

# Effective Communication Problems in Housing Construction Between Clients and Builders

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**Abstract:-** This article presents the development of a project for effective communication, between clients and builders, through a works control system, in the planning and construction process of a house, taking as a case study the city of Cuenca, Ecuador. The investigation was based on the lack of communication that exists between clients and builders at the time of starting the construction of a house, which leads to a series of problems in the progress of the work, since communication constitutes an important component that it permanently influences all societies. Starting from the aforementioned problem, as a methodology, a systemic method is used, where, for the collection of information, tools were used, such as: observation and interview; This made it possible to diagnose and evaluate the parameters that made up the model, as well as needs and requirements. As a result, different communication criteria were obtained, which allowed proposing an alternative solution, determining that it is feasible to develop an application that allows interaction between the client and the builder, in real time, on the construction processes, which will allow make effective decisions according to the reality of the project. The most important conclusion of the project was that the development of an application (SCOPU application) shows that, indeed, the use of technology, through digital tools, facilitates interaction between customers and builders, and not only in terms of construction, but also in general terms. By creating a digital application, communication between the client and the builder in the process of building their home can be improved, reducing the probability of cost increases, extensions and improving the quality of the work at the time of project delivery.

**Keywords:-** Construction; Costumer; Builder; Effective Communication; SCOPU.

## I. INTRODUCCION

Communication problems between users and contractors prevent the successful delivery of the housing project within the specified time, costs and quality. The problem arises from the dissatisfaction of the users by not feeling involved in the process of developing their work, feeling that they do not have

the full information due to the lack of communication with the builder. A common thread present in every housing project is the relationship that exists between these two parties, and it can be said that success depends largely on communication. However, this type of communication is not done through a single interface, but through several, and it needs to start before the project and be maintained throughout the construction program.

Construction, despite being a development area, is within an organization in which there are different hierarchies and the owner is the one who must be in contact with the higher hierarchy; In the world it has been shown that effective communication is a prop for every business to flourish. The knowledge generated through the investigation of the communication process, serves to develop a strategy aimed at facilitating and streamlining the flow of messages that are given among its members, (for example, investors, clients, suppliers, government, media, competitors, distributors, associations and chambers, various organizations and the general public ...) [1].

Effective communication is a shared responsibility, communicating well is everyone's responsibility, although some must play a more important role in this regard, due to the position they occupy or the information they handle. Therefore, the development of people's communication skills, at different levels and areas, has become a priority, especially now that organizations are experiencing fundamental changes [1]. A growing number of organizations are specializing in the charge of professional communicators, whose basic function is to support them to facilitate communication processes and make this shared responsibility effectively fulfilled [1].

Likewise, if we take into account the current situation that the world is going through due to the SARS-CoV-2 pandemic, and the measures adopted to combat it, they have implied, of course, very substantial and sudden changes in the lives of citizens and in society as a whole, one of them is in the field of the media. In Ecuador, a rigid confinement was decreed as of March 16, 2020, which meant that, suddenly, millions of people were held in their homes. This, added to a situation of informative exceptionality, led to a radical change

in the way and intensity with which citizens come to interact with digital media.

In the blink of an eye, millions of people around the world have been forced to drastically change our routines due to an unknown and invisible virus. The world has taken a resounding turn and in a matter of weeks we have had to adapt to a new reality unknown to all, technology and information have been two of our great allies, both individually and collectively [2].

In the midst of the crisis, many people have been encouraged or forced to learn how to use mobile technologies and applications that they may not have used before. Citizens of hundreds of countries have been forced to seek solutions to the problems they face daily, due to the difficulties and risks involved in leaving home. For the same reason, many people have discovered that it is easier, when possible, to carry out procedures digitally than they used to do in person. We will thus acquire greater digital autonomy through applications that already exist and that will be developed as a result of this crisis. Technology and information have been great allies in this health crisis, which is already transforming the current decade and will probably transform the next [2].

It is evident that, when social life returns to a certain normality, the habits acquired in some cases will remain, the comfort that this digital age has brought in certain cases will be very useful. Faced with this radical change in our lives, digital communication media are the sideboard of this new daily reality, becoming the main platform on which any type of activity or message can be channeled [2].

