interested parties close a deal without the possibility of regret. The results of the research obtained were incorporated into the project and served as a starting point for the analysis of requirements for the construction of LifeCar.

**Objectives:** Develop a platform that offers the life history of any vehicle, through the license plate, making it possible for the parties interested in the sale, to reach an agreement where no one will be harmed, with full transparency that the vehicle has a value according to the whole type of problem that has already occurred and its maintenance, thus making it possible for the buyer to have a better view, which is often the part that has the most related problems and who is usually at a disadvantage with the loss of some dealerships or resale stores. The main objective is to create a relationship of trust between seller/consumer, offering all the history of the desired vehicle and thus closing a contract without offering something that disagrees with the value. The objective of this paperwork is the

implementation of a system that allows the control of vehicle history, aiming at availability on mobile devices with easy access, where it is free, responsive and contributes to the interaction between seller/customer, making the whole process in the sale of semi-new vehicles, something fast and transparent, with a cost that is in line with everything that has happened to the vehicle. Specifically, the application will allow its users, both customers and companies, to register vehicles of any brand and model, among all those available in the national market and use the platform in the best possible way, where it will bring advantages to both parties. For this, it is necessary for the application to be able to register predictive and/or corrective maintenance of the vehicles, the probability of necessary corrections, the number of owners, a life cycle each time the sale is made, use filters for the best visualization of reports and historical information already registered and finally, carry out the transfer to the new owner, containing all the history that occurred during the period of life with the current owner.

**Problem:** The problem is found in researches made by related documents where they show various schemes of: camouflage defects at the time of sale, adulteration of mileage, little corrective maintenance and etc. From these situations, it usually causes dissatisfaction in the purchase and even most of the time, they end up choosing to put the vehicle on sale again. The lack of control over the useful life of the vehicles becomes a factor to be studied, because, as it is presented, the market is formed by different groups of society, where we can make use of the information, aiming to improve the process of selling semi-new cars. In certain cases we can mention the scenario of the purchase of a vehicle, where all negotiations are closed and from the next six months onwards it will incorporate a series of occurrences, generating a complaint to the dealership that made the sale and that stop in tiring and long law suit, because until all the facts have been analyzed, the vehicle loses its value according to the FIPE table, in many cases, the agreement made after a long period, does not cover the damage caused to the consumer and is exactly what LifeCar want to avoid.

**Scenario Explanations:** We have practically more than a million people that constantly feed this market that only gains with the passage of time, we are facing the best scenario for implementing new tools, because we are also aware that over a few years, owners tend to sell the vehicle to buy a current one. In the average of the four segments evaluated by Fenauto, which includes semi-new cars, sales of used vehicles reached 1,217,360 vehicles in January, an increase of 4.6% over the total of 1,163,377 sold in the same month last year. For Kotler (2003), "Consumers give preference to products that are easy to find and low cost. Production-oriented company managers focus on achieving high production efficiency, low costs and mass distribution. "~ For this reason, a large part of the population chooses to purchase a semi-new vehicle, as it is easy to access and only depends on a good credit history. Las Casas (2008) explains that the form of commercialization has been changing according to environmental variations. "At certain times, production was valued more than other functional areas, due to the lack of products on the market. At other times, sales activity was more valued due to the excess of offers in the market, and so on. " Even though it is a 2008 study, it is a fact that is presented even today, valid for all products, including vehicle variations.

**Scenario Exposure:** For everything to be implemented, we need to specify some requirements, such as: the target audience, the benefits that the application can bring, the people involved, the advantage that this will bring to the sectors involved and its disadvantages. There will always be a decision-making process when buying semi-new vehicles, most of the time the people closest to them increase the knowledge of those who want to buy the vehicle, for example: Tips on maintenance costs, the viable model, if it is still produced, the origin of the pieces, etc. The influence on the choice in this scenario relies on the help of people who already had or that someone close had, thus linking the help in choosing the desired model, influencing the fact of real experiences, not just what is seen in magazines and files techniques. We can also say that the internet is a fundamental ally for resellers, most of the people interested in purchasing search for resale information through the internet, many sites offer this convenience and ease to users.

Resellers want to conquer their customers as much as possible, causing a domino effect, thus generating future profit for the organization, always aiming for excellence in service and vehicles in excellent condition, a fact that we will see in the results and graphics, being the fundamental issue that would bring attention to LifeCar. It is obvious that the customer, when he feels he can trust, returns to the store or establishment that made his last purchase, bringing even new interested parties, with our application implemented, the positive effects would only gain, the customer with all the information of the vehicle of interest and a great service, the efficiency of the sale would be something immediate and without any complications, that's what we seek to bring.

