

Designing at the service of rural territory

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ABSTRACT: This article provides the results of the final project developed to obtain the title as Industrial Designers of the National University of Colombia in Bogota. As designers we have found an opportunity to solve Service Design issues related to food waste while working hand in hand with the Archdiocesan Food Bank of Bogotá, which was founded eighteen years ago with the aim to join the academy thus private and public sector, with non-profit organizations that serve to vulnerable populations by collecting, selecting and distributing food, goods and services, donated or purchased. We believe organizations like these have a huge potential to guarantee food security for the Colombian population by reducing waste and reaching quality food to those in need. That's why as a result for this project we have developed ideas of improvement to be implemented on the actual service of PREA ("Programa de Recolección de Excedentes Agrícolas", Collection of Agricultural Surpluses Program), one of many the programs that belongs to the Food Bank previously mentioned. During the whole process we have realized that through design there are many possibilities to make these services and programs more "usable", simple and replicable. The full implementation of this project could create new bridges between stakeholders of the food industry and food banks, so they would all be involved on a circular and sustainable economy. The design process includes research, co-creation with the food bank team, use of creative tools and many field work days. This project not only consists of a diagnose of the major areas of weakness of the service, but also provides a guide portrayed in a blueprint, to improve specific areas of the service and highlight the phases that require more attention from the bank directors.

Keywords: Food design. Service design. Food banks. Agricultural surpluses. Circular economy.

1 INTRODUCTION

Colombia has evolved in the agribusinesses production with organizations increasingly productive and profitable, however, these are not always sustainable, because hardly ever their business model is adjusted to what markets or communities need. This explains why we live in a place where enough food is produced to feed the total population but, about 4.4 million of people are undernourished. The food access is not equitable and we must add up the huge amount of food product wasted, or thrown away in the main cities of the country (in Colombia 10 million tons of food are wasted (CÁMARA DE COMERCIO DE BOGOTÁ, 2016).

Given this, and with the premise of fighting hunger, the Archdiocesan Food Bank of Bogota has emerged, with the aim to recover food to deliver it to foundations in the capital and its surroundings through different programs. By affinity to this project, and taking into account that the food issue affects everyone, we have focused our attention in PREA, (Agricultural Surplus Collection Program) program of this food bank, which makes agreements with small farmers of nearby municipalities to rescue post-harvest waste and deliver in change a salvage value for it, or food packages and other goods.

Our objective? To apply our design knowledge using different service design tools to find improvement ideas that could increase the number of beneficiaries of the Program PREA, while identifying weak and strong points of the whole service thanks to the observation of the operation system.

2 METHODOLOGY

The design process was divided on six main stages: Discovery - Empathy, Understanding, Observation- Definition, Ideation, Evaluation and Communication.

The tools used for each stage are:

1. Discovery - Empathy:

- Ideal models research
- Study of referents

2. Understanding

- Project planning
- Experts interviews
- Individual interviews

3. Observation- Definition

- Stakeholders map
- Organizational chart
- Actual blueprint
- Field work

4. Ideation

- Brainstorming
- Critical insights

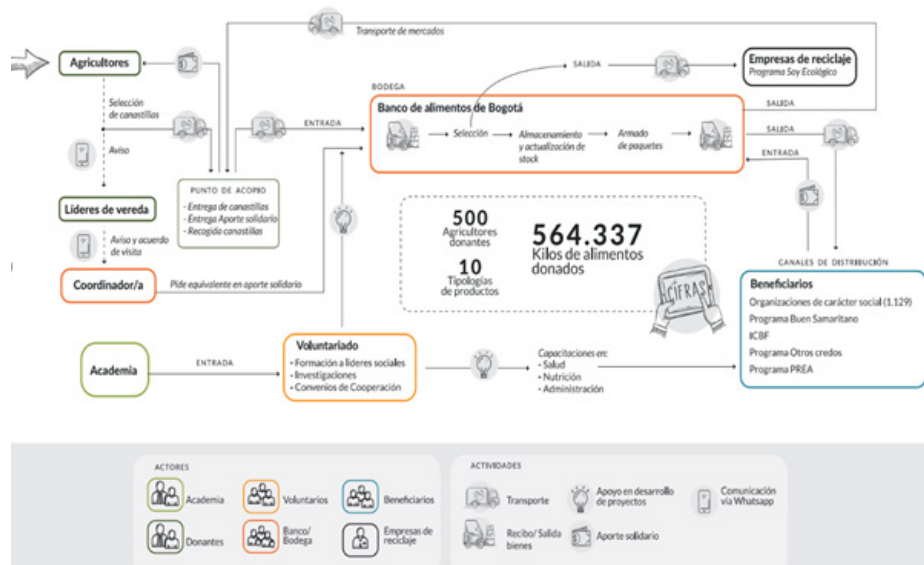
- Co creation workshops
 - New blueprint
- 5.Evaluation
- Solutions flow
 - Implementation timeline
 - Future recommendations
- 6.Communication
- Storytelling
 - Presentation of the blueprint
 - Final print documen