Under this context, as we can realize, the use of digital tools is becoming more and more essential, which will be of great help so that communication between the client and the builder is effective, with better coordination in the construction process. of your home.

In the development of this project, once the results have been obtained according to the proposed methodology, through qualitative data collection instruments, both for the builders and the clients, on monitoring and control of works in the construction process of your home, we can conclude by stating that the use of an application would be a viable solution to solve the problems generated; Thus, monolithic applications have resulted in several use cases throughout the world, but with the passage of time problems have been generated when scaling and improving their performance, since constant changes in the business model originate that have to modify the entire application, making it larger and more complex to maintain [3].

To solve the problems that are caused with traditional architectures, much more stable and efficient models have been proposed, such as architectures based on micro services, which propose the construction of sets of small independent services, which communicate with each other through HTTP requests. and they run autonomously, this allows them to be scalable and easy to maintain, and they can be written in

different programming languages and by different development teams [3].

In this context, after analyzing the results through the collection of information from clients and contractors, involved in the construction of houses, the need to parameterize and implement an electronic service platform was raised, which allows contractors and users, generate a control and monitoring system of the work, during the execution phase of a housing project, which must be parameterized with the necessary information, improving coordination, documentation management and the interaction of all the actors involved. involved in it, the progress of the work both in time, costs and quality, will avoid problems in the final delivery of the housing project, and for this it is essential to build this solution under a micro services architecture, this because we are in a volatile, uncertain, complex and ambiguous environment, which forces the platform and its components to provide the opportunity to can be adjusted according to this dynamic [3].

Finally, the article presents the development of a tool that allows effective communication between the client and the constructor, as follows: section II details the collection of information, its interpretation and the analysis of the results; section III presents the methodology used in the research; and, in section IV the conclusions are described together with their future work.

## II. METHODOLOGY

The project was developed with the use of a systemic method, which allowed the diagnosis and evaluation of the parameters that made up the model, as well as needs and requirements. This made it possible to meet the objectives set, for example, for builders it is to improve communication of progress in the construction of works, while for users it is to have a better experience at the time of getting directly involved in all the construction processes of their project of housing.

To determine the needs of the parties involved in this model, the use of sources was primarily traced, such as: observation (personal experience of the author), and instruments for collecting information from clients and contractors involved in the construction of houses, as observation cards and questionnaires.

To understand how the research was developed, in figure 14, the methodology used for the analysis is described with the information collected, and a block diagram is established, to later develop a guide for the direction of the project.

### A. Challenge: Identification of solutions to problems.

As can be seen in the flow diagram, the parameterization for the use of the platform (SCOPU), arises from the approach of the problem in the construction of a house project, in which the client does not feel involved in the development of construction, feeling that he does not have all the information due to the lack of communication with the builder.

**B. Empathy:** The best challenges are focused on human behavior.

Through a research plan, it was established which collection instrument to use to obtain the necessary information, and continue with the analysis of the collected data.

**C. Interpretation:** Understand the needs to identify opportunities.

With the use of actionable insights, the available information was connected and through a data analysis, it was possible to understand the existing problem, and propose a solution.