**Target Audience:** As already presented in several parts, we have a range of people who, if they had this tool in hand, would apply as needed, questions taken from the LifeCar feedback form. We can understand that because it is a growing market, all audiences can be affected, between the age range of 18 to 55 years. We can quote several authors who explain the importance of the customer in any purchase, justifying why they focus on the satisfaction of the purchase in order to offer an application option so that the numbers are simplified without any hindrance at the time of purchase. Both Paladini (2000) and Green (1995) mentioned that the customer is the key to having quality as a successful management style. The focus is on customer satisfaction, because if the application is useful, next to the reception, if it is really accessible in what the customer can pay, we are successfully implementing our goal. Oliveira (2004) states that "the customer is the main figure in the entire organizational process", so it is essential that the decisions made by the entrepreneurs and the operational tasks consider the needs and expectations of the consumer and take the risk to overcome them and fully satisfy your customer. According to Green (1995) "Customer satisfaction is directly related to the company's economic result, so it is necessary to know in depth who the company's target audience is (market segmentation), as well as their perception and satisfaction of the services provided."

"An important trend is the fragmentation of consumers. It has been increasingly observed that similar groups of customers may have very different preferences as to what they want to buy and how they want to buy it. In addition, this trend enables the ability of a company to serve certain niche markets and meet the customers' desire to receive increasingly specialized

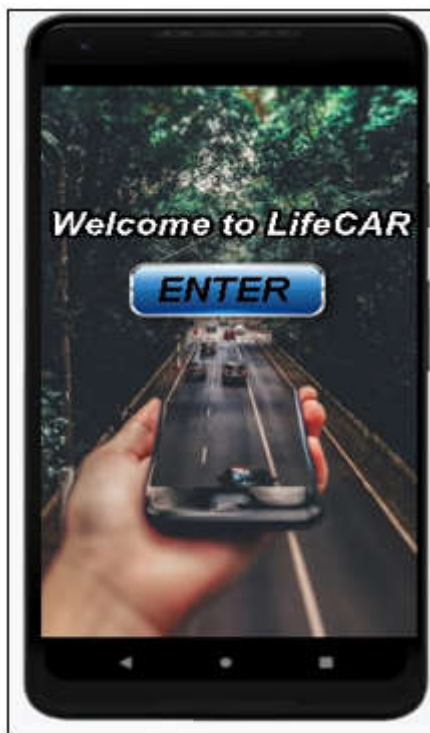
offers (NADLER, TUSHMAN, 2000)." "Market segmentation is a mapping of consumer groups and is a facilitator of targeted marketing strategies, as it represents" the process of classifying customers into groups with different needs, characteristics or patterns of behavior "(KOTLER, 1993, p. 467). According to Cerqueira Neto (1993) the client's wishes, and consequently his satisfaction, are materialized through his needs to have confidence in the possibility of the organization offering the quality he wants as well as the permanence of that quality over time. Let's think about a company that wants to expand its horizons and bring without innovation, it is theoretically impossible, the planet is turned to technologies and millions of options appear every day, to be competitive, it needs to focus on the quality of its services and products to achieve customer satisfaction, also look for possibilities to innovate your line of business, discard what is not useful and invest in what will always put you ahead of your competitors, focusing on the organization's success. A great argument for creating new tools that make this evolution possible. "Doing things, the right way, quality becomes a competitive weapon (...) However, sometimes resistance to change is so ingrained that it requires a cultural awakening" (GREEN, 1995, p.122).

**Benefits and Disadvantages:** Every application brings its benefits, thus making processes that often can become tiring, something simply easy and of great understanding, optimizing time, generating profit and buyer satisfaction, because we know that if the customer is satisfied with a purchase, it is very likely that he will return to make a new one or will refer to friends who have the same need. The idea of using the life cycle, is geared to the workshop that will carry out the maintenance, pass the information as an index of the vehicle that was carried out, so, every time the maintenance is carried out, the owner will have the information of where it was carried out, what was done and the problems that were presented and their solutions, at the moment that technical assistance carry out the maintenance it would be extremely important to fill in all the corrections that were made. The intention is to avoid this type of rework, offering this tool to meet this need, obtaining all information for a good sale, as the demand for vehicles has increased in recent years, the tool in a future plan may evolve according to customer feedback, thus making a safe sale and that the two parties agree. A disadvantage is due to the fact that a seller, for example, does not pass on maintenance information, which has already happened to the vehicle and the buyer requests this data on LifeCar, and can have a general view of the entire history and choose not to perform the purchase, but in the same case we can improve the negotiation, offering a specific value, linked to the FIPE table, where the customer can make a counter offer that is better for both parties.

