# Politecnico di Torino

Corso di Laurea **INGEGNERIA GESTIONALE (ENGINEERING AND MANAGEMENT)**
A.a. 2020/2021
Sessione di Laurea Mese Anno

# Business model innovation in the food delivery industry:

## The increasing roles of delivery models and sustainability

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Accademic year 2020/2021

To encapsulate on one page all the people who have enabled me to achieve this goal is not possible. A Harvard-led study in which researchers studied participants' health development, their work successes and failures, their marriages, and their divorces over a lifetime showed that interpersonal relationships, more than money or fame, are what makes people happy throughout their lives. These bonds protect people from life's difficulties, counteract mental and physical decline, and are the best predictors of long and happy lives.

All of the relationships I have created over the years have been instrumental in achieving this goal and most importantly being happy as I travel this college journey. So I would like to thank all the people I know because they have helped me grow and become the person I am now. I thank my father, my mother, Gianpiero, Paola my big family who has always encouraged me to follow my dreams. I thank my sister Valentina who put up with me being absent-minded and messy. I would like to thank Bibi, Dila, Fede, Flavio, Gabri, Gigi, Manu, Mini, Pons, Sbatta, Tissi, my childhood friends who have seen me grow up, make mistakes, go as far away as Australia and yet have always transmitted to me their closeness and support. I would like to thank Andrea, Federico, Federica, Fosc, Gio, Serena, Teo, my friends from the university with whom in a short time a very deep relationship has been created and who have given lightness to this journey. I thank Giovanni, Lorenzo, Massimiliano who are friends before being colleagues. I thank Valerio with whom I shared the most beautiful journeys of my life and who has become a big brother to me.

Thank you all, I love you!

Finally, I thank myself, there have been times when going forward has been difficult but I had the certainty that no matter how difficult the road was I would not give up to take a step forward. This is perhaps, together with all the people I have met, the greatest gift that the Politecnico di Torino has given me.

*ABSTRACT*

The world of catering in recent years has undergone substantial changes and specifically, in the world of delivery, we have seen a revolution in terms of volume and quality of service. The pandemic of covid 19 has, even more, accelerated this process of change by transforming the habits of people and forcing even the most sceptical to approach this technology. In recent years, many foods delivery companies have sprung up that work with restaurants and manage their delivery. Because of this and the historical moment in which we live at an environmental level, the concept of sustainability has also impacted this industry. Many people have become sensitive to this issue. This has led many players in this industry to adapt to respond in an innovative way to the problem of sustainability. In this scenario and considering my entrepreneurial aspirations, the idea of developing an innovative sustainable pizzeria that guarantees a punctual delivery and with eco-sustainable means of transport was born. The purpose of this work was to analyse the current situation in the delivery industry and pizzeria chains and how sustainability has impacted these markets. It is also deepened, the concept of sustainability by defining what are the key metrics to define a sustainable business with a focus on the world of catering. The objective is to develop a business plan for a restaurant that respects the parameters of sustainability and is based on a circular economy without losing sight of economic profitability. From a practical point of view, this study proposes an overview of the most common and adopted practices that can be implemented to achieve sustainable development and the degree of implementation of these practices and their impacts in the restaurant industry.

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## *General Introduction*

It is widely recognized that the food industry plays an important role in every individual's life and is being affected by the great innovations developed in these years. Technological evolution has substantially modified people's habits. Many delivery services have been created that allow receiving comfortably at home practically any dish that we want, increasing the possibility of sales for restaurants but also reducing the margins of gain of the latter in favour of the big players of delivery. Covid 19 also spurred the growth of this industry because even those who were less accustomed to using delivery services were forced to learn. After all, it was the only way allowed to receive prepared food during the harshest periods of the pandemic.

In addition to this, the sustainable development goal has led food companies to deal with sustainability requirements. They require the implementation of sustainable practices that have the dual objective of improving the overall performance of the company itself and fulfilling the sustainable development goals. Therefore, through a systematic literature review, this project aims to propose a new business model for pizza home delivery by implementing new technological innovations and sustainable practices to be economically feasible and sustainable. The document is structured as follow:

- *Part 1 – Food delivery*. First, the evolution of food delivery up to the present day is described. Then, the main models diffused at this moment and future developments of this industry in continuous evolution are discussed.
- *Part 2 – Sustainability.* First, relevant theoretical concepts are introduced. Then, by exploiting the established and rigorous systematic literature review methodology, sustainable best management practices that companies operating in the food sector should implement to reach the Sustainable Development target are defined. All the practices identified are introduced as a conceptualization of a general model.
- *Part 3 - Industry analysis:* Sustainable pizza restaurant with its delivery system. This part has analyzed the industry of the takeaway pizzerias with a focus on those who autonomously manage the deliveries without relying on existing players. The specific analysis that has been made are PESTLE, stakeholder analysis, Porter's five competition, customer personas, competition analysis (SWOT) and price and positioning.

- *Part 4 – Delivery sustainable pizza restaurant Business Model Innovation.* In the last part of this thesis, it is proposed a new model of pizzeria of take-away based on the analyses carried out in the previous parts and on the experience matured in years of job in restaurants.

# 1 PART 1 – FOOD DELIVERY

## 1.1 HISTORY EXCURSUS

### In India

The first delivery food firm was "Debbawala" [1] born in India in 1890. The concept of Dabbawala originated in India with British rule many Brits who populated the colony did not like local food, so a lunch delivery service was created for those who lived far from their workplace. Deliveries are still made mainly with bicycles and trains on the rail network. Every employee of the Dabbawala, regardless of where he works, receives between two and four thousand rupees a month, equivalent to 60 dollars.

### America

In American [2] history instead, already over 1700 colonial hotels in big cities advertise that "families can be provided with dishes of any kind every day, cooked the same day, by sending their servants for delivery. After the Civil War, lunches prepared by restaurants and packed in take-out boxes became widespread. Takeaway lunches in the early 1900s became an inevitable part of life for the urban working classes of all races. After the Second World War, the concept of delivery took off across a broader swath of the restaurant world. The television goes inside to many American families who start increasingly spent their leisure time in their own homes glued to the boob tube, restaurants saw their profits steadily declining. For this reason, many restaurants start to send prepared food directly home and those eating houses that started offering their customers that service in the early 1950s showed sales increases of 20 to 50 per cent in a single year.

Delivery is taking on newer and more convenient forms in today's ever-changing technological landscape. There is of course the model championed by industry giant Seamless, which allows users to order food delivery with the touch of an app, but supermarkets like Whole Foods and Tesco will also now deliver groceries straight to one's door while companies like Blue Apron will send to hungry shoppers ready-to-cook meals. In recent years, the food delivery space has become one of the biggest and most lucrative in the tech world; in 2014, venture capitalists invested over $1 billion in the field, knowing full well that humans of whatever century will always be hungry— and will always be looking for a quick and convenient bite to eat.

*Italy and Europe*

In Italy [3], the home delivery service developed thanks to the impetus of the first activities that carried out mail-order sales through catalogues such as the Milanese Postal Market, founded in 1958. However, this formula was not without imperfections: orders often arrived late, and the need for buyers to personally test the products before buying them was still deeply rooted.

Other forms of direct sales that have established themselves in the following years are those the party plan, home demonstrations, telephone invitations and door-to-door sales; All these formulas had an immediate initial success, as the consumer received individual attention for the first time and was made at ease thanks to the comfortable atmosphere of their home.

In the frozen food sector, two large companies established themselves: Bofrost and Eismann, the business model of the two companies consisted in offering a wide range of frozen products (including pizzas, vegetables, fish, meat, ice cream, ready meals) delivered directly to customer's home, according to the time and day of delivery.

The companies took care of periodically providing the customer with a new catalogue, updated on the various products available, orders were made by calling the call-centre or following the visit made by the representative.

Leaping a few years, in the world of e-grocery [4], in the European panorama since the 90s, several supermarkets have decided to operate online, the most relevant was Tesco, a famous English chain that used and a strategy between tax and visual channels. for the sale of its products.

In Italy, the pioneer was the Volendo.com site, a local reality that was born in Monza in 2000 to offer a home shopping service for the Milan area and province.

Immediately it did not have great success, due to a mistake in choosing the target to turn to, given the company thought of housewives, at a time when online purchases in our country were not very widespread. Later, however, the graphics were improved, and the target audience was changed, focusing on wealthy men and women aged between 25 and 45, often working and single. To favour this target, volendo.com entered into commercial agreements with numerous Milanese companies, to which they offered discounts on orders placed. They also made logistics more flexible, giving users the ability to receive groceries not only at home but also in the office. Thanks to these improvements, the company was able to get the business off the ground, making volendo.com the reference point for online shopping until 2008, in the Milan area and province.

In the 2000s, another important reality was born in Denmark that is still present in the food delivery market, Just Eat, founded by five Danish entrepreneurs. The company that established itself in the Italian market and which still has an 80% market share, and this makes it a leader in the sector, continuing to expand with a 97% presence in Italian cities with more than 50,000 inhabitants.

In 2004, delivery was also tested in Italian large-scale distribution, the first was Esselunga, but it was unsuccessful, this was due to a low willingness of the consumer to try the service and to a poor marketing communication strategy used.

In 2013, the coop also experimented with the world of digital with the opening of a portal for electronic commerce.

Another great food delivery company is Deliveroo, founded in 2013, based in London was founded by two US entrepreneurs, has a business model similar to the other Danish giant Just Eat. In the wholesale distribution in Italy, the birth of delivery in Metro in a structured way since 2014 to meet the new market needs, especially to serve HoReCa customers.



**Historical evolution of food delivery**

1980: Birth of the Dabbawalas (INDIA)

1950: Take-away menus advertised on TV (USA)

1958: Sales through catalogs (ITALY)

1994: Pizza hut realize the first website (USA)

2000: Foundation of Just Eat (Denmark)

2004: Delivery service in the first supermarket: Esselunga (ITALY)

2014: Glovo Foundation (SPAIN)

*Figure 1 - Historical evolution of food industry 1980-2014 [64]*

Glovo was born in Spain in 2014, a start-up that offers an on-demand service that purchases, collects, and delivers the products ordered through its app. In 2019 it expanded into more than 26 countries offering its service in more than 200 cities around the world.

## 1.2   4 MODELS OF FOOD DELIVERY

Arriving, therefore, on the market of the 21st century, the demand for food delivery had radically changed its structure, it was no longer a question of necessity, but a question dictated by reasons of comfort and imposed by the lifestyle that was affirming itself. The exponential growth of the internet has influenced online retail and the development of e-commerce in general. This is because it allows for a virtually unlimited choice of products and services, such that the consumer can take a strong advantage from product personalization, interactive communication in real-time and fast delivery.

The explosion of food delivery is based on a basic psychological appeal: they promise to gratify us instantly without effort and allowing us to save time.

To achieve this goal, some opportunities have been identified for on-demand players to save users' time:

- **Decision Convenience:** make the choice of products quick and immediate, for example by showing users reviews and rankings directly on the platform, as Just Eat does.
- **Access Convenience**: provide the service quickly and at any location along the lines of Deliveroo's tagline "At home or at the office, in 32 minutes!".
- **Transaction Convenience**: give the possibility to pay easily, by credit card, PayPal or online wallets.
- **Benefits Convenience**: make the use of products or services easily pleasant, for example through special packaging solutions that improve the user experience.
- **Post-Benefit Convenience**: make the repurchase action quick and easy, for example by allowing you to save your delivery address and payment details and save your favourite restaurants.

So far there are three different business models for the home delivery of food. On the following page we will go into a little more detail and analyse the basic characteristics of each of these models [5]:

- *Only order*

In this model [5] [6], the delivery company acts as an intermediary and acts as a showcase for partner restaurants; websites and applications offer access to multiple restaurants through a single portal allowing you to compare prices, menus and reviews. This model was used by the first

generation of delivery services, such as JustEat or, in Italy, PizzaBo, which focused on the first step of the meal experience. Delivery Hero, JustEat, Waiter and Seamless have achieved global reach using this model. Most of these platforms give the customer the possibility to choose between the possibility of delivery, for restaurants that have a fleet of couriers, or the take-away service.

Only order was the first model that replaced the classic phone call with the use of online platforms. The goal of delivery companies that use this system is to involve as many restaurateurs as possible, to be able to offer as varied an offer as possible. The restaurateurs active on the platforms are mainly owners of take-away or fast-food restaurants. Therefore, applications and websites of this type do not have to deal with the delivery phase, the most expensive one. Requests for ancillary services by restaurateurs for activities belonging to this model are limited compared to the other models.

The main advantage for partner restaurants that already offered a home delivery service and who decide to rely on these platforms is to replace the telephone ordering system with a platform optimized for the web and mobile, also capable of integrating with the flow kitchen work. For those who decide to start offering a delivery service, the system offers the main advantage of acquiring new customers. Catering businesses that decide to rely on delivery-only platforms also enjoy space benefits: if they previously had a limited number of seats inside the restaurant, now their possibilities become endless as customers who order online consume their meal at home or office.

### *How is it works?*
The user usually orders through an application in which there are several restaurants nearby. After placing your order, you will receive an email or message from the application confirming the order. From the point of view of the restaurateur, the application will show the order just made and all the delivery data and the proposed delivery time that can be modified by the restaurant.
In this model, the rider who delivers is part of the restaurant staff, so the online platform has no responsibility in the subsequent phases of receipt.

One of the advantages of this model is the low fees: since these platforms do not directly deal with preparation and delivery, they tend to impose a service fee of 10-15%. Like any pure business

software, investments are highly scalable, and this leads to activities of this type to have a strong diffusion.

- *Order + Delivery*

The companies that adopt this model [5] [6] do not act solely as an aggregator, nor do they only deal with the delivery phase: they oversee two of the three strategic phases of the meal experience, order and delivery. Due to this integration, the commissions requested from restaurants are higher, around 30%. Logistics is the most onerous phase of the whole process and for this reason, some restaurateurs who rely on only order platforms decide to migrate and rely on order and delivery platforms; therefore, this model poses a potential threat to only order platforms. The growth of companies adopting this model is driven by two new consumer needs. The first need is to have a substitute for dinner in a physical restaurant: with this model, consumers can eat their meal at home with the same quality food they would enjoy in a good restaurant. Unlike the only order platforms, in fact, in this integrated model, it is also possible to select more elaborate dishes, which require longer preparation times and come from quality restaurants; some platforms also include Michelin-starred venues. The second source of demand is the replacement of meals prepared and consumed at home.

*How is it works?*

The order is made via the app or from the page of the website where a restaurant menu is loaded. Sometimes restaurants to cover part of the high commissions decide to add a surcharge to the items in the online menu so that they can cover the fee without touching their margin on the products sold. However, customers are asked to pay a flat-rate delivery cost for each order placed, which is collected directly from the order and delivery platform. When the customer places the order, a notification is sent to the couriers closest to the restaurant. To receive the notification, the latter must be connected to the system so that the platform algorithm is aware of its service status. Each courier can decide whether to accept the delivery or not; if no one accepts the job, the order will be sent to a greater number of couriers, who may have been initially excluded because they are more distant or engaged in the delivery of another meal. The work is entrusted to the first courier who accepts the assignment.

Each delivery made helps to collect data to optimize routes and collection schemes, offering a huge technological advantage to order and delivery platforms. The first platforms thus benefit from economies of scale: it will be very difficult for a new competitor to compete against these

optimized networks of restaurants and couriers once they reach maturity in a city. The higher fees collected are higher because these software and logistics companies have a significant amount of operational work to do (hiring and training couriers, equipment maintenance, shift planning). Therefore, these on-demand markets are not as easy to scale as purely software ones.

- *Fully integrated*

The fourth generation of the food delivery model [5] [6] is the one in which the restaurant is "dematerialized", becoming virtual through a vertical integration that adds food production to the order and delivery. The first laboratories and systems were born that can make dishes directly and then deliver them to your home. Companies that adopt the full-integrated model are real online restaurants. This model was born in the wake of the gig economy and has a potentially infinite number of seats, even though digital restaurants do not have a physical space for the customer to eat a meal. Compared to previous systems, this business model is more expensive because it includes both the cost of the kitchen staff and the cost of the delivery staff, which as we have seen is one of the most significant expenses. Despite this, the profit margin that can be obtained increases: for this reason, the full-integrated platforms can offer high-quality products at reasonable prices. The main advantage is the possibility of having control over all the strategic phases of the meal experience: if the work done by the whole team is well organized, customer loyalty is rapid.

For this model to spread more and more, companies need food and tools suitable for transport. As for the menu, some companies create a different one every day while others opt for a fixed card that is kept for over a week; still, other businesses create seasonal menus. The main difficulty for those who use this model lies in forecasting incoming orders, in choosing the mix of dishes and in coordinating the kitchen team with the delivery team. Imagine receiving an order every ten seconds and having to fulfil all the orders as soon as possible: it would be very difficult to coordinate the work perfectly. Offering customers, the ability to make pre-orders simplifies work, making it possible to predict demand accurately, manage the fulfilment of requests and optimize delivery times by reducing waste of raw materials.

### How is it works?

The order is placed through an application or website developed specifically for the digital restaurant. Customers can choose from a limited menu of dishes, desserts, soft drinks and snacks. Some companies allow you to order up to three days in advance or by subscription for a defined

period, while others allow you to order from the previous day or with open service. Users who use the pre-order function must specify a delivery time window in which they would like to receive the food; if instead they order live, then open service, they can choose express delivery or pre-order live. Companies that adopt this model can in turn choose between certain types and means of delivery.

Spoon Rocket, for example, keeps the dishes prepared in stoves that are inside the vehicles owned: in this way, during transport, the dish maintains the temperature and arrives hot. In Maple, however, food is prepared in a central kitchen, but some final steps are carried out by satellite kitchens located throughout the city. The hubs scattered around the city allow you to increase efficiency because the return times of the riders are reduced. Muncher uses an even different system: it drops ready meals directly from its central kitchen onto a delivery truck. The trucks themselves function as a mobile hub: each driver is assigned a certain number of packaged meals and order requests are routed automatically by the algorithm or manually by dispatchers to each driver.

The assignment of orders is managed considering the following parameters: delivery address, number of orders per slot that the rider can carry out and number of dishes that the rider can carry. Based on these factors, a driver chooses where to start deliveries based on the delivery time chosen, both in the case of pre-order and live pre-order. If two or more deliveries entrusted to the same rider have the same delivery slot, the decision is made based on the customer's position, with which the closest customer will be served first, or according to the "first come, first served" rule: in this case, the preference will go to the customers who ordered first. As they scale, the data collected on previous deliveries allows platforms to continuously optimize routes and pick-up/drop-off schemes. The first Milanese company to have adopted the full-integrated model is Foorban.

## 1.3 FOOD DELIVERY TODAY

The food delivery platforms that have emerged in recent years are many, but it is possible to identify five main competitors: Just Eat, Deliveroo, Glovo and UberEats. Since 2016, the presence of these online platforms has increased strongly in Italy, particularly in Milan, a city with an international character and always ready to capture new trends. However, the Italian market is very fragmented, and it is difficult to establish whether there is a real leader, so the struggle to grab market share from competitors is very heated. According to the B2c E-commerce Observatory [7] of Politecnico di

Milano and Netcomm, in 2019 food delivery was the leading sector of the online market with a turnover of 566 million euros. Currently, in our country, the Food & Grocery sector reaches a value of 1.6 billion, reporting growing values in all sectors, especially for Food Delivery with a growth of 566 million (+56%), according to Just Eat [8], one of the main Food Delivery services.

In 2019, only 18% of food delivery will still be through digital platforms, a figure well below the national average in other countries. Again, according to Just Eat [8], in the next three years, the amount could reach the value of one billion, showing a growth of between 30 and 34%.

An analysis by the Observatory "The World after Lockdown", curated by Nomisma [9] and Crif, shows that in 2020 seven out of ten Italians ordered ready meals from restaurants/pizzerias/other venues for take-away or home delivery and the Italians who ordered through digital platforms were 28% (+10% on 2019) while 12% directly used the website/app of the public establishment or booked through social networks, WhatsApp, phone

Analysts point out that the restrictions issued by the Italian government, with curfews for bars and restaurants, to counter the spread of the pandemic represent a possible boost to meal delivery and takeaway - the only services allowed after 6 pm in some cities - consolidating a trend already established in recent months and contributing to the growth of orders placed through online platforms and restaurant websites.

In 2020, the turnover of meal delivery in Italy reached 706 million euros with an increase of +19% compared to 2019 [10] and growth in the role of digital: about 25% of the entire home food sector is driven by online orders compared to 18% in 2019 [8]

In 2020, meal delivery sales almost quintupled compared to 2016 [10] and the consumer base is set to increase: 82% of Italians expect to use food delivery and takeaway services in 2021. A final piece of data testifying to the upward trend of the "new out of home" is that 46% of consumers are exploiting digital channels even more to order or book food: 36% plan to do so via delivery sites/apps and 19% via the online channels of restaurants/pizzerias/bars.

## 1.4　THE MOST IMPORTANT PLAYER

### *Just eat*

Just Eat is the oldest home delivery company [11]. It was founded in 2001 in Denmark by Jesper Bunch and already had 500 restaurants on its platform in 2004. Since 2007, it has been growing internationally, reaching the Netherlands and then Ireland. Its growth continued with several

acquisitions of small start-ups and a listing on the London Stock Exchange. In 2016, according to foodweb.co.uk, the London-based company achieved a 52% increase in consolidated revenues to £375.7m and gross profits of 164%. The number of people who relied on JustEat to get a hot meal delivered to their door in record time was 142 million 20 across the 13 countries in which the company operates. Today it is a leading food delivery company, and arrived in Italy in 2011, as well as in thirteen other countries, with more than 15,000 affiliated restaurants and over 100,000 meals ordered per day.