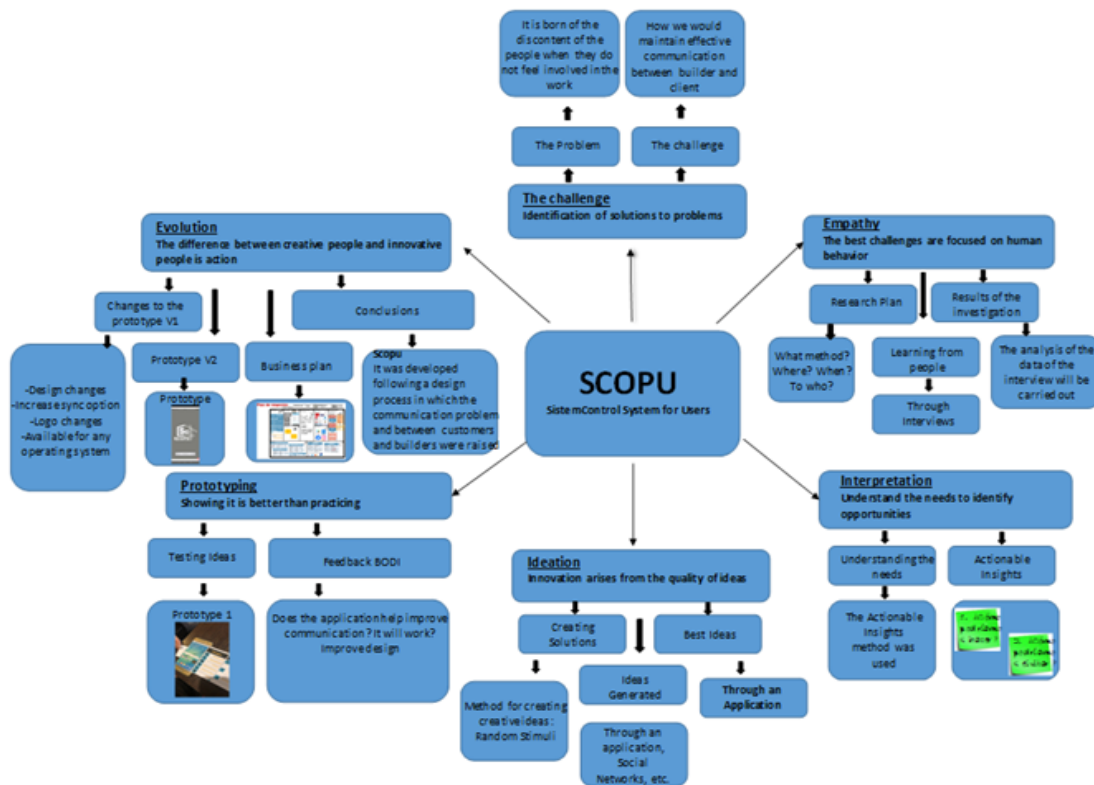


Fig :- Block diagram of the platform source:- Self-made

**D. Ideation:** Innovation arises from the quality of ideas.

Faced with a challenge or problem, making use of observation and empathy to generate ideas is significant [4]. The method of random stimuli was used to generate creative ideas, and after their selection and compilation, the best ideas were selected, concluding that the best idea for the communication and interpretation of information at the time of building a house would be through an app.

**E. Prototyping:** Showing it is better than practicing it.

Building resolution prototypes and testing them helps us visualize the most effective possible solutions before reaching a final result [7]. Through feedback or "feedback", it was possible to obtain important aspects, such as benefits, doubts, opportunities and ideas, to build a prototype that contains the necessary parameters that are required when using the application.

**F. Evolution:** The difference between creative people and innovative people is action.

Several changes were made to the design, so that it is useful according to the conditions of use previously raised, developing a design process in which it is proposed to solve the existing problem. The "Design Thinking" process helped

us to develop through innovation an easy-to-use product for monitoring work [5]. Any problem can be solved, if we let our imagination flow. The important thing is not to focus on a group of products or services, but to generate an "innovative concept" that allows involving many new products, services and forms of operation [6].

### III. RESULTS

The project started with the intention of knowing the opinion of different people who built their home; An interview was conducted with fifty people, and through a series of questions from different questionnaires related to the experience in construction in the day-to-day life of their housing project, the following results were obtained:

In Figures 1 and 2, it can be seen that the age range with which they have started the construction of their home is between 25 and 40 years old, with a percentage of 62.3%, and the male gender is the one that prevails in the monitoring of the control of the construction of the project of your home with 64.2%.

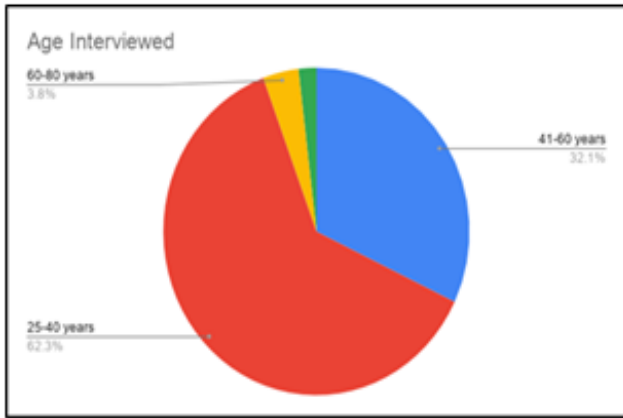


Fig. 1. Age of people interviewed - Clients.

