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# **"The risks of the neglected world of the last mile food delivery"**

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## **INTRODUCTION - Notes on the recent history of grocery and food delivery**

In the context of a global digitization that has brought more and more types of businesses online and has greatly accelerated automation in last mile logistics, the last few years, populated by new anti-contagion measures of various kinds, have been the undeniable drivers of an exponential growth of digital foodservice and grocery directly to the customers' home.

The same phenomena that we had already known in the field of travelling at least a decade earlier now permeate hospitality: those mechanisms for managing reservations, price selection, data management and that extra attention to the user experience can now be applied to hospitality, but inevitably collides with a gastronomic tradition reluctant to innovation, which sees in these automated systems a "depersonalization" of the relationship between craftsman and guest.

Evolution, however, can only slow down and what has been started can no longer be stopped. What we saw in the spring of 2020 is actually just the explosion of a situation that was already taking place in the world and that we now have a name to define: the **dark kitchen**. It is estimated that in 2021, the global market value of cloud kitchens reached \$56.71B and is expected to almost double in 2027<sup>1</sup>.

As early as 2015, with the first major investments in delivery platforms and with the first wars for mergers, the possibility of bringing the customer an express dish by simply by signing an agreement with a third party had prompted many restaurant owners to also open this sales channel in order to hit a different demographic target than the classic dine-in customer. The disadvantage of having to pay to be able to use this service was far less impactful than the possibility of declining responsibility for legal problems related to courier accidents. Also, drawing on a pool of customers already supplied by the platform (and therefore without having to invest further in marketing to propose their own menu) and having someone else manage customer assistance was a strong incentive, but above all food delivery was the best way to optimise the yield of each dish without having to pay the FOH staff and increasing the usage of short-expiry ingredients.

The model worked and was gaining more and more strength, especially in the segments of the population who felt the lack of time and energy to prepare a meal or who simply wanted to reduce the waste at home given by the large quantities of food purchased in the supermarket and then never used.

Among the many artisan restaurateurs, a few enlightened entrepreneurs emerged who thought: "Why limit myself to an online restaurant, when I can show myself with more than one virtual brand from a single production centre?"

From a logistical point of view, this system represented an invaluable opportunity because it allowed them to put a virtual brand, similar or equal to that of their restaurant, online, thus creating a diversification of identity and image without the customer's knowledge, creating false competitors and saturating the market of an area for that specific gastronomic category, or it gave way to test completely different brands without affecting the credibility of the restaurant and without any start-up cost. With a practical example: a tavern specialising in handmade pasta could suddenly create a virtual brand of hamburgers or sushi that all came from the same kitchen, without the end customers or dine-in guests of the tavern knowing anything and without having to pay all costs of renting new premises, buying new equipment, etc. In this way, positioning themselves on the market with multiple targets

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<sup>1</sup>Lock S., *Cloud kitchen market size worldwide in 2021, with a forecast for 2027*, Statista, 10 Aug 2022

became very simple and also optimised the expenditure of the workforce in the kitchen and of the ingredients purchased, especially if the production lines of each brand could be intersected, increasing the use cases of each raw material.

What if the brand didn't work? They could dismantle it or change it with a new brand, at no cost. A much simpler and cheaper operation than closing a pop-up store or a food truck, the methods previously in vogue to understand if one's product might be liked before investing in a real restaurant.

When orders started pouring in on these virtual brands, the last step was to abolish dine-in altogether and focus exclusively on delivery and takeaway: the genesis of a **dark kitchen**.

From dark kitchen to dark store the step was short, if not almost parallel: small convenience stores and supermarkets began to offer shelf products on the same platforms that were helping restaurant owners to increase their sales channels and finally, with the COVID-19 emergency, what until then had been a simple extra income for both, became the only way to get in touch with a customer who could no longer leave the house to buy.

Although Italy has lagged behind the rest of Europe in this trend, in 2020 only grocery delivery reached a total market value of over 2.5B€<sup>2</sup> and since then it has only grown, with new market players now in our territory.

We have numerous case studies of activities in Italy that have received substantial investments to bring hospitality and catering services that touch of innovation necessary to bring out the “made in Italy” to the international foodtech scene. See for example Kytchen in Rome or Kuiri now in various cities, which has decided to take a further step towards the future by winking at robotics and the automation of some production processes. I myself have created and managed a dark kitchen of over 17 distinct virtual brands, collaborating and advising players such as Uber Eats and Glovo.

The platforms and large franchisee dark kitchens, financed by venture capital, were the first to invest in kitchens and "cook rooms" in which to import their brands and were among the first to have to manage health emergencies and problems with the neighbourhood and having to quickly create best practices to make this new job sustainable and safe. There was no shortage of media crises, such as the closures of Reef Kitchen in the USA due to food poisoning, pieces of glass in food and employee safety issues, caused by a lack of standardisation of processes and staff training in the rush to open new branches and reach the targets set by investors<sup>3</sup>, or the closures of Deliveroo Editions due to complaints from

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<sup>2</sup> Coppola D., *Online grocery market in Italy - Statistics & Facts*, Statista, 28 Jan 2022

<sup>3</sup> Luna Nancy and Cain Aine, *Reef's Race to Grow Ghost Kitchens Created Chaos, Food-Safety Issues, Insiders Say*, Business Insider, 30 Nov 2021

residents, closures that also affected grocery delivery in the Netherlands, France and Spain for the same reason<sup>4</sup>.

I thought it appropriate to present this perspective before diving into the dynamics closely linked to food safety in these realities because they are not yet well known by most and above all no legislation has yet studied their specific risks. I have reason to believe that the evolution of these new businesses has accelerated with a speed that did not allow regulators to study the GMPs of such hybrid activities on field and that therefore it has not yet been possible to set key points in order to frame the correct legal forms, responsibilities, or the application of fair practices of information to the online customer. This created legislative gaps that leave these activities in a convenient grey area.

My experience, first as a consultant for food tech and then as Senior Operations Support in the grocery delivery industry in Italy, has allowed me to see numerous instances of lack of consumer protection in the field, legitimate and lawful due to lack of clear legal definition or poor perception of the risk by the relevant authorities.

In my analysis, therefore, I will examine the issues specific to my first hand observation, without going into the already consolidated work phases that characterise the flow diagram of a restaurant or a large-scale retail trade, focusing instead on the lesser-known passages of production and management of the publicly visible data on online platforms and applications used by restaurants and supermarkets.