**The Negotiation:** Because of this, we will create the connection between the vehicles and their buyers, giving complete certainty of the best vehicle and its cost benefit, adopting the results of the mixed research, adapting to the maximum for the development of necessary tools that allow a history of each vehicle, starting from the moment the client will negotiate. Given the problem where the dissatisfaction of acquiring a good usually occurs, we bring benefits to both the seller and the person who is fulfilling the dream of owning a vehicle. Imagine the customer looking for a vehicle, where he arrives at a dealership and in front of many cars, pre-selects the desired vehicles, looking for value, visualizing the interior of the vehicle and then a long conversation, consulting all

information and analyzes the situation, interacting with this scenario, normally the customer will be sure which vehicle is cost-effective accordingly, and his purchase will be exactly as he wishes, and may even negotiate for a lower value, in cases of many maintenance presented with problems or little preventive maintenance, as this will have the necessary data for a good purchase and will also generate savings that can be applied in other cases, which is the vision of each person, save as much as possible and leave satisfied with the purchase.

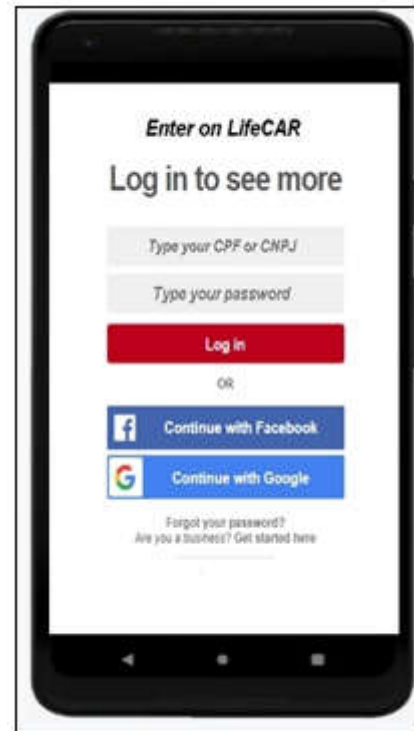
**Expectations:** The trend is that the market for new and semi-new vehicles will continue to heat up in 2020. In a note, the president of Fenauto, Ilidio dos Santos, expects the resumption of the national economy to continue in 2020, which will be favorable for the expansion of vehicle sales and for the growth of the sector. "We expect the economy's heating trends to continue this year, with the planned reforms, inflation control and job creation. These measures should therefore encourage the continuity of the positive results obtained by our sector in recent years". After collecting documentary information, from the questionnaire conclusion, from the development of the application and knowing the problems encountered, LifeCar aims to provide the life history of semi-new vehicles for the consumer to make an assessment of all possible and desirable requirements. At first, we incorporated the main screens that will serve as a basis for the development process. The entire application is focused on a simple design and easy interaction with the user, to facilitate the manipulation of information, making interactions simplified to streamline at the time of negotiation, being a quick service and with objective information, clarifying any doubts about maintenance and cost benefit, always keeping the focus on the history of each vehicle. In figure 1, the initial screen seeks to attract users' attention and offer the application's information, a feedback option, a welcome message and also the button to enter the system.



Source: Authors, (2020).

**Fig. 1. Home screen**

In figure 2, the login screen offers many ways to enter the system, thus not getting stuck in the idea that the registration must be long and tiring, giving options to use social networks, a means of recovering the APP password and also the standard registration, providing information on vehicle registration and complete.



Source: Authors, (2020).

**Fig. 2. Login Screen**

In figure 3, the registration screen has everything we need to register owners and used vehicles.



Source: Authors, (2020).