3 RESULTS

After a long research process of different concepts like agri-food marketing, agri-food systems, circular economy, food waste, food banks, waste and losses, we registered the whole process the bank follows and any other key information in a system map, with the aim to understand how everything works (figure 1) showing actors, activities, inputs and outputs involved.

Consequently we focused our attention on the distribution channel of PREA, since it was necessary to limit and simplify the spot we could intervene, given the time given. We picked this program because of our affinity with farmers and specially for the ease of access to the information.

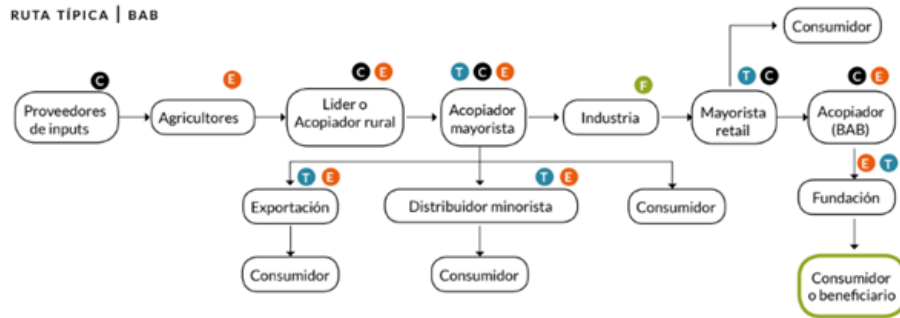
Figure 1 - System map Food Bank



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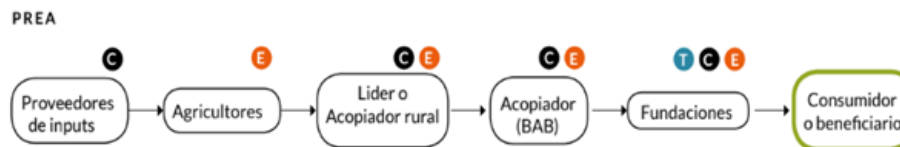
Therefore we made a timeline for PREA to locate the most important moments in the history of it, and an organizational chart, to make sure we were visualizing all the actors and their activities. Then we analyzed the advantages and disadvantages of the program, realizing that one of the most relevant advantages was the commercial route of its products. To understand this the figure 2 shows the conventional route of logistical network to transport products from farmers to the final consumer, we can see at least five intermediaries. While on the figure 3 we observe just three main intermediaries. Each one of these actors add utilities for the product on each stage: It could be adding utilities on form, space, time, possession, or quality control. All the intermediaries are very important, but, the more intermediaries, the more expensive the products are.

Figure 2 - Usual commercial route of agri products



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Figure 3 - Route of agri products from PREA.



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As a complement to research, field work was really important to immerse on the rural territory context and to recognize which were the quality standards for human consumption for each product that arrives in the food bank warehouse and goes for donation. To do so, we did voluntary work at the installations of the food bank in Bogota and sorted fruits and vegetables (figure 5).

We also had the opportunity to work in a “Food Rescue Day” in Viotá Cundinamarca with the coordinator of the program and one of the drivers, picking up surpluses of fruit alongside harvesters and delivering them food or salvage value in exchange. We registered all the information on a timeline paying special attention to the actors involved as well as their emotions (figure 4).

Figure 4 - PREA Food Rescue Day.