## **CHAPTER 1 - Microbiological and chemical risks**

### **1.1 Temperature and delivery**

When we talk about the transport of food, we tend to think of the large refrigerated trucks used by suppliers for large-scale distribution and hospitality or catering companies that bring finished and semi-finished products to be completed on site. Sometimes we can think bigger and even go back to the fishing vessels on which the first freezing of the fish we find in the supermarket is started or to the controlled atmosphere transports on which we ripen the exotic fruit before it reaches our table. Anyhow, in most cases we are certain that our food has been

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<sup>4</sup> O'Brien Peter and Haeck Pieter, *'Dark commerce' backlash grows in cities across Europe*, Politico, 31 Aug 2022

strictly controlled at the origin and above all at the destination and that the hygienic-sanitary conditions have been respected according to standards that guarantee public health. As users of the supply chain, we expect it and we know our rights as consumers who can complain about food mishandling.

Despite this, when we order a dish for delivery, we rarely dwell on that seemingly short passage, in which, however, the average temperature and storage status of our food is totally out of control, and suddenly we are no longer interested in how it will get there, as long as it arrives, and quickly.

Also most of the HACCP consultants with whom I have collaborated, for some reason, stop the flow diagram at the end of production and do not examine the "after", which instead turns out to be a phase in which a CCP could be inserted: the control of temperature in the bag of a delivery man.

My experience leads me to position the average ETA of the single order (in a delivery polygon with a radius of between 3.5 and 5 km) between 15 and 50 minutes, a time which tends to extend if the economic strategy or the algorithm in use believe that merging several orders in the same route of a rider is functional to optimising costs. This practice, called "batching", is currently used by large delivery players and is considered an extremely useful choice for containing costs related to personnel and means of transport. The problem is that sometimes, between production, packaging, waiting for the arrival of the courier, intermediate deliveries and then the final destination, there can be periods of time that are decidedly longer than those foreseen. In these periods, the average temperature of the food is exactly in the optimum for the development of the majority of the most common pathogenic microorganisms, which manage to double in number even three or four times before the dish arrives at the customer's home.

The risk becomes even worse if we analyse the best-selling dishes: pizza, medium-cooked hamburgers, ice cream, sushi and poke<sup>5</sup>.

Assuming that all the products in the kitchen have been kept in the refrigerator until the last moment and that therefore the food exposure time at temperatures suitable for bacterial proliferation is reduced to post-cooking time and transport operations only, we must in any case consider that the products most frequently treated are raw fish, ground beef, often thawed, and a variety of fresh milk-based products which can be, among others, cheese or ice cream.

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<sup>5</sup> Quarto Osservatorio Nazionale Just Eat, *Mappa del Cibo a Domicilio in Italia*, 2020

We have seen that the menus often offer several product categories or that dishes from different brands of the same kitchen can even be sold together if it is allowed in the proprietary app or on telephone orders, so it is not uncommon to find sushi and pizza in the same delivery bag.

What does this mean though? That within a single contained space, some dishes can raise the average ambient temperature by several degrees and there is no other possible control method than probe monitoring. In fact, most of the technical sheets relating to FCMs designed for food delivery take on-site collection by the end user as a use case and do not adapt it to the longer duration of a home delivery, completely omitting the specification of the variation  $\pm 1^{\circ}\text{C}$  per period of time. The problem is not perceived as a priority even by delivery platforms such as Deliveroo<sup>6</sup> and Just Eat<sup>7</sup> who have begun to propose a range of special packaging for restaurateurs without specifying the correct use of FCMs and thus favouring a misinterpretation of the function of each piece and therefore less customer protection.

Let's take minced meat as an example, knowing that at about  $37^{\circ}\text{C}$  (which is the optimum for many bacteria responsible for food poisoning) *Salmonella* spp doubles in number every 20 minutes in what the Food And Safety Inspection Service (USDA) defines as a "danger zone"<sup>8</sup>. When the customer orders a medium-cooked burger, the bacterial load mixed in the meat compound reaches a compliant external temperature, but at the heart of the product it cannot be confirmed that the pathogen has been completely suppressed.

Using the recognized<sup>9</sup> pathogen modelling system proposed by the United States Department of Agriculture - Agricultural Research Service (fig.1<sup>10</sup>), we can see the growth curve that *Salmonella* spp has every hour at  $40^{\circ}\text{C}$  in ground beef.

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<sup>6</sup> [Deliveroo Packaging: best in market food delivery packaging \(deliveroo-packaging.com\)](https://www.deliveroo-packaging.com/)

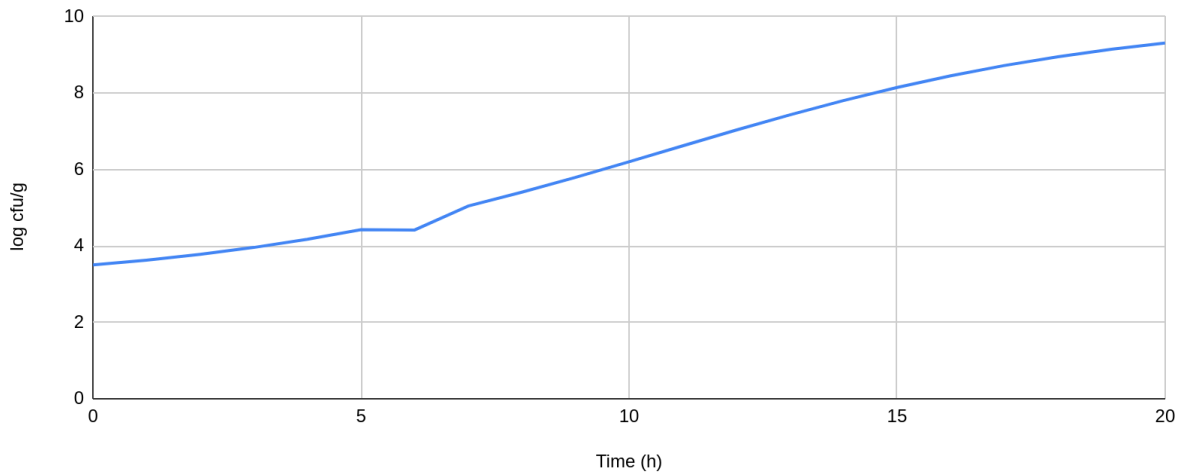
<sup>7</sup> [Delivery boxes | Just-Eat.com](https://www.just-eat.com/delivery-boxes/)

<sup>8</sup> ["Danger Zone" \(40 °F - 140 °F\) | Food Safety and Inspection Service \(usda.gov\)](https://www.usda.gov/food-safety-inspection-service/danger-zone)

<sup>9</sup> Juneja Vijay K., Melendres Martin Valenzuela, Huang Lihan, Subbiah Jeyamkondan, Thippareddic Harshavardhan, *Mathematical modeling of growth of Salmonella in raw ground beef under isothermal conditions from 10 to 45 °C*, International Journal of Food Microbiology, 31 May 2009

<sup>10</sup> USDA, *Pathogen Modeling Program (PMP) Online*, Mathematical modeling of growth of *Salmonella* in raw ground beef under isothermal conditions

Mathematical modeling of growth of Salmonella in raw ground beef under isothermal conditions from 10 to 45 °C.