**Fig. 3. Registration**

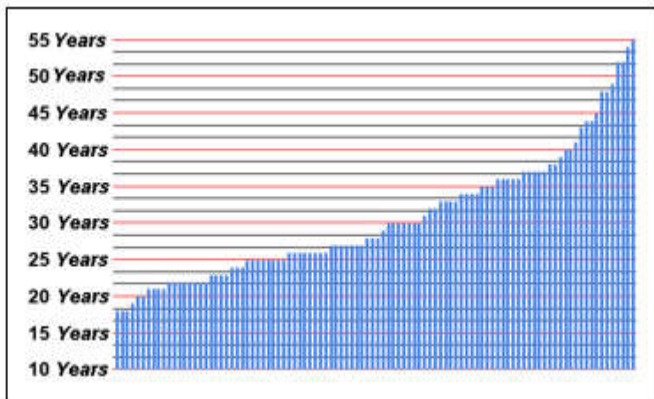
The fields are: Name of the owner or company, CPF or CNPJ, the vehicle brand being the same pre-registered in the database, chassis, model, plate, color, the value requested for sale, if the customer accepts exchange, the contacts and a brief non-mandatory observation.

**The Graphics**

After the research carried out with Google Forms, we obtained satisfactory results, where we can see that LifeCar will really have a great positive impact in the sector of selling semi-new vehicles, where the majority of those surveyed, agree with what is presented.

In the initial stage of the research, we present just a few details of what LifeCar will be. The questionnaire starts with questions related to: full name, age, if you already own a vehicle and also CNH

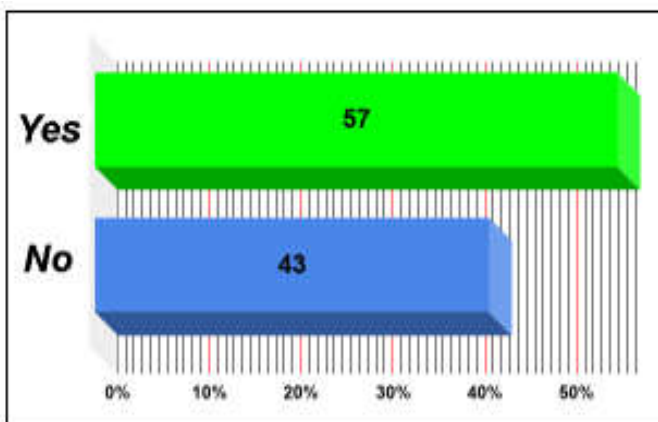
In graphs 1, the age range of the people who took the form is filtered from 18 to 55 years old, thus, providing different forms of thoughts, where ideas are not only stagnant to the youngest but rather to count on the help of the people who have more vehicle experiences, a total audience of 100 people.



Source: Authors, (2020).

**Graph 1. Age of surveyed**

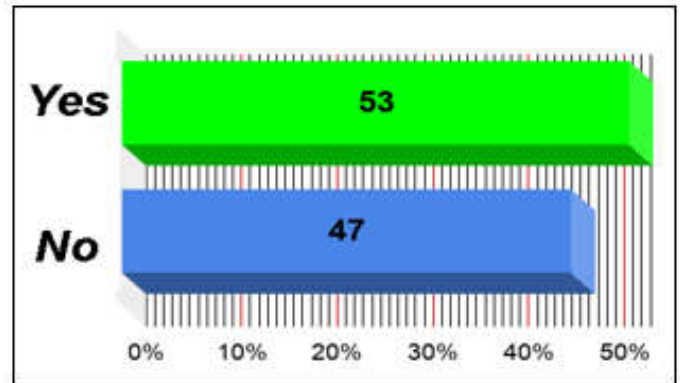
In graphs 2 and 3, a large part of this public already has CNH, also accompanied by vehicles.



Source: Authors, (2020).

**Graph 2. People who already have CNH**

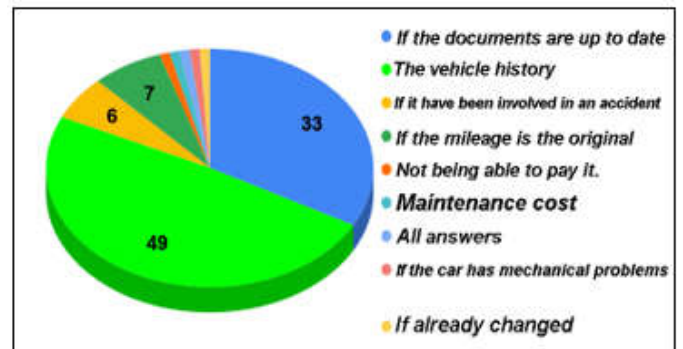
As shown in graph 2, opinions are much more objective, as it is half for both those with CNH and those who already have vehicles.