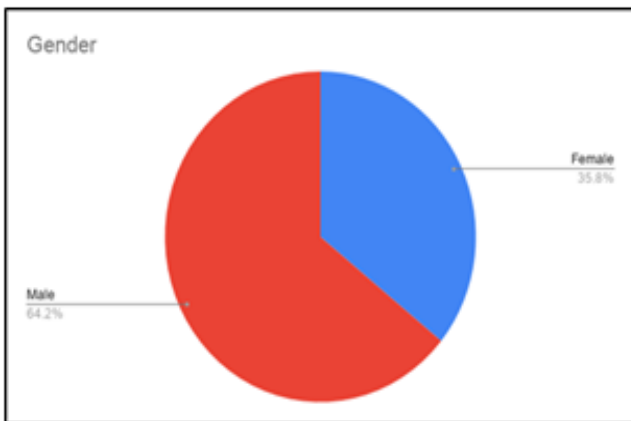


Fig. 2. Gender of people interviewed and who have started to build their home.

It was asked if they would like to have control and monitoring of the construction process of their housing project, where the answer was almost entirely, yes, 94.3%, thus demonstrating interest in monitoring the construction of the work, figure 3.

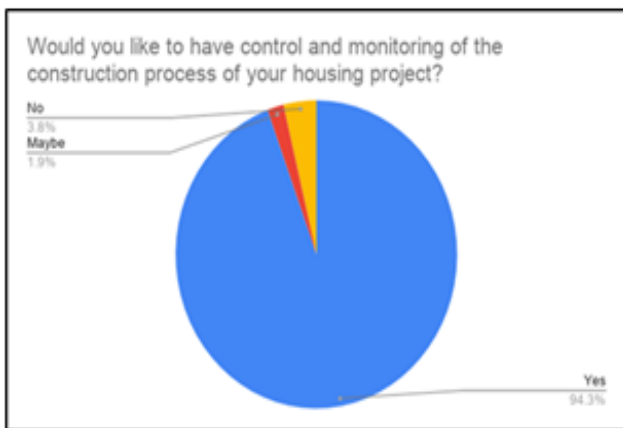


Fig. 3. Control and monitoring of work.

When consulting about the information that the consultant presents at the time of construction and, if it was enough to know the progress of your project, we realized that there is an equitable average in the information that is received from the builders. Builders, it is observed in figure 4, that 39.6% present information and those that do not present 35.8%.

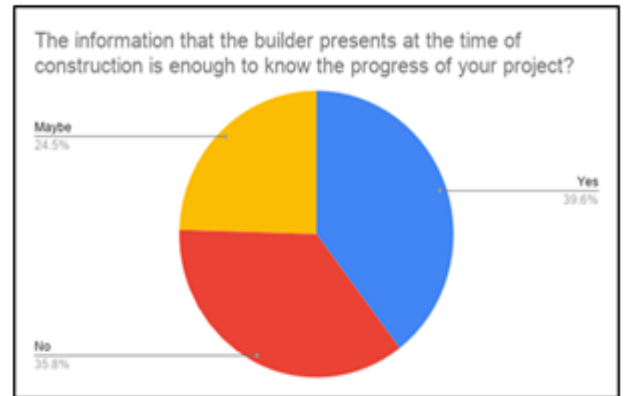


Fig. 4. Information received from the builder is enough to know the progress of the project.

According to the information obtained, it was seen that the frequency with which clients receive information on the progress of the work by the builder 56.6%, is enough to have control and monitoring of their construction project, see figure 5.