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Figure 5 - Classification of fruits suitable for human consumption



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Additional to this, we organized a workshop (figure 6) with industrial design students in order to validate the role of design as an opportune discipline to fight against agricultural surpluses waste. We achieved students to reflectionate about the problem and the importance of working on a reality of national interest.

On the other hand, to approximate the validity of the service, we met PREA director (Fabián Martín) and the coordinator (Sandra Rodriguez) and exposed them the service in a blueprint, inviting them to make any changes they thought were necessary. We also talked about the organizational chart as a previous contextualization. It's important to say we persuaded them not to think about

the lack of resources at the moment of intervening the blueprint, instead, it was important for them to keep in mind which could be the answer to: how would be the ideal program?

It is important to have the highest number of stakeholders in this kind of workshops so they can contribute from different points of view. As a work team it was very gratifying to know that it was possible to comply with the workshop objectives regarding understanding and use of design tools like the blueprint.

Figure 6 - Workshop with design students



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Figure 7 - Workshop with PREA staff



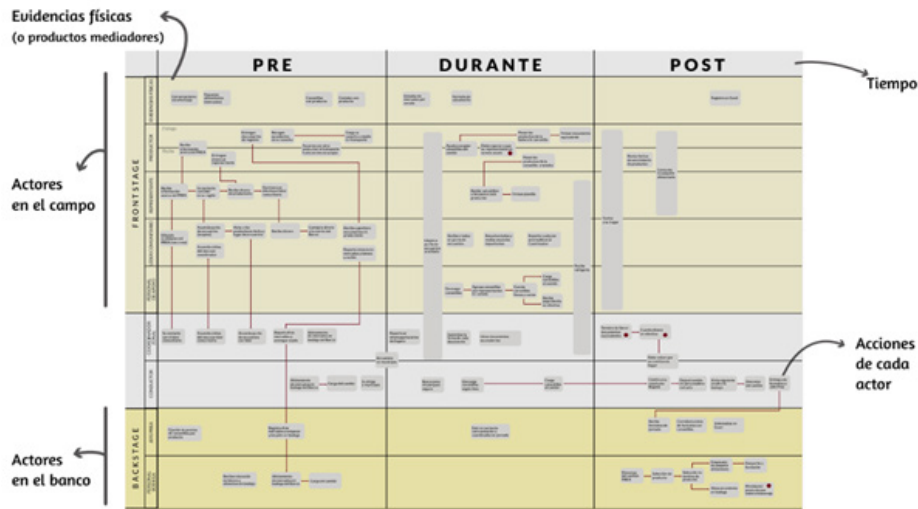
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Regarding In the next image (figure 8) the actual blueprint service is exposed. This is how the service is running out actually in Cundinamarca. The blueprint was organized by four variables: time, physical evidence (or products service mediators), frontstage actors (people on the rural territory), backstage actors (people in the Food Bank), and the activities (interaction between actors). At the same time, service is divided in three parts: "PRE" (everything that happens before Food Rescue), "DURING", (during Food Rescue journeys) and "POST", (what happens after Food Rescues).

- Frontstage actors are: Farmers who donate and those who don't, representatives, community leaders and support staff.
- Backstage actors are: The warehouse staff and PREA director.

- Actors moving from the Food Bank to the rural territory (front and backstage): Drivers and coordinator.