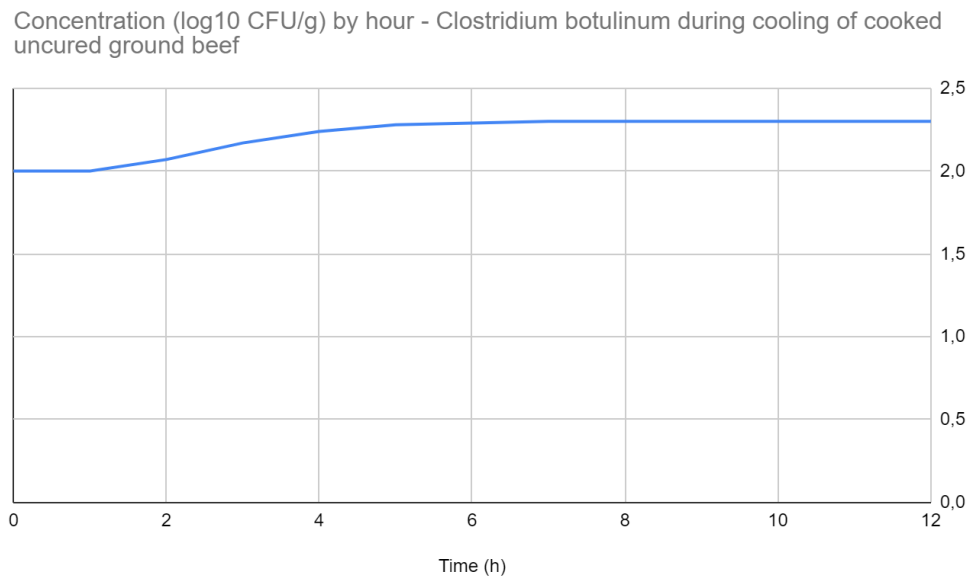


**Figure 1. Juneja Vijay K., Melendres Martin Valenzuela, Huang Lihan, Subbiah Jeyamkondan, Thippareddic Harshavardhan, *Mathematical modelling of growth of Salmonella in raw ground beef under isothermal conditions from 10 to 45 °C*, International Journal of Food Microbiology, 31 May 2009 - Max Growth Rate 1.054 (log(cfu)/h), Lag Phase Duration 0.9h**

Scarier still than Salmonella spp is Clostridium botulinum to contend with and if we look at the growth it has in cooked ground beef under cooling (fig.2<sup>11</sup>), we already see that if the time elapsed since the last heating at +65°C exceeds two hours, a growth pattern begins which increases as the temperature decreases until it reaches the plateau at six hours.

<sup>11</sup> USDA, *Pathogen Modeling Program (PMP) Online*, A predictive growth model for Clostridium botulinum during cooling of cooked uncured ground beef





**Figure 2. Vijay K. Juneja, Anuj S. Purohit, Max Golden, Marangeli Osoria, Kathleen A. Glass, Abhinav Mishra, Harshavardhan Thippareddi, Govindaraj Devkumar, Tim B. Mohr, Udit Minocha, Meryl Silverman, and Donald W. Schaffner. A predictive growth model for *Clostridium botulinum* during cooling of cooked uncured ground beef. Food Microbiology 93 (2021)**

For this reason, all the preparation logics that previously envisaged direct consumption on site must be reviewed to accommodate much longer durations between the last state of controlled temperature (whether it is through cooking or refrigerated containment) and must presuppose, within legitimate limits, that the customer may not consume immediately after delivery, but wait further and without knowing the right storage methods. This often happens when someone orders early in the morning to get something to eat for lunch, but cases vary and it's important to never assume that our customer will know how to handle this food. This is because, unlike prepackaged food which carries labels that are strictly regulated, food delivery is all about express cooking being made available to an unsupervised customer.

To clarify, let's examine the case in which a consumer decides to order sushi in the afternoon to enjoy an aperitif with friends at home.

The restaurant already has unrefrigerated sushi on the prepping board that would have otherwise served to its customers in the restaurant, so the temperature is probably just below room temperature. The order appears on the receiving device, which says that the courier will

arrive to pick up in the next 15 minutes. The order is ready and is now on the counter where the rider can collect it. The ETA is 20 minutes, plus the time necessary for the rider to get in touch with the customer. By the time the sushi arrives at its destination, it's already been out of the fridge for *over 45 minutes*, to which we must add all the time before the order at which the food was exposed to ambient temperatures.

The customer knows from anecdotal knowledge that cold salmon loses its flavour and that the rice could harden in the fridge, so he leaves it at room temperature while waiting for the guests to arrive, underestimating the risks also due to lack of education on the nature of the product. Let's assume that a further minimum of 30 minutes elapses between the first guest arriving and the actual start of consumption: the total time out of the fridge exceeds one hour, without considering unforeseen events and with a single order in progress or with this dish as first of a batched series.

<b>Time (h)</b>	<b>Temp (°C)</b>	<b>Concentration (log10 CFU/g)</b>	<b>Growth Rate (log10 CFU/h)</b>	<b>MPD (log10 CFU/g)</b>
0	54.59	2	0	8.03
1	45.99	2	0.6	8.03
2	38.94	2.06	0.93	8.03
3	32.92	2.33	0.78	8.03
4	27.86	2.81	0.56	8.03
5	23.43	3.22	0.36	8.03
6	19.89	3.49	0.22	8.03
7	16.71	3.65	0.11	8.03
8	14.14	3.73	0.05	8.03
9	11.94	3.77	0.02	8.03
10	10.13	3.78	0	8.03

**Figure 3.** Vijay K. Juneja, Chase E. Golden, Abhinav Mishra, Mark A. Harrison, Tim Mohr, and Meryl Silvermand. Predictive model for growth of *Bacillus cereus* during cooling of cooked rice. *International Journal of Food Microbiology* 290 (2019) 49–58.

