



In Company Project

**Development of a Tool for
Culinary Management**

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Executive Summary

Gastro Ventures is a start-up that works with gastronomic innovation applied to the whole food industry, from products to hotels and restaurants. During the first semester of 2019, coinciding with the second semester of the MSc in Innovation and Entrepreneurship in ESADE, I have been working in the company as Business Operations Manager Junior.

One of the projects in which the company is involved in is with a high-standing hotel in Spain. Gastro Ventures manages their whole gastronomic offering – from the formation of the chefs and the rest of the staff to the design of the different menus and elaborations.

This project was born after the realization that the whole process involved in the management of the restaurant of the hotel – and all restaurants for that matter – is full of inefficiencies. These inefficiencies are mainly related to the design of the various products, the lack of a unified data base, and the inventory management.

Additionally, Gastro Ventures has a special interest in Circular Cuisine, the application of Circular Economy to the food industry. That is why the aim of this project is not only to provide a solution to those inefficiencies but also to implement a system that is able to apply the Circular Cuisine model in Hotels and Restaurants.

The first step to develop this project was to immerse ourselves in the current processes and understand how the system works in order to identify the already suspected inefficiencies. To carry out this step appropriately, the Hotel that we are working with provided us with all the necessary information.

Secondly, to define the specifications that this program needs, an exercise of ideation was carried out by the CEO of the company – Jordi Gamez – and myself. Lastly, once the main ideas of the characteristics and functionalities of the program were clear, it was time to code using the VBA in Excel. The necessary knowledge to code such a complex tool was provided by a course in ESADE of Excel by Francesc Alcaide.

The solution designed is a tool with the ambition of being a software that meets the needs mentioned in the lines above. In terms of realization a Pilot program was created with Excel, and even though it provided evidences that there is a need for a more powerful interface to code this complex program, the pilot has proved very useful to define the characteristics and functionalities of what might be the software in the future.

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1. Introduction

During the first semester of 2019, coinciding with the second semester of the MSc in Innovation and Entrepreneurship in ESADE, I have been working in Gastro Ventures as a Business Operations Manager Junior. Gastro ventures is a start-up that works with gastronomic innovation applied to the whole food industry, from products to hotels and restaurants.

One of the projects in which the company is involved in is with a high-standing hotel in Spain. From the start of the development of this collaboration, several issues and challenges regarding the efficiency of the operation of its restaurant have arisen. Part of my work in the company was to analyze such circumstances and provide a potential solution in the form of a tool.

Additionally to solving the problems unveiled, and aligned with Gastro Venture's values regarding sustainability, it is important that such solution takes into account Circular Cuisine, the specific application of Circular Economy to the food industry. The enforcement of this model has substantial benefits both to the environment and the economic health of the company, since its main goal is to redesign waste with the aim of turning it into an asset rather than being something disposable.

The aim of this In Company Project memoir is to give a detailed explanation of the work carried out during these months and to set the next steps and recommendations considered.

2. Description of the Company

Gastro Ventures is start-up specialized in Gastronomy Innovation. It was born in 2018 and it's located in Creapolis – Sant Cugat del Vallès. Gastro Ventures is a holding which operates into three differentiated gastronomy business areas:

- (i) **Gastronomy Solutions** brings innovative solutions to the food industry. With the most disruptive methodologies, processes, and ingredients from Haute Cuisine, we design products and processes for the industry. Our methodology for the industry focuses on scalability, life span, costs, and standardization.
- (ii) **Carrot Culinary Management** manages Gastronomy Proposals of some top luxury hotels. Our services can range from a menu design to an overall implementation and execution of the gastronomic proposal, including training and economic profitability.
- (iii) **Koete Food** manages its own Venture Builder where we work on innovative products from the conceptualization up to market launch and commercialization.

The three founders of the company are Jordi Gamez (former CEO of Rakuten Spain), Pere Planagumà (former Head of Cuisine in *El Cellar de Can Roca**** and in *Les Cols****) and Pere Castells (former Head of Science in *El Bulli****).

The development of the project in hand is part of Carrot Culinary Management. More specifically Carrot is currently managing the restaurant of a high-standing hotel in Spain. This project will therefore be contextualized in the specifications of this luxury hotel.

3. Description of the Project

3.1. Carrot CM and the Hotel

As previously mentioned, Carrot Culinary Management provides a wide range of services to high-end hotels and restaurants. Every project of Carrot CM is tailor-made to the needs of the business, and therefore it is fundamental to understand the specific relationship between these two parties.

Carrot CM is in charge of managing the following aspects of the gastronomic experience in the high-standing hotel mentioned in the previous sections:

- (i) Design the elaborations and semielaborations¹
- (ii) Design the beverages menu
- (iii) Design the menus for the restaurant
- (iv) Design the menus for the other areas of the hotel such as SPA, room service or special events
- (v) Train the chefs
- (vi) Train the barmen
- (vii) Train the rest of the staff

All this bearing in mind that the ultimate goal is to offer a profitable proposal. So far, Carrot CM has managed to increase the hotel's revenue by decreasing costs while improving considerable the quality of the gastronomic experience.