Figure 8 - Actual blueprint

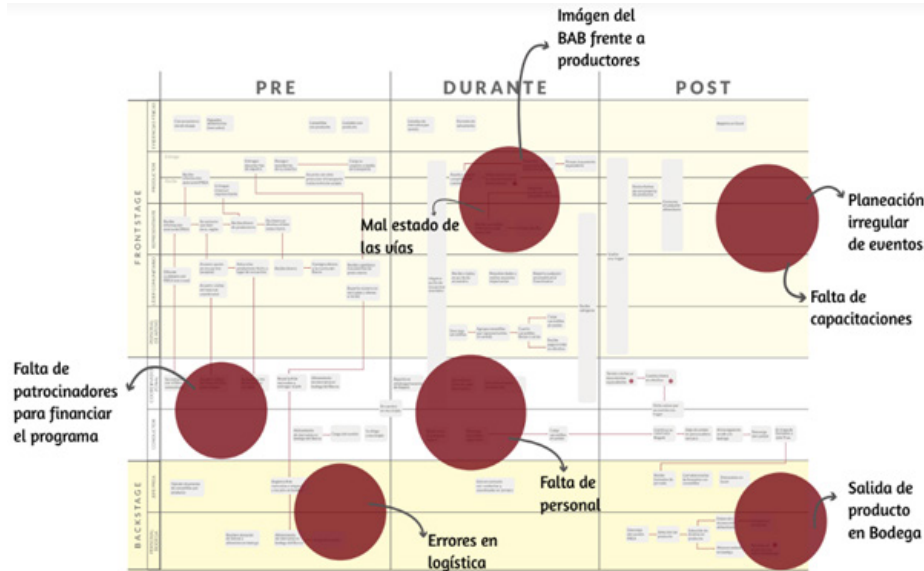


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In addition to this, while analyzing the interactions, we found some critical points, and then located these points on the blueprint to visualize them (figure 9). The main critical points are: Lack of sponsors to finance the program, lack of staff, lack of training, logistics errors, bad state of the roads, Food Bank appearance to farmers, irregular events planning, outputs food system.

The latter was key for the observation and definition stage, to decide it was necessary to group up the activities developed in the service on different phases with the purpose to clarify the objectives for each one and to arrange the ideas of improvement in the next phases accordingly. It's worth saying that some activities occur simultaneously, not in a consecutive way. The main phases are: Collection, Compensation, Distribution and delivery, Appropriation, Diffusion.

Figure 9 - Critical points



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Proposals for each phase

COLLECTION

Objective (1): Control and record data from each collection day:

- DETAILED DATA BASE OF THE PRODUCERS: The program already has a database of the producers that have taken part of the project. However, it is proposed to reinforce this existing information with visits to producers as a "census" so they can know the conditions of the plots where the products are harvested, the conditions the harvesters work in, and the composition of the family nucleus. All this in order to track and be able to calculate the long term impact of the program.

- INFORMATION MANAGEMENT PROTOCOL: As one of the objectives of the program is to increase the number of beneficiaries, and this leads to the need for more staff, we propose to carry out a single protocol for all coordinators that they can follow step by step and avoid improvisation when fulfilling their functions.
- MAP OF THE LOCALIZATION OF PRODUCERS AND FOLLOW-UP TO DRIVERS: We propose that each route a driver does has to be geographically monitored to know the location of the truck in real time and ensure the safety of personnel and product, since the state of roads ain't always its best.

Objective (2): Get more human resources

- CONNECT WITH THE VOLUNTEER STRATEGY OF THE FOOD BANK OF BOGOTÁ: It is proposed to strengthen volunteering through alliances with more organizations, for example, with students that are required to achieve a certain number of social work hours on their schools and also with gastronomy and rural tourism schools. The coordinator of programs and events (a new actor we have proposed) will be in charge of organizing the volunteering schedule. The minimum is one day per month in each small town.

COMPENSATION

Objective: Contribute producers for their work.

- STAR PRODUCERS SUB PROGRAM: Producers who are registered in the database with the largest number of donated baskets, will have the opportunity to talk with businessmen to do product marketing negotiations and not rely solely on the exchange with the Food bank.

- LINKS WITH SPONSORS FOR OTHER AWARDS.
- DIVERSIFY FOOD PACKAGES

DISTRIBUTION AND DELIVERY

Objective: Differentiate the PREA product.

- PADRINO PRODUCER SUB PROGRAM: A group of PREA producers will “Sponsor” a school or foundation in their town delivering fresh products from time to time for their snack. This way the bank could create support networks.
- CONNECTING STAR PRODUCERS TO COMPANIES: One of the objectives of the Star Producers Subprogram is to achieve different outputs for food and avoid waste in the warehouse. To do so, we propose PREA should make contact with companies that could transform fruit products and connect them with producers with the largest harvest.

APPROPRIATION

Objective: Promote the independent development of producers and product rotation through the region.

- TRAININGS: Training producers in topics related to agro development, entrepreneurship, management and food handling, nutrition, preparation of food for sale, etc.
- EXCHANGE BETWEEN PRODUCERS: This could be possible with events in the regions allowing the farmers to sale their products.