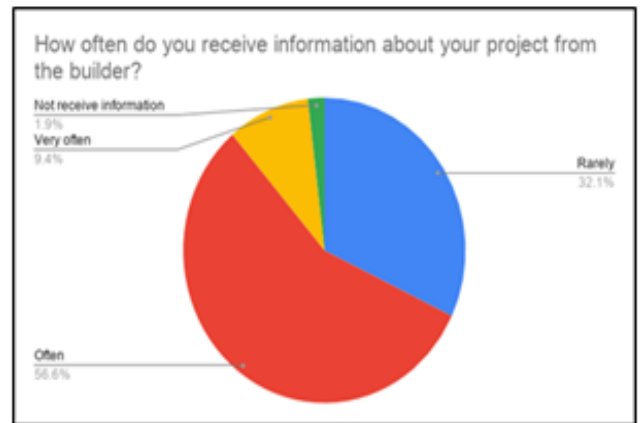


Fig. 5. Frequency with which they receive information from the builder.

Among the aspects that they would like to have control, at the time of the construction of their home, were indicated, among them, the exterior and interior finishes, foundations and structures, construction materials to be used, economic progress, meeting deadlines, etc., reflecting in this question the importance given in the control of the progress of the work, see figure 6.

Another requirement suggested by clients in the process of building their home was to be able to make changes and modifications to existing designs and materials to be used during the construction process, since, according to their experience, this led to a series of problems at the end of the delivery of the house already concluded.

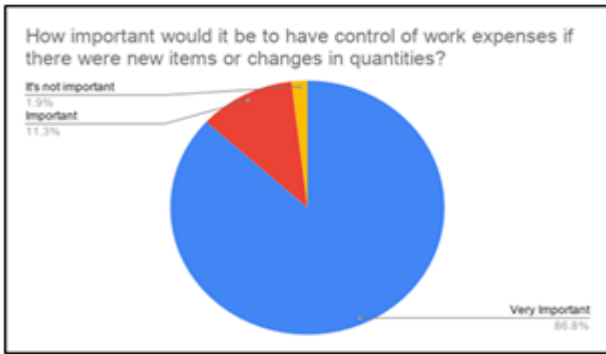


Fig. 6. Importance of cost control.

And, to conclude with the interview, as can be seen in figure 7, they were asked which option they consider to be the most useful to have control of the construction process of their home, where, it was observed that the use of A digital application would be very helpful for the communication between the two parties to improve in the construction process.

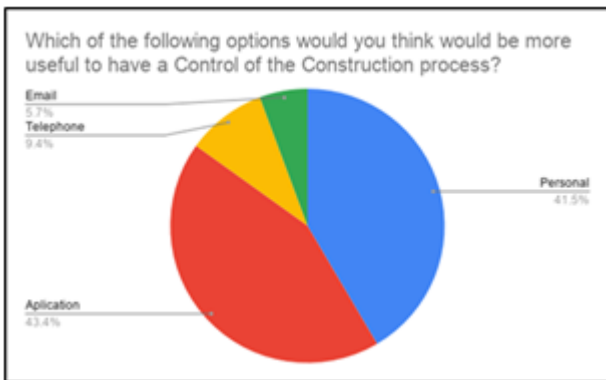


Fig. 7. Utility options for communication of project progress according to clients.

After we obtained this information, we proceeded to conduct an investigation with the builders, where they stated the following:

The age range of the constructors in charge of the construction of houses is between 25 to 40 years, with a percentage of 46%, and 41 to 60 years with 48% and the male gender is the one that prevails in the construction of houses with 69%, as indicated in figure 8.

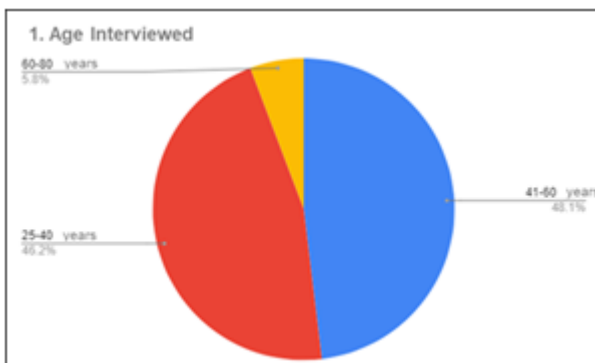


Fig. 8. Age of people interviewed - Builders.