If we take the predictive model used previously again for *Bacillus cereus* (Fig.3<sup>12</sup>), we see that in the rice that has been cooling for four hours and at a temperature of about 27°C (the state in which we assume to find it in the restaurant when the order is received) it has a concentration of 2.81 (log10 CFU/g), which increases at the sixth hour at 20°C to 3.49 (log10 CFU/g). The risk of emetic syndrome caused by cereulide toxin is therefore substantial and adds to the risk

<sup>12</sup> USDA, *Pathogen Modeling Program (PMP) Online*, Predictive model for growth of *Bacillus cereus* during cooling of cooked rice (Baranyi Model)

deriving from *Staphylococcus aureus*<sup>13</sup> and other pathogens that we can find in raw fish and which, at room temperature, have the perfect conditions to proliferate. Outcomes can range from simple abdominal pain, sometimes accompanied by vomiting and nausea, to hospitalisation and septicaemia in the most severe cases of pre-existing immunocompromised conditions.

For some products to be served hot, transport technologies have been developed in recent years capable of keeping the temperature constant at 65°C or more, guaranteeing the safety of foods such as pizzas, fries and even some hot gastronomy, but the experience gathered over time leads me to say with certainty that to date no delivery platform that makes its riders available to the restaurateur has equipped them with these heated boxes and that these are an expensive item in which only a few gastronomic entrepreneurs specialised in dark kitchens have hitherto considered investing for their own independent fleet. It should be underlined, in fact, that for "classic" restaurants, delivery is seen more as a nuisance to look after in order to reach a few more customers, rather than a real production line in its own right and also the competent authorities and the consultancy institutes with which I have dealt with for many of my clients were almost unprepared for the various additional phases envisaged in the supply chain of express delivery dishes.

Statistically, the number of catering businesses (but above all, of virtual brands) present on delivery platforms is significantly higher than that of businesses that are really capable of fully understanding all the facets of this complex business branch and of investing in a development both sustainable and healthy of the same, taking into account not only the needs of their brand identity and their business plan, but also the protection of public health.

For this reason, few understand the importance of temperature control not only to ensure a good qualitative and organoleptic result (which instead seems to be the main concern of our local gastronomic craftsmanship, very attached to tradition and intimidated by the idea of decreasing the value of their own dishes in the eyes of the end user, with whom they have obtained a reputation that they want to preserve), but also to respect a CCP that has so far seen little formalisation.

In grocery delivery, the considerations to be made regarding temperature retention and compliance with the cold chain in "batching" are the same.

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<sup>13</sup> Etsuko SAITO, Nanako YOSHIDA, Junichi KAWANO, Akira SHIMIZU, Shizunobu IGIMI, *Isolation of Staphylococcus aureus from Raw Fish in Relation to Culture Methods*, Journal of Veterinary Medical Science, 12 October 2010

Most companies have implemented or considered the use of thermal bags to maintain a range of -18°C or +2°C while waiting for an available rider and subsequent transport, but often a non-compliant temperature range can be reached and the check of this metric is never reported as a CCP in flowcharts designed for these businesses. Delivery times are not perceived as long enough to represent a risk, while field data say otherwise.

If, then, hot rotisserie or gastronomy foods were also available for delivery in the same order, the figure would worsen further, increasing the ambient temperature inside the single pack and the entire trunk of the courier, in which up to six or seven orders can be grouped in a single route.

However, if the mixed temperatures in a delivery bag do not yet cause so much scandal, the same cannot be said for cross-contaminations, for which I have noticed greater sensitivity. The industry though is still far from having established correct management practices for these contaminations and is still in the phase in which it must define the origins of the risk itself. But what are these additional risks compared to a normal restaurant?

## **1.2 Cross-contamination in a multi brand dark kitchen**

Let's briefly review the concept of dark kitchen: a kitchen that issues more than an online menu.

This kitchen can be found in a restaurant, in a hotel, in a ventless bar, in a catering laboratory, even in a container. Provided there is the necessary equipment to produce the required dishes, even an electric hob and a sink can become a dark kitchen, so much so that the risk deriving from unregulated home-made production on delivery apps has long been discussed and during the pandemic countries like the UK have been forced to create specific rules for these new activities<sup>14</sup>, while in Italy no changes have yet been made to the current Domestic Food Microenterprise (IAD), which does not yet account for food delivery as a separate instance and therefore includes it only as a "quibble" in the private catering sector. The primary objective, originally, was to optimise the costs of the kitchens by allowing third parties to rent them when not operational (for example at night or out of season) thus giving space to others to experiment with new menus or to start catering activities without having to take on the initial investment in real estate. Delivery platforms were therefore the best way to reach customers without even having to build a showcase or take care of the reception service. When the owners themselves realised they could do what they were allowing strangers to do in their kitchens, they began to develop the spaces to accommodate more brands, but in most

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<sup>14</sup> Food Standards Agency, *Starting a food business from home*, 7 August 2020 (reviewed 2022)

cases they were kitchens with a single space re-purposed for the delivery. The dark kitchens built with the aim of hosting multiple virtual brands came much later and with conceptually different structures: micro niches including private storage, all connected to a centralised system of aggregators of third-party delivery platforms and white labels. Therefore, when we examine the risks of cross-contamination in a dark kitchen, we must understand that spaces with this name exist in multiple natures and forms and that they often differ in terms of intrinsic purpose, variety of sales channels and types of virtual brands. Precisely on the latter it is good to dwell a bit if we want to understand the problem behind cross-contamination.

In order to describe what a **virtual brand** is, it is first necessary to understand what a brand is: in the case of hospitality, it represents the set of dishes on the menu, the language used to express oneself to the end customer, the logo, the market positioning and of all those strategic choices that can range from working hours to the average age of the employees employed. In short, a brand is equivalent to a well-defined identity that distinguishes the "soul" of the business.

When we transpose this concept into the virtual world, we bring to the platform a logo, an eye-catching cover that represents at first glance the specialties on sale, but also a well-defined menu (often structured to facilitate upselling and cross-selling with customizations, additional sales and pairing suggestions) which at more professional levels is built according to the logic of menu engineering and psychology of reading applied to UX, a delivery time and above all a delivery cost, which also determine a selection of who will be the final customer, partly already carried out from the platform we decide to adopt for our brand, given that each of them has a different demographic target.

The dark kitchens developed in niches are designed to host a single brand per niche, so everything that is produced within that single menu uses equipment limited to that small space, by personnel who manipulate only a single line of raw materials, and all preparations are stored in a single insulated cooler. In this case, the risk of cross-contamination is limited to the mismanagement of the different foodstuffs in the available space, as in the case of a normal restaurant: incorrect arrangement of the foodstuffs on the different shelves of the refrigerator, incorrectly sealed products, raw materials with different expiration dates incorrectly mixed, uncleaned work surfaces or insufficient hygiene of the operators or their clothing, ascribing the entire production phase to a flow diagram typical of mass catering.