In the last two years (2019-2020) according to Milanofinanza.it [12] Just Eat had losses of 115 mln and 150 mln respectively. According to the company, these figures are a direct consequence of the acquisition and integration agreements: in this context, the latest is the one for the purchase of the US-based competitor Grub hub, announced in the summer for a value of 7.3 billion dollars. According to milanofinanza.it [12], there is also positive news on the turnover front, favoured by the boom in the delivery sector that occurred during the Covid-19 pandemic. Just Eat's revenues were 2.04 billion, up sharply from 416 million in 2019 when the group had integrated Takeaway's operations. On a combined basis, the two companies' adjusted EBITDA increased 18% to €256 million. Also on a combined basis, sales saw a 54% surge to €2.4bn, surpassing previously provided guidance of between €2.38bn and €2.4bn [12].

As far as the features of the Just Eat service are concerned, the coverage of the cities is complete and allows, in some cases, to cover even the suburbs. Delivery can be made by the restaurant or by the team of Just Eat riders. The waiting time is indicated immediately after placing the order and the cost of delivery can be free or charged depending on the restaurant, as well as the minimum cost to be able to place the order depends on the restaurant where you want to order the meal. Payment can be made by credit card, PayPal or cash on delivery.

Just Eat's value proposition is based on a wide and diverse choice of restaurants, as can be seen from their website it is possible to order from pizza to Indian food, from American hamburgers to vegetarian and from African food to Spanish tapas. Another strength of the delivery giant is its widespread presence in multiple cities, from the north to the south of the country, thus expanding potential demand and the possibility to order even in the suburbs of cities [13] On the other hand, one of the elements that diminish value is, as highlighted above, the strong discretionary nature of the service fee and the minimum order value, which varies from restaurant to restaurant and therefore poses difficulties for the consumer when choosing and comparing the various alternatives [13] .

Just Eat's intentions lay their foundations in a spirit of innovation and modernity, in fact, as the country manager of the London-based company Daniele Contini points out: 'the focus, is to drive the evolution of food consumption habits towards new ways, able to meet the needs of modern life thanks to the use of digital'. The Italian manager goes on to state how the other strength of the online platform is the wide variety of dishes offered: 'an offer able to show a variety of up to 70 available cuisines or over 300,000 dishes, thus encouraging discovery and variety in consumption' [14].

### *Deliveroo*

The home delivery company was founded in London in 2014, thanks to the intuition of Will Shu, who felt the need to order home from the best restaurants in the metropolis. In the following years, it expanded to other European countries, including Italy. As the company's website points out, their main strength is the technology that allows them to offer a competitive service to customers who refer to the company, with the aim of delivery in 32 minutes. A peculiarity of the delivery service offered by Deliveroo is the possibility of tracking the location of the rider in real-time. The company has arrived, since 2014, to operate in over 200 European cities, 11 in our country with 1,900 affiliated restaurants in our country and 35,000 worldwide. The entry into the Italian market has been profitable for the British company. In 2017 the turnover in our country for Deliveroo grew by 200% [15].

An important factor for the English company, as highlighted by their website, is the relationship with restaurateurs. As highlighted above, data in-home delivery is becoming more and more important, so Matteo Sarzana, general manager Italy for Deliveroo, interviewed by Comunicazione e Ristorazione [16], pointed out that a strong point for the company he belongs to is the sharing of customer preferences with affiliated restaurants, allowing them to optimise the offer and fully understand the customer's needs. Another important service Deliveroo has launched is Marketplace+, through which restaurateurs will manage orders by referring to the London-based company's riders and using their distribution network. Over the past year, more than 1,000 Marketplace+ restaurants have joined the platform, and today more than 2,000 have chosen to be present on Deliveroo through this specific method.

Compared to the 89 locations where the service was present last year, Marketplace+ has now expanded to 130 cities where it is active. This growth has followed the stages of territorial expansion in all Italian regions over the last year. Concerning the total number of restaurants, the cities with the highest number of M+ restaurants are Pescara, Bologna and Turin [17].

"This service," said Matteo Sarzana [17], General Manager Deliveroo Italy, "represents one of the best examples of how Deliveroo supports the restaurant sector, particularly smaller businesses. Restaurants grow by joining our platform. And we grow with them, giving our customers the possibility to expand their choice, with new menus and new cuisines, with the same quality of service as always".

The main characteristics of the Deliveroo service in Italy are that it has complete coverage in the cities, but practically no coverage in the suburbs. The average waiting time is around 32 minutes, but customers can get a more precise and detailed estimate when choosing their menu. The cost of the delivery service is €2.50 with a minimum order of €15. Payment, which is made at the end of the order, can be made either by credit card or via PayPal.

Deliveroo's strengths lie in the fact that it provides various possibilities of obtaining discounts for oneself or friends. In addition, as mentioned above, thanks to the strong technological development of the application, it is possible to follow the courier throughout the delivery process via GPS. In addition, the customer is immediately notified by customer service by phone if there is a delay of 10 minutes or more. In the event of a delay, the customer is reimbursed, not instantly, but with a credit for the next order. On the other hand, there is not a wide choice in the suburbs of participating restaurants and, in case of delays of more than ten minutes due to exceptional events, the application hardly updates and cannot guarantee an adequate estimate of the delivery time [13].

*Glovo*

Glovo was founded in Barcelona in 2015 by Sacha Michaud and Oscar Pierre and is a company that deals with the logistics of various sectors it not only sends food via its app but all kinds of products. Through its app, it is possible to receive at home ready-made food products, ice cream but also gifts ideas and pharmacy products. In addition, the startup also deals with messaging. It allows businesses and companies to receive invoices or packages at competitive prices [18].

The company uses "Glovers". Glovers are delivery men with their means of transport, such as cars, bicycles or motorbikes, who have to deliver as quickly as possible. The company's website explains that the Glover aims to "help everyone save a lot of time by simplifying their lives" and adds that "Glovers give time and smiles to spread good humour and cheer "25, highlighting that a good Glover will need not only his vehicle and an iPhone or Android device but also a "smile with 32 teeth" to work. The application makes it clear how it solves the problem of home delivery and logistics for commercial activities, guaranteeing increased earnings and no fixed costs. The cost of the service depends on the business you order from, shop or restaurant, and can range from 0 to 4.90 euros. The

cost if referring to participating restaurants is 1.90 euro while it goes up to 4.90 euro if the premises are not participating [13].

Payment is made, once the service has been provided, through the app and there is no minimum budget. As of September 2019, the company has expanded to 26 countries and offers its service in more than 200 cities around the world. It entered the Italian market in 2016, through the purchase of startup Foodinho. Subsequently, 2017 was a year of development for the logistics startup it carried out a capital increase of 30 million euros as the Japanese company Rakuten Capital and the investment fund Cathay Innovation joined the company as shareholders. This operation has allowed the company to expand into new cities, such as Gijón in Spain and Palermo and Catania in Italy.

The company's goal, according to the two co-founders following the capital increase, is to invest more in technology and to ensure the best relationship between what they define as the "three key pillars" of their market: users, glovers and partners. What enabled the startup to obtain this funding was the strong growth the platform has had and the ability to grow internationally. The company currently boasts more than 7.4 mln users, spread across 20 countries, 1900 employees and 64 thousand couriers [18].

The advantages of using this service are represented by the wide choice of products delivered, from fast food to medicines from pharmacies, and the possibility of paying on delivery, which takes about 35-40 minutes. On the other hand, the cost, as highlighted above, is quite high compared to competitors when ordering from non-contracted activities and, in addition, deliveries are mostly made in central city areas [13].

### UberEats

Uber, the Californian passenger transport start-up, launched in 2014 an additional service to differentiate its offer, called UberEATS. It is an online platform where it is possible, as can be seen from their website, to find the restaurants the consumer likes, orders and pay through the Uber account and then monitor the courier in real-time receiving the order at home [19].

Deliveries are made by couriers who can choose to work by bike, motorbike or scooter and are paid weekly. The ordering application is very intuitive and straightforward, in line with the company's goal of representing UberEATS as "the easiest way to get the food you love delivered to your door "28. The customer simply chooses the food he or she likes and, when placing the order, will see the price and delivery time. Payment is made automatically to the card associated with the account. Throughout the delivery process, the customer can follow the rider and even see some details such as

name and photo29. Rates vary depending on the area of the order and the restaurant providing the service.

The delivery service entered the Italian market in 2016, particularly in Milan, and then also entered Naples and Rome in 2018. Worldwide, it is present in more than 200 cities including New York, Orlando, Rio de Janeiro, Lima, Moscow, Paris, Adelaide, Melbourne, Tokyo and Johannesburg30. The service struggles more than other delivery companies, in fact, according to a Financial Times report, the service was only profitable in 27 cities in 2017, despite 3 billion in annual gross sales [20]. The strength of the service may lie in its ability to leverage the user base of customers already active with Uber.

*Conclusion*

From what emerges from this analysis, the situation of the competitors is characterised by fierce competition where the focus is on service differentiation. As highlighted, many companies have implemented additional services to traditional home delivery, to add value and gain a competitive advantage in a market that is certainly young, but still highly competitive. The losers, due to this competitiveness, are very often the riders who in some cases, for example in UberEATS, do not even accrue a working relationship with the company for which they deliver and whose situation is in the headlines. It also emerged how fundamental the technological contribution is, the ability to guarantee control of one's order through the dedicated app and customer service that knows how to guarantee assistance in case of problems. One element that all companies could focus on to improve the service would be to extend the area of competence to the suburbs. Certainly, in the following years, also because of the current situation of the riders and the instability of the moment, there will be several changes that will also affect the competition between the companies and the way the service will be provided.

## 1.5 DARK KITCHEN AND DARK SHOOP (A NEW INNOVATIVE DELIVERY MODEL)

An important trend that has been gaining popularity in the recent period is dark kicks.

Dark kitchens are the evolution of food delivery. From here, in the future, your favourite dishes ordered by the most popular food delivery apps could be born. The dark kitchens are centralized, "closed" kitchens: restaurants where customers do not go, but where the dishes are produced and then delivered by home delivery. The restaurant understood as the physical place where the meal is consumed becomes one's own home. A trend that is becoming increasingly strong due to the phenomenon of food delivery apps.

It so happens that the restaurant, or the kitchen where the chef and the brigade cook the dishes, in some cases represents only the kitchen phase, a closed kitchen. A dark kitchen produces what will then be delivered through the riders to customers.

Will the explosion of the phenomenon of "closed" kitchens, designed solely for the production of dishes for home delivery, change the balance of the food sector and redefine the role of operators in this sector? The topic, which is also very topical in Italy, was discussed during Mapic Food [21], an international event dedicated to chains and players in the commercial catering sector held in Milan in recent days. There is a very specific reason why the so-called "dark kitchens" are credited by experts with explosive growth potential, and that reason is the exponential increase in-home delivery of ready meals, a trend to which the millennial population has mainly contributed. A type of clientele that does not hesitate to order ready-made food even two or three times a week and that expects a fast service, wide choice and a good quality-price ratio.

As demand for home delivery grows substantially, even well-established and well-organized restaurants have often struggled to cope with orders to be delivered to the riders of Deliveroo, JustEat, Glovo and Uber Eats. Hence the push towards a new model of cuisine aimed at the one hand at preserving the quality of the consumption experience inside the restaurant and on the other at not compromising the development of new business, taking advantage of the opportunity to reconfigure their spaces or to entrust third parties (the "dark kitchens") with the management of home deliveries.

What are the cornerstones (financial, operational and technological) at the basis of the new catering model linked to dark kitchens and what are the consequences for operators? The aggregators of food delivery (such as Delivery, Uber Eat, Just Eat or other chains less known to the Italian public such as Stuart) - this is the analysis carried out by Peter Backman [22], a well-known consultant in the sector - "have built a strong brand in the last two years at the same level as established restaurants. Customers want food delivered because they have been educated by Amazon's model that delivers products ordered online to their homes in no time."

Stephane Ficaja, General Manager Northern and Southern Europe of UberEats, has tried to quantify the extent of the phenomenon, estimating in 5 thousand the number of "dark kitchens" active in Europe within the next five years, serving 200 thousand restaurant brands. An indicative estimate, certainly, but one that represents a clear confirmation of a change underway. "Online food delivery is growing faster than the rest of the market - added the manager - and dark kitchens allow to reduce direct investments, guarantee excellence at an operational level and greater agility in product management. The improvement of their efficiency will make them an active part of the future of the

catering industry". We talk about a "disruptive" phenomenon, and we don't do it by accident. Europe, as Ficaja recalled, is a market of 750 million inhabitants, a quarter of whom are millennials, and with a high penetration of the Internet, mobile telephony and e-commerce. And the role of operators like UberEats should be read beyond the pure delivery function. "One of the main areas on which we are focusing - he concluded - is to find solutions to help restaurants of all sizes to transform data into new business models, identifying for example areas where the demand for a particular cuisine is very high but not satisfied by a limited offer, thus opening the possibility to launch a new restaurant to fill this gap.

"Kitchens dedicated exclusively to home delivery can significantly help restaurants grow their business by providing a very low-risk platform for expansion, which zeroes out the costs of renting premises and equipment and other operational expenses such as utilities, running costs, and cleaning." Ajay Lkahwani, VP of special projects at Deliveroo, also has clear ideas about the advantages offered by the dark kitchen model. Confirming the intentions of the English company to become a real food company, the manager summarized the scenario to come: restaurants will be able to manage exclusively the preparation and cooking of dishes and concentrate on offering quality products to customers, without having to worry about the complexities of running a normal restaurant. Deliveroo will meet this need by becoming a marketplace where you can order your meals and take care of the whole process. How? Leveraging (also) new technologies, from Big Data for the infrastructure platform to the predictive intelligence of the algorithms to predict demand through the tracking in real time of deliveries.

Low Capex investment, excellent operations, optimized distribution and then tailored marketing, brand awareness strategies, physical positioning: the updated restaurant concept is composed of a multitude of elements that have delivery as a fundamental component and dark kitchens as a (potentially) great asset. Dan Houghton, co-CEO of the Mexican restaurant chain Chilango, used the term "food production facility" to summarize their role as food factories that must produce added value to increase the quality of customer service, first and foremost in terms of variety of offerings. It is still very early to make predictions, however, he added, highlighting how "the presence on the market of operators such as Domino's, who opt to maintain a substantial number of physical stores, must not go unnoticed. Dark kitchens are a very exciting opportunity, but I believe that at the moment they must act in a multi-brand perspective because the addressable market is still small".

If for traditional restaurants, with the emergence of food delivery, the possibility of losing control of their customers in the long term is a risk calculated to gain visibility and optimization of investments, the phenomenon of dark kitchens has already found "application" even within companies, in the form

of corners duly equipped where you can buy and consume your dish ready. This is the model of the "closed" kitchen that the Milanese startup Foorban has also embraced, which has been operating in Amazon's headquarters for a few months and is preparing to open another five offline "production sites" in the B2B sphere between Milan and Rome by the end of the year.

## 1.5.1 Gorillas and dark shop

Another declination of dark kitchens is that of dark stores, or small stores spread throughout the city to ensure much faster and environmentally sustainable deliveries.

In this market, about a year ago a very interesting German startup was born, called Gorillas. Gorillas is the brainchild of Kağan Sümer who founded the service in Berlin and aims to revolutionize the food and grocery delivery market. Thanks to a recently received 290 million dollar funding (about 238 million euros, ed.), it has reached the status of a "unicorn" startup with a market valuation of more than a billion.

Gorillas offers an on-demand home shopping service that relies essentially on three factors: the speed of delivery (10 minutes from the order and fixed costs of 1.80 euros), a community of bikers equipped with electric bikes that are the backbone of the platform, a network of micro-centres of distribution of "property" that ensure the availability of necessities, food and fresh (fish, meat, fruits and vegetables, dairy products) including, at the same price of the supermarket and retail stores. The mobile app provides access to a catalogue of about 1,500 products, the employment of employees regularly hired temporarily for 6/9 months (currently about a hundred people, who will be incentivized to hire permanently) performs deliveries and logistics, and the micro-centres act as a hub for "pick and pack" orders.

Alessandro Colella, general manager of Gorillas Italia, in an interview with Sole24Ore.com [23] said «Life is too short for bad food, so we never compromise on the quality of our products. In addition, collaborating with local companies in each of the cities in which we operate not only helps us meet the tastes of the communities we approach but also allows us to support local businesses by becoming a new distribution channel for them. And it's a choice that consumers also reward because thanks to Gorillas they can have a fast and quality shopping, all while supporting small local businesses».

Considering in the last year food spending has increased (+8% on packaged products and +5.9% on fresh products) [24] Gorillas seems to fit perfectly in solving this need by delivering more than a thousand products including food (including fresh) and common daily use at the same retail price based on the "Need-Order-Get" principle, i.e. delivering on-demand and practically in "real-time" (just 10 minutes) all the products that the consumer needs at that moment. And it also does so by

supporting local businesses, thus managing to always provide fresh products and guaranteeing short supply chains.

The drastic reduction of delivery times, combined with standard prices and a low cost of delivery, thus aims to limit household waste, often the result of large weekly expenses that are more difficult to calibrate. Alessandro Colella continues "Gorillas is designed to change for the better the consumption habits of everyone and to do so it focuses on two objectives: to waste less food and to provide the user with fresh and good products to make food choices as healthy and genuine as possible. We are not just providing a new home shopping service, but our model aims to solve some of the most significant contradictions of delivery by proposing a more sustainable model, based on a network of micro-distribution centres or neighbourhood "dark stores".

## 1.6 CONCLUSION (PRESENT AND FUTURE SCENARIOS FOR FOOD DELIVERY)

Home deliveries as we have seen have grown exponentially in recent years and specifically, restaurant deliveries have increased by 20% in the last 5 years while sales through online platforms are estimated to reach 220 billion by 2023 (40% of total restaurant sales). This growth has certainly been influenced by the impact of covid19 but also by recent business models that have developed as described in the previous paragraphs. Based on data from the field and forecasts by industry experts [25], here are six major trends that are shaping food delivery and will continue to do so for the next couple of years:

- **Third-Party Delivery:** Outsourcing delivery has now become normal for many restaurateurs, thus avoiding having to manage this segment of the business and to have more visibility, but at the expense of revenues that drop by as much as 30% if online delivery platforms are used. Many restaurateurs for this reason have tried to mitigate this effect by using their internal site for orders and relying on external players only for delivery.

- **In-House Restaurant Delivery Fleets:**
  Some restaurants, on the other hand, have decided to use another approach, which is to manage deliveries in-house as well. For these restaurants, the choice is to use delivery management software becomes essential, especially as the number of outlets grows. Another positive aspect of this approach is the visibility and control of data which also allows for demand forecasting and optimization of the production process.

- **Prioritizing delivery data tracking:**
  In April 2019, McDonald's spent $300 million to acquire a big data startup [25]. The multi-billion-dollar conglomerate understood that the best way to stay ahead of the competition is to measure, analyze, and improve your performance. Having these insights into your delivery

operations is invaluable and the benefits stretch across everything from relations with external fleets and aggregators, to providing flawless deliveries, to enabling other arms of your business, like customer care, marketing and branding.

- **Tech Giants Moving in on Food Delivery:**

  In 2017, Amazon purchased "Whole Foods" intending to take over the grocery market. UberEats has also developed a grocery delivery platform in-house. Google has enabled a delivery feature directly from Search and Maps to allow users to order directly from the search page. Considering that the majority of revenue comes from online sales it is foreseeable that this trend could grow more and more.

- **Online Grocery Delivery is Growing Rapidly:**

  Even for large food retail chains, delivery is developing exponentially. Many supermarkets now offer delivery or pick-up services. The best example of this trend is the rapid development of Gorillas.

- **Trends in Food Delivery Subscription:**

  The increase in the use of online delivery services is mostly due to the generation of millennials (born between the 80s and 2000s). This generation, thanks in part to the habit of using technology, prefers to eat from the comfort of home. With online ordering growing at a faster pace than ever before, grocers have an unprecedented opportunity to increase profit margins and customer reach. The challenge will be balancing customer demand for fast, convenient and seamless delivery with the logistical complexity and expense required to meet these demands.

# 2 PART 2 - SUSTAINABILITY

## 2.1 INTRODUCTION ON SUSTAINABLE FOOD SYSTEMS

Humanity is facing an existential threat as the impacts of its activities exceed planetary boundaries. Modern industrialised food systems are major contributors to this thereat through their profligate use of finite resources, including land, energy, and freshwater [26] (and degrative impacts on the environment, including greenhouse gas emissions [27], biodiversity loss and food waste [28]. In turn, these environmental harms are effective food yields, quality, and safety as well as the macro- and micronutrient composition of certain staple foods.

Modern industrialised food systems are also associated with poor public health outcomes. Dietary risk factors are leading contributors to the global burden of disease [29] In particular, dietary

imbalances are associated with several non-communicable diseases (NCDs), such as cardiovascular disease, and certain cancers and diabetes and dietary excesses are associated with nearly 2 billion adults being overweight or obese [29] . At the same time, dietary inadequacies are contributing to 2 billion people suffering from micronutrient deficiencies (FAO, IFAD, UNICEF, WFP, & WHO, 2018) and 821 million people being undernourished. It is estimated that malnutrition in all its forms costs the global economy up to US$3.5 trillion each year (World Health Organization, 2016)

Healthy and sustainable food systems are prerequisites for human existence. They must provide enough, quality and variety of nutritious food while discouraging the proliferation of junk food (ultra-processed food or nutritionally poor, resource-wasteful food) to meet the nutritional and socio-cultural needs of populations now and into the future. To do this, food systems must function in ways that do not undermine the Earth's capacity to provide life-sustaining resources. However, current systems are broken and their contributions to poor public health outcomes and environmental harms are not only substantial in absolute terms but also inequitable, with those who have contributed minimally to the problems often being most affected and least able to respond.