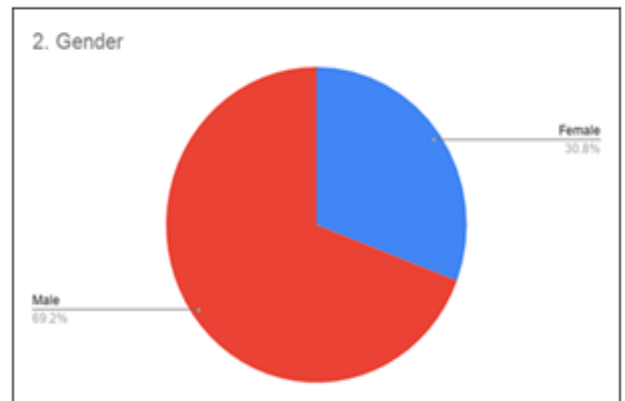


Fig. 9. Gender of people interviewed dedicated to housing construction.

The builders were consulted about the usefulness of sharing with clients the information on the progress of the construction of their project, where they can verify all the construction phases of their home; Figure 10 shows the need that customers have to know and follow up, also considering that they frequently provide all the information to their customers, as can be seen in the attached tables, there is only 57.7% of builders who share this information.

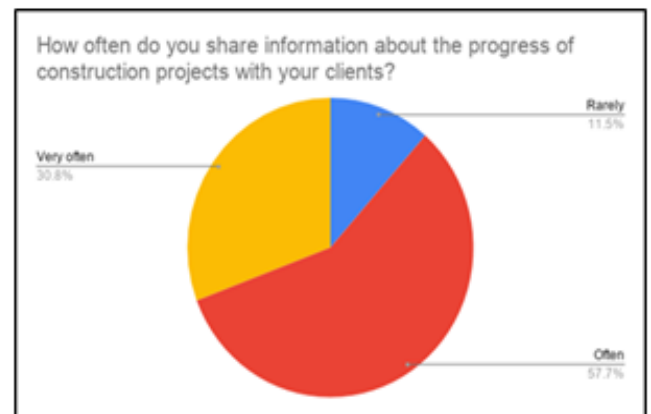


Fig. 10. Frequency with which the builders provide information.

On the other hand, the builders indicated that they feel satisfied by the communication they maintain with their clients at the time of construction, as they have always considered transmitting relevant and important aspects that clients should know. Among the aspects that they consider important to share with clients are: budgets, work progress, type of materials, designs, additional items that generate changes to the initial budget and work progress schedules, see figure 11.

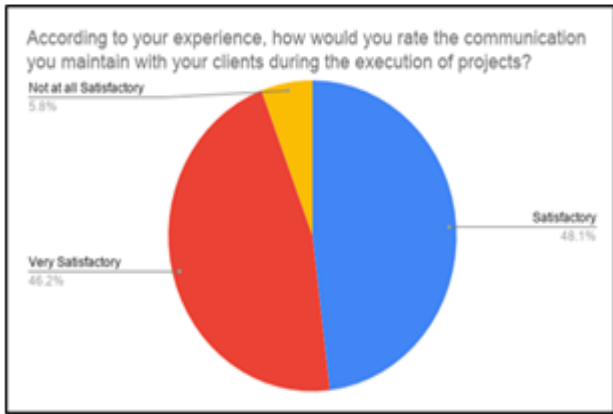


Fig. 11. Importance of control and monitoring of work.

An important aspect that was indicated to them in the interview was, if they would consider that the delays that are generated in the delivery of a project are due to the lack of communication with the clients; Those who responded that communication between the two parties will always be necessary to coordinate all economic and construction aspects in the advancement of the housing project, the lack of communication between the two parties will depend a lot on the success of the project, they indicated.

However, in figure 12, it can be observed that, contrary to the clients, the contractors indicated that they prefer that the interaction between the two parties should be carried out in a personal way, since they consider it to be the best means of communication to deliver the information that is required, since, according to their experience, personally interacting with people helps to reach agreement and find immediate solutions to the problems that are generated in the course of the construction of the housing project.