However, when we analyse a space not built to host multiple brands, but actually used for this purpose, we need to further investigate which ingredients are used in each of them and by whom. The risk factor will in fact be completely different if in a single space the different lines remain distinct or if the reduced space allows an insufficient separation of the preparation phases, or if each brand is operated by a single member of staff or if more people operate on multiple brands (and if all those people belong to a single FBO - food business operator - or if they are all employees of different co-tenant company names) or, again, if the packaging is used individually on each line, or if it is located in a single point of the kitchen, at the indiscriminate disposal of each brand.

Further analysis will then be carried out on the packaging: does the kitchen offer inter-brand orders on a proprietary app or does it distinguish the menus? Where do they wait for the rider once they are ready? How many orders are combined in the courier case? To what extent can the losses of liquids or powders from one package to another be evaluated in the event of allergens? In how many bags are the products divided if the customer has specific requests?

As we can guess, the number of variables in a kitchen dedicated to food delivery increases with the increase of brands and players involved and in order to be able to draw up a HACCP manual in these activities it is necessary, conscientiously, to spend the right time for the analysis of each preparation and each movement from one phase of the work to another.

With today's knowledge, I can sincerely say that the manual drawn up for the dark kitchen that I helped create was completely wrong and failed to analyse the operational complexity of preparing 17 virtual brands, but above all the implications of the chosen delivery method.

Let's try to reformulate it briefly to understand where to make an improvement: the brands used included one or two "copies" of traditional Roman taverns, American bistros with classic brunch products, vegan hamburgers, Greek street food, donuts and pre-packaged pastry desserts and finally healthy salad brands. We operated on the classic online delivery platforms, but using our delivery men. In the testing phase we had also started allowing loyal customers to call us to be able to place mixed orders from different brands at the same time.

The kitchen space was a single open space with an entrance for dirt equipped with a foot washer and an exit for clean, beyond which was the collection counter for waiting orders.

The refrigerators and storage spaces for dry food and pots were shared across all brands, operated by two of our employees who performed all duties.

The walls were tiled to facilitate cleaning of the room with special products for professional use, the floor had several drainage grates and the two water points in the production area had

non-manual elbow openings, with hot and cold emission. All work surfaces and ventilation systems were made of stainless steel and the chopping boards in use were staffed with a distinct colour for each product category, with deep cleaning and professional scraping assignments scheduled on a regular basis.

We did not have ceramic dishes: the dishwasher was obviously only used for the kitchen equipment as all the products were packaged in cardboard packaging for food use, suitably arranged in different positions in the production area.

We have chosen not to offer products for celiacs because it would have been impossible, due to the spaces available, to guarantee the isolation of food from any trace of gluten, even volatile.

Given the quantity of raw materials in use and the preparations that had to be refrigerated, we had decided to have three refrigerators to distinguish the ingredients and not to activate, at least in the first phase, any line of fish, either raw or cooked. Our staff was not trained to handle this category correctly and it was our concern to enhance their skills and avoid possible microbiological risks associated with storage or treatment errors.

The decision to maintain control of all operations and all spaces derived from considerations that we made during the risk analysis phase. Other dark kitchens, for example, offer a shared kitchen model<sup>15</sup>, in which several companies can rent a single space at intervals, with the big problem of also having to share the storage space in the fridge and clearly distinguish the respective responsibilities in terms of food supply in the contract with the landlord. Personally, I have always found it very difficult from an operational point of view to distinguish in a single fridge or room department which foodstuffs belong to which company name, especially in a kitchen that is not duly structured to compartmentalise the uses of the available space, but above all I have always been extremely intrigued by the naïveté of the parties involved with regard to responsibility for the protection of public health; who is the reference FBO if the customer of one of the drivers contracts food poisoning? How do you distinguish the origin of the problem? Who is in charge of sanitising the spaces, cleaning any traces of allergens left on the surfaces and shared work tools? Who can be legally prosecuted in case of serious shortcomings with respect to the HACCP manual? Certainly, having separate and suitably locked storage rooms is a first step, but then it also becomes necessary to advise against the simultaneous use of the production area by more than one tenant and

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<sup>15</sup> Conover Emma, Rubchinuk Elyse, Smith Suzannah, Cortez Yarisamar, *History of Shared-Use Commercial Kitchens: A Case Study Analysis of Kitchen Success*, Bates College SCARAB, 2015

instead promote distinct pertinent time slots, in which it is possible, in a clearer way, to define the hygienic state before and after use in order to better trace the source of any problem in case of reporting to the Authorities. In particular, then, the lessor must act as a super partes by constantly verifying the compliance of the work of all operators, establishing a self-control manual that should be independent from the individual production lines and supporting with any extraordinary cleaning and maintenance interventions in common agreement with all the parties involved, as we would expect in a classic condominium administration.

We decided, precisely for these reasons, not to open our laboratory to others and to focus on the potential that we could exploit in that space.

After signing with the four main delivery platforms in the capital and having obtained the device for each of them to start receiving orders, we soon realised that we needed a special piece of furniture to be able to store them all (about 4 devices per brand, for 17 brands). The positioning followed a forward-looking logic of operation and contamination control: the washbasin at the entrance with disposable paper to cleanse and dry hands before operations, then the tablets to receive the order (strict use of the touch screen only with clean hands, gloves or with appropriate subsequent sanitization), the refrigerators, the blast chiller and the storage freezer to collect the preparations necessary for the evacuation of the order, two parallel work surfaces for fresh produce and then the fire points for kettles and fryers. From the fire point one could reach the dishwasher for pots and pans that had just been used and the island worktop on which the packaging was placed for the last phase of bagging before delivery to the courier. Finally, the second basin to wash hands at the end of the operation, before placing the bag ready for pickup at the desk.

We decided to have a separate hot grill for all vegan products and to reserve an insulated basket in the fryer and pasta cooker in order to guarantee the customer total absence of contact with products of animal origin treated in the lines of all the other brands. The space chosen for the vegan line in the fridges, common to all the menus, was also a drawer compartment on the top shelf of the fruit and vegetable fridge. Most of our preparations were purchased ready-made or cooked and vacuum-packed and, in hindsight, I would have included with the consultant in our self-control manual a deep daily cleaning of the vacuum machine, also placing a flow chart of the correct sequence of use with respect to the product category, giving priority to vegan products, treated fruit and vegetables, doughs and then to meat products and sauces containing meat or dairy products, spacing a cleaning of the machine components between one category and another.



If I wanted to make a further improvement in terms of cross-contamination control, I would have equipped the kitchen with wall-mounted packaging dispensers, avoiding accidental contact of food particles with the packages already folded and opened on the counter and limiting manipulation with hands to a minimum, and I would have done the same for the outer bag, opening it only at the last closing step of the order and with as little contact as possible, in accordance with chap. X of the REG. CE 852/2004.