Source: Authors, (2020).

**Graph 3. People who own vehicles**

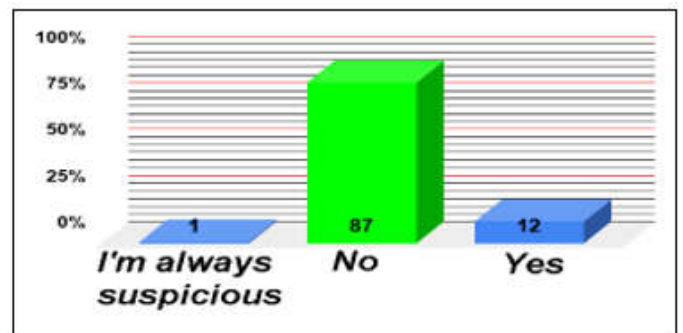
In graph 4 shows that there is a factor that worries the consumer even more, the issue of the vehicle is with the documents in days, even so we can notice that the vehicle's history has a certain weight, because even if the documents are up to date, nothing will be worth it if it has problems related to the lack of preventive maintenance.



Source: Authors, (2020).

**Graph 4. What is your main insecurity when buying a semi-new car?**

In graph 5, the information provided in the service, through the survey, we realized that 87%, do not trust only the information passed on from the salespeople, even on account, that their service is to make sales, presenting the best that can be obtained from a vehicle.

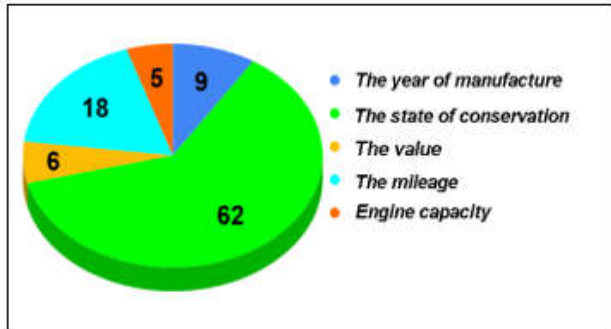


Source: Authors, (2020).

**Graph 5. Do you trust all the information that the seller provides you with?**

In graphic 6, some points were mentioned that are observed when buying a vehicle and the maintenance of the vehicle, it is one of the main points, generally people immediately look at the aesthetic part of the vehicle, maybe that's why most think

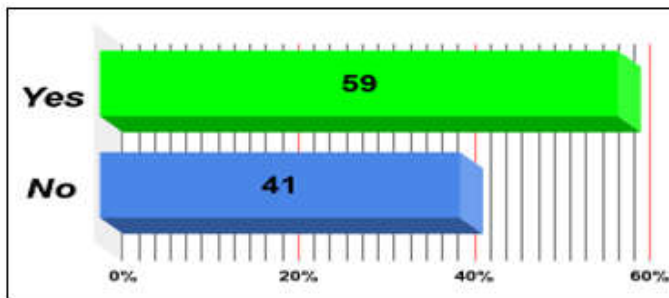
that way, but in another question, it was analyzed whether these same people can have the knowledge necessary to evaluate the mechanical part of the car, and the answer shows why, the aesthetic part is more important.



Source: Authors, (2020).

**Graph 6. What are the main points you observe before purchasing a new vehicle?**

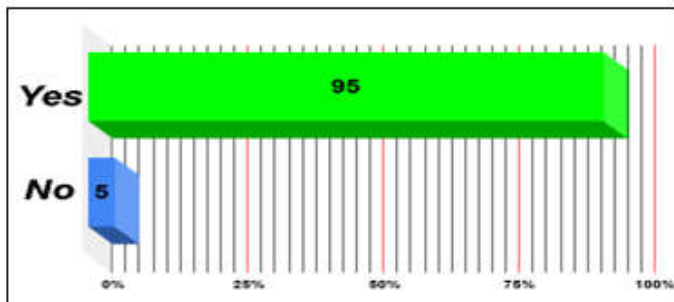
In graph 7, we can already see the complement to the previous question, usually people who want to buy semi-new cars, end up choosing to take someone who understands the subject, but in some cases, most people have no idea of mechanics to check if the parts are good, if the engine has no problems, etc.



Source: Authors, (2020).