¹ A semielaboration is a preparation that serves as an ingredient for an elaboration. An example could be chicken broth; it requires preparation but it's not sold by itself.

3.2. Description of the Problem

While working with the hotel, a few issues have revealed to be crucial to the development of this project. The motivation behind it is fourfold - the overall idea of it being inefficiency of the following processes:

(i) Recipes

The chef has not a clear format or template for recipe creation. The process is not standardized and a consequence of that is decentralization of recipes. Another implication is that the rest of the staff can't have access to that information and therefore the flow between the parties is non-existent. Additionally, the process is rather slow since the cost of every elaboration must be calculated by hand and decide the price accordingly.

(ii) Menus

Similarly to the recipe creation, the menus' details are not centralized nor common to the staff of the hotel. Also, the cost must be calculated individually for each menu so that the price (if it's a degustation menu) is fixed accordingly – and that is a very inefficient process.

(iii) Lack of data-base

Generally speaking, there is a need for a global data-base that includes the ingredients, the semielaborations, the elaborations and the menus with all the associated information such as costs, quantities, price and so on. A fundamental piece of information that must include the data-base is the dependencies between all the products.

(iv) Groceries

Finally, the process of grocery shopping is based on stock revisions done once every trimester and on consumption rather than by detailed demand data and consumption trends. In that area, an automated system would prove very useful to avoid stock-out or too much stock.

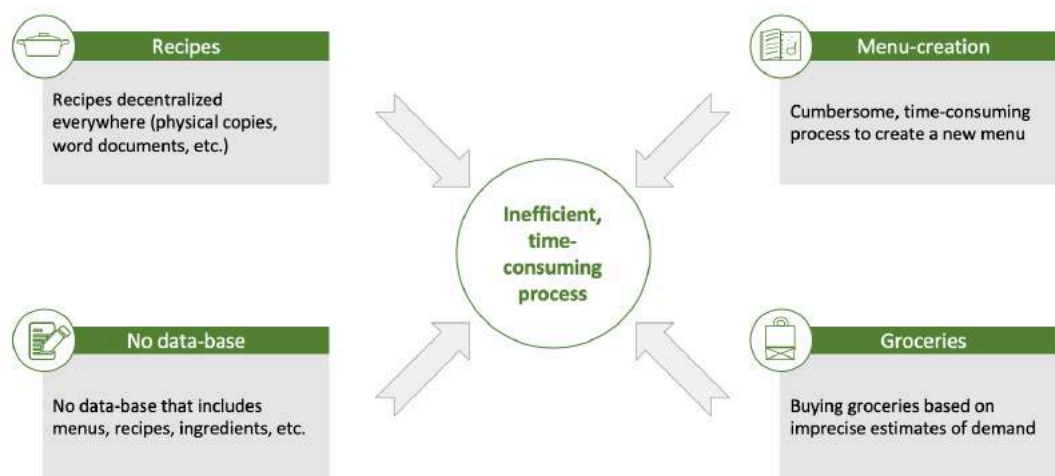


Figure 1. Motivations behind the project

3.3. Additional Incentives

3.3.1. Definition of Circular Economy

According to Trudy Rood – expert on the field of Circular Economy applied to the food industry: “A circular economy is targeted at making optimum use of natural resources, raw materials and products and re-using them. This means that all resources are still used in a way which adds the most value to the economy and causes the least damage to the environment. The aim of a Circular Economy is to use natural resources for longer and as far as possible avoid waste and environmental pollution.”² It changes the current extractive and linear model to a more environmentally and socially regenerative one.

In order to achieve that end, it is relevant to remark the importance of the design process entailed in this model – since waste is no longer something disposable and rather a new asset to take into consideration its design is crucial to the system, so that a gradual decoupling of economic activity from the consumption of finite resources is possible³. The Ellen McArthur Foundation remarks the importance of not only design out waste but also pollution⁴.

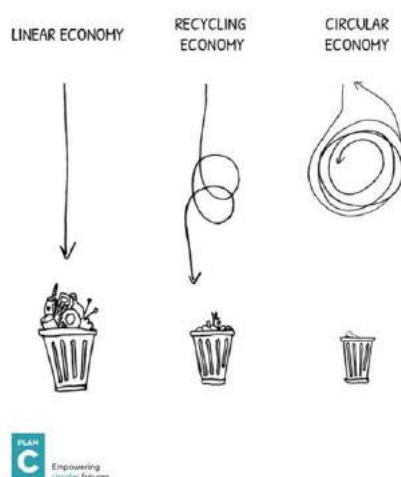


Illustration 1. Linear vs. Circular Economy.
Source: Seattle Made³

² For further information see Reference [6].

³ For further information see Reference [1].

⁴ For further information see Reference [7].