Today, it is multiple interrelated social, economic, demographic, political and technological developments that are rendering relationships between food systems and human existence untenable. Fundamentally, the extent and pace of these developments clash with two immutable realities: the physical limits of the planet's environmental boundaries [26] and the nutritional requirements of the human body, which have evolved over millions of years. Unless significant and prompt action is taken, the adverse impacts resulting from the gap between policy and human behaviour practices and fixed realities are destined to be exacerbated as the global population approaches an estimated 10 billion people by 2050.

There is no one universal cause of the food-related public health and environmental sustainability problems confronting humankind. Instead, the formulation of effective and safe policy and action responses to these problems faces multiple challenges:

- The challenges of the complexity and sheer size of these problems involving multiple drivers, actors and places.
- Among these drivers, actors and places, there are multiple dynamic non-linear interactions.
- Contexts can play a significant role in shaping the nature and scope of the problem and a potential solution.
- Foods' integral role in economies means that politics, particularly involving actors whose interests align with maintaining the status quo.

These challenges highlight why a healthy and property food systems perspective provides a fit-for-purpose approach to analysing causes and distinctive solutions to the issues. A systems perspective provides the means to visualize all drivers, actors, places contexts and circumstances (as well as all their interrelationships) related to food provide and food demand as a whole instead of thinking of the operation in isolation from one another.
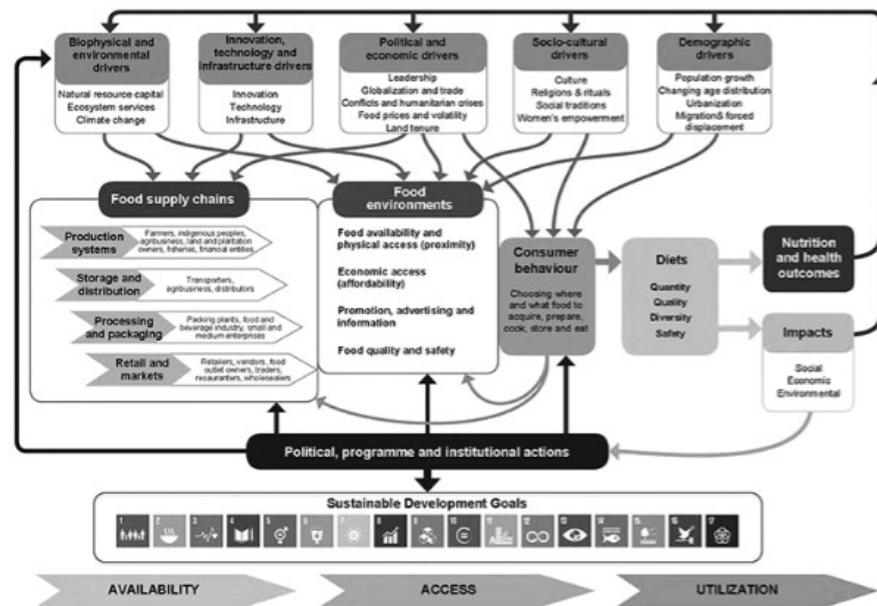


***Figure 2*** *Conceptual framework of the structure of the food systems [30]*

Figure 2 provides a conceptual framework for thinking about the structure of a food system. The framework sets out an overarching coherent perspective to the system's multiple structural components that its core extends across food supply chains, food environments and consumer behaviour and how these lead to diets and ultimately nutrition and health outcomes and social, economic, and environmental impacts. The framework also illustrates the intricate operations of the system in terms of the many inputs and outputs and multiple relationships among its structural components. Critically, those relationships are not simply a series of linear connections between system components. Instead, the relationships are characterised by multiple interactions among components parts and so are continuously changing and influencing one other through non-linear pathways and feedback mechanisms. Therefore, any attempt to understand a food system simply by looking at its parts is limited because parts rarely operate in isolation. Rather, there is a need to think of the whole food system as being greater than the sum of its parts.

## 2.2 HEALTH AND FOOD

Every human has the right to adequate, nutritious food. The realisation of this right around the world will not be achieved without food systems that ensure optimal nutrition for everyone, now and into the future. Something has gone wrong and what we are left is the high burden of malnutrition in all its forms (undernutrition, micronutrient deficiencies, overweight and obesity) which affects every country on the planet. Malnutrition, in all its forms, is to blame for a significant proportion of global ill-health as you can see in Figure 3 below. Child and maternal malnutrition have been identified as the world's leading cause of human mortality and years of healthy life lost (or disability-adjusted life-years, DALY) with sub-optimal diets, estimated to be the second top risk factor.
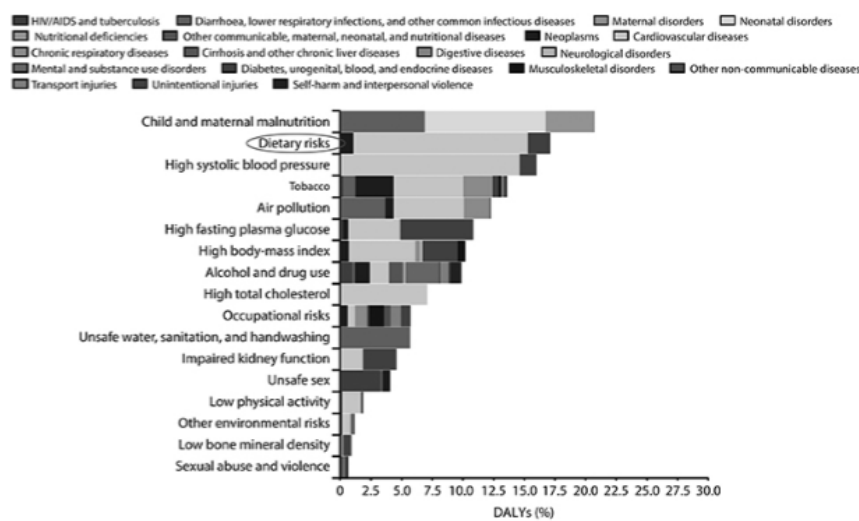


*Figure 3* *World's leading causes of human mortality [30]*

Malnutrition affects people's health by:

1. Impacting negatively on physical and cognitive development.
2. Compromising the immune and cellular systems.
3. Increasing susceptibility to communicable and non-communicable diseases.
4. Restricting the attainment of human potential and reducing productivity.

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The burden of ill-health caused by malnutrition is directly linked to the food system because what people eat is a common cause of malnutrition in all its form. A broad range of social, economic, demographic, and psychological factors influence the diets that people eat. These factors operate within the context of the overarching determinant – the "food system". The food system encompasses everything, and everybody involved in producing, storing, packing, processing, distributing, consuming and disposing of food.
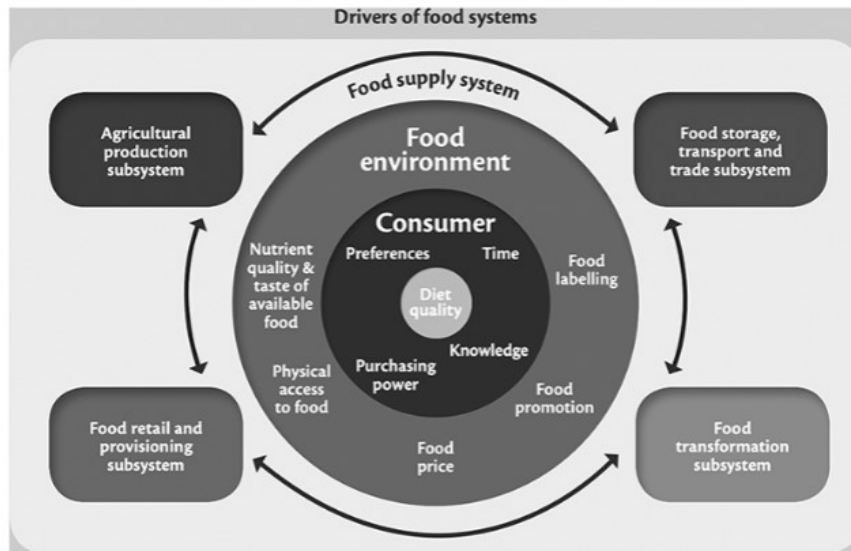


*Figure 4 - Drivers of food systems [30]*

The way food systems function – including what is produced, how these products are transformed through food supply chains, the way that economic value is generated, gained and lost – influences which foods are available, what they cost, and how they are marketed, and, in the end, they influence food environments. Data on malnutrition make evident that food environments are not delivering diets that promote good nutrition and health [31] but had the objective of delivering enough dietary energy to meet the needs of a growing population.

At the same time," globalization" put policies into place to liberalise trade, private state-run institutions and reduce barriers to cross-border investment [32]. Power shifted to the "middle of the chain" and the food companies become huge transnational corporations responsible for growth, distributing and processing and retailing. The result is a double-edged sword- residual inadequacy of dietary diversity among populations at risk of undernutrition, rising consumption of industrially manufactured, packaged foods hight in refined carbohydrates depleted of fibre, sugars, unhealthy fats, and salt, but accompanied by various positive trends, such as more readily available fruits and vegetables to those who could afford it [33].

It has become what has been termed distorted food systems that failed to put quality protein and diversity into the diets of the poor while "succeeding" in feeding people large quantities of dietary energy refined carbohydrates and packaged foods high in sugar, fats and salt [34].

## 2.3 SUSTAINABILITY AND CORE INDICATORS OF SUSTAINABLE FOOD SYSTEMS

Sustainability is the ubiquitous descriptor for almost everything that is done in research, policies, programmes, and interventions, regardless of the sector or discipline. This thesis is confined to environmental sustainability but with the assumption that in order to be sustainable a food system must be healthy.

Several attempts have been made to define sustainable diets but what I find it describes in a more precise and complete way was written during the International Scientific Symposium on Biodiversity and Sustainable Diets, in 2010 organized by FAO in collaboration with Bio- diversity International:

| Domains | Targets | Thematic areas | Outcomes | Pillars |
|---|---|---|---|---|
| - *Nutrition.*<br>- *Environment.*<br>- *Food affordability and availability.*<br>- *Sociocultural well-being.*<br>- *Resilience.*<br>- *Food safety.*<br>- *Waste.* | - *Hunger.*<br>- *Malnutrition.*<br>- *Food productivity and incomes.*<br>- *Sustainable and resilient food production and agricultural practices.*<br>- *Biodiversity* | - *Biochemical characteristics*<br>- *Food quality*<br>- *Environmet*<br>- *Lifestyle*<br>- *Clinical aspects* | - *Food affordability.*<br>- *Food consumption diversity*<br>- *Health and nutrition status*<br>- *Environmental sustainability* | - *Food loss waste.*<br>- *Sustainable agriculture.*<br>- *Nutritional challenges.* |

"*Sustainable diets are those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable, nutritionally adequate, safe and healthy, while optimizing natural and human resources.*"

There are many variations in definitions, conceptual frameworks, typologies, metrics and models for developing or selecting indicators in the context of sustainable food systems. The Food Sustainability

Index (EIU, 2016) classifies 58 indicators under three "pillars". The table shows a selection of indicator classifications from these five sources.

Nutrition appears specifically in all five classifications, explicitly and singly as "nutrition" and "nutrition challenges" or combined with health status; or further disaggregated into hunger and malnutrition. Under Thematic Areas, it is spread between biochemical characteristics and clinical aspects, and included within food quality, as in nutrient content of foods and diets. The environment also appears specifically in all classifications, again explicitly by name in three classifications or implied within sustainable production and sustainable agriculture in the other two.

The choice of indicators for any given purpose must be based on commonly agreed criteria, e.g. relevant, methodologically sound, measurable, monitorable, outcome-focused, easy to interpret and communicate (UNSD,2015)[1]. The greatest limitation related to indicators is the lack of availability of sound data sets, which suggests that generation should be a priority to have robust indicators.

## 2.4 SUSTAINABLE INDICATORS IN A PIZZA RESTAURANT

In the following paragraph, we are going to analyze what are the main indicators of the sustainability of a restaurant based on a study conducted by the Department of Nutrition, the University of Brasília in collaboration with the Department of Statistics, University of Brasília. The purpose of this study is to write a checklist designed to verify sustainability indicators in food service.

The entire food chain that leads food from the producers to our plate has a high financial and environmental cost that needs to be rethought, especially the environmental factor. This is due to an increased amount of discarded waste and the use of various natural resources [ [35], [36], [37]] The production of meals is responsible for 80% of deforestation, 70% of freshwater consumption and 30% of greenhouse gas emissions, being the most significant cause of the reduction in the biodiversity of the planet's species [37]. Globally, the restaurant industry is considered the least sustainable of all economic sectors.

The checklist was developed using available literature and through subject matter experts. In this sense, it has been used the International Organization for Standardization ISO 14000 that deals with the environmental quality system; ISO 14004, which guides the development, implementation, improvement, and maintenance of the Environmental Management System (EMS); and ISO 14001, which establishes guidelines for obtaining a quality certificate. The Brazilian Association of Technical Standards prepared all of these documents.

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[1] United Nations Statistics Divison

In this study, the checklist was developed to provide restaurateurs with a tool to support restaurateurs with the implementation of sustainable practices. The final version of the checklist contains 76 items divided into three sections:

1. ***Water, energy, and gas supply.*** This section is related to the practices that the company must adopt as a whole to reduce water, energy, and gas consumption

2. ***Menu and food waste****;* The second section consisted of items that directly assess food production and food waste.

3. ***Waste reduction, construction materials, chemicals, employees, and social sustainability****.* The third section of the instrument consisted of forms of waste and sustainability actions

## SUSTAINABILITY ASSESSMENT OF FOODSERVICE          YES  NO NA*

### 1. WATER, ENERGY, AND GAS SUPPLY

1.1 The company has goals for the rational use of water, such as the use limit per activity (for example: for each meal served, 10 liters of water are spent).

1.2 The company has reduced water consumption by at least 15% in the last six months, or by 30% in the previous 12 months monitored by the record (see history of water bills).

1.3 The company performs preventive maintenance of the plumbing.

1.4 The company, in case of a water leak, performs immediate repair.

1.5 Employees verify that taps, when not in use and at the end of the service, are closed (note: confirm with the employee).

1.6 The pressure of kitchen faucets, washbasins, and bathrooms is regulated and limited to allow water savings.

1.7 Taps installed in hand or kitchen sinks have automatic activation.

1.8 The water reservoir is adequately kept covered and conserved, and is free from cracks, leaks, infiltrations, peeling, and other defects.

1.9 The company does not use running water to melt ice in sinks or thaw food.

1.10 Employees remove dirt without water from utensils before putting them in the washing machine.

1.11 Dishwashers are operated only at full loading capacity.

1.12 When cleaning floors, the water flow is interrupted when it is not necessary to use it.

1.13 Rainwater is collected and/or water from thermal counters that use water is recycled for use in activities where the use of drinking water is not required (e.g., flushing, washing outside areas).

1.14 The company has documentation for the assessment and/or inspection of energy use for energy conservation.

1.15 The company has reduced energy expenditure by at least 15% in the last six months, or 30% in the previous 12 months (see history of energy expenditure).

1.16 The company has smart energy meters. Check the energy meter.

1.17 The company does not use air coolers as it has natural ventilation to maintain thermal comfort.

1.18 The refrigerator and freezer doors have audible alarms for open doors or automatic locks.

1.19 The temperature of refrigerators, cooling chambers, and freezers are adequate and have a monitoring record.

1.20 The company performs and documents the maintenance recommended by the manufacturer for electronic devices to ensure that all equipment is functioning correctly and maintains energy efficiency levels.

1.21 The company cleans the air cooler filters with suitable detergents or contracts a third-party company for this service and changes the replaceable filters according to the manufacturer's guidelines.

1.22 The company has lighting controls, such as sensors and timers, in low-occupancy areas (for example, in the distribution area) so that lights are automatically turned off when daylight is sufficient or when spaces are not being occupied.

1.23 The company uses some form of renewable energy (wind, solar, or photovoltaic) in the production area.

1.24 The company achieves zero greenhouse gas emissions with proven partnerships (e.g., commercial energy and vehicle fuel use).

1.25 The company has a documented program to reduce carbon emissions (by at least 5% per year).

1.26 The company has documented targets for reducing the use of liquefied petroleum gas.

1.27 The company has documented targets for reducing the use of

1.28. The company uses biogas.

## 2. MENU AND FOOD WASTE

2.1 The company owns and uses the technical preparation sheets to make the preparations.

2.2 The company has options for smaller portions separately or a children's menu.

2.3 The company offers ≥50% of its proven healthiest (less salt, sugar and oil) dishes.

2.4 The company offers a separate menu or substitutions to meet diet restrictions, such as gluten-free preparations, vegetarian cuisine, vegan menu, or preparations to meet religious restrictions.

2.5 The company has documented commitments, with a defined term, to reduce the use of sugar, salt, or saturated fat on the menu.

2.6 The company includes seasonal products in its menu, changing it throughout the months of the year.

2.7 At least 50% of the fruits and vegetables that the company buys are certified organic.

2.8 The company manages its vegetable garden without using pesticides.

2.9 Suppliers of products of animal origin have certificates that prove that animals are raised without the application of antibiotics or organics.

2.10 The company only purchases products of animal origin that have an animal welfare certification seal.

2.11 The company has a policy of purchasing sustainable seafood.

2.12 The company's supplier produces farmed fish and has a sustainability certification (for example, organic).

2.13 The company does not use ingredients or products with transgenic ingredients in its composition in the production of meals.

2.14 The company prioritizes the full use of food, producing safe preparations that use peels, stalks, and/or edible shavings of vegetables and fruits as ingredients.

2.15 The company assesses its food waste during food preparation.

2.16 The company assesses its food waste during food distribution.

2.17 The company discards food waste in the form of composting, anaerobic digestion, maceration, donates to feed pigs, or establishes partnerships with cooperatives that carry out these processes.

2.18 The company trains its employees to avoid food waste during all stages of meal production, from the receipt of food to distribution.

2.19 The company carries out smart ordering systems, inventory monitoring, inventory rotation and/or other inventory management strategies to avoid food waste.

2.20 The company has goals for reducing/controlling food waste.

2.21 The company recycles or reuses its coffee grounds.

2.22 The company recycles cooking oil and/or transfers the cooking oil used to recycling companies.

## 3. WASTE REDUCTION, CONSTRUCTION MATERIALS, CHEMICALS, EMPLOYEES, AND SOCIAL SUSTAINABILITY

3.1 The company has an operational policy that contains a documented strategy on solid (non-food) waste management.

3.2 The company separates recyclable materials, that is, selective collection.

3.3 The company limits packaging and orders products in bulk to avoid waste generation

3.4 The company does not use disposables and/or adopts strategies to minimize the use of these materials as much as possible, with documented goals.

3.5 The company adopts strategies to reduce the use of plastic in the distribution of meals.

3.6 The company returns packaging boxes for suppliers to reuse and/or provides suppliers with their returnable boxes for the delivery of goods.

3.7 The company returns glass bottles for suppliers to reuse and/or properly dispose of these materials for recycling.

3.8 The company adopts measures to encourage its customers to reduce waste (for example: maintaining glasses, reducing disposable packaging, and eliminating plastics or straws).

3.9 The company uses recycled paper or FSC certified office paper.

3.10 The company uses lamps, accessories, or furniture made from recovered or recycled materials or those provided with an environmental product declaration to improve the environmental impact.

3.11 The paints used for building are environmentally sustainable.

3.12 The furniture (tables, chairs, and others) of the company is made of durable materials that can be repaired.

3.13 The tablecloths (if any) and/or employees' uniforms are made of organic or environmentally sustainable materials.

3.14 The company uses rechargeable batteries for battery-powered devices and equipment, including flashlights, handheld vacuum cleaners, and others.

3.15 Office equipment replaced or purchased is ENERGY STAR or PROCEL certified.

3.16 The company uses only ecological cleaning products.

3.17 The company uses cleaning concentrates and dilution control systems and/or employee training and monitoring for adequate dilution to minimize the use of chemicals.

3.18 The company exclusively uses environmentally sustainable hand cleaners in the bathrooms of customers and employees.

3.19 The team has already undergone environmental training (energy efficiency and water efficiency).

3.20 The team has already undergone environmental training (fundamentals of sustainability).

3.21 The staff has undergone some training on healthy eating and the health impact of what they are producing.

3.22 The company has a strategy regarding donations or support to its community.

3.23 The company donates to food banks or charities to avoid wasting food from products suitable for consumption.

3.24 The company has initiatives to promote healthy eating education for the local community (schools, colleges, community groups).

3.25 The company has a policy in place with the supplier or purchase specification that favors the acquisition of local products for foods such as dairy products, meat, fruits, and vegetables.

3.26 Does the company purchase one or more products from a charitable foundation or a social enterprise that provides social impact? (For example, a product made from leftover food, bread from a social enterprise bakery, etc.).

Additionally, the organization of three sections with a closed number of items will facilitate the construction of a score and classification of food services as sustainable services or not.