**Graph 7. Do you know how to assess the condition of a semi-new vehicle at the time of purchase?**

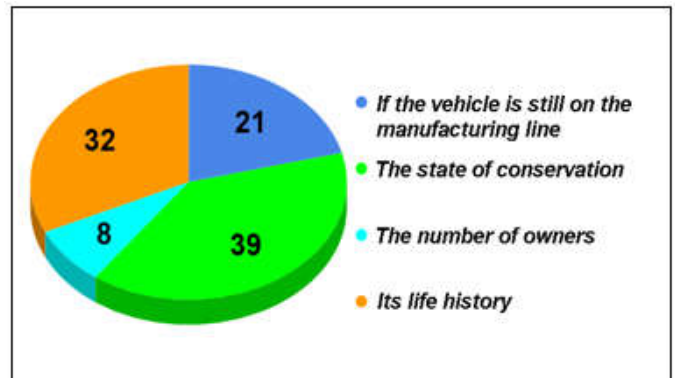
In Graph 8, it shows that everything that was presented makes sense, and it couldn't be better, more than 90% of the people who carried out the research, would use the application, thus making the research something useful and innovative, as we know they are few applications that perform the functions we have demonstrated and perhaps the pioneers in this matter.



Source: Authors, (2020).

**Graph 8. With the existence of an application that contains all the history of the used vehicle, would you use it for a better view of the vehicle history**

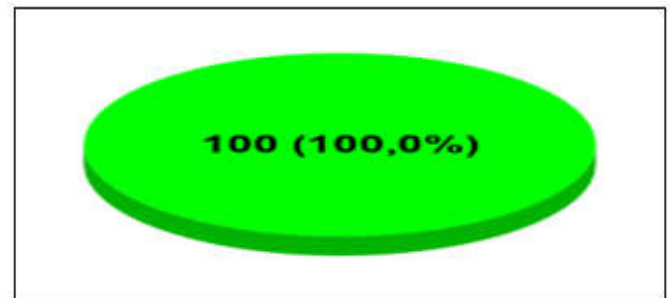
In graph 9, as we have already shown, vehicle maintenance is a factor of great influence at the time of negotiation, so we set goals and objectives so that the customer is not deceived, and that he leaves satisfied with the purchase, but his history of life, also follows as an influencer.



Source: Authors, (2020).

**Graphic 9. For you, what information is needed to check if a semi-new car is really viable**

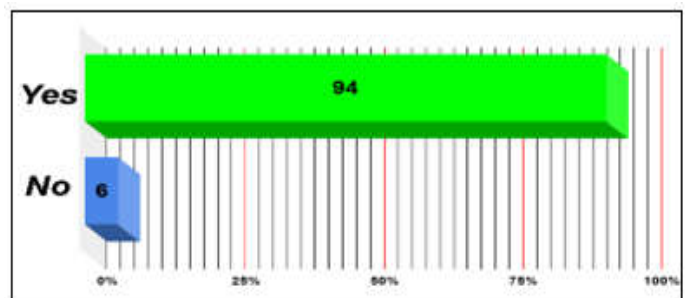
In Graph 10, the application brings with it an advantage that was addressed in an exceptional way, since 100% of people are really committed to following the life cycle proposed in the system, and thus, making a promising future, with even more features.



Source: Authors, (2020).

**Graph 10: If you were going to sell a vehicle, in the same way that you want transparency in the purchase, would you make the history according to its use?**

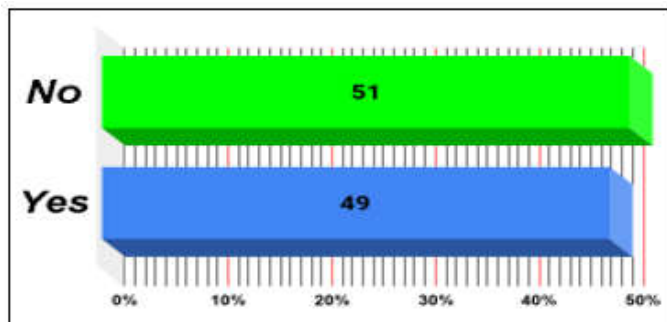
Graph 11 also shows the question of its use and the results are positive, 94% confirm that they would make the history of their vehicle, in the same way that they wish to have a preview of a future purchase.



Source: Authors, (2020).