We have to stop right on the packaging process if we want to analyse the risk of cross-contamination during the order assembly phase. When the order arrives, the kitchen operators cannot know if the customer expects to receive everything in a single package or if he places the order for an entire family or a group of people in which there is someone who has specific food requirements. So how can we know if some dish within the order could contaminate everything else and create a problem for the consumer or if this problem does not exist? Simple: by **actively informing the customer**. We will focus later on the very important role of the platform as a means of communication to the customer, but if we wanted to focus on the more strictly operational choices, we would see that combining the need to cut costs of packaging (one of the main items of the food cost of a dish in the food delivery) and to protect the customer's health is not easy at all. No packaging designed for food delivery is sealed as the classic domestic tupperware could be, but instead it has a punctual and non-repeatable use case, of very short duration and which therefore does not need to resist high temperatures, oils, juices and powders. Also in this case we see how technologies and best practices have been adopted straight from the simple take away services which, however, have never found anyone who would question food safety in a structured and regulated key, so we are still in the embryonic stage of experimentation with all the tools currently in use in this relatively new food industry.

To inform the customer visually, we chose to adopt stickers for all allergens and to apply them to the single box or to the single paper wrapper inside the secondary envelope and to develop an assembly method with the parts that could accidentally emit liquid on the bottom and, separated by dividers, above them all the lighter, dry or better sealed components (such as salads in bowls with click RPET lids).

And in case of multiple orders for the same rider in a single route? Surely the order output priority, with the first destination closest to the opening of the trunk, had to be considered together with the management of the small space available and the correct subdivision of the arrival sequence at the planned addresses.

Taking a closer look, to date, I can say that the need for a better division of the bags in batched orders is extremely underestimated and that for this reason many procurement producers for this type of foodservice have never applied themselves in the search for a watertight compartment methodology that could be also functional in terms of additional packing times on the means of transport and subsequent unpacking at the customer's home. Having our own internal fleet, equipping the vehicles with dividers was easier than in the case in which we had to entrust the order to a third-party courier, but it also increased the possibility that it was never just one order that went out, but many at the same time. Indeed, within the limits of our opportunities and with the means at our disposal, we were not able to fully guarantee that there was no cross-contamination, limiting ourselves to naively using materials that were suitable for food use and washable, but were not originally designed for that function.



**Figure 4. A rider package with internal compartments delimited by removable inserts that can be adjusted with VELCRO® strips. The pads are thermally insulant.**

Since then, some companies have committed to providing industry players with solutions with internal dividers, like the one in the figure 4<sup>16</sup>. Using it correctly, however, is not that simple. In fact, does it make more sense to divide each order into its bag, with vertical dividers, or to separate all the dishes on the shelves regardless of the order to which they are associated, based on allergens and temperature, to then assemble the bags once the rider arrives at the customer's home? For operational ease and speed of execution, we opted to keep some separations in the complete packs, but to then insert them already composed inside the trunk, in order of exit. Even today, this seems to be the most difficult phase to manage in terms of

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<sup>16</sup> RODNAE Productions, Pexels.com

cross-contamination and the one on which operators struggle to implement strict control, as there are no real metrics that can be recorded for the purposes of a CCP and GMP is also highly variable based on the composition of the batched and single order.

On the other hand, what can be done more proactively is staff training on everything related to food handling in all the brands active in the kitchen laboratory and it is appropriate to stop briefly on this point.

### **1.3 Virtual brands: continuous training as brands change (CCP-GMP)**

As previously mentioned, the real hidden power of a virtual brand is that, if it doesn't work and customers don't like the assortment offered, you can quickly change the name and menu on the platform and change your identity overnight. This speed of mutation must necessarily be contemplated within the HACCP manual and the flow chart for each new preparation must be updated and accessible to all operators. It is necessary to clearly define which phases need to be monitored through annexes to the manual and on which ones to implement GMP and sometimes it is not possible to be satisfied with creating a *facsimile* suitable for any dish. Therefore, in the urgency of constantly updating the risk analysis and the drafting of the manual, it is necessary to take into account the fact that the operators must be trained to accommodate these changes and know exactly the correct hygiene practices relating to each production line<sup>17</sup> following the courses of the duration established by the Region of reference (Italy).

In the case of my experience, the dictates come from the resolution of the Lazio Regional Council (March 8, 2002, n. 282), which demands a 20-hour course for the RHACCP, a 14-hour course for all operators qualified to carry out activities of complex handling of foods in sectors at risk or for department managers and one of 8 hours to unqualified personnel. While some information remains the same, such as who is responsible and how the job description is structured, what the principles of the HACCP method are or how to manage water supply, food waste and dirty water, there are some points which, instead, must be redefined every time new raw materials are introduced to be processed because the correct practices for accepting supplies, the storage temperature limits, the methods of reclamation, the cleaning phases of the surfaces and equipment and the chemical agents suitable for sanitising after the use of these foods will change, just like the annexes for self-control.

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<sup>17</sup> Art. 2 Cap. XII of REG. EC 852/2004

What is often overlooked is that the 8-hour course is also required for anyone who transports food and this includes delivery riders who need to undergo the training.

This may seem like a trivial detail, but in the age of outsourcing, most restaurateurs who sign an agreement with delivery platforms to benefit from their service remain responsible for the entire supply chain despite entrusting the food they produce to riders who oftentimes do not receive any **training on food hygiene practices**, or at least with no assurance that the courses have been given (although fortunately most players "encourage" their freelancers to follow them<sup>18</sup> or include them in the basic package for hiring in cases of contract as an employee, in explanatory presentations that are sometimes not very transparent, such as the "safety courses" made available by Just Eat<sup>19</sup>) and that the food is treated according to its quality standards. As temporary operators, then, they don't even have the obligation to be included in the job descriptions in the manual, thus leaving a void of individual responsibility in the last phase, that of delivery.

Among the possible risks we can list negligence in the sanitization of the transport equipment or in their maintenance (to always ensure thermal or watertight sealing), the failure to use disposable gloves and clean work clothes, the accidental exchange of the bags during batched orders or the permanence on the street beyond the time limits indicated as acceptable for the correct preservation of the food. In the most serious cases, during my supervisory activity around dark kitchens, reviews of the customers reported dishes already almost consumed or boycott operations by the couriers in an attempt to retaliate against their company for their working conditions.