3.3.2. Definition of Circular Cuisine

Circular Cuisine is the specific practice of the Circular Economy model applied to the food industry. The similar term Circular Cooking was trademarked by the Michelin Star chef Iglés Corelli⁵ but in Gastro Ventures the term *cuisine* is preferred because its application spectrum is broader – the company not only wants to apply the concept to the restaurants but in its gastronomic products as well. But the core idea remains the same: waste must be redesigned and minimized.

The Ellen McArthur Foundation⁶ defines three ambitions in this area that would completely change the scenario: source food grown regeneratively, and locally where appropriate; Make the most of food and Design and market healthier food products. If appropriately applied, these three ambitions in cities could generate annual benefits worth USD 2.7 trillion by 2050.

Trudy Rood has identified three requirements for an optimum circular food system⁷:

- (i) Natural resources must be effectively used and managed.
- (ii) Optimum use of food is important. Reducing food waste is an important starting point in this context.
- (iii) Optimum use of residue streams, such as tomato stalks, beet pulp and stale bread. In this way, as little biomass as possible will be lost.

⁵ For further information see Reference [4].

⁶ For further information see Reference [2].

⁷ For further information see Reference [6].

Gastro Ventures has the Circular Cuisine model embedded in its core values, and that can be seen – among others – in a *garum*⁸ sauce that its branch Koete Food (the Venture Builder) launched a few months ago under the name of ESCATA⁹.

Koete Food realized that in the process of preparing anchovies these are put in water for several days. This water – which was previously thrown away – is what the chef Pere Planagumà turned into a sauce. Additionally, Koete Food contacted a company that was throwing away some bottles when they didn't need them for their production - as it usually happens, it is cheaper and easier to throw away perfectly good resources rather than manage their reuse - and came to an agreement with them so that they could use this bottles in exchange for managing the needed arrangements.

The confluence of all this waste results into a high-quality gourmet product. As Igles Corelli puts it: "Circularity means quality, efficiency and sustainability. These are the three features of any healthy economic process."¹⁰.

3.3.3. *Application to the Project*

After seeing what Circular Economy looks like in the food industry under the name of Circular Cuisine, let us proceed to see how this model applies to the present project. As previously mentioned, Carrot CM manages the gastronomic experience in a luxury hotel, and part of the service is the elaboration and menu design. In that area is where Circular Cuisine becomes relevant, since it is fundamental to reduce the streams of waste, present in every kitchen.

⁸ *Garum* is one of the basic ingredients in the cuisine of Roman and Greek antiquity. It is a fish sauce that was used to salt dishes and enhance its flavors as common salt does. For further information see Reference [5].

⁹ For further information see Reference [3].

¹⁰ For further information see Reference [4].

Circularity in this context means using the same ingredients in various ways to use it in its entirety. This not only has positive sustainability effects but also economic ones, proving to be a very appealing model. A very simple but clear example of this is with a steak of beef. With the piece of meat bought to prepare a steak, the extra meat is usually considered waste. This remaining meat though can be used to prepare croquettes. And with the waste of the croquettes elaboration – for instance the bones – a meat broth can be prepared. And of course the bones can be composted to enrich the soil of the kitchen garden.

Although the example above is very simple, that is not always the case. This is why this is only feasible at a certain level of cooking, where innovation and technology are present – which is the case of the hotel at hand.

4. Proposed Solution

4.1. Overview

After considering the problematic presented in the lines above, Gastro Venture's CEO started ideating a tool that could solve such inefficiencies and he put me in charge of developing the first prototypes and pilots.

The overall idea was to create a program that allowed Gastro Ventures understand the profitability of the hotel's restaurant to the last detail, and that would also help the Chef and kitchen staff manage the details of the menus and the interactions between elaborations so that Circular Cuisine could be easily implemented.

4.2. Glossary of Concepts

Donor: an elaboration or semielaboration is a *donor* if an ingredient used to prepare it is later on used to create another elaboration or semielaboration, and that this part of the ingredient would otherwise be considered waste. This is part of the Circular Cuisine model.

Elaboration: an *elaboration* is a dish that is ready to be served in the restaurant. The elaboration can have a price, or may be part of a degustation menu and therefore its price won't be set since the menu will have a fixed price. See *Figure 2* to see an example.

Ingredient: and *ingredient* is a raw material used to prepare either a semielaboration or elaboration. This *ingredient* is a product that has not been processed by the restaurant in any way – it has been bought in that form. See *Figure 2* to see an example.

Menu: a *menu* is a group of elaborations presented in a restaurant for the end consumer. This *menu* can be either “à la carte”, meaning that the consumer can choose the amount

of elaborations and pay for them individually, or it can be a degustation *menu* that the consumer orders and pays in its totality. See *Figure 2* to see an example.

Recipient: an elaboration or semielaboration is a recipient if an ingredient used to prepare another elaboration or semielaboration is used to prepare the present one and would otherwise be thrown away as waste. This is part of the Circular Cuisine model.

Semielaboration: a *semielaboration* is a prepared product that serves as a component of an elaboration or another *semielaboration*. For example, Chicken Broth is a *semielaboration* that can be used to prepare the elaboration Vichyssoise. It can be made of ingredients and other *semielaborations*. See *Figure 2* to see an example.