**Graphic 11. With the vehicle's history in your knowledge. At the time of purchase, will the application give you full assistance in making sure that the semi-new vehicle is really at your cost benefit?**

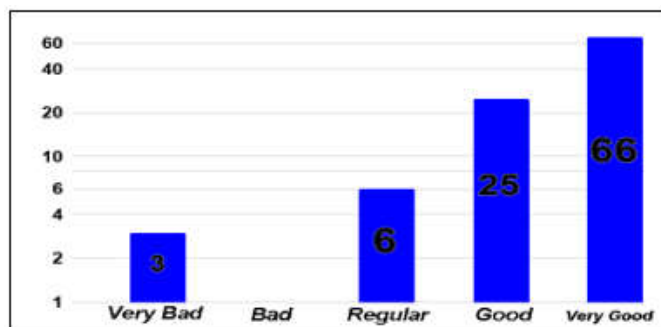
In graph 12, a very interesting question, at the time of negotiation, if vehicles with a large amount of maintenance were presented, but with their agreed value, the buyer would confirm the purchase, and in this question the public is divided equally.



Source: Authors, (2020).

**Graph 12. Would you buy a vehicle with little maintenance, but with an agreement value?**

In Graph 13, on a scale of 1 to 5, how LifeCar is evaluated in terms of benefits, and most assess the idea of the new application as very good and good. Ending with a positive and fundamental result for implementation.



Source: Authors, (2020).

**Graph 13. How do you evaluate the idea of the application for your benefit**

## Conclusion

We can highlight that, the research needs information that shows why the study related to the sale of semi-new cars was carried out, the advantage of the Life Car's creation is that its features are not yet applied at the time of negotiation. Highlighted, the research was assembled from graphics and information collected through forms. Always focusing on the information that was presented throughout the work, maintaining our goal, which is customer satisfaction when buying a new vehicle, safely and that meets all requirements, without deception and without delay. We know that one of the most important dreams of people is to have their own vehicle, and nothing better than buying the ideal vehicle, without complications. We must reflect on everything that was presented and then mention new points for implementation and evolution of the application, we have few systems with the same line of reasoning, so much that, in many of the auctions or vehicle fairs, the customer does not use any application that helps in their choices, just based on the information of the salespeople, which may or may not be true, because as mentioned by one of the respondents, about the information

provided about the used vehicles, she comments. "I don't believe it, because they are there to sell."

So we concluded that this application is unprecedented, because its functionality brings benefits to both parties that negotiate certain means of transport, ensuring that everything is in agreement, presenting a means of solving communication problems at the time of sale, so that there is no type of inconvenience, making negotiations simple and quick to understand, by controlling the entire history of the vehicle, according to each owner, following certain maintenance probabilities that are presented in the manual of each vehicle. Always thinking about the evolution of LifeCar, attention will be given to all feedbacks that will be received about the application, turning it into an evolutionary process, adapting new tools that can further assist buyers of semi-new vehicles, giving an economic option that meets the consumer expectations and increase the profit of the dealerships and idea partner's workshops, ending with our initial implemented objective, the developed application. Unfortunately, at the end of the article, a situation changed the markets of the world in a certain way, the pandemic of Covid-19, Assumpção Jr., president of Fenabrave: "Dealers are handling the situation as they can, but there will come a time when it will not be sustained."

After the stagnation of sales caused by social isolation measures to contain the coronavirus pandemic in the country, Fenabrave points to the probable scenario of layoffs among the 315 thousand people who work in the 7.3 thousand resellers that are part of the vehicle distribution system. The entity that gathers the concessionaires has already sent a series of requests for measures to mitigate the effects of the severe crisis and avoid the collapse of the sector to different spheres of government and financial institutions. According to data from Renavam consolidated by Fenabrave, 163.6 thousand light trucks, trucks and buses were registered in the country in March, a result that represents a strong retraction of 18.6% over February and 21.8 in comparison with the same month in 2019. In the first quarter, 558 thousand vehicles were sold, down 8% compared to the same three months last year. (FENABRAVE, 2020). It is a situation that everyone will have to go through, but it is something that does not directly imply the creation of the application, the vision is its implementation in a new scenario, where sales will be cheaper and with that we can offer the application so that all the new ones purchases, already use LifeCar and thus complement the entire market for the sale of semi-new vehicles.

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“Always giving thanks for everything to our God and Father, in the name of our Lord Jesus Christ. (Ephesians 5:20) “

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