It is also important to highlight that the instrument is practical, quick to apply, not extensive, and encompasses the three pillars of sustainability (environmental, economic, and social). This instrument can help professionals working in food services to use and apply sustainability indicators, helping them to create strategies to change behaviors towards the environment.

## 2.5 PRINCIPLES, FRAMEWORKS, AND STRATEGIES TO CREATE HEALTHY AND SUSTAINABLE RESTAURANTS

Food systems are a major driver of human-induced climate change, inefficient land and water use and loss of biodiversity – which affect the food security and health of people worldwide [38].

In 2015, 150 leaders from 193 Member states, the business and civil society sectors convened to support the implementation of the United Nations (UN) 17 Sustainable Development Goals (SDGs) by 2010 to end poverty, ensure economic change [39]. The process of creating healthy and sustainable food systems is linked to all 17 SDGs. However, about 80 per cent of major transnational food and beverage firms' revenue aligns with only three goals:

1. Zero Hunger (SDG 2)
2. Population health and well-being (SDGs 3)

3. Responsible production and consumption practices (SDG 1)

The transnational chain and non-chain restaurants and foodservice industry sectors are important food system actors who feed millions of customers daily. These sectors offer a variety of inexpensive and convenient meals either consumed by customers on the premises, through takeaway, or delivered at home. In many countries, restaurant, food service and hospitality businesses are partnering with delivery service businesses. Through this new partnership, restaurants have the potential to influence upstream and midstream procurement practices and downstream eating and environmental stewardship behaviours of the population to support healthy and sustainable food systems.

The fair food, Good Food, Slow Food, and Sustainable Food Movements have evolved over decades, in response to concerns about the harmful impacts of the fast-food culture and large-scale food and agricultural systems on the diet quality and health of populations [40] . These movements have advocated for food to be healthy, green, humane, fair, and equitable, affordable, and profitable. They:

- Have supported local food cultures and traditions.
- Raised awareness about how food is grown and processed.
- Educated citizens about how their choices support either sustainable or unsustainable food systems practices

The restaurant, foodservice, hospitality and health care industries have many frameworks, guidelines, standards, and metrics to promote a healthy and sustainable food system then.



*Figure 5* – *Principles of healthy, sustainable menus [65]*

Restaurant businesses could also use MMCA (marketing mix and choice architecture) strategies to cue healthy and sustainable behaviours. Choice architecture or nudges represent how options are framed or presented to individuals in environments, deemed effective based on the assumption that:

1. People choose options that require the least amount of mental or physical effort.
2. People value immediate rewards or avoid short-term costs versus long-term benefits or consequences or specific actions.
3. People align their behaviour with prevailing social norms.
4. People identify with peer groups that reinforce specific lifestyle behaviours

[41]

An MMCA framework is available to enable restaurants to promote healthy food environments that offer eight strategies, aligned with expert bodies' recommended targets and actions, to encourage healthy food environments (Figure…). These strategies include:

- Place (ambience and atmospherics)
- Profile (nutrient composition),
- Portion (serving size)
- Pricing (strategic and proportionate),
- Healthy default picks (side dishes and beverages)
- Priming or prompting (information and labelling),
- Proximity (strategic positioning)
  (Kraak et., 2017)
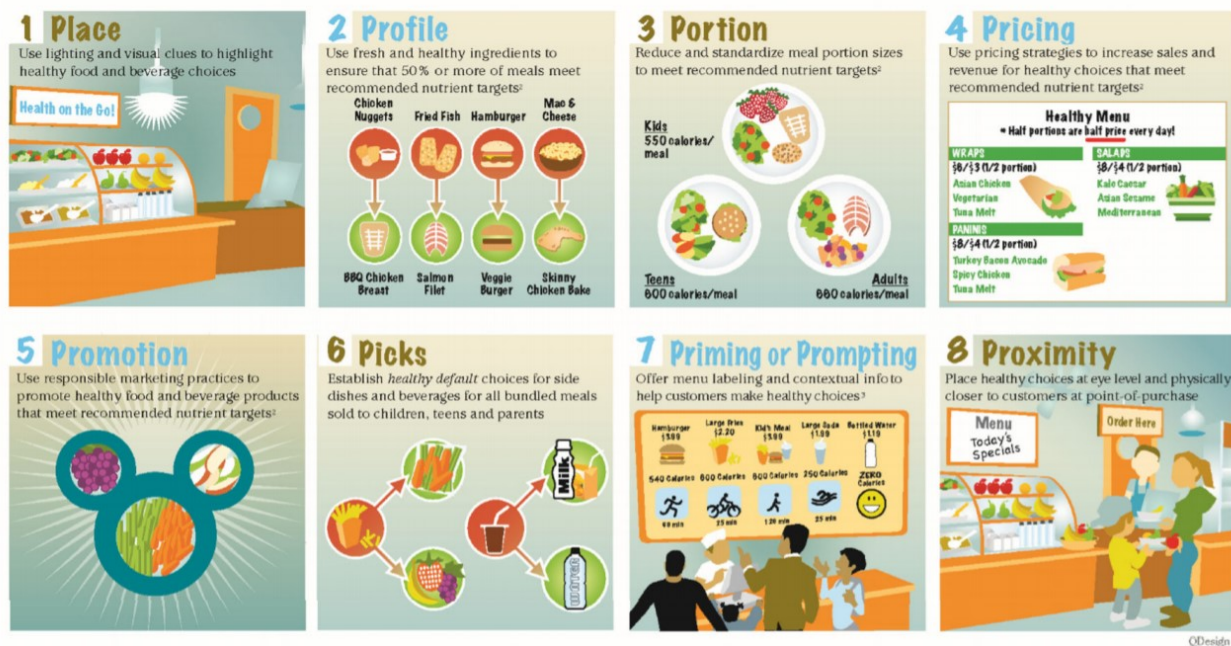
*Figure 6 - Marketing mix choice architecture strategies to promote healthy restaurant environments. [42]*

These voluntary strategies complement government-mandated standards, legislation, regulation and laws that require restaurants to meet food safety guidelines, food labelling requirements, nutrient composition targets, and responsible food and beverage marketing practices that influence the decisions of children, teens and their parents.

Starting in May 2018, the US menu labelling law required that calorie labelling be accompanied by contextual information to help Americans to make healthy choices when eating out at chain restaurants. The information states for children: 1200.1400 calories/day is used for general nutrition advice for ages 4-8 years and 1400-2000 calories/day for ages 9-13 years, but calories needs vary. For adults: 2000 calories/day is used for general nutrition advice, but calorie needs vary. Upon a customer's request, restaurants must provide written nutrition information for total calories, fat, saturated fat, trans-fats, sodium, protein, carbohydrates, added sugars and fibres [43].

***Transforming restaurant business practices to support healthy and sustainable food systems.***

People's views of environmentally friendly business practices to produce "green restaurants" differ across countries. US consumers who visit green restaurants report that they value fresh ingredients, health, easy access, and environmentally sustainable food choices [44]. However, according to Jilcott Pitts, the US restaurants and food service industries have encountered barriers to expanding healthy and sustainable meals that include: low customer demand for, satisfaction with, and acceptance of

new options; a limited selection of products from upstream vendors; and increased time, cost, and workforce training to prepare and serve items that may not be financially sustainable.

The US National Restaurant Association (NRA)[2] has identified several sustainable practice trends for food systems, such as increasing water efficiency; promoting recyclable, edile and biodegradable packaging and reducing food production loss and consumer food and waste.

Managing food waste is important to save money for businesses while also reducing GHG emissions to mitigate the adverse effect of climate change. Chain and non-chain restaurant businesses can contribute to food waste reduction through various policies and strategies, such as:

- Providing customers with smaller plates in self-serve or buffet settings;
- Promoting trayless dining and eliminating "all you can eat" promotions;
- Replacing plastic food packaging containers with recyclable containers and edible wrapping;
- Tracking food waste practices to inform changes;
- Using diverted food waste in menus to reduce costs;
- Supporting institutional composing

(NRA, 2018; ReFED, 2018)

## 2.5 CONCLUSION

Transnational chain restaurants and non-chain foodservice operations can use principles, guidelines, standards, and metrics to support healthy and sustainable food systems. Few transnational restaurants are yet to use comprehensive MMCA strategies to encourages customers to make healthy and environmentally sustainable choices in countries where they operate franchise businesses. In the future, restaurant and foodservice industry businesses should harmonise universal nutrition and environmental sustainability guidelines and standards to support healthy and sustainable meals for customers across countries and regions. Government and civil society organisations and researchers should monitor the implementation of these commitments, and evaluate the impact on outcomes to hold restaurants accountable for promoting healthy and sustainable food systems that align with the one health vision and the SDG agenda by 2030

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[2] National Resturant Association

# 3 PART 3 - INDUSTRY ANALYSIS: SUSTAINABLE PIZZA RESTAURANT WITH ITS DELIVERY SYSTEM.

In the following chapter, we are going to analyse and focus on the sustainable takeaway pizza industry. Indeed, never has sustainability been a necessity that the planet is demanding of us and considering that the population is expected to increase from the current 7 billion to around 10 billion, the focus on being sustainable in the way we produce, consume, and deliver food is of central importance. The dream of opening a chain of pizzerias can only meet this fundamental theme and add an extra brick that could be considered a nuance of sustainability: the attention to create positive externalities for our society and therefore also on a human level.

## 3.1 PESTLE

## 3.1.1 Political

These factors assess the extent to which government policies interfere in the business. It can be the laws related to health and safety, taxation, trade policies, labour law, environmental law, restrictions on trade, and more.

- Political stability ensures how much a business will flourish. Government policies may change over time, owing to the changing scenarios of the area where this industry operates. Companies must be flexible to adapt to these changes and plan business strategies accordingly.
- The health and safety-related policies affect the restaurant industry the most. Businesses must take care of cleanliness and hygiene while carrying out cooking, packing, and delivering operations to abide by the guidelines related to health and safety.
- Taxation that affects the purchase and quality also influences the industry. It differs from country to country. Companies must plan their finances well, keeping this factor in mind.

## 3.1.2 Economic

The digital food delivery sector is going through a period of profound dynamism generated by new consumption habits and the growing opportunities offered by the service in terms of territorial coverage, variety of restaurants and evolution of available cuisines.

Driven by the explosion of mobile and the digital evolution of Italy, the growth of this industry, according to Just Eats' estimates, is following a consistently positive trend. In 2019, digital accounted

for around 18% of the entire home sector (end-of-2019 projection) - which (online orders + traditional offline orders) is worth around €3.2 billion - showing an increase of 7 percentage points compared to 2018 and with still very substantial potential for expansion.

On an economic level, the food delivery sector has shown impressive growth. According to Milano Finanza [45], the turnover of online ordering and home delivery services is around USD 270 billion, and analysts predict further growth of 20% per year between 2019 and 2022. This will mainly affect the 'old' telephone orders. On average, 80% of all meals are now ordered by phone, while only 20% use the online service.
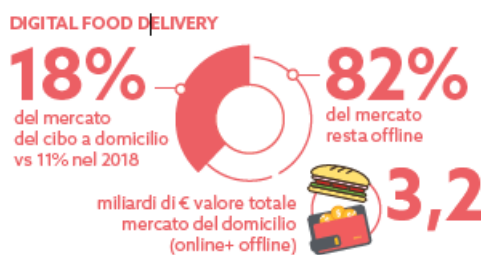


*Figure 7- Ordering Methods [46]*

Another very interesting aspect of the new online market is the clash between two different business models:

1) **The intermediation model.** Entrepreneurs adopting the brokerage model connect restaurants and consumers, but then the restaurant takes care of the delivery. The average profit for this type of transaction is between 10% and 15% of the order value. It is a very profitable model, because it earns money with each customer order at a restaurant and because it does not require a lot of capital. Famous intermediaries are Thuisbezorgd (NL), JustEat (GB) - recently merged with Just Eat Takeaway - and GrubHub (USA).

2) **The logistics model**. Logistics service providers connect restaurants to their platform, taking care of both the order and the final delivery. The profits are much higher (sometimes 30%), but they also involve delivery costs. The best-known logistics operators are UberEats, Doordash (USA) and Deliveroo (UK). Until recently, these companies had a lot of cheap money at their disposal, which allowed them to grow rapidly. Today, however, the model is often (still) loss-making due to high capital requirements.

The consumption of Italians evolves year after year, incorporating new trends that tell of a country where tradition marries new tastes and distant flavours. The top 10 of the most ordered cuisines in the third edition of the "Mappa del Cibo a Domicilio in Italia" [8] confirms the predilection of pizza,

a figure that reflects what happens internationally in 11 other countries. Second place confirmed compared to 2018 for hamburgers, third for Japanese, fourth for Chinese, fifth for sandwiches, sixth for Italian cuisine, seventh for chicken. In eighth place are desserts, Indian specialities in ninth and Mexican specialities in the tenth to close the ranking.



**LE 10 CUCINE PIÙ ORDINATE A DOMICILIO IN ITALIA NEL 2019**

*Figure 8 - The most ordered foods of 2019 [46]*

## 3.1.3 Sociocultural

There is an increasing social focus on sustainability, and it is no coincidence that concepts such as the circular economy have become much discussed. The impact that mankind has created on the earth is now very clear, just as we cannot proceed in the same way as we have up to now. This common awareness is already influencing many choices both at the level of big companies - the automotive market, for example, is moving towards increasingly green alternatives - and at the level of the individual. Many people have taken the issue of sustainability to heart, and consumers are becoming more careful about buying products that have a low impact on pollution and use recyclable materials.

This trend is now very clear and is affecting the restaurant industry, which has a very high impact on global pollution. For this reason, anyone who decides to open a restaurant/pizzeria cannot afford to ignore this trend.

An aspect unrelated to sustainability but which is having a social impact is the convenience that delivery can offer the consumer. It is no longer necessary to go out of the house to get food, but it is enough to connect to any delivery app to receive your lunch/dinner very quickly. The most important risk that can be caused by this phenomenon is certainly the loss of sociality, which is already widely threatened by the development of social networks and the pandemic. We are in a historical moment in which sociality is considered secondary in the psychophysical wellbeing of every individual, as evidenced by the shift of many companies to smart working for their employees, but many studies show that happiness depends largely on fulfilling personal

relationships [47]. The impact on sociality should not be underestimated when it comes to food delivery.

**Healthy trends**

The healthy diet and exercising trends are becoming popular among people. They use smartwatches and other tech gadgets to maintain their health and diet. Such trends have made people avoid unhealthy and fast food. Now many food businesses are changing their cooking style and shifting towards an organic-based diet to keep up with the health trends.

Food and beverage businesses and companies should be aware of the diet preferences of the market where they are going to launch their product. Nowadays, many people have become cautious about their diet, and they avoid salty, spicy, oily, and sugary based food. Because it causes diabetes, higher blood pressure, and other health issues. That is why food and beverage businesses should research their customers' preferences.

*Halal meat*

If you are running a business in the Muslim consumer market, then make sure your meat should be Halal. The slaughtering of the animal should be according to the faith of Islam. Many international brands have faced Halal meat in Muslim countries. Therefore, food and beverage businesses should know the beliefs and values of the target market.

## 3.1.4 Technological

*E-commerce*
The pandemic of covid-19, masking, and social distancing have amplified the growth of e-commerce and online businesses. Many people from the millennial and generation Z prefer online shopping. A food business should follow these trends and launch its online platform to attract more people.

*Automation*
Some food businesses like McDonald's have adopted the tech automation tools like cooking robots, self-ordering, payment systems, and online orders and delivery systems. The usage of automation technology and robots would make food preparation efficient and reduce labour costs. It would result in the form of more profitability and less human error.

## 3.1.5 Legal factors

Food companies must follow very strict food safety and other health protocols. For instance, they must clarify the amount of oil and salt they're using, the right temperature, rightly grilled, food storage

system, expiration date, cleaning, and food transportation. That's why food businesses must conduct their operation according to health and safety regulations.

Governments have a complex and sometimes different legislative framework for every aspect of the pizza delivery industry. This includes regulations on the cleanliness of commercial kitchens, the way food is delivered and stored requirements for workers in this industry. All this is obviously to make sure that consumers are not exposed to poor quality or even worse, dangerous food. All these rules at the same time make the food industry, and consequently, the food delivery industry, one of the most regulated markets in the world, and this certainly reduce profit margins.

As mentioned in the introductory paragraph, one of the most important aspects of food delivery is certainly the protection of riders. This topic has been at the centre of a heated debate between the Italian government and the big food delivery companies. Being a relatively new market, the rider market had not yet been regulated. The debate revolves around the precarious conditions in which this class of workers finds itself, most of whom are underpaid and therefore forced to work hard to achieve a salary that is often meagre. With Circular No. 17 of 19 November 2020, [48] the Ministry of Labour and Social Policies clarifies the legal provisions on the protection of the work of cycle-porters (so-called riders) of digital platforms. The published text recalls, first, the innovative value of the amendments made to Legislative Decree no. 81 of 15 June 2015, by Law no. 128 of 2 November 2019, with which, for the first time, the work activity of riders of digital platforms was regulated, seizing the stimulus launched by the European Union to give a coordinated response to the legal challenges posed by the continuous technological changes in the labour market.

Law 128/2019 gives riders differentiated protections depending on whether their activity falls under the general notion of hetero-organised coordinated and continuous collaboration or is instead attributable to subordinate employment within the meaning of Article 2094 of the Civil Code.

The most important new features are:

- **- D.L. rider protection, contract form:** Individual employment contracts must be evidenced in writing and workers must be provided with all relevant information to protect their interests, rights, and safety. In the event of failure to conclude a contract, the employee is entitled to an indemnity not exceeding the remuneration received during the last year, determined fairly regarding the seriousness and duration of the violations and the behaviour of the parties [37].
- **- D.L. protection of riders, salary:** The remuneration of riders are determined by collective agreements concluded by the most representative trade unions and employers' organisations at the national level, which may lay down criteria for determining the overall remuneration

that considers the way the service is performed and the organisation of the principal. In the event of failure to conclude a contract, workers may not be paid based on the deliveries made, since a minimum hourly remuneration must be guaranteed that is in line with the minimum rates laid down in national collective agreements in similar or equivalent sectors signed by the most representative trade unions and employers' organisations at national level [37].

- **D.L. protection of riders, prohibition of discrimination:** Another important aspect concerns the prohibition of discrimination. Specifically, riders are subject to the anti-discrimination rules and the rules protecting the freedom and dignity of workers, including access to the platform. Exclusion from the platform and reductions in work opportunities due to non-acceptance of the service are prohibited [37].

- **- D.L. rider protection, accident protection** Finally, Article 47-septics provides riders with compulsory insurance cover against accidents at work and occupational diseases. The INAIL insurance premium is determined according to Article 41 of Presidential Decree No. 1124/1965, based on the risk rate corresponding to the activity carried out [37].

Another key role that politics plays in food delivery these days is healthy and sustainable food. Many governments are pushing to transform this market in the direction of being more sustainable and fairer through ad hoc laws that favour companies that use local products with low environmental impact and green transport. The food system, from production to consumption and waste, has a strong impact on the environment, health, and food safety. On 20 May 2020, the European Commission presented its 'farm-to-fork strategy to build a sustainable food system to safeguard food security and protect European citizens and nature [49]. The strategy provides a framework for a series of laws that the European Commission will propose in different fields. Proposals include revised legislation on pesticides, new animal welfare rules, plans to combat food waste and food labelling fraud, an initiative to sequester carbon in agricultural soils and a reform of the EU farm system. The strategy will complement existing EU rules and provide a comprehensive regulatory framework for the whole food chain. All proposals will be negotiated and approved by the Council and the European Parliament.

In addition, in many countries, it is also becoming compulsory to indicate the number of calories in food. For example, as part of the *Healthy Menu Choices Act,* food services with over 20 locations in Ontario, Canada, must now post the number of calories for food and drinks openly. A change like this could affect purchases of foods (and the importing/exporting of ingredients) for their country.

## 3.1.6 Environmental factors impacting the food industry

Food is a fundamental aspect of our daily life and culture. However, this makes us forget that the choices we make in terms of purchases greatly affect the environment. According to a study by the Consultative Commission on International Agricultural Research (CCIAR), food systems account for about 30% of greenhouse gas production. Considering the continuous increase in population, this problem could become even more serious in the coming years.

By food system, we consider the entire supply chain that brings food from producers to the table. The following graph, based on research by science, shows the percentage of different stages of the food system that contribute to climate impact [50].



*Figura 9- Impact of the agri-food system [50]*

The supply chain associated with animal products (i.e. meat, eggs and dairy products) is the main reason behind these undesirable effects. Again according to Science, meat and dairy production uses 83% of agricultural land and produces 60% of the greenhouse gas emissions of the entire agricultural sector.

Specifically, meat production is responsible for 30% of global emissions of methane ($CH_4$), a greenhouse gas 28-36 times more potent than carbon dioxide. In addition, there are several indirect

sources of emissions, such as the destruction of forests and woodlands - important carbon sinks - to create space for pastures and monocultures to feed animals.

Another climate-damaging factor within food systems is the use of pesticides and chemical fertilizers. In addition to being extremely harmful to bees, pesticides and fertilizers are the primary source of anthropogenic emissions of nitrous oxide (N2O), a greenhouse gas 300 times more potent than carbon dioxide. Compared to pre-industrial levels, the level of N2O in the atmosphere has increased by 20%, with serious consequences for the ozone layer and atmospheric warming.