Therefore, in an attempt to examine the risks associated with delivery, the choice to operate with internal delivery men rather than with third parties turns out to be the most conservative and in a possible economic evaluation, it could also be the least expensive if we consider the chance of being subject to fines of up to 6,000 €<sup>20</sup> for omission of a correct procedure of self-control and monitoring of the microbiological limits in all phases relevant to the responsibility of the FBO.

Wanting to finish with the above, we can finally analyse in more detail the obligations of the Food Sector Operator when it comes to packaging.

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<sup>18</sup> [Deliveroo | Formazione su sicurezza stradale e trasporto alimenti](#)

<sup>19</sup> [Trova lavoro come corriere - Diventa un Rider Just Eat | Just Eat Italia](#)

<sup>20</sup> LEGISLATIVE DECREE No. 193 of 6 November 2007, Art. 6 Para. 6

## 1.4 FCM in food delivery

My experience as a consultant in the catering sector, and before that as an operator myself, has shown me that, at least in the capital, the attitude of entrepreneurs towards bureaucracy is that of those who fail to understand the profound meaning of the motivations which led to the drafting of all the documentation that they keep in the shop. I believe that, in the specifics of the practices dictated by the HACCP method, this is also due to a certain haste on the part of the consultants in giving courses for RHACCP without correctly diving into the analysis of the real risks that the restaurateur will have to deal with in the daily life of his restaurant or, even, imparting them to operators who then will not be physically presenting the premises and will not be able to actively check the updates to the attachments, communications from suppliers and much more.

In this context, I have often seen restaurants, bars and caterers without an FCM declaration of conformity or with documentation that is not appropriately updated with the whole assortment of work materials and tools for food preservation currently in use.

All FBOs, without exception, make use of FCMs. From frying pans to "foil", all food contact materials must bear a declaration provided by the supplier<sup>2122</sup> which certifies the compliance of the materials with the good manufacturing practices established by EC Regulation n.2023/2006. This ensures the traceability of materials and objects at every stage of production, marketing and use and allows the competent authorities to identify any possible non-compliance that could represent a risk to public health<sup>23</sup>, placing responsibility in the matter on any "business operator" (that is "*the natural or legal persons responsible for ensuring that the requirements of [] Regulation are met within the business under their control.*"<sup>24</sup>) that uses those materials. So even the restaurateur, who not only must absolutely not lose the declaration that the supplier issues to him, but rather must demand it if absent (because the repercussions on public health in the event of non-compliance can be very serious), and know how to provide it to the competent authorities when required.

Unfortunately, however, it is commonly used to give little value to this document and its constant updating and it has even become a frequent practice to forget to place the supply order in time and run for cover with an extraordinary purchase in some retail store, which however, presuming to be the last link in the distribution chain before the final consumer, does not issue a declaration unless expressly requested.

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<sup>21</sup> EC Regulation n.1935/2004, art. 16

<sup>22</sup> EC Regulation n.2023/2006, art.7

<sup>23</sup> EC Regulation n.1935/2004, art.17

<sup>24</sup> EC Regulation n.1935/2004, art.2, Paragraph 2, letter d)

Why does this topic become even more relevant when it comes to food delivery? Simply because the use of materials in contact with ready-to-eat foods represents an essential packaging step in order to complete the order and deliver it to the consumer and, while the dine-in makes use of plates, ceramics and trays which generally remain always the same in the life of a restaurant, in delivery we have a multiplicity of materials in paper, plastics of various types, aluminium and much more and these reflect the type of virtual brand to which they lend themselves. Therefore, if the virtual brand changes internally or is replaced by a new production line, the FCM must also keep up with the times and it is necessary to guarantee that the Authorities can trace who has made use of any non-compliant FCM. Failure to provide this information can result in a fine of up to 50,000 € for the restaurateur according to Legislative Decree 29 of 2017 in article 5, paragraph 3.

The reason why this topic was included among the chemical risks immediately after the discussion on personnel training is that the use of materials in contact with food is a sore subject in the industry, in which many operators still offer newspaper wrapping or similar printed paper supports without thinking about the damages from ink transfer to food caused by oils and fats or even in particles of pulverised ink (which have a carcinogenic effect<sup>25</sup>), or use aluminium paper or aluminium alloy without knowing the correct use cases and which applications instead endanger consumer health.

Let's examine just the case of aluminium: the hygienic regulation of FCMs made of aluminium or aluminium alloy is defined by Ministry of Health Decree No. 76 of April 18, 2007, which gives definitions, purity requirements and conditions of use that must be found, according to Article 8, in the FCM declaration of conformity issued by the supplier and in labelling, as required by Article 6. Even some products intended for the general public in large-scale retail outlets do not present all the information as per discipline, and this can mislead users, who do not know which products can be stored in aluminium trays or films and especially whether these are for food use at all. Assuming that the misunderstanding in the case of use occurs at the packaging stage of the final dish, the FBO bears the ultimate responsibility because he/she has not taken the time to train himself/herself on the tools he/she uses and puts the healthiness of the food at risk<sup>26</sup>.

What are some of the best practices in the use of these FCMs according to the Ministry? <sup>27</sup>

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<sup>25</sup> Jessica E S Bohonowych et al (2008), "Newspapers and Newspaper ink contain Agonists for the Ah Receptors". *Toxicological sciences* 102(2):278–90. DOI:10.1093/toxsci/kfn011.

<sup>26</sup> Ministry of Health Decree No. 76 of 18 April 2007, Art. 9

<sup>27</sup> [Campagna informativa sul corretto uso dell'alluminio in cucina](#)

Certainly do not use abrasive tools on lacquered aluminium pots and pans as the protective film on the metal may no longer protect against the release of aluminium microparticles. The same thought also applies to dented or scratched beverage cans, bent aluminium tubes for sauces and pastes, or aluminium trays, which should always be washed before use and should not be reused. Strongly acidic or salty food can damage FCM, as can heat, so the Ministry distinguishes between food that can only be in contact with aluminium at refrigerated temperatures, food at room temperature that can remain in contact with the material for no more than 24 hours, and food at room temperature (defined in Annex IV of the same Ministerial Decree) that can be stored in aluminium or alloy containers for more than 24 hours. To know which type of FCM we are dealing with, the first rule is to read the label. In the training course, operators who will be handling food must then be given a specific lesson on the tools actually in use in the kitchen, in addition to the training they will have already received on the correct use of cleaning products.