Waste: the *waste* of an ingredient is the percentage of that ingredient that is thrown away without being used to prepare an elaboration or semielaboration. If an ingredient has gone bad and the restaurant needs to throw it away it is not considered *waste* in this context but loss of stock that of course must be rectified using predictive trends of purchase.

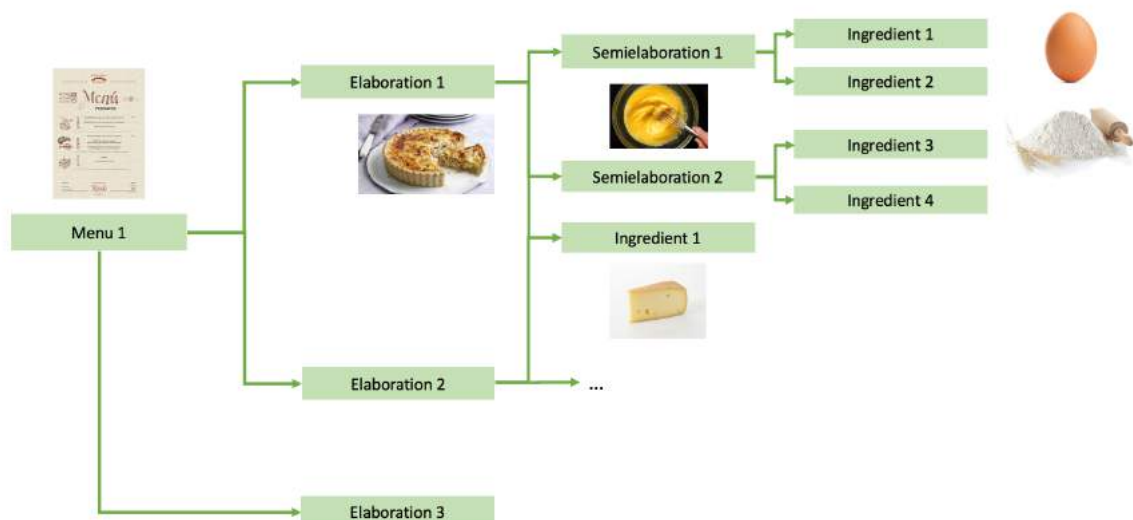


Figure 2. Example of how a Menu is structured

4.3. Detailed Solution

As it was previously stated, this tool must provide a deep analysis of the restaurant. To do so, the idea is to go bottom-up from the details of the elaborations to the overall financial analysis of the restaurant. Consequently, the program was ideated to have three main parts: Gastronomy, Demand and P&L.

4.3.1. *Gastronomy*

This block needs to entail the following functions:

- (i) To serve as a data base of ingredients, semielaborations, elaborations and menus.
- (ii) To be used to create such semielaborations, elaborations and menus. Such creation must be ideated to incorporate the Circular Cuisine model.
- (iii) To be consulted to know the details – such as quantities, cost, profit margin or average waste - of any ingredient, semielaboration, elaboration or menu.
- (iv) Circular Cuisine Analysis: to understand and analyze the dependencies between elaborations and see what ingredients are being wasted the most and therefore understand the whole menus efficiency.

The following illustrations are the first sketches done during the ideation process of what the Chef block of the tool should look like.

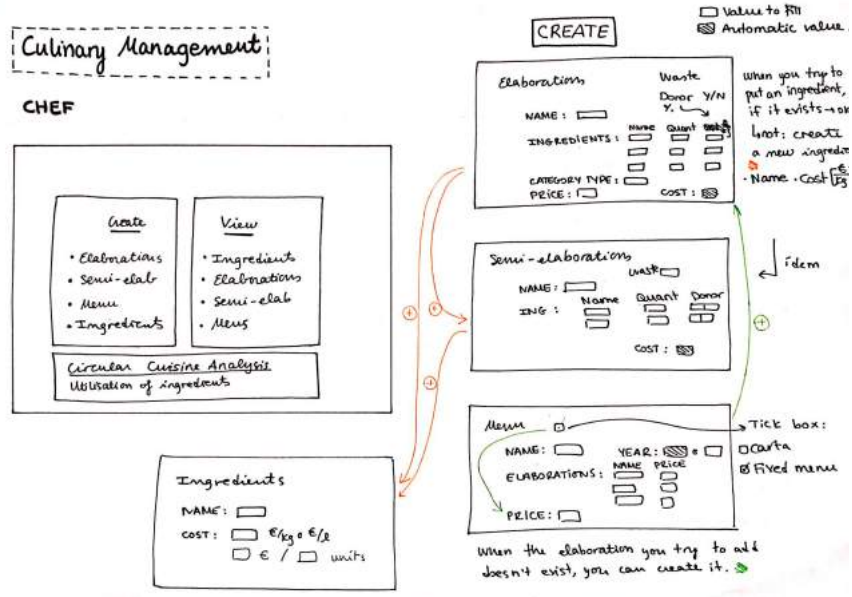


Illustration 2. First sketches of the Chef block (I)



Illustration 3. First sketches of the Chef block (II)

4.3.2. Demand

After the detail of the elaboration and other products is presented and analyzed, that information has to be crossed with the demand of each elaboration or menu. With that information, knowing the costs and profit margins from the first block, the revenues can

be calculated. Also, by adding the purchases done by the restaurant the stock can be calculated.