## 3.2 STAKEHOLDERS MAPPING

Stakeholder mapping is the visual process of laying out all the stakeholders of a product, project, or idea on one map. The main benefit of a stakeholder map is to get a visual representation of all the
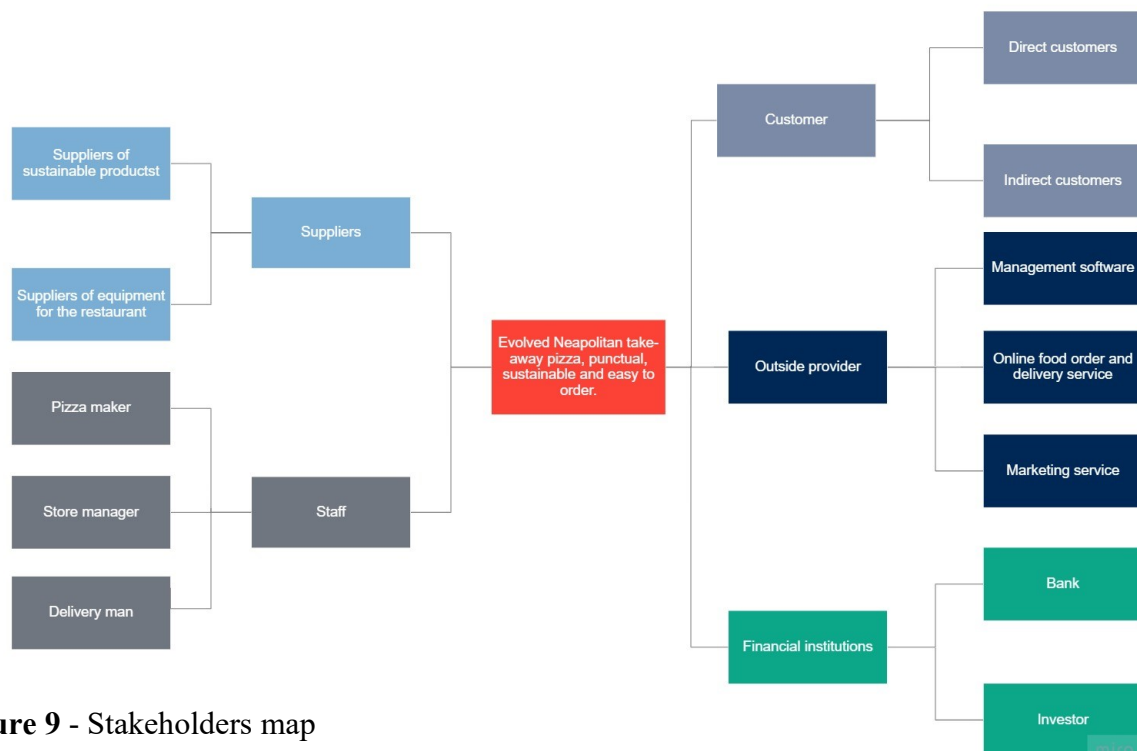


**Figure 9** - Stakeholders map

people who can influence your project and how they are connected. In this section, we will analyse who the main stakeholders are in the creation of a sustainable pizzeria. The main actors are Suppliers, Staff, Customers, Outside providers, financial institutions.

## 3.2.1 Supplier

The choice of suppliers is fundamental because it has an impact both on quality and on the cost that a restaurant must bear. So-called green and sustainable products certainly have a higher cost than traditional products and this cost must be minimised by good negotiation with suppliers. Having

several suppliers who can guarantee the supply of the same product is a good strategy to create an outside option in case one of our suppliers becomes too expensive. At the same time, it is very important to create a climate of trust with our suppliers to guarantee us better products at a low cost. This can only be achieved by demonstrating reliability and continuity in purchasing.

## 3.2.2 Staff

The staff is perhaps the most important stakeholder to deal with when setting up a takeaway pizzeria. We have identified three types of people needed for the start-up of a takeaway pizzeria: Pizzaioli, Store managers and delivery men. All three of these stakeholders have completely different tasks and different contractual needs. For example, it is more common for delivery staff to be students or casual workers while the situation is reversed in the case of pizza makers and store managers who are more often looking for full-time work. These factors should be considered when deciding to start a pizzeria restaurant.

At the heart of it, all and consistent with the idea of starting a sustainable pizzeria with positive externalities not only for customers but also for staff is the way we decide to treat and pay our employees. It is very common in the restaurant industry that employees are forced to work long hours and for very low wages. Many restaurateurs manage to generate revenue by exploiting their employees, but our vision is different, and we want to put the human factor at the centre of our project without losing the entrepreneurial vision. The solution to this trade-off is organisation and a clear definition of the tasks that the employee must perform. Only an accurate balance between the effort required, clarity on the performance of these tasks, salary can create an environment of trust with your employees and above all a positive climate within the premises.

## 3.2.3 Customer

Knowing the target customer, you are addressing is a necessary condition for success with your business. The target group is the entire customer base, broken down for example by age group, type, geographical area of residence, characteristics and so on.

Defining your target customers means gathering as much information as possible and processing it strategically to get the most out of your marketing strategy. If you know what your customers want, you will be able to formulate a better proposal, more in line with the expectations of your target customers. A restaurant can refer to different target customers (some people also call them clusters or segments): let's take the example of a restaurant located in the city centre, in a commercial area where there are offices, shops and banks. At lunchtime, the main target will be the employees of the

various activities around it, who need quick service to get back to work and low costs (fixed price menu). On the other hand, in the late afternoon, the target will presumably be a more youthful and dynamic clientele, such as young people who appreciate an aperitif, to be sipped calmly with a few snacks. If you don't know your customers and propose an "opposite" menu, you will have paved the way for failure.

The concept of the target audience is often equated with that of segmentation. The two terminologies are very similar to the point that the two words are used synonymously. There is a small difference, but it is subtle and finding the boundary is not easy.

A target usually indicates a class of consumers and customers, while a segment refers to a subset of the target. Paradoxically, many are looking for hyper-segmentation to be able to provide a proposal even almost by name.

To construct the target, it is possible to refer to segmentation by geographical, socio-demographic, behavioural, psychological area. The behaviour of a young university student will be different to that of an elderly couple and, consequently, your approach and communication strategy must change.

Identifying a target clientele for your restaurant is key to determining an effective and targeted marketing strategy. In both strategy and segmentation, you need to have established objectives, collect data, process it and draw up a classification that will help you understand the characteristics of your customers.

Depending on your customers, you must change your communication policy: it would not make sense to focus on social media marketing if the typical clientele of your restaurant is over 60 years old. So, you need to differentiate according to the characteristics of your customers and their tastes. Knowing the target audience of your restaurant will lead you to understand who you are going to cook for, how you are going to serve at the tables, what type of menu to propose and what price to ask.

Once this is understood and achieved with an effective marketing policy, comes the hardest part: building customer loyalty. It is a fact that most of the profits of a takeaway pizzeria come from repeat customers, so it becomes of paramount importance to put the customer at the centre when thinking about the product, the delivery method, and the structure of the premises. All these factors must be consistent with the vision of the restaurant. If, as in our specific case of a sustainable pizzeria, we cannot use old fossil fuel scooters to deliver pizzas. Even though the product itself meets all the sustainability characteristics, we convey an inconsistent and confusing image to the end customer.

### 3.2.4 Outside provider

To achieve the difficult task of reliability and punctuality, and to effectively communicate the pizzeria's vision, we identified several external providers:

1. *Software management*

Software to better manage orders coming from different channels, monitor deliveries and have all the data related to your business. So far, we have identified several providers that provide this service but certainly one of the most interesting is called Deliverart.

2. *Online food order and delivery service*

Given their widespread use, delivery services now play a central role in deliveries, and it is impossible and inconvenient to neglect their presence. It is also true that entrusting the delivery of one's restaurant to the various big players (JustEat, Glovo, Deliveroo) is very inconvenient from an economic point of view, given that they ask for commissions of around 30% of the value of a single receipt. The solution is to use them, at least for the first few moments, only as tools to advertise your restaurant, but once you have created a customer base you must try in every way to migrate customers to your platform.

### 3.2.5 Marketing service

Marketing has become a prerequisite for any kind of business. In recent years, thanks also to the explosion of social networks, marketing has changed a great deal. Until not too many years ago, to advertise a pizzeria, for example, people relied on door-to-door leaflet distribution. This strategy is like that used by call centres, where you try to reach as many people as possible in the hope that at least someone will be interested. In this historical moment, in which we are moving towards the customisation of every service, marketing must also be updated with this trend. Marketing has therefore now moved online, especially through social networks and Google advertising, where it is possible to reach exactly those who have been identified as target customers. Another very important role is played by review sites such as TripAdvisor, The Fork or Google, so it is very important for a restaurateur to first consider how customers talk about the restaurant and consider how to improve.

### 3.2.6 Financial institutions

The last, and first in terms of timing, interlocutors to deal with are the financial institutions to receive the liquidity needed to start the business. In our case, we have identified different ways of financing.

1. *Bank*

Banks are the most used method for this type of business, especially when the objective is to open only one shop. In our

case, they can be used at the beginning to start the first restaurant.

2. Investors

With a view to growth, it is very complicated to rely only on bank financing; instead, it will be necessary to seek funding from external investors such as venture capitalists.

## 3.3 PORTER'S FIVE COMPETITION

In 1979, a young associate professor at Harvard Business School named Michael E. Porter published his first article in the Harvard Business Review entitled "How Competitive Forces Shape Strategy" and influence long-term profitability in any industry. Porter's 5 forces model, according to Gartner,
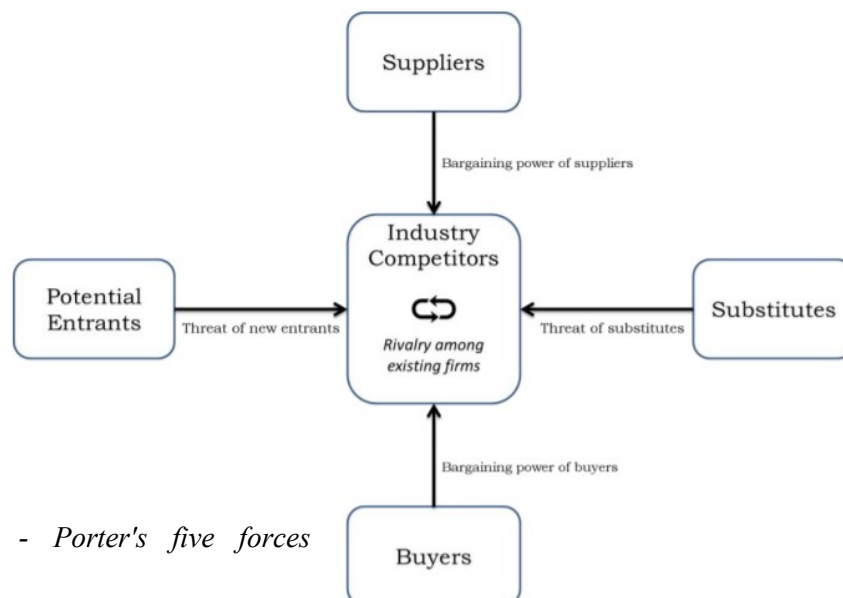


*Figure 10 - Porter's five forces analysis*

is a strategic management tool to study the industry and understand the profitability levers related to that industry. It is still the most widely used framework for analysing competition within an industry competition within an industrial sector. The five forces individuated by Porter, as shown in figure 10, include three sources of "horizontal" competition: substitutes, new entrants, existing companies/rivals; and two sources of vertical' competition: the bargaining power of suppliers and customers.

## 3.3.1 The threat of new entrants (medium-high)

Pizza sustainable delivery restaurant operates in an industry whose threat of new entrants is medium because of the medium cost to entry. In particular, to get into this industry there are neither patents requirements nor huge capital investments needs. Barriers to entry, however, are

technical knowledge in pizza production and branding. There are already many competitors in the takeaway pizza market, but few are looking for sustainability, so this aspect could be a big advantage.

### 3.3.2 The threat of substitutes (medium)

So far, there are many pizza substitutes thanks to the explosion of the various big players in delivery. Now, unlike a few decades ago, it is possible to receive many different dishes such as poke, Chinese, Japanese, Mexican etc. in the comfort of your own home. If we focus our attention on sustainability again, many restaurants are starting to commit resources to sustainable packaging and green delivery, but the competition is not yet fierce and there is still plenty of room to enter. In the specific case of takeaway pizzerias, we will see in detail in the comparative analysis in the present paragraph there are not yet big competitors.

### 3.3.3 Customers bargaining power (medium)

The customers of a take-away pizzeria are mostly people who live in the vicinity of 3-5 km from the restaurant. The power that customers have therefore depended very much on the location of the pizzeria because if there are many different alternatives in the vicinity, customer power is very high. In the specific case of a sustainable takeaway pizzeria, however, being a very particular proposition, it does not compete with the myriad alternatives in the vicinity. It targets a specific segment of customers who are more interested in the quality of the product, the way it is received, and above all with a focus on the planet. To sum it all up, we can say that the "customers bagging power" is average because on the one hand the customer has the possibility of choosing different alternatives but on the other hand if he wants a sustainable product on time, he will have to turn to us.

### 3.3.4 Suppliers' bargaining power (medium-low)

The problem of food costs affects restaurants and pizzerias all over the world. Every restaurateur is always looking to optimise the use of ingredients and find favourable agreements with suppliers. There are now so many different suppliers competing against each other that they reduce their power over the individual restaurateur. It is also true that in the case of using organic and sustainable products, the power of suppliers may be higher at this historic moment precisely because of the lack of alternatives on the part of the restaurateur. However, if we consider that the trend is towards a circular and sustainable economy, we can look to the future with much more

optimism. Indeed, it is likely that the number of suppliers will increase in the coming years because of the alternative.

## 3.3.5 Competitive rivalry.

The competitors are all the restaurants/pizzerias offering a home delivery service. As we have mentioned in the previous paragraphs, the choice of specialising in a sustainable and punctual Neapolitan pizzeria allows us to reduce competition with most pizzerias. In a very detailed way in the next paragraph, we will analyse who the competitors are and their characteristics.

**3.4   MARKET ANALYSIS (MARKET DEFINITION AND SIZING)**

Considering that the sustainable and punctual pizzeria is essentially part of three different markets in the following paragraph we will analyse the three main markets: The food delivery, restaurants and food services in Italy and the end the sustainability

## 3.4.1 Industry overview:

*Online food delivery market*

The home delivery industry is experiencing a period of great development. The delivery market has been growing rapidly since 2013. Moreover, in this historical period due to the pandemic that has forced billions of people to stay indoors, it has become the only way to receive food safely. This has given a further boost to the industry because many restaurants that previously only provided on-site consumption have had to adapt to the historical period and start using the big players in delivery or organise themselves independently to guarantee home delivery.

 Consumers choose to order online for 4 main reasons:

- The main reason for ordering online is convenience. Consumers do not need to call, and risk being misunderstood and receiving the wrong order. These mistakes are very unlikely when ordering online.
- Another reason in favour of online ordering is time-saving. Customers do not need to cook or go out to get their meals. By waiting quietly at home, the consumer can use the time efficiently.
- In addition, ordering through online ordering platforms offers an effortless ordering process by storing credit card details together with contact details and information on favourite

restaurants and previous orders. Direct home delivery implies no effort for the customer, either.

- Another major advantage that Online Food Delivery services offer is that customers can make informed choices and discover new kinds of cuisines. The Online Food Delivery companies aggregate menus and cooperate with a variety of restaurants, providing customers with an increased number of choices. Furthermore, customers can specifically choose certain restaurants or dishes over others based on customer reviews.

## 3.4.2 Market Size and future development

The global revenue in the Online Food Delivery segment amounts to US$248.0 billion in 2020. A global comparison shows that most of the revenue is generated in China with US$150.6 billion in 2020.



**Global revenue forecast in million US$**
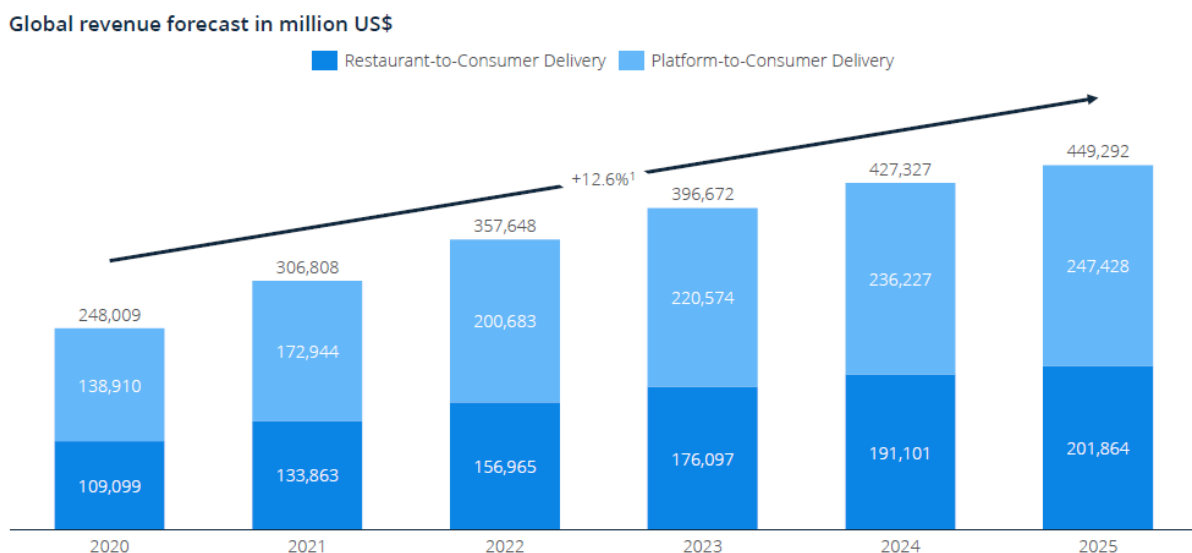
*Figure 11 - Global revenue forecast [51]*

China is followed by the U.S., which has a revenue of US$28.0 billion in 2020. Revenues in Europe are the smallest in this comparison with US$25.8 billion in 2020. The UK is the leading country in Europe with revenues of US$8.8 billion in 2020. Europe is expected to have an annual growth rate of 13.0% (2020-25) and a total market volume of US$47.7 billion by 2025. We anticipate China to have an annual growth rate of 11.6% (2020-25). This will result in a market volume of US$261.9 billion by 2025. The U.S. is growing slightly slower than China and Europe, at 10.1% annually. We anticipate the U.S. to have a market volume of US$45.3 billion by 2025.
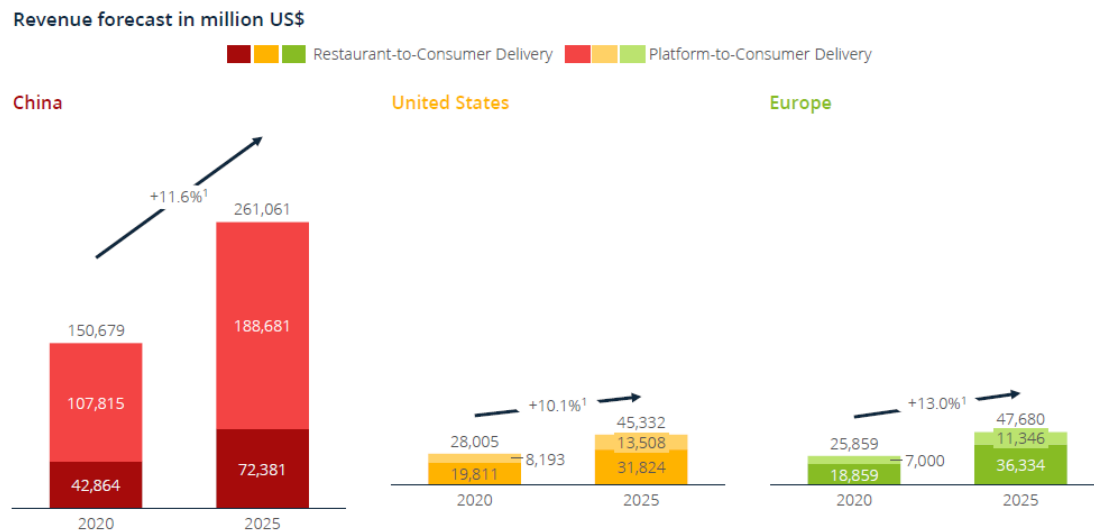
*Figure 12 - Revenue forecast China, USA, Europe*

While it is becoming increasingly popular to order online there is still a segment of the market that still uses the telephone route. In some countries, there is a low user penetration showing that the segment still has strong growth potential. The platform-to-consumer delivery segment still accounted for 48% of the total revenues of the online food delivery segment in 2018. The difficulty in penetrating new markets lies in the commissions and fees that are much higher compared to restaurant-to-consumer delivery.