DIFFUSION

Objective: Attract more producers to the program.

- BROCHURES AT THE COLLECTION POINTS: The most frequent questions will be listed for people that don't have internet access.
- DIFFUSION FOOD CULTURE OF EACH REGION: As part of the volunteer programs and alliances with other companies, the exchanges can be strengthened if the food bank gets to know the alimentary culture of each region and all the history that there is behind their main and typical recipes, so in a long term, events related could be planned.
- EVENTS ON SPECIAL DAYS: the events and programs coordinator will consider special dates like farmer´s day for example in a schedule. This way, the celebration of these days will not depend on the spontaneous disposition of staff, but it will be a fundamental component of the program that is made always following protocols.

ACTORS PROPOSAL (New organizational chart)

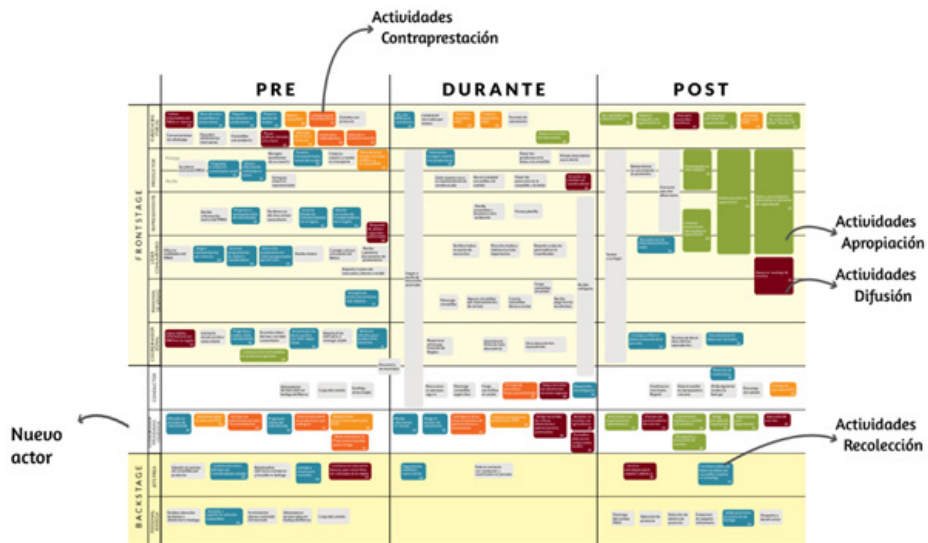
- PREA Director: It is suggested that the profile of who directs the program must be that of a committed person with the rural development of the country, someone willing to work with and for those in the countryside. That person must also have any kind of studies in project management and a related career with agricultural production, with special capacity of leadership to motivate those who are in charge of zonal coordination and events and programs coordination (whose roles will be described next), to carry out all the proposals of each proposed subprogram of the PREA.
- Zonal Coordinator: There will be a zonal coordinator by region, who is in charge of the community leaders of each municipality. The zonal

coordinator is responsible only for what happens in the rescue days related to operational tasks of collecting and contracting benefit.

- Programs and events coordinator: Unlike zonal coordination, in this case it is not necessary a coordinator per region, all tasks can be managed from the headquarters of the Food Bank in Bogotá. It must be a person who has a profile like that of a community Social Worker, responsible for promoting alliances to strengthen subprograms and objectives of appropriation and diffusion. Will work directly with the PREA director, zonal coordinator and the leaders at least once a month.