In this area of the program it is also interesting to add trends on the demand based on the historic data available, as well as the inventory trends to be able to predict the purchasing more efficiently. And finally, the Circular Cuisine Analysis in economic terms must be studied in this block: information such as money saved by applying the model should appear.

The following illustration is a first sketch done during the ideation process of what the Demand block of the tool should look like.

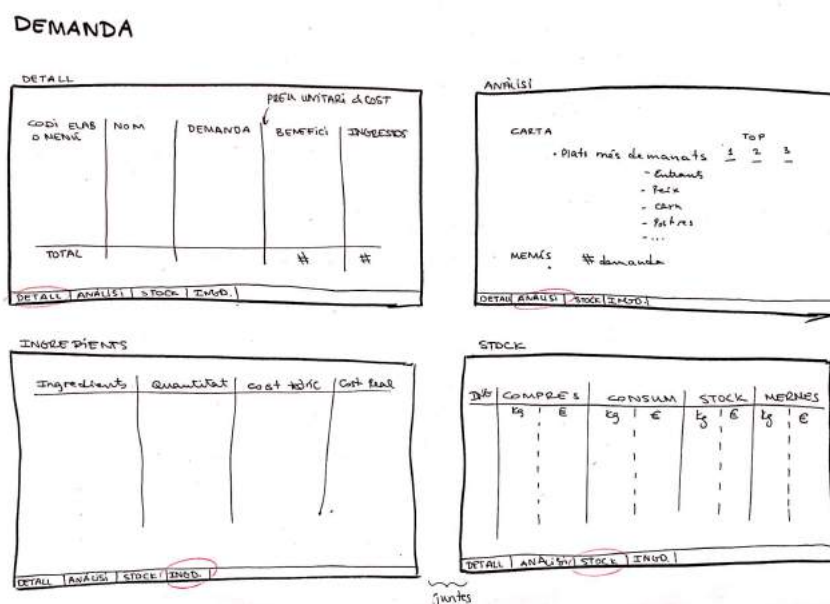


Illustration 4. First sketches of the Demand block

4.3.3. P&L

Once the revenues are calculated in the second block, by incorporating the information regarding the other expenses of the restaurant, the P&L of the restaurant can be created.

4.4. Pilot Implementation

4.4.1. Selection of the Coding Language

Once the definition of the different blocks and features each one ought to have were defined, it was time to prepare a pilot of the program. In order to do so, the program EXCEL was selected, for various reasons:

- (i) So that everyone could access the program taking advantage of the Microsoft Office software penetration in businesses.
- (ii) Because I was taking a course on EXCEL VBA in ESADE so I was learning how to code in VBA language.
- (iii) Because of the flexibility and different interfaces EXCEL has; it is relatively easy to program and obtain a good user experience.
- (iv) Because it is compatible in both Windows and Mac Operation Systems¹¹.

Once the coding language was selected, it was time to start preparing the structure of the program so mistakes and iterations while coding were avoided.

4.4.2. Description of the Pilot

Taking into consideration the user experience of the program, it was decided to divide it in two main parts: the Chef part and the Manager One. The logic and relationship of these parts are shown in *Figure 3*, where the previously mentioned database is shown, as well as the sales and inventory functions.

¹¹ Later on, it was discovered that one part of the coding needed for the program is not compatible with MacOS and therefore the program can be only used using Windows.

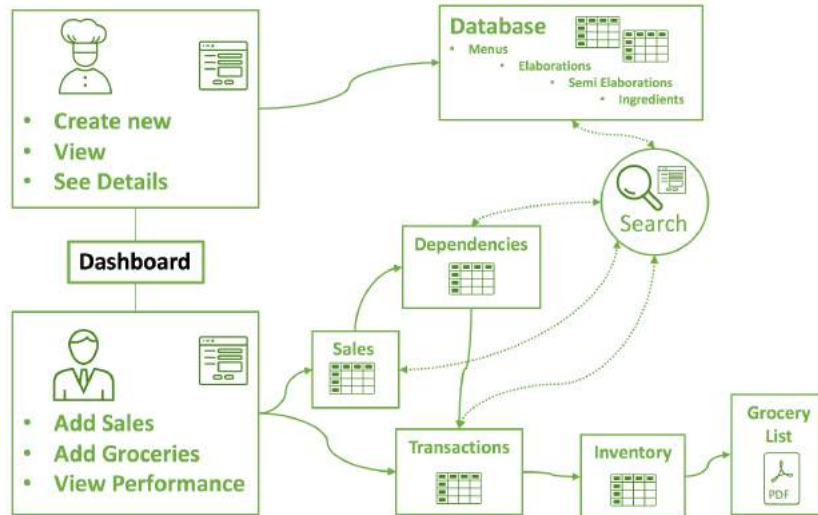


Figure 3. Representation of the logic of the program

The Chef and Manager parts and its specific functions can be accessed from the general Dashboard seen in *Illustration 5*. For a clear overview of the program, a video has been made with a demo and has been submitted as a deliverable together with the memoir.