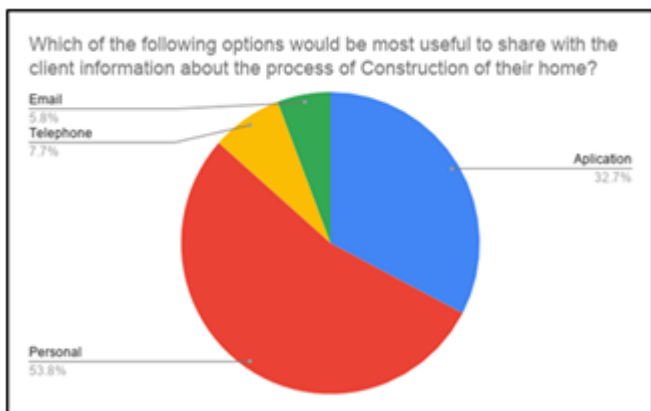


Fig. 12. Utility options for communication of project progress according to builders.

Once all the results had been obtained and analyzed, the SCOPU (User Control System) application was developed as a proposal, which has a design pattern based on service parameters that will serve both the constructor and the customer in the construction process. user. Figure 13 shows the design of a prototype that makes up the design of the platform.



Fig. 13. Platform prototype design schematic. Source: Self-made.

It is important that this application has all these benefits, by virtue of the fact that this will allow the communication problem between the client and the builder to be solved at the time of building their housing project, having all the information required in any place and time, which will improve that upon delivery of the project both the client and the constructor are satisfied with the work carried out.

#### IV. CONCLUSIONS

The use of information collection instruments allowed us to know the reality of the construction environment, both the builders and those involved in the process, the clients.

In order to correctly determine the exact number or amount of data we need, it is important to know a significant sample in order to make a decision regarding the criteria we are investigating.

By knowing how they behave (customers and builders), with respect to different communication criteria, it was possible to generate an alternative solution for them, the most viable in this research being the development of an app.

The application development of the SCOPU app shows that, indeed, the use of technology through digital tools, facilitates interaction between customers and builders and not only in terms of construction, but also, in general terms, the pandemic has shown that, technology is transversal to any type of project, being, not the end of the investigation, but the means that allows us to successfully conclude a project.

Once this part of the project is concluded, as future work, the application can be improved, the application trained and allow more data to exist for the application and in this way, know if it is one hundred percent functional or make improvements, since it is It must take advantage of the technology that the internet provides us and take advantage of 5G networks, so countries such as Spain and Europe are already implementing this technology, which will give way to more devices being interconnected.

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#### REFERENCES

- [1]. H. Andrade, "Comunicación Organizacional Interna PROCESO, DISCIPLINA Y TÉCNICA."
- [2]. Cátedra Ideograma-UPF de Comunicación Política y Democracia, *Comunicación política en tiempos de coronavirus*. 2020.
- [3]. I. De Sistemas, I. De Sistemas, I. De Sistemas, and J. De Posgrados, "Arquitectura de microservicios para compras en línea: caso de uso " ala orden " Microservices architecture for online shopping: " to order " use case Arquitectura de microserviços para compras online: caso de uso " sob encomenda "," vol. 5, no. 1, pp. 151–162, 2020, doi: 10.23857/pc.v5i1.1884.
- [4]. P. Combelles, A. Ebert, C. Lucena, "Design Thinking 디자인 사고 ( Design Thinking )," *IEEE Softw.*, vol. 37, no. 2, pp. 21–24, 2020.
- [5]. A. N. A. María and F. León, "Design thinking. Educational innovation and methodological research," *DIM Didáctica, Innovación y Multimed.*, vol. 0, no. 33, pp. 1–6, 2016.
- [6]. X. C. Internacional, "El Proceso Del Design Thinking En El Aprendizaje De La Competencia ' Sentido De Iniciativa Y Espíritu Emprendedor .'"
- [7]. F. J. Hofmeister, "Trends in maternal mortality in Wisconsin.," *Wis. Med. J.*, vol. 69, no. 2, pp. 79–81, 1970.