New blueprint

Figure 10 - Critical points

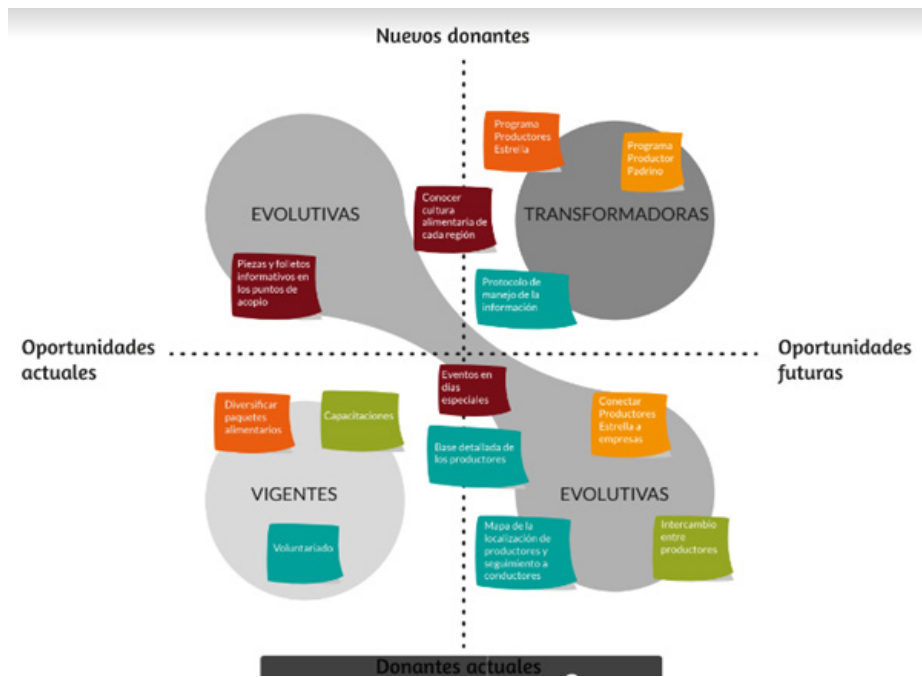


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This new blueprint is the tool we have used to portray how our proposals could work in the service of PREA. We maintain the variables of time and physical evidence. We added a new actor “events and programs coordination”. New activities were classified with a color code for a better viewing (figure 10).

Finally we concluded the project with some tools for the implementation stage as future recommendations. “Solutions Flow” (figure 11) is a very useful tool to visualize in a matrix all the proposals at the same time, each one located according to its orientation to users (new and current donors) and what is offered in the service given the actual opportunities and opportunities that may arise from the proposals.

Figure 11- Solutions flow



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“Implementation timeline” (figure 12) is another tool where we located the proposals chronologically according to the deadlines for its achievement, the complexity and the availability of resources for each one. The minimum period is two weeks and the maximum is one year for its implementation.

Figure 12 - Implementation Timeline



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4 DISCUSSION

All the actors of the program have agreed with the idea of increasing the number of beneficiaries of PREA if they work as a team. We especially recommend this project could continue in charge of another student group, even designers that could use the tools we propose and not only apply them, but also improve them to make a better service.

In an ideal world food waste and inequity would not exist. All the roads of the whole country would be perfect and the government would give permanent attention to the communities. But we have faced a reality of the country unknown to us so far. It's necessary to be part of the solution and support the food bank

actions and programs, as well as support networks fighting hunger. As industrial Designers we concluded that we are able to develop strategies that can strengthen these initiatives.

5 CONCLUSIONS

5.1 Conclusions for the Service Design

- It is important to define service standards that can be flexible to be replicated correctly in any of the regions contemplated. The service can be replicable in other Food banks in the country.
- The Food Bank must differentiate PREA products, prioritize their departure and contemplate new channels for distribution, because the effort that is made from the program, guarantees products of high quality.
- The most problematic areas are in the “PRE” and “POST” stages of the service. In “DURING”, there are minor problems like resource management, yet not less relevant.
- Along the design process we have focused on the “Ideal PREA”. We understood that even so, we cannot neglect basic determinants of design such as the lack of internet connection in certain areas of the regions, or the availability of monetary resources.
- During the development of the service design, we understood the origin of the decisions that PREA actors have made.

5.2 Conclusions Working with the Archdiocesan Food Bank of Bogota

- As students outside the organization of the Food Bank, we realized we had to have a lot of caution with the comments about interpersonal relationships so it was necessary to maintain neutral in our opinions.
- It is important to clarify that the decisions of the solutions implementation for PREA are governed by the foundation's policies and we use its regulations.
- It was essential to make a day of food selection to make a complete immersion as students and to understand the magnitude of what is wasted, why and how.
- While working with an organization outside the university, we run the risk of not being able to comply with the initial schedule, so the activities planned depend on the availability of its workers. One of the biggest design challenges was to adapt in a short time to changes in the schedule by circumstances of the Food Bank.

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