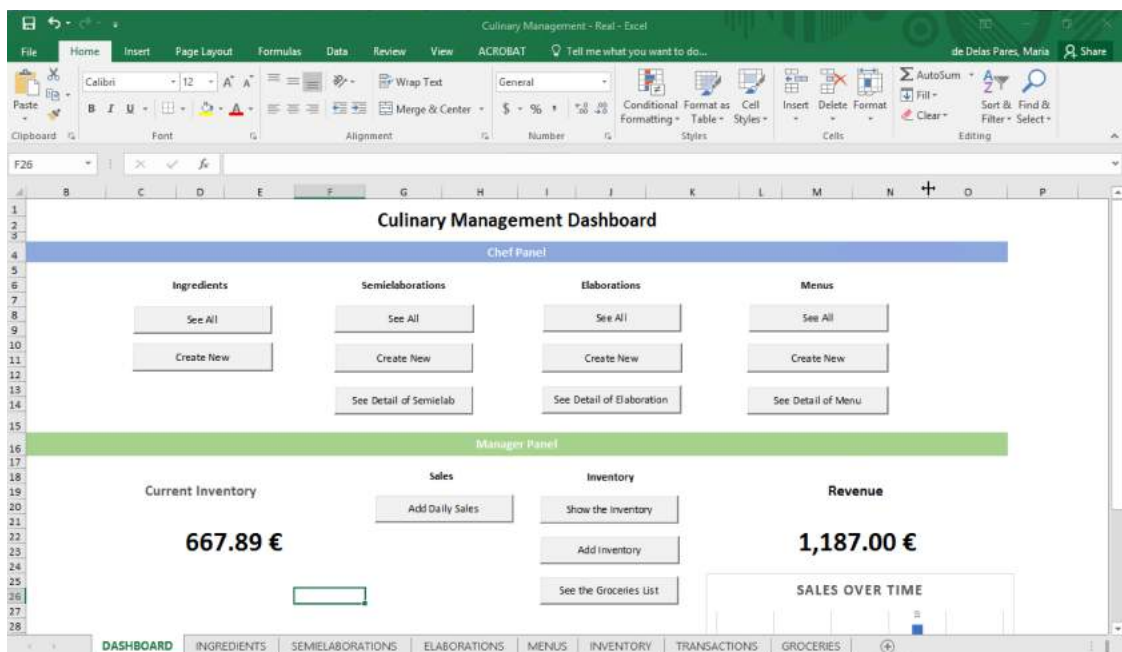


Illustration 5. Screenshot of the Dashboard of the program

The Search engine present in *Illustration 6* is a crucial element of this program since it is accessed from every part. It is used to look for an ingredient, semielaboration, elaboration or menu. In the *Illustration 6* the Search engine is shown, with the example of looking for ingredients that contains a “c” and then changing it to semielaborations.

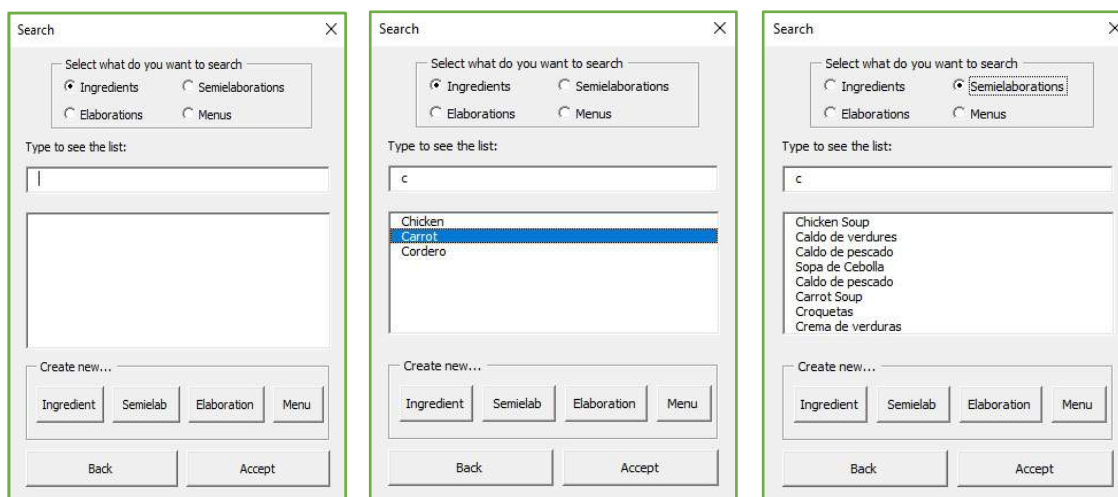


Illustration 6. Screenshots of the Search engine while being used to search ingredients and semielaborations containing a "c"

(i) Chef Part

This part is the Gastronomy block defined in 4.3.1. To see an example of how the program works some screenshots for the Semielaborations part are shown in *Figure 4*. The functioning of the Ingredients, Elaboration and Menus is similar to this one. For further understanding watch the video together with this memoir.