As can be seen from Figure 12, China has the highest revenues for both sub-segments compared to the rest of the world, but unlike Europe and the United States, the platform-to-consumer delivery segment predominates, demonstrating the high penetration of food delivery services in this market. In the rest of the world, however, it is still more widespread and more convenient for restaurateurs to take care of the delivery themselves. In the United States, 100.7 million users ordered directly from restaurants in 2020, compared to only 44 million who preferred to use delivery platforms. Europe follows the same trend, with 142.4 million users choosing to order at restaurants, compared to 58.5 million who preferred to use the big players in delivery. According to Statista data, this trend will continue in the coming years.
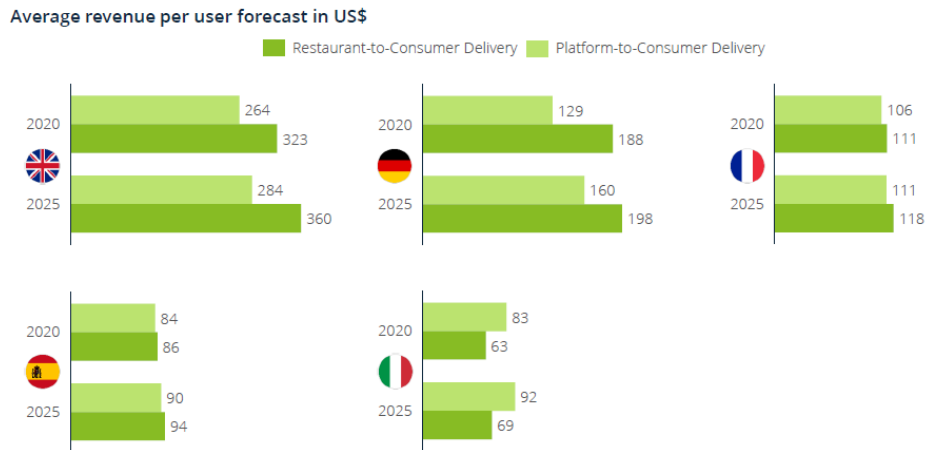
*Figure 13 - Average revenue per user forecast in US$ [51]*

Among the European top 5, users in the UK spend the most on Online Food Delivery with 264 US dollars per person. The average revenue per user is higher in the sub-segment restaurant-to-consumer delivery respectively platform-to-consumer delivery for all countries in the graph above except for Italy. In Italy, the average revenue is higher than the platform-to-consumer delivery. This is because the average delivery price for the restaurant is lower than for the platforms. Furthermore, many restaurants, aware of the platform fees, tend to set a higher price when using the delivery platforms.
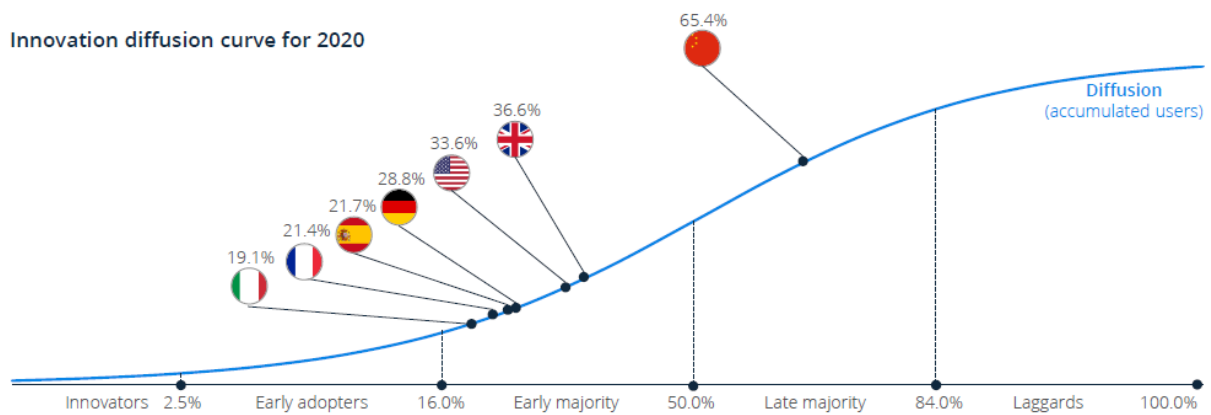


*Figure 14 - Innovation diffusion curve for 2020 [51]*

The diffusion of innovations graph (Figure 15) shows successive groups of consumers adopting Online Food Delivery (Figure 15 shows the penetration rate of selected countries). Innovations in general are not adopted by all individuals at the same time. Instead, they tend to adopt in a time sequence and can be classified into adopter categories based on how long it takes until they begin using the service.

As we have already seen previously China diffusion is much larger than in the rest of the world but the certainly global trend is of growth in the coming years.

Soon, we will see stronger competition between in-house and third-party delivery services, with more companies offering both healthier and high-quality food, even prepared by well-known chefs. Many Online Food Delivery companies focus on data-driven user experience optimization. They leverage technology and harness data by using personalized profiles, recommendations, or digital tracking along the process from the preparation to the final delivery.

Another topic is the integration in an IoT environment. It is expected that voice-ordering will play an ever-bigger role in the future. More food delivery apps will add virtual assistant systems that enable voice ordering. In addition, smart assistants like Amazon Echo will be equipped with online food ordering features. Also, wearables will be used to place these orders. Optimizing the user experience is strongly connected to the delivery process, which is why we predict to see more innovation regarding new delivery methods. Companies are experimenting with self-driving cars, drones, and robots to make transportation easier and more convenient. As the innovation leader within this area, many companies in the U.S. are testing autonomous vehicles. An example is Domino's, which developed a self-driving pizza delivery robot and a delivery drone, or Ford, who put up a self-driving van delivery in cooperation with Postmates. In China, Ele.me is working on a pilot project using food delivery drones in Shanghai's Jinshan Industrial Park

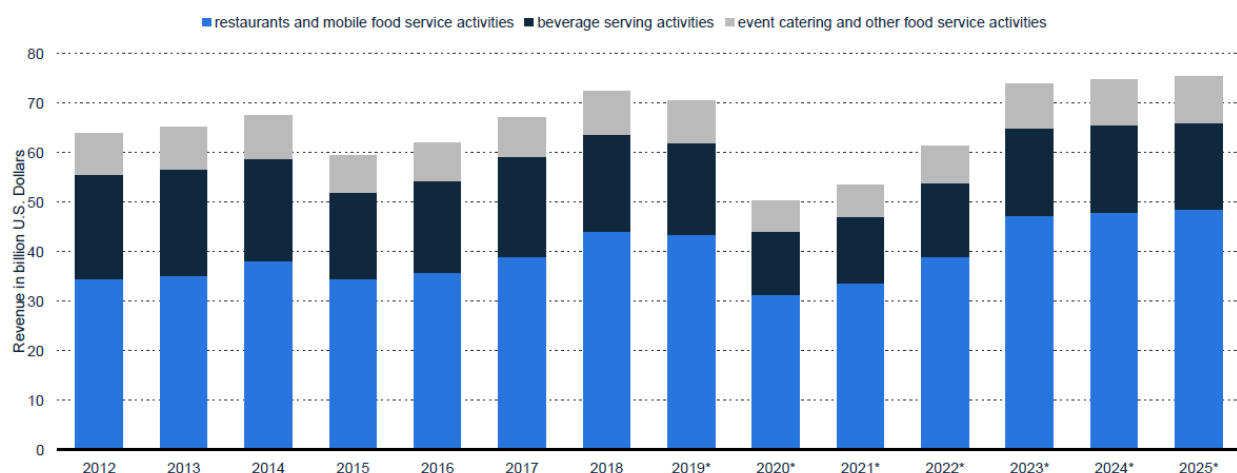## *Restaurant and food service in Italy and sustainability*



*Figure 15 - Revenue from food and beverage activities in Italy. [51]*

60

Figure 16 show the revenues from "food and beverage service activities" in Italy. It is very clear how the impact of covid has negatively influenced the restaurant business especially for restaurants with tables. In any case, the trend up to 2025 is expected to improve significantly, especially from 2023 when the effect of the covid will be fully reabsorbed. It is projected that the revenue of food and beverage service activities in Italy will amount to approximately 48.48 billion U.S. Dollars by 2025.

One of the most relevant aspects of recent years, also in the catering sector, is the increased attention of consumers to consume healthy and sustainable products. According to the Italian federation of public establishments, only 29% of those interviewed cared little or nothing about whether a restaurant was sustainable, while 71% considered it important or very important. The issue of sustainability therefore also plays a central role in the catering sector.
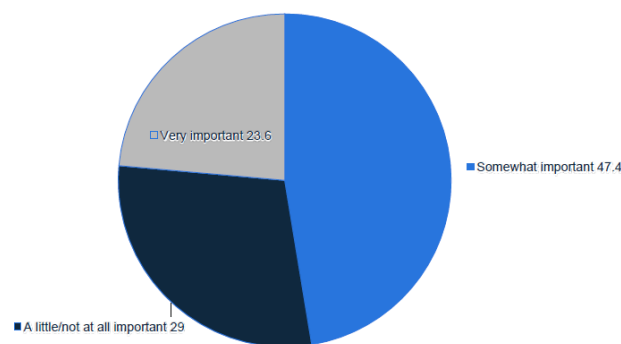


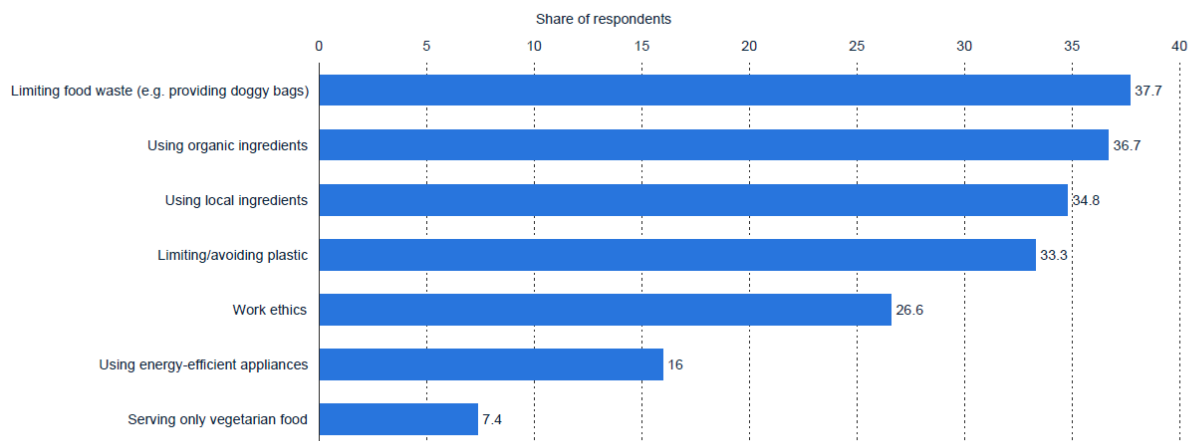*Figure 16* Opinion on the importance of sustainability for restaurants in Italy 2019 [51]



*Figure 17* - Main features of sustainable restaurants according to Italians 2019 [51]

Also, according to the interview made by the Italian Federation of Public Services, Italians have identified the main characteristics of a sustainable restaurant. In the absolute first place, we find

greater attention to food waste, for example, by providing customers with the famous doggy bag. Next in importance are the use of organic products (2nd place), limiting/avoiding the consumption of plastic (4th place). With 36.7% and in third place in terms of importance for Italians is the use of local products. This trend can also be seen in several start-ups born in recent years with the mission to connect small and medium-sized producers directly to the consumer by skipping the entire food chain that reduces profits for farmers and does not allow safe product traceability. One example of a start-up born in Italy is Cortilia, which has been working in this direction since 2012. Cortilia has created an eCommerce site where users can find local products that are delivered within 24 hours and the user knows in detail how and where the product arrives.

## 3.5  TARGET MARKET: CUSTOMER PERSONAS

Personas are real identikits of ideal customers, a sort of fictitious user profile, which represents the needs, behaviours, interests, and aspirations of real users. They are a representation of the characterizing traits of each user and of those that unite them. The main needs sought by the profiles identified above are a product that is easy to order, reliable, on time and that is also sustainable and healthy.

# Giulia Mangiano



**Age**

**23 years old**

**Highest Level of Education**

**Bachelor's degree**

## Current Setting

Giulia is an off-site student who has been living in Turin for 2 years and is studying at the Turin Polytechnic. It is very attentive to climate change and for this reason it buys products with a low environmental impact. She is always looking for something new to try.

## Frustrations

- Lack of time
- Climate change
- Difficult to move in the city because she doesn't have a car

## Goals

- Find a way to have smart and quick delivery.
- Receive a product that respect the sustainable criteria.
- A new innovative product

# Sheldon Cooper

**Age**

**35 years old**

**Highest Level of Education**

**Master's degree**

**Industry**

**Investment**

## Current setting

Francesco is a businessman who works for a big company. He is a very busy worker uses food delivery when he returns home after an intense one work / study day and more in general when you hear it subdued. Comfortable with the digital he often uses for payments, she is curious and loves to experiment, ordering often from multiple restaurants, with a medium-high expense.

## Frustrations

- Lack of time.
- Lack of bio and healthy foods on delivery.
- Tired of the usual delivered pizza

### Goals

- Find a quick solution to order and receive healthy product.
- Fast and on time delivery

# Flavio Gassino

**Age**

**45 years old**

**Highest Level of Education**

**High school diploma**

**Organization Size**

**Bank**

### Current setting

Francesco has a wife and two children. He lives in Turin and work in bank. His life is full of commitments because both must follow his children in recreative and sport activity after the school. Food delivery is an excellent opportunity for get together with family or friends. He prefers the appearance social media of food delivery which becomes a party occasion and conviviality, a trend which is confirmed by the fact that not being active users, they only order on occasions special where they prefer tradition relying on few and trusted restaurants. He is also very attentive to waste and tries to educate his children to pay attention to the use of sustainable products.

## Frustrations

- Food waste
- Pollution
- Lack of time

## Goals

- Find a healthy and sustainable pizza.
- Receive the pizzas quickly and on time.

## 3.6 COMPETITION:

- **Big chain restaurant**

| | Domino's Pizza | Pizza Hut | Chuck E. Cheese's |
|---|---|---|---|
| **Strengths** | 1. Brand recall<br>2. Quick service and deep menu<br>3. Technological innovation<br>4. Internal doughty manufactory | 1. Brand loyalty<br>2. Beautiful restaurant environment<br>3. Quick service<br>4. Good company's corporate image<br>5. Same owner of KFC and Taco Bell | 1. Presence of fun and entertainment options along with food<br>2. Serves families with and groups of kids coming for parties or events<br>3. Economies of scale achieved in Pizza and salad making as the scope of the menu is narrow |
| **Weaknesses** | 1. Operations<br>2. Low staff retention<br>3. Decrease sales due to rise health-conscious population<br>4. Low shops compared his competitors | 1. The satisfaction of the pizzas is declining.<br>2. Complex computer systems and internal conflict from franchisees.<br>3. Lack of organic pizza | 1. The brand is restricted to the US with no global presence means low market share.<br>2. Environment more suited for entertainment and gaming rather than dining |
| **Opportunities** | 1. Market expansion<br>2. Health-conscious eatables | 1. New pizzas with different crust sizes and flavours.<br>2. Pizza Hut expands Indian market menu and looks to an old favourite to bolster sales in the US | 1. Increase in menu options<br>2. Conducting game competitions and handing out prizes to evoke more interest<br>3. Possessing some hi-tech games |
| **Threats** | 1. Direct indirect competition<br>2. Changing consumer habits<br>3. Cost raw material<br>4. Regulatory pressures | 1. Rising competition undermines Pizza Hut as consumers go for greater<br>2. Cost of raw material<br>3. New competition from Mc Donald (Pizza) | 1. Increase interest in online games.<br>2. Competitors in the food industry like pizza hut offer better options.<br>3. Papa john's incredible Pizza providing a better ambience. |

|  | Little Caesars | Spontini |
|---|---|---|
| **Strengths** | 1. A strong brand name built over 50 years. <br> 2. Famous advertising "pizza " <br> 3. Hot N Ready pizza offer <br> 4. Breakthrough advertising and marketing campaigns <br> 5. Aggressively expansion | 1. Quick service <br> 2. Deep pizza is rare in Italy. <br> 3. Easy to standard and replicate the same quality of the pizza. |
| **Weaknesses** | 1. Little Caesars' profits declined in the 1990s, due to the company's attempts to offer free delivery leading to many franchisees to shut. <br> 2. Franchise management can be a problem. <br> 3. A large number of players in this market | 1. Average price higher than competitor <br> 2. They do not have their delivery service. <br> 3. Narrow number of pizzas on the menu |
| **Opportunities** | 1. New pizzas with different crust sizes and flavours <br> 2. Venture newer/ country | 1. Market expansion <br> 2. Increase in menu option. <br> 3. Have their delivery service. |
| **Threats** | 1. The health-conscious segment can be a problem. <br> 2. The Rising price of cheese. <br> 3. Increasing competitor activity can reduce the market share for the brand. | 1. Risk of growing too fast without the infrastructure. <br> 2. More competition in deep pizza abroad |

- **Sustainable restaurant**

| | EZIO | Bella&Brava VENEZIA | Gigi Pipa |
|---|---|---|---|
| **Strengths** | 1. First sustainable pizza in Italy (Forbes) <br> 2. Wide menu with a particular mix of ingredients. <br> 3. Unique dough recipe | 1. Easy to standardize working method. <br> 2. Innovative restaurant and packaging of the pizza <br> 3. Do not need skilled employees. <br> 4. Hight level of ingredients | 1. Ingredients km zero <br> 2. High level-pizza <br> 3. Save money with own vegetable garden <br> 4. Beautiful restaurant <br> 5. Different kinds of dough |
| **Weaknesses** | 1. Just one restaurant <br> 2. Process difficult to standardize. <br> 3. Family management | 1. A narrow number of pizzas on the menu. <br> 2. Prevention on frozen pizzas from costumers <br> 3. Higher price compared to competitors | 1. High average price <br> 2. Process difficult to standardize |
| **Opportunities** | 1. Increasing awareness of healthy eating <br> 2. Standardized the way of producing pizza | 1. Increasing awareness of healthy eating <br> 2. Increase in menu options | 1. Sell vegetables in advance <br> 2. Increasing awareness of healthy eating |
| **Threats** | 1. Increase of competitors in this health market. <br> 2. Cost of raw material | 1. Increase of competitors in this health market <br> 2. Cost of raw material | 1. Increase of competitors in this health market <br> 2. Cost of raw material |

| | PIZZARIUM | 'o fiore mio PIZZERIA | ci Sta FRIENDLY PIZZA |
|---|---|---|---|
| **Strengths** | 1. Unique and refined dought<br>2. Refined choice of ingredients<br>3. Easy to standardize a working method<br>4. The owner is one of the best pizza expertise in the world | 1. High level and refined pizza<br>2. They sell non-only pizzas<br>3. Bio and natural ingredients<br>4. Already 3 points of sale<br>5. It is possible to heat the pizza | 6. Ingredients km zero<br>7. High level-pizza<br>8. Save money with own vegetable garden<br>9. Beautiful restaurant<br>10. Different kinds of dough |
| **Weaknesses** | 1. High average price<br>2. Only slice and shovel pizza<br>3. Only one restaurant | 1. Gourmet is a small market<br>2. Higher cost of ingredients respects the competition<br>3. Higher price | 3. High average price<br>4. Process difficult to standardize |
| **Opportunities** | 1. Open more restaurant<br>2. Propose a cheap alternative | 1. Increasing points of sale<br>2. Increasing menu option | 3. Sell vegetables in advance<br>4. Increasing awareness of healthy eating |
| **Threats** | 1. Cost of raw material<br>2. Higher cost of skilled employees | 1. Cost of raw material<br>2. Higher cost of skilled employees | 3. Increase of competitors in this health market<br>4. Cost of raw material |

## 3.7 PRICING AND FORECAST

The term Price Positioning describes the process of adapting your price towards the position you want your products and services to represent in the market. It is a marketing strategy in which you attempt to create a "position" for your brand in the minds of your target customers that according to the price is consistent with your positioning.
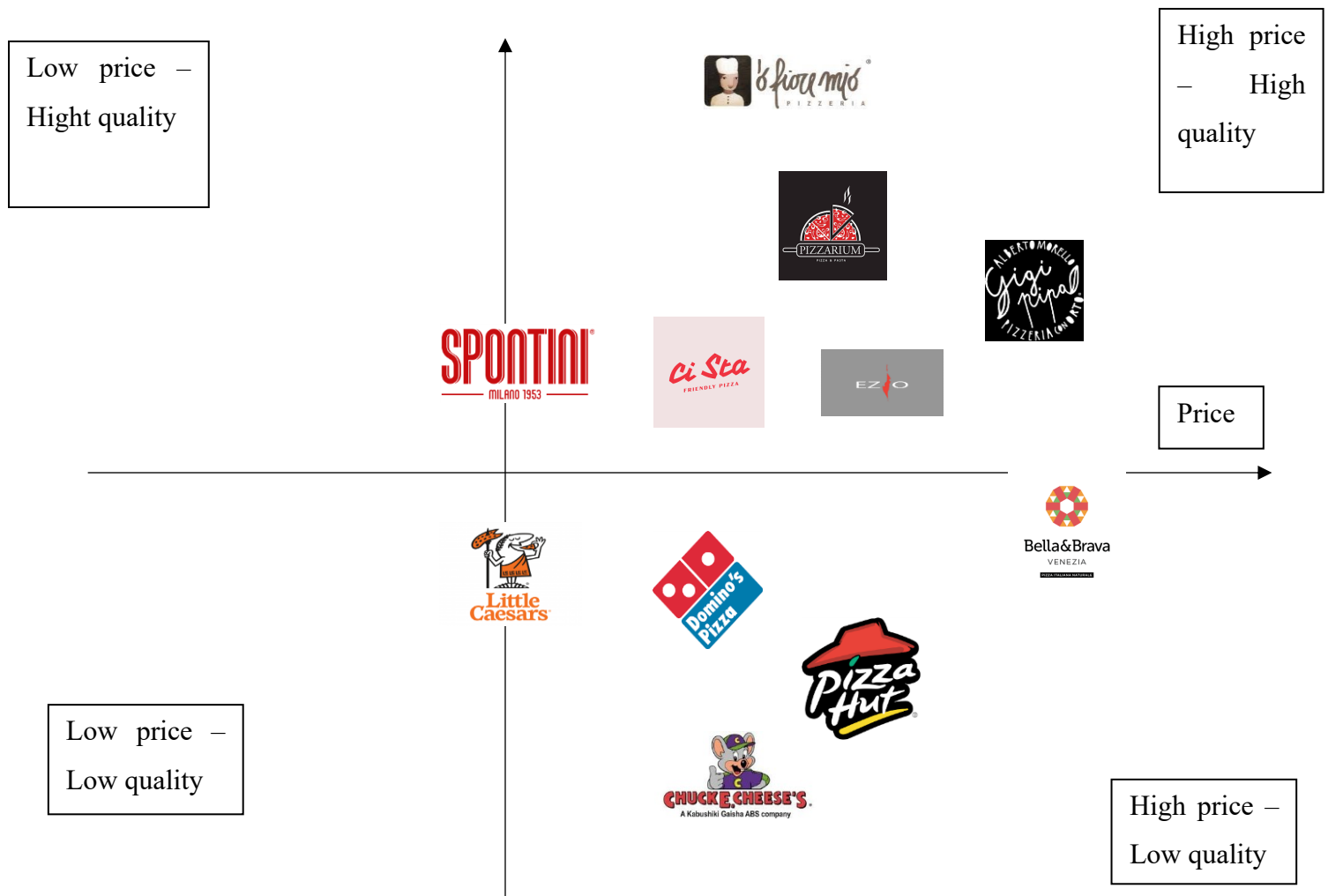


Thanks to the graph above, it was possible to identify more clearly the positioning of the most important competitors according to price and quality. In the Low Price-Low quality quadrant we find only the pizzeria, Little Caesar, with a very low price, in fact, on average a pizza is sold at 6.4 euros and with a medium-low quality. In the upper quadrant, Low Price-High quality, we find 'Spontini'. It is the only pizzeria in this quadrant because being able to offer a good product at a competitive price is a very difficult challenge. Spontini is succeeding in this arduous task because it sells a very thick

pizza by the slice with a lot of dough (which has a very low cost) and the topping, which is the most cost-impacting part, is present in a limited way. In the High Price-Low quality quadrant are the large American takeaway pizza chains with an average price of 8.5 euro for Domino's pizza, 9.8 euro for Pizza Hut, and 10 euro for Chuck E. Cheese's respectively. As for the latter, it should be noted that it offers its customers, especially children, a paid entertainment area that raises the average price. The only pizzeria in Italy in this quadrant is the newborn Bella&Brava, which offers frozen pizzas at an average price of 11.6 euros per pizza. In the last quadrant, High quality - High price, all the quality Italian pizzerias have in common an attention to the origin of the product and its processing. The average price is also much higher.