(ii) Manager Part

This part was designed to contain both the Demand and the P&L blocks defined in 4.3.2 and 4.3.3 respectively. A selection of screenshots is presented in *Figure 5* to better understand the functioning of the program. For further understanding watch the video together with this memoir.

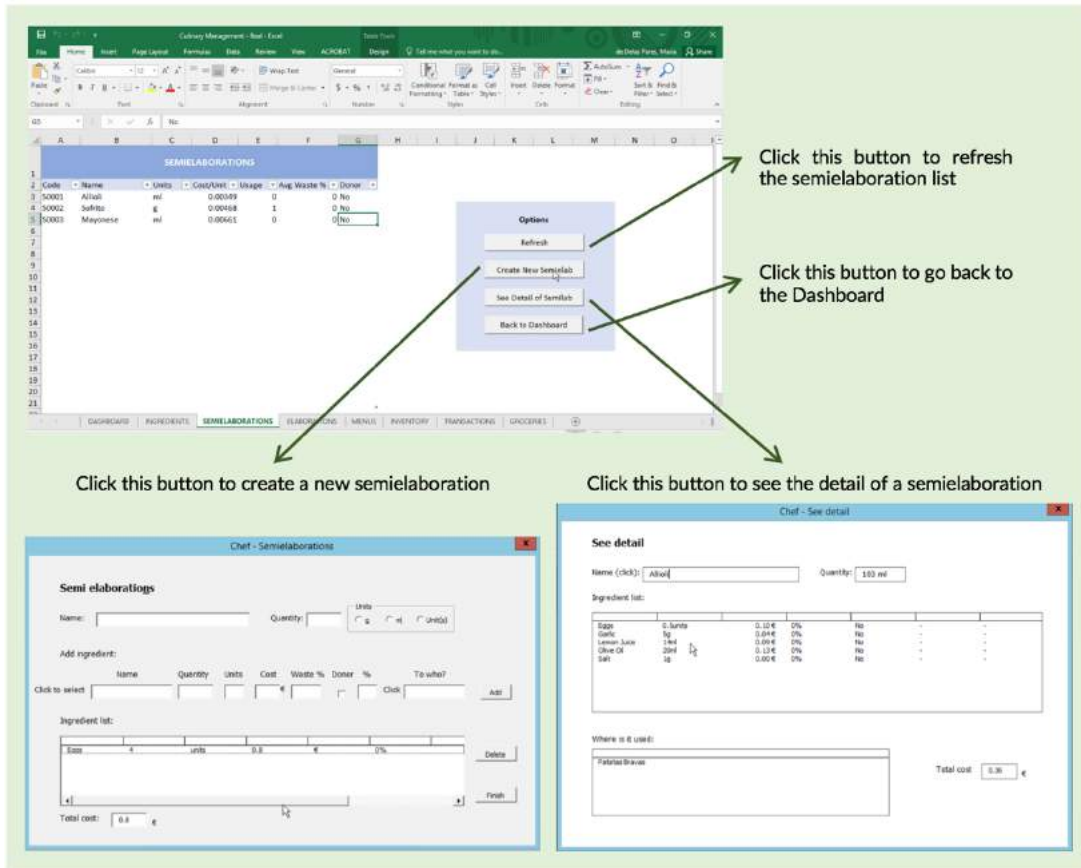


Figure 5. Screenshots of the Semielaborations part

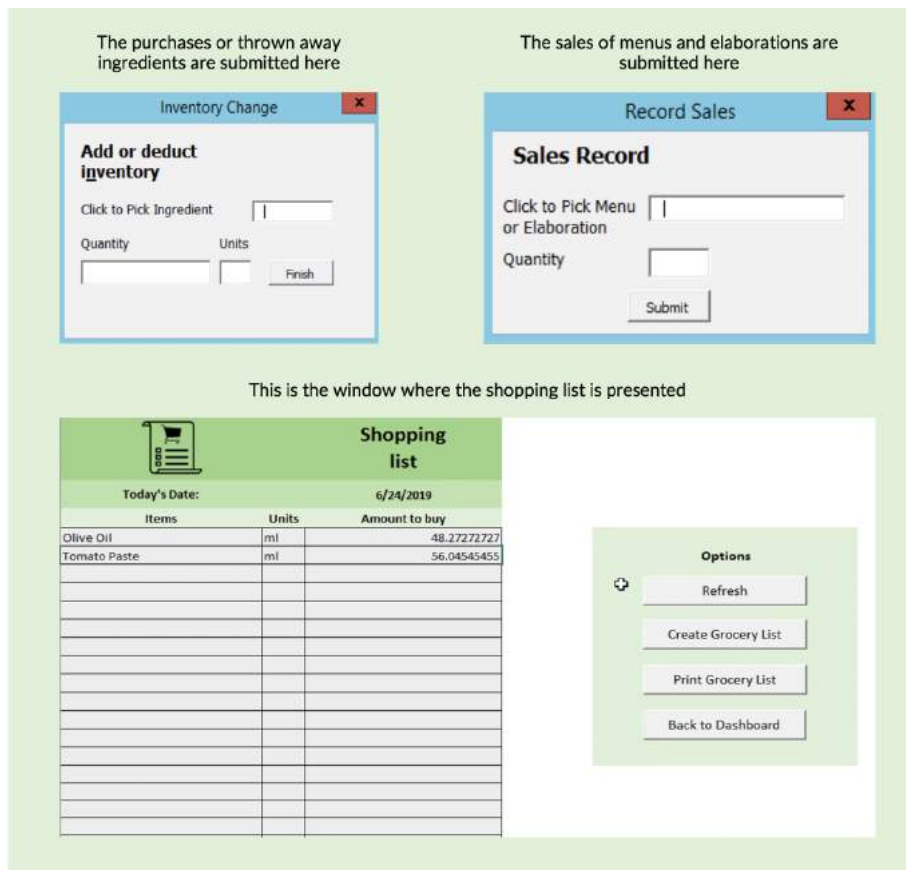


Figure 4. Screenshots of the Manager block

Once the Demand and Inventory part were finished, it was already foreseeable that the usage of this pilot would not be feasible, and therefore it was time to stop coding and analyze the problems that had arisen throughout the development of this trial.

4.4.3. *Analysis and Learnings*

During the development of this tool several issues made us aware that this pilot would not be able to be used by the hotel nor by Gastro Ventures. These are the following:

- (i) As it can be seen in the Figures in this memoir and in the demo video, there are not many ingredients, semielaborations, elaborations and menus imputed in the tool so far. However, the tool is already a bit slow – making it not feasible since the tool would need to have thousands of components and the user experience would not be as expected.
- (ii) Since this tool is thought to be used by several users, it is not realistic that it is an excel document, since it is not efficient to send the new versions back and forth and is not feasible to use a cloud because there are some functions of the code that require to be linked to a specific computer.
- (iii) Although in the demo video or descriptions it might seem that the program is robust, it is not. It has many bugs that would take weeks to solve, and since this program was ideated to be used by a hotel, it is not reasonable to provide them with a fragile program.
- (iv) As it usually happens with coding, while it was being developed the complexity made itself evident. Although the tool has already in place mechanisms to set if an elaboration or semielaboration is a donor, the program is lacking all the dependencies of Circular Cuisine Analysis to study the current state of the efficiency of the restaurant. This dependencies analysis is extremely complex to code and would take a long time to set ready and even then, the program might be already too heavy.

These issues made it evident the need of rethinking the project. But the development of this tool also proved the need of such program, since the implementation of such tool would increase the efficiency of the restaurant considerably.