# 4 PART 4 – DELIVERY SUSTAINABLE PIZZA RESTAURANT BUSINESS MODEL INNOVATION

In the following chapters, we are going to describe in more detail the project of a Neapolitan pizzeria, sustainable and punctual, and with it also the major problems faced by the restaurateur in the management of a take-away pizzeria. Having identified the main problems, we will proceed to describe my proposed solution.

## 4.1 CASE STUDY

### 4.1.1 Project

The project is to start an advanced sustainable Neapolitan take-away pizzeria with scalable characteristics.

After years of experience in pizzerias we have identified several critical issues:

1. Delivery time not respected
2. Fluctuating product quality
3. Loss of consistency in pizza
4. Poor management of raw material supply
5. Lack of customer care

All this creates a great disservice to the customer.

Our project is to respond innovatively to these problems by launching a 4.0 pizzeria with the following characteristics:

1. Order management that allows for different delivery times based on distance and speed of pizza production that ensures the timely delivery.
2. Standardisation of all the equipment and the working method allows the product to be replicated almost identically.
3. A new type of innovative packaging produced by a start-up company in Turin. A special grid guarantees optimum conservation.
4. Computerisation of warehouse management to guarantee supply.
5. Quality service to ensure customer loyalty.

The image will be innovative compared to the rest of the pizzerias. We want to be a green pizzeria that respects the environment and the products. Everything from the logo to the layout of the premises, to the digital marketing, will be consistent with this image.

As far as social impact is concerned, we will focus on two distinct factors:

- Attention to the purchase of raw materials, waste disposal and the use of recyclable materials.
- The other key aspect is human capital management. We want a company that puts the person at the centre. Every employee represents the company, is the company, and this will be passed on to every individual who works for us.

## 4.1.2 The main problems:

In the following chapter, the critical issues listed above will be analysed in more detail.

### 1. *Delivery time not respected*

I think we have all waited anxiously for the delivery man to ring the bell and finally deliver our lunch or dinner. There is no wait more nerve-wracking than waiting for your food, sitting on the sofa, and checking the time every second. What happens in most cases is that the agreed time is not respected and the 5–10-minute delay has become part of the norm. The only outlet is to blame the delivery person, who is not responsible. This bad experience significantly alters our judgement of the restaurant and unconsciously also of the food we have ordered and consequently discourages customer loyalty.

Delay has now become part of normality, especially when delivery is managed independently by the restaurant/pizzeria. According to research carried out by "Dal Pirata", 43% of deliveries arrived late and the percentage on Saturdays, as we can see from the graph below, rises to 55%.
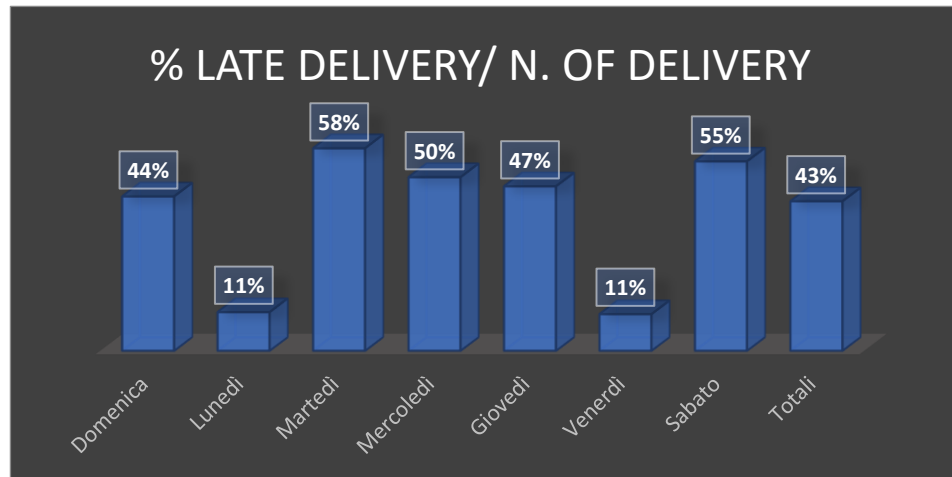
*Figure 18 - % Late delivery/ Number of delivery*

The peak, against intuition, is reached on Tuesdays with as much as 58% of deliveries being late despite only 47 pizzas being produced (graph below). This last figure shows that the problem is not only caused by peaks in workload but is a symptom of intrinsic bad organisation.
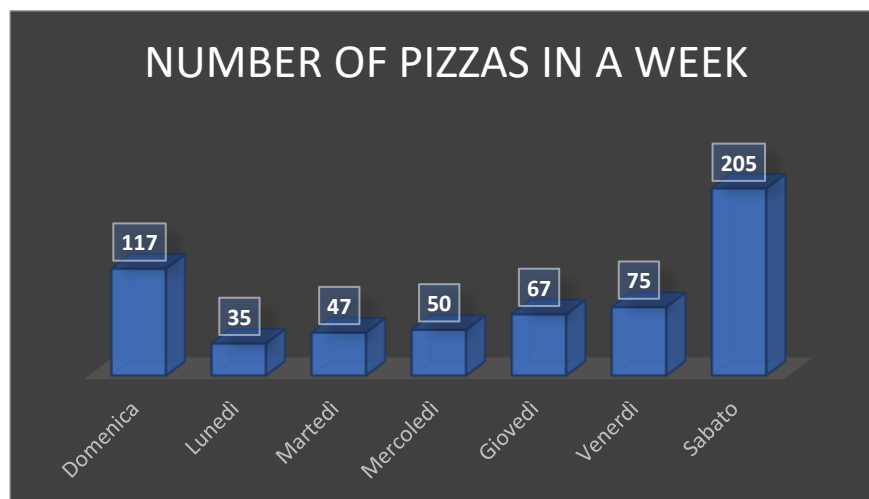


*Figure 19 - Number of pizzas in a week*

But what is this systematic delay caused by? There is no single answer, but the discourse is broader. In the next paragraph, we will describe the method used in pizzerias (including the one analysed) to manage orders. For now, we will focus our attention on restaurants that manage deliveries autonomously because, as will be explained later, using the various big players (Just Eat, Glovo) reduces in a too substantial manner the profit margin which is not very high in a take-away pizzeria.

Restaurants can essentially receive orders in three ways: by telephone, via their website or using the platforms of the big delivery players. Most pizza restaurants only have one point of sale and therefore receive orders by phone or from delivery apps.

Let's try to go through the main steps of home delivery:

1) The customer calls the pizzeria to order.
2) The operator places the order on an electronic till which outputs the order in duplicate. One will be given to the delivery men while the other will be used by the pizza chef.
3) The pizza chef prepares the pizzas when he thinks is the right time.
4) The pizzas are then sorted into the various deliveries and entrusted to the delivery man.
5) The delivery men reach the delivery point.

As you can see, there are many steps behind an online order and each of these steps is a possible source of error and delay. Usually, the person who answers the phone in the restaurant is the one who oversees the till. This person, therefore, must at the same time answer and essentially organise the service by distributing the pizzas evenly throughout the evening. The operator in this case is subjected to an excessive amount of work and is the first cause of possible inefficiencies (wrong pizza, wrong address, and a systematic delay in delivery). Once the first hurdle of difficult communication between customer and operator has been overcome, the process continues. At this point, orders are organised according to the requested delivery time and based a little on the experience of the pizza makers, it is decided when to start producing the pizzas. However, this method of working does not consider the distance of the deliveries and the availability of the raiders because it is not known when they will return from the previous delivery. Once the pizza has been produced, it is stored in the carton until a raider returns for a new delivery. At this point, the raider, hoping that the address has been taken correctly reaches the delivery point.

If we go to analyse the process just described, it is easy to find several critical points which, if not considered, will certainly lead to a systematic delay.

- The first aspect to consider is the communication between the customer and the operator which, as we have said, can essentially take place in three ways: by telephone, through delivery platforms or the customer's website. The telephone route is the one that we can define as the most problematic, both in terms of the average time taken to receive an order and the misunderstandings that it undoubtedly generates. At the same time, the time has not yet come when it is possible to completely abolish the telephone channel to make room for online orders (from the big players, from one's website), so it is necessary to find a way to make this process as linear and clear as possible.

- The second critical issue in the process is the organisation of the service (home delivery and takeaway). It must be considered that the variables change with each order added and therefore a responsive order management system must be designed. In addition, it is of fundamental importance to know what is the maximum number of pizzas that can be produced per hour and based on this limit the number of pizzas. The most common mistake made by most takeaway pizzerias is to take more deliveries than are feasible because the horizon is to earn as much as possible from a given night. The result, however, if we shift our horizon to the medium to long term, is a series of dissatisfied customers due to delays, mistakes, and cold pizzas.

- The third factor that has a major influence on delay is the complete lack of interest in the time/distance of delivery. Usually, the pizza is produced 20 minutes earlier regardless of the travel time of the delivery person, who many times receives an address written on the receipt that he hopes to be able to find. This is because it is usually the pizza chef who must think about when to start producing the pizzas.

All these aspects, if not well considered, inevitably lead to delays and poor service. Despite the efforts made to offer a quality product, consumers will always prefer to receive their pizza from Domino's, which can deliver the product in half an hour and never late.

## 2. Fluctuating product quality

The second very important point I would like to focus on is the quality of the product in takeaway pizzerias. I regularly receive pizzas or products of different quality when ordering from the same pizzeria. Sometimes the pizza arrives with ingredients in different quantities, with a particular shape or dough with a strange taste than usual. How does the average customer react to all these changes? Do you think they will still trust the pizzeria? The answer is no. The consumer wants to be sure of what he is going to eat and not rely on the luck of the moment or the day. The big fast-food chains also work because they guarantee the same product every day in every part of the world. If we think for example of McDonald's or Domino's, to remain in the takeaway pizza market, they guarantee the same standard and the same product and that is why so many people choose them. They are certainly not healthy or excellent products, but they are a security for the consumer, who, faced with a choice, will always prefer to go down the familiar path. In most Italian takeaway pizzerias, not only does the quality change between venues in the same group, but it often changes within the same venue and even the same evening.

As in the case of lateness, let us try to analyse the causes a little more deeply and then propose a solution. All that follows is based on experience gained over the years and on personal research and is not intended to be and is not the absolute truth.

Most takeaway pizzerias entrust the pizza chef with the responsibility for quality and this immediately generates two important consequences:

- The owner of the restaurant will have to choose the pizza chef carefully and will have to pay him more, thus reducing his profit margin.
- If for some reason this pizza chef leaves, the pizzeria will change its identity.

All this generates a situation of dependence that an entrepreneur should avoid, which would be aggravated if he wanted to create a so-called scalable business. This speech certainly does not want in any way to discredit the importance of the human factor of which I will speak extensively in a dedicated paragraph, but it is simply the entrepreneurial vision that forces you to privilege the process rather than the individual. If we think again of the large chains, this reasoning becomes even more relevant because the various Domino's, McDonald's, etc. put the process at the first step, making it clear and feasible for anyone.

## 3. *Loss of consistency in pizza*

Another important issue with delivery is the condition in which the food arrives in our homes. If we think that at least 20 minutes elapse from the time the preparation finishes its processing and reaches the consumer, it is of fundamental importance to consider the mode of delivery and the tool used. If we return to the case study of the take-away pizzeria, this aspect becomes even more central. Let's try again to trace the path of the product from the pizzeria to the consumer. The pizza, as soon as it comes out of the oven steaming hot, is placed in the carton, and immediately closed and stored in a warm place until the arrival of the delivery man, who places the cartons inside the classic pizza box and reaches the delivery point. The pizza spends almost all its time inside the box, which makes it difficult for moisture to escape, and as a result, the pizza changes consistency from crispy to chewy. Moreover, if too much time passes it also starts to cool. The result is that what we serve to our customers is completely different from what comes out of our oven, and all the effort that has gone into the care of the product is destroyed in transit. Most pizzerias have no idea what they are serving to their customers because quality control is done with the pizza as soon as it comes out of the oven, steaming hot.

## *4. Poor management of raw material procurement and waste*

Managing the supply of raw materials in pizza restaurants is often a problem for several reasons. Usually, it is an activity followed by the first pizza chef, who checks the pantry daily and then orders what is missing from various suppliers through specific orders. In my experience, it happens more than a few times that some products run out during the service, and this causes great inconvenience both to the customer and stress to the pizzeria workers, who must waste time calling the customer to change their order. This situation conveys a lack of seriousness to the customer and, as in the case described above, prevents us from being a guarantee for our customers.

Another very important issue is attention to waste. 21% of food waste occurs at the catering and consumption stage. Every year in the world, according to FAO and Coldiretti, 1.3 billion tons of food are wasted. In Italy, 20 million are wasted each year, which corresponds to 15 billion in terms of expenditure (1% of national GDP).

Food waste also has a significant impact on climate change. Each kg of a wasted product would correspond to approximately 4.5 kg of $CO_2$ released into the atmosphere, considering both the production and disposal processes. Moreover, food waste corresponds to 8% of the greenhouse gases produced by man.

Every restaurateur in his or her small way can do something to reduce waste and at the same time keep their pockets a little fuller.

**Waste**

Reducing waste in catering, as well as in the daily consumption of individuals and families, is crucial on two fronts: environmental and management. Reducing waste means optimising costs and therefore better management control of your business.

21% of food waste occurs in the catering and consumption phase [52]. Every year in the world, according to FAO and Coldiretti, 1.3 billion tons of food are wasted. In Italy are wasted 20 million a year that corresponds to 15 billion in terms of expenditure (1% of national GDP).

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Each restaurateur in his small way can do something to reduce waste and at the same time have pockets a little fuller.

To avoid waste, and thus minimise the amount of unused food, management organisation is necessary. Both in terms of warehouse management and in thinking about dishes and menus. For a restaurant, it becomes crucial to check orders placed and control incoming goods to eliminate wastage. Continuous monitoring of food costs can be a great ally in managing a restaurant business wisely and facilitating waste reduction.

Defining operational standards, keeping product quality and quantity under control, and cross-checking the production of dishes will allow the manager to establish the maximum capacity that can be delivered and the level of quality that he wishes to provide to the customer.

## 5. *Lack of customer care*

The first famous and fundamental leadership principle behind Amazon's extraordinary success is customer focus.

"*I leader costruiscono tutto a partire dal cliente. Lavorano con entusiasmo per conquistarne e mantenerne la fiducia. Nonostante siano attenti a ciò che fa la concorrenza, il loro sguardo è fisso sul cliente.*"

Customer care should be the basis of any good restaurant/pizzeria but in reality, it seems as if the customer is a nuisance.

Customer care comes into play at different stages. The first contact takes place during the ordering process and can be direct (in person or by phone) or indirect (via delivery platforms or personal website). Then the second contact takes place either on the premises in case of take-away or at the customer's home where the product will be delivered. In both situations, the pizzeria employee has not been given any training on how to deal with the customer. Most restaurateurs underestimate this aspect which has incredible importance on customer loyalty. The delivery men themselves represent the restaurant; they are the ones who actively meet the customer.

A caterer's job does not end just when you have prepared the food but ends when the customer has received the food at home, been satisfied, and left you a positive review.

So why should the delivery person be exempt from all those rules mentioned above? Why should you accept that the delivery person representing you goes to the customer's home looking like a

"bricklayer" at the end of his shift? (Without taking anything away from the bricklayers, but only to express their "battered" state due to the heavy work they must endure).

But what do you want the customer to think if it is a dirty and scruffy guy who brings him the pizza? Why doesn't the delivery man have his uniform, but comes dressed in a jogging suit? Why should you accept that the delivery man snorts and complains if the customer pays the €50 bill for €22.5, simply because he must give him change? Why waste the possibility of the delivery person inviting the customer to leave a review, post a photo on social networks tagging you, sponsor you in general? Why waste the chance for the delivery person to invite customers to download your venue's app, rather than ordering from platforms so you have their details?

All these problems have only one cause: the restaurateur who does not care about the delivery boy. The delivery man is nothing more than a waiter who goes to the customers' homes, rather than going to the table. And if you must send him to customers' homes, without training him, then better to rely on platforms

## 4.1.3 Our innovative solution

In the following paragraph, I propose our innovative solution to the main problem that I explain in the chapter above.

### 1. *Innovative order management tool*

The delay then, after the above considerations is a big problem for pizzerias/restaurants. Our innovative solution is the use of innovative software for the management of orders and not only. In the market, many startups offer a service of this type but the one that seems more complete for our needs is called deliverart.

Deliverart is an Italian startup born in 2016 and incubated in Turin and have developed a platform for digital order management. In the specific the features they offer are:

- Deliverart aggregates all orders coming from website, app, phone and delivery platforms into one platform. This allows you to manage all orders coming from different sources through a single software, avoiding the classic restaurant confusion. In addition, another very useful feature is the management of simultaneous menu changes on all platforms to which the software is connected, thus ensuring timely and accurate service.

*Figure 20 - Deliverart Aggregation tool*
*[53]*

- **Optimize:** Deliverart suggests the best time based on your workload and creates the fastest route for delivery. In fact, by connecting to google maps it provides real-time traffic updates and consequently calculates the delivery time autonomously. It also considers the amount of work and the production time you have previously set and combining these three pieces of information communicates the delivery time to the customer. This service optimally addresses the issues discussed above order management and delivery times/distances.

- **Monitor:** Reduce errors by keeping everything under control with dashboard tools: from real-time statistics to delivery tracking and order updates. This makes it easy both for an operator to know in real-time what is happening during service and for us owners to know what is going on in their restaurant. Moreover, having access to all this information after the fact, it will be possible in a second moment to investigate the causes of delays or inefficiencies.

- **Speed up:** Simplify the work of your couriers with the dedicated APP. Deliverart optimizes routes thanks to an intelligent algorithm and allows you to organize their shifts with a click. This feature facilitates the management of employees even at a distance and significantly decreases the risk of leaving shifts uncovered.

- **Provides Information:** Statistics, order history, courier performance, best-selling products, most loyal customers. Deliverart allows you to have under control all the information on the progress of the premises through the consultation of the dashboard.

According to the Deliverart website, this allows you to achieve an increase in the performance of your business. Specifically:
  - Decrease in time to manage deliveries by - 60%.
  - Increase of deliveries within a month by +30%.
  - 15% increase in turnover

[53]

## *2. Reliability on the quality of the product sold*

As extensively discussed in paragraph 2 one of the biggest problems of takeaway pizzerias is the fluctuating quality of the products sold that consequently lower the level of trust of your customers. For this type of problem, and to be able to structure a scalable business through the implementation of a series of changes on several factors:

- **Choice of the number of pizzas on the menu:** In our vision, it is important to offer our clients a menu with a reduced number of pizzas (about 15) to control and simplify the implementation of the finished product. Most of the take-away pizzerias have a menu that ranges from 30 to 100 pizzas, and this, in addition to causing embarrassment to the consumer when he/she consults the menu, conveys to the customer that there is no identity of the restaurant. I find it much more effective to offer a limited number of products that are consistent with the vision of the restaurant. In addition, having a limited choice favours the replicability of the product.

- **Employee training:** Everyone who comes to work in our restaurant must be trained on the process and the importance of respecting these rules. We believe it is important to ensure a standard for our clients, so employees must be aligned with this mission.

- **Structure of the restaurant:** In this perspective of standardization of the product, how the restaurant is organized has fundamental importance. Right from the planning stage, it will be essential to structure the production line consistently with the menu that is proposed. In most pizzerias, on the contrary, the opposite happens, that is, once the

restaurant is finished, the menu is decided. This causes a series of criticalities when the pizza is produced.

Moreover, in this way, it will be easier to replicate the restaurant and guarantee the same product. Examples of this way of structuring the restaurant come from large chains such as McDonald's or Domino's where the production line is standard in every part of the world.

### 3. *Improved pizza preservation*

The problem of pizza preservation is certainly one of the most difficult challenges to overcome. Being able to maintain both the fragrance of the pizza as soon as it comes out of the oven and the temperature is very complicated. We respond in two different ways:

- **Using an innovative carton**: Several companies have sprung up in the last period that has attempted to solve the problem of pizza preservation. One of the most interesting alternatives is the "KEEPizza" carton. KEEPizza is based on a grill that manages to keep the pizza always hot! This is not magic: the grid reduces the surface of contact with the pizza (no condensation) and the hot and humid air stops in the lower cavity. The water vapour, heavier, precipitates and is absorbed by the bottom cardboard (not in contact with the pizza). The result is a cavity of warm, dry air that keeps the heat to your pizza!



***Figure 21*** *- Pizza packaging by KEEPizza [54]*

The cardboard must be certified. And KEEPizza is, so it's safe for your health and the environment. The pizza cartons of little value can contain dangerous substances (bisphenol for example) caused by the use of recycled paper. This is forbidden in Italy but dangerous cartons can be found in the Italian market.

KEEPizza is different! It is therefore even more attentive to:

- **Health**: KEEPizza uses only pure cellulose, guaranteeing the highest levels of care. Don't be fooled by those who say that cardboard is carcinogenic! It's a pure strategy to sell! Our cardboard is certified and therefore safe!

- **Environmental:** cartons can be thrown in the paper only if they are clean. With KEEPizza the pizza comes into contact only with the removable grill and then the cardboard, which remains clean, you can throw in the recycling bin, to go back to being other paper. [54]!

- **Means of transport:** Another fundamental aspect to solve the problem of consistency is the method of transporting the pizza. Considering also the nature of the pizzeria we would like to open, that is sustainable and with limited environmental impact, our solution is to use electric means of transport with boxes to keep the pizza warm. Dometic [40] responds to our needs, a company specializing in the production of instrumentation for delivery. Specifically, Dometic produces a Delibox made of insulating material that can hold up to 14 pizzas at a temperature of 80°. The heat is distributed evenly at all points and, thanks to Dometic's patent, odours are eliminated.



*Figure 23 - Pizzas box by Dometic [61]*
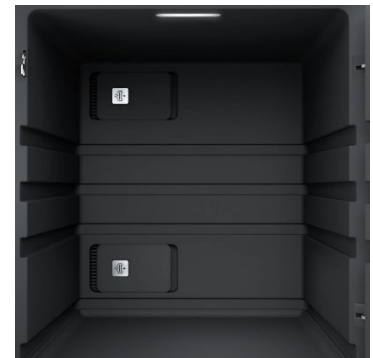


*Figure 24 – Control dashboard [61]*



*Figura 25 - Pizzas box (inside) [61]*

## *4. Management of raw material procurement and waste reduction*

Another important aspect in the management of a restaurant is the sourcing of raw materials. Many, restaurants, as we have explained above are used many ingredients and it often happens that something is missing. Our solution to this problem is once again the use of software that easily allows employees at the end of the service to make the stock of the warehouse. In automatic software,

knowing the average sales trend of the following days formulates an order. In this way, besides not risking finishing the ingredients, it is possible to make orders that take into account the demand and limit in this way the waste. Not to mention that through access to the dashboard of the software to be aware of what ingredients are used more and always have under control at a distance the situation in their stores.

- ### *Waste*

Exactly, food waste in restaurants is a big problem. Laura Michelini and Ludovica Principato [55] , researchers at Lumsa and Roma Tre, have mapped the phenomenon, looking for good practices already in place, models to follow. Most food waste in the restaurant industry occurs during the food preparation phase (45% of the total), or on the plates of customers (34%), or due to food spoilage (21%). As a result, responsibility for so much waste lies with chefs, those who work in kitchens, and end customers, but also with restaurant managers who often plan poor purchases.

"Unfortunately, however, not all restaurant managers believe that limiting waste leads to financial savings. Not everyone knows that for every dollar invested in reducing food waste there is a return on investment of up to $14, and the restaurant sector appears to be among the business activities with the highest returns," Michelini and Principato (the latter author for Spinger of the book "Food Waste at the Consumer Level") tell ANSA.

Managers and chefs should better plan food orders and carefully define menus; avoid food deterioration by checking expiry dates and storage, reuse leftover food for new and tasty recipes and allow customers to choose half portions to avoid leftovers on the plates. The client, instead, should be able to understand his level of hunger before ordering the dishes, and in case of leftovers, can ask for a container to take them home and consume them at a later time. The problem is that the so-called doggy bag, much loved and requested by Anglo-Saxon populations, is not yet so used in our country for purely socio-cultural reasons. According to a recent study, 90% of Italians believe that a large amount of food is wasted in restaurants, but 41% are embarrassed to ask for a doggy bag.

This scenario also includes new digital business models, the so-called food-sharing platforms, which aim to reduce food waste, particularly in the distribution and catering sectors.
Some platforms have an essentially non-profit vocation as the case of Foodsharing.de [56], one of the first food-sharing initiatives in Europe, and that thanks to the involvement of many volunteers have

built an equal P2P network of food savers who share excess food using the platform (model sharing for the community).

Among the platforms with a greater profit orientation (sharing for money), which therefore aims to balance the desire to solve the problem of food waste and at the same time ensure the economic sustainability of the platform, there is Too Good To Go, a start-up founded in Denmark and now present in 10 European countries (recently also in Italy). The platform, operating in the business to consumer (B2C) market, collects offers of food in excellent condition (but close to expiration and that would otherwise be thrown away) from bakeries, supermarkets and restaurants and the final consumer can go to the point of sale and buy the products at an extremely advantageous price. The food can be bought directly from the app. With a double option: search for activities that adhere to the initiative, or identify a specific dish.

## 5. *Customer care*

Attention to the customer as we discussed in the paragraph above is of vital importance for anyone working in the restaurant industry but perhaps has even more importance in the takeaway pizzerias because the revenue of the latter comes from 80% from regular customers.

Our solution is also summarized in two ways:

- **Training:** You must necessarily transmit to your employees your company vision and teach them how to relate to customers. At the centre of the relationship with the customer is the delivery man because he is the one who directly delivers the food entertains relationship with the customer. For this motive the Deliveryman could be considered as "the waiter who goes to the customers' homes" and for this, he should respect some rules:
    - Wearing a clean uniform.
    - Maintain a certain language register.
    - Be customer-oriented.
    - Respect health and hygiene rules.
- **Quality control:** In addition to teaching customer relations, it is perhaps even more important to ensure quality standards. It is necessary to set well-defined standards for the final product. This is perhaps the most difficult challenge because the production of pizza has so many variables that can affect the result and only through a clear definition of how it is made and above all a strenuous search for perfection can this goal be achieved.

## 4.1.4 Focus on own sustainable strategy

In the previous paragraphs, we have described the main actions we want to take to respond to the problems and shortcomings that exist in most takeaway pizzerias. In this paragraph instead, I want to focus on all the innovative strategies that respond to the need to be first of all a sustainable business. As we have seen in the theoretical part, the pillars of sustainability are environment, economy and society, and through the checklist proposed by the Department of Nutrition, University of Brasília, 67 articles go into detail on each of these pillars and allow to evaluate the degree of sustainability of a business. Innovative strategies to achieve these goals are:

- **Use of local and seasonal products:** The pizzeria will use only products from local producers to limit pollution due to transport and also supporting the community in which the pizzeria is going to be inserted. There are now structured startups such as Cortilia that deliver products directly from the producer to the consumer, shortening the long food chain that is a source of pollution and often has a higher cost for the restaurateur/consumer. Connected to this strategy is the use of seasonal ingredients, so the menu will be dynamic, adapting to the time of year, guaranteeing fresh products and an ever-changing offer for consumers.

- **Use of green means of transport for delivery:** Another key aspect is the use of green means of transport for delivery. Our deliverers will use only means of transport of our property that will necessarily be at zero environmental impact. So we will purchase bicycles for short distances and electric scooters for longer distances. The use of software for the management of deliveries will also allow us to optimize the number of deliveries by combining where possible more orders in a single trip to reduce delivery times and protect the environment.

- **Menu and food waste:** To limit the waste and increase the standardization all preparations will be written in a recipe book with pre-established doses. In this way, it will be easier to verify the exact amount of raw materials used by employees. In addition, the menu will offer baby portions for the youngest customers to avoid waste. The restaurant will offer a separate menu or substitutions to meet dietary restrictions, such as vegetarian cuisine, vegan menu, or preparations to meet religious restrictions. At a later stage also the kitchen will be opened for the sale of gluten-free products.  The restaurant will offer ≥50% of its proven healthiest (less salt, sugar and oil) dishes. For transparency within the site, it will be possible to consult all the nutritional values of each dish. Thanks to warehouse management software the restaurant carries out smart ordering systems, inventory monitoring, inventory rotation and/or other inventory management strategies to avoid food waste.

- **Waste reduction:** the restaurant will limit packaging and orders products in bulk to avoid waste generation especially for the plastic. Moreover, inside the restaurant, bins will be chosen to encourage the differentiated disposal of products thanks to different shapes of the bins and with clear indications on how to dispose of waste. In addition to this last solution, the company through its social communication channels, website and physical points encourage its customers to reduce waste (for example: maintaining glasses, reducing disposable packaging, and eliminating plastics or straws). The company exclusively uses environmentally sustainable hand cleaners in the bathrooms of customers and employees. The packaging with which the pizza will be delivered will be made of recyclable paper and with a grid on the inside that increases the quality of the pizza and at the same time allows for more cardboard to be recycled and not in direct contact with the pizza. The company donates to food banks or charities or startups as "too good to go" to avoid wasting food from products suitable for consumption.
- **Employee Training:** Di fondamentale importanza per attuare le strategie descritte sopra è il training per i dipendenti. The company will train its employees to avoid food waste during all stages of meal production, from the receipt of food to distribution, on healthy eating and the health impact of what they are producing.

## 4.2  VALUE PROPOSITION AND BUSINESS MODEL

| Key Partners | Key Activities | Value Proposition | Customer and Beneficiary Relationship | Customer and beneficiary Segments |
|---|---|---|---|---|
| Supplier of:<br><br>- Food<br>- Beverage<br>- Cleaning product | - *Marketing*<br>- *Production systems*<br>- *Employee's relationship*<br>- *Quality control*<br>- *Customer care*<br>- *supply of raw materials* | **Economic value proposition:**<br><br>*Advanced Neapolitan takeaway pizza, on time, sustainable and easy to order.*<br><br>**Social value proposition:**<br><br>*Innovative restaurant attentive to the environment, health, and people wellness.* | **Customer:**<br><br>- *Punctuality guaranteed.*<br>- *Pizza tracker: Through an application that allows you to see the status of your delivery.*<br>- *Customer-oriented service.*<br>- *Possibility of ordering online.*<br><br>**Beneficiary**<br><br>- *Using recyclable material and reducing waste*<br>- *number of calories in the food*<br>- *Positive environment for staff development* | **Customer:**<br><br>- *Customers in the vicinity of the pizzeria (Can be reached in a maximum of 20 minutes to ensure good pizza preservation)*<br><br>**Beneficiary:** |

| Type of enterprise | Key resources | | Channel | |
|---|---|---|---|---|
| *Benefit corporation* | - Technical knowledge of pizza<br>- Management software<br>- High-level instrumentation to ensure standards and quality<br>- HR | | - *Pizzas restaurant*<br>- *Advertising*<br>- *Social media*<br>- *Smart app* | |

| Cost structure | Revenue stream |
|---|---|
| - *Advertising*<br>- *Operation cost*<br>- *Tax*<br>- *Employees*<br>- *Software management*<br>- *Delivery player fee (Glovo, Just Eat..)* | - *Pizza and farinata*<br>- *Beverage*<br>- *Collaboration with companies producing sustainable materials, food, or drinks* |

| Social & Environmental Cost and Risk | Social & Environmental Benefits |
|---|---|
| - *Food waste*<br>- *Energy consumption*<br>- *Noise landscape impact* | - *Use of recycled material (circular economy)*<br>- *Using environmentally friendly means of delivery (such as electric scooters or bikes)*<br>- *Integration of disadvantaged people into labour market*<br>- *Promoting the use of organic and healthy products*<br>- *Use local products to support small producers* |

### 4.2.1 Channels

Our customer contact channels will essentially be the following four:

- *Pizza restaurant*

The appearance of the restaurant is fundamental to communicate correctly and effectively with customers. The decor must communicate to the customer that he is in a place that is environmentally friendly, waste-free and promotes local excellence, in other words, a sustainable restaurant. In addition to the furnishings, employees must also be dressed and behave in a manner consistent with these principles.

- *Advertising and Social media*

As discussed earlier in the thesis one of the most important communication channels is advertising, which will be innovative. It will avoid the distribution of flyers that in addition to being a waste of money is also a waste of resources and inconsistent with the vision of the pizzeria. Instead, it will try to use social media as a tool to make itself known and advertise products. The advantages are immense using this tool, in fact, in addition to respecting the principles of sustainability you can reach more immediately and effectively exactly the target to which the pizzeria is addressed.

- *Smart app*

Another way to stay in touch with our customers at all times is definitely to create an app to place orders and check their status as the various delivery big players already do. There are already several services that provide you with their order management software and with it two versions of the same app. One is aimed at delivery people to monitor their deliveries and the other is for customers who in turn can place orders and be kept informed of the status of their delivery.

### 4.2.2 Customer Relationships

Attention to the customer must be maniacal, inspired by Amazon and the first, already mentioned principle of leadership. A fundamental aspect is a punctuality, which must be pursued maniacally because it represents a necessary condition for customer satisfaction. Another aspect to focus on is how we relate to the customer when we have the opportunity to talk to them. In this case, as well, the objective of an excellent relationship with customers can only be achieved through a training process for employees who are the showcase of the restaurant. Particular attention should be paid to the delivery staff, who have the closest contact with customers. So it will be important that they know very well how to address the customer, are dressed appropriately and recognizable.

### 4.2.3 Customer Segment (e.g., SMEs, startups)

The analysis of the customer segment to which our pizza is aimed has already been identified in the analysis carried out previously through customer personas. The main characteristics are well-off people willing to spend a few extra euros to have a quality product that respects the environment. A fundamental aspect is a location to ensure quality and punctuality the delivery radius will not exceed 20 minutes.

### 4.2.4 Key Activities

The main activities are pizza production which can be divided into several sub-activities such as:

- Procurement of raw materials
-  Dough preparation and line
- Pizza service
- Quality control
- Local cleaning

All this process must be standardized as much as possible to allow replicability in several stores. The structure of the room must also be designed to facilitate production.

Other important activities are the optimal management of relationships with various stakeholders such as Suppliers, employees, accountants etc.

## 4.2.5 Key Resources

The main resource on which we would like to build our business model is the person, dispelling the idea that you can be an entrepreneur only on the backs of employees. We would like to create a virtuous environment in which everyone is satisfied and adequately remunerated for their services. I believe that the concept of sustainability should be pursued not only for environmental and health reasons but also to create a stimulating environment and growth for those who work there. This way of treating employees is not only morally right but will also stimulate other people to give their best.

From a more practical point of view the resources on which we base our business model are:

- A practical knowledge of pizza making.

- Use of innovative software for order management

In recent years several start-ups have surfaced that have attempted to solve one of the biggest needs for restaurateurs, namely a software that helps the restaurateur manage orders. We don't have yet

which software to use but there are several alternatives that we are evaluating to choose the most suitable for us.

## 4.2.6 Key Partners

The partners with whom we will be confronted will be the suppliers of raw materials and then at least at the beginning the application of delivery as Glovo, JustEat etc... The latter will be used only initially and only in the functionality of "only order" in fact it is unthinkable to leave them the management of delivery for the fee too high.

## 4.2.7 Cost Structure

The most impacting costs in a pizzeria are surely the raw materials that should never exceed 30% of the turnover. The use of organic and local products leads to an increase in the average price so it will be even more important to choose the right suppliers and reduce waste. Another very important aspect is the cost of employees. In this case, it is necessary to structure the production model most linearly to be able to limit the hiring of highly specialized personnel.

## 4.2.8 Revenue Streams

The main source of income is the sale of the pizza. It is very important to define a selling price consistent with the product sold and the relative costs to produce it. The choice of the price must be done by considering, first of all, the segment of customers to whom it is addressed and by taking into account the nature of the product which will not be, at least initially, addressed to the majority of the population. From this point of view, the choice of the menu comes into play again, in fact, it will be necessary to propose some pizzas with a much higher average cost to balance the average revenue from the sale of the Margherita.

Another source of profit is the sale of beverages which will not be given as a gift with the pizza as they do in most takeaway pizzerias, but they will have to be sold to increase margins by exploiting up-selling techniques.

## 4.2.9 Social & Environmental Cost and Risk

The main sources of pollution come from the waste of raw materials and as we have already discussed in the dedicated paragraph it must be reduced to a minimum. The second source is energy consumption and a good solution could be the purchase of energy produced by renewable sources. The third environmental impact is noise pollution even though it can be limited by proper insulation of the room.

## 4.2.10     Social & Environmental Benefits

The main benefits generated by this business model are:

- *Use of recycled material (circular economy):* The use of recycled material as much as possible, such as pizza boxes, promoting a circular economy that limits environmental impacts.

- *Using environmentally friendly means of delivery:* Deliveries will be made by electric vehicles or bikes only.

- *Integration of disadvantaged people into labour market:* In the company's hiring policy, the hiring of disabled people will be favored with a view to social integration.

- *Promoting the use of organic and healthy products:* A healthy lifestyle and balanced diet will be promoted. The website will describe the products used and the number of calories in each pizza offered on the menu.

- *Use local products to support small producers:* Small local producers will be favored to the detriment of large suppliers in order to have a positive impact on the ecosystem in which the pizzeria is to be inserted.

# GENERAL CONCLUSION

As the focus on sustainability and sustainable development is becoming more and more relevant nowadays the purpose of this research is to find new business models that can achieve these goals while maintaining economic viability. The main objective of this thesis is the integration of sustainable practices in the world of catering with a special focus on delivery. The delivery market has grown a lot in recent years and as we have seen will grow at an increasing rate and considering the environmental impact caused by this industry, it is vital to develop sustainable models. With this objective, the first part of the thesis is dedicated to the description of the delivery business models diffused up to now with the analysis of the main players born up to now and then put our attention to the newest business models such as dark kitchens and dark shops. Thanks to the widespread diffusion of dark shops, deliveries are made by green means, reducing a lot the pollution due to the last mile that is the main source of pollution of the whole supply chain. The second part of this research project is devoted to present the theoretical foundation underpinning the sustainability concept and the systematic literature review carried out to define sustainable best management practices that companies operating in the food sector should implement to reach the Sustainable Development target. The goal set by the European Union of zero emissions by 2050 is also influencing the restaurant industry by encouraging the emergence of new sustainable models. In addition, the culture of the importance of following a correct and balanced diet is spreading. In the third part of this research, an analysis of the restaurant industry was carried out with special attention to take-away pizzerias. Through Pestel analysis were identified the boundaries in which new business models are inserted and then reviewed the main competitors and their positioning in terms of quality and price. The last section of the third part studied the market and the main trends for the future. The restaurant industry is experiencing a moment of great ferment mainly due to two factors. The first one is related to sustainability, therefore the analysis showed how many companies are looking for innovative solutions to reach this important goal. Another important aspect comes from the market in which more and more consumers are looking for local products with low impact and above all with fast and reliable delivery. The impact of covid has played a very important role because on the one hand, it has forced many to rely on home delivery of food and the other hand it has led many to rediscover the importance of a healthier diet and the consequent need to know the origin of ingredients through a shorter and controlled production chain. The last part of this thesis is instead proposed a business model that responds in an innovative way to the problems discussed above. A takeaway pizzeria is sustainable and timely through the following key points: Use of innovative software for the management of the restaurant for the management of production times, deliverymen, consumption of

raw materials. The second point instead responds to the need to be reliable in terms of the quality of the product provided through an innovative organization of the restaurant that starts from a choice of thought out menu. The third important aspect is delivery with ad hoc equipment to be sustainable and guarantee the customer a product that maintains its organoleptic properties and temperature. The fourth point instead focuses on the supply of raw materials from local producers and attention to waste. The last important aspect is customer care, the goal is to ensure a customer experience of the highest level. The economic feasibility of such practices can be achieved only by defining in a very accurate way the market segment to which one is addressing because the costs of such a model will be higher but with a right positioning of the place, and a targeted marketing campaign that conveys to the final consumer the differentiation from a traditional takeaway pizzeria can make this model economically feasible.

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