4.4.4. Next Steps

As for how to continue this project - since it has proved the need of such tool – the next steps are to look for a programmer that can code a software with the functions described in this memoir and taking as an example the Pilot developed so far, since the general structure will remain the same, it's the back-end that requires most changes.

Since the investment to hire a programmer to code this tool is very high, my proposal to the company is to present it as a business opportunity: once the program is done the company can sell it to other restaurants that might find it useful.

5. Conclusions

During the development of this project, an unexpected level of complexity has been found. This complexity is mostly related to the Circular Cuisine analysis and the extended number of users the tool is designed to have as seen in 4.3. Because of this found difficulties, it was no longer feasible to continue with the Pilot since Excel was no longer a realistic option to develop it, and the code was getting too complex for someone without specific training.

However, the tool described in this project successfully solves the problems presented in 3.2 regarding the inefficiencies in the design and data storing process of the ingredients, semielaborations, elaborations and menus. The functionalities described also cover the Circular Cuisine requirements presented in 3.3.3, although these ones haven't been implemented in the pilot.

Nevertheless, precisely because of the project's complexity the tool is so attractive, since it would solve key challenges that restaurants face on daily bases and would provide them with a unique methodology to implement Circular Cuisine in their kitchen. That is especially relevant to the project, since Circular Economy is not only a trend but the ultimate solution to the current extractive and destructive linear model as seen in 3.3.2.

The developed Pilot provides the guidelines to continue and implement the project in the future. My recommendation to Gastro Ventures is to leverage this project and hire a software developer to code this tool, taking advantage of the synergies that will take place because of the detail into which this project has deepened. And once this software is up and running, Gastro Ventures can use it in all its projects with Carrot Culinary Management and sell it to other restaurants and hotels that might be interested in optimizing their processes.

6. References

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