But what are the risks if these practices are not observed? EFSA gives us information on the opinion of the scientific community<sup>28</sup>, which considers that the largest source of exposure to aluminium in the population comes from the ingestion of food containing it and that only a small part is available for absorption once the digestive pathway has been completed via the acid solution in the stomach first and the formation of insoluble aluminium hydroxide in the duodenum at neutral pH later. The absorbed portion is unevenly distributed throughout the tissues of the human body, with bioaccumulation mainly in bone (for which the healthy limit is set between 5 and 10 mg/kg) and lungs, and is partly eliminated by renal action with citrate emission in urine. Although levels generally remain within the normal range, the human body tends to accumulate the metal in certain tissues, where it can remain for years. Research has continued over time and is still trying to determine the possible link between this bioaccumulation and diseases of the nervous system (such as Alzheimer's disease) or breast cancer.<sup>29</sup>

If we want to follow ministerial directives to reduce the risk for the end customer, in food delivery we should minimise the use of aluminium trays for dishes such as pasta with sauce, escalopes with lemon or food preserved in vinegar, and we should eliminate sauce holders in

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<sup>28</sup> Scientific Opinion of the Panel on Food Additives, Flavourings, Processing Aids and Food Contact Materials on a request from European commission on Safety of aluminium from dietary intake. The EFSA Journal (2008) 754, 1–34

<sup>29</sup> A.I. Pogue, W.J. Lukiw, Aluminum, the genetic apparatus of the human CNS and Alzheimer's disease (AD), Morphologie, Volume 100, Issue 329, 2016, Pages 56-64, ISSN 1286-0115, <https://doi.org/10.1016/j.morpho.2016.01.001>.

plastic cups sealed with aluminium foil, as well as aluminium wrappings for hot burgers filled with sour or very tasty sauces. When evaluating the packaging for each individual dish, we should always keep the guidelines in mind and, if in doubt, contact the supplier for clarification of what is specified in the declaration of conformity.

For a final look at the subject, I believe that the professionalism of a FBO can also be seen in the detail of the information he decides to share with the end user; educating the consumer on the correct use of the packaging he has received should be a good rule not to be underestimated. Indeed, it can make the difference between a quality product and a mediocre one, and can reassure the customer that this overzealousness is a representation of the care the restaurateur also takes in all the other procedures that contribute to the wholesomeness of the food he or she purchases. Preserving consumer safety, as we have seen in this chapter, is often difficult, and the reason why the kitchen manager's perception of danger is lacking is that it is also lacking in the customer, who does not demand what he cannot know. When more than one operator in the sector makes an effort to explain the measures put in place in their kitchen and the risks if they are not applied, the market may become more sensitive to the issue and begin to protect itself against negligence of any kind.

We therefore end this chapter with a note on how the microbiological and chemical risks associated with the express delivery industry are still unclear even to professionals who have so far only seen this type of activity as a small extension of the catering industry rather than approaching it as a case in itself to be examined in flow charts.

In order to understand even better what the shadow areas of this business and the world of grocery at home in 30 minutes are, let us proceed to analyse them from the perspective of its digital existence.

## **CHAPTER 2 - Sanctions Framework**

### **2.1 Fair information practices (labelling)**

A risk that is often overlooked in distance selling is that the customer is not able to see the product he is buying for himself and choose for himself, relying instead on a guarantee given by a third party.

While this has long been known in e-commerce, in the sale of foodstuffs the risk factor is even higher, as it is public health that is the first to be jeopardised in the event of negligence in customer information, and sufficient measures are often not put in place to prevent damage. This need to limit practices deemed unfair to the consumer led as early as 2005 to the



ratification of Directive 2005/29/EC of the European Parliament and of the Council, with its subsequent implementation in Legislative Decree 146/2007; these regulations put in place clearer definitions of what a 'consumer' is, namely “ *any natural person who, in commercial practices covered by this Directive, is acting for purposes which are outside his or her trade, business, craft or profession*”, and prohibit any information campaign that misleads the average user of the relevant product, be it real estate or service.

The notion of the 'average consumer' appeared frequently in the judgments of the EU Court of Justice for over twenty years<sup>30</sup> as “ *reasonably well-informed and reasonably observant and circumspect*”<sup>31</sup>, which must take into account the average vulnerability of the target population on a social, ethical, cultural and linguistic basis. At-risk groups that fall under this definition are the elderly, people with disabilities, or those who are simply untrained in how to find the information necessary for their own protection.

As a contribution, Regulation (EU) No. 1169/2011 delves into the specifics of food labelling, determining precisely which information is mandatory and which is voluntary, and dispelling doubt about certain misleading practices (such as attributing to a food properties common to all foods of the same kind as if they were extraordinary properties<sup>32</sup>).

The real problem with distance selling, however, is that in addition to having to assess which is the average consumer of the individual product sold, it is necessary to examine how educated he or she is also on the platform through which that product is sold, because often the user experience of these applications is not intuitive and does not make it easy to find content that may even be included for the benefit of the user. In fact, if a customer buys a pair of shoes online in the wrong size or books a hotel room with a bathroom in the hallway because of a bad reading of the description during the selection phase can complain to the seller, but has no risk to his own safety, while on the other hand the purchase of a product that has potentially lethal allergens or elements that conflict with the diet prescribed by a doctor can have truly disastrous consequences.

Let us try to examine a case for grocery delivery and one for food delivery to better understand what the sanctions framework provides for these issues.

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<sup>30</sup> Court of Justice, Section V, 16 July 1998, C-210/96

<sup>31</sup> [CORTE DI GIUSTIZIA UE Sez. 4^, 28/03/2019 Sentenza C-614/17 | AmbienteDiritto.it](#)

<sup>32</sup> article 7, Paragraph 1, point (c)

### **2.1.1 Packaged products and non-compliant marketing activities (case study: Surprise Bundle)**

Most of the market players using micro fulfilment centres (i.e. small warehouses located in the delivery area to facilitate last mile logistics) have a great operational urgency: to free unsold or expiring assortment and to make room for new items or to focus on those with a more frequent rotation. This happens regularly even in classic large-scale distribution, but in delivery it is even more important because the spaces of a warehouse are on average much smaller than those of a supermarket (as is also the number of labels in inventory) and one cannot count on the placement of a sign or shelf to push the consumer to finish stock, so the fundamental role of platform promotions is the mirror image of in-store promotions and must be even more focused on the consumption data collected and the commercial goals to be achieved.

Among the initiatives that can be found in the dedicated category in the app, there are often price cuts or multipacks in which the customer is encouraged to choose products on the basis of the logic of lowering the unit cost, or through cross-selling combinations such as 'recipe packs' in which a dish is proposed and the customer is given a pack with everything needed to prepare it. These activities are generally carried out with clear identification of the product the customer is buying and make available all useful information on that item without any particular variation from the non-promotional inventory.

However, in recent months, and especially after the outbreak of the pandemic and the consequent exponential growth of digital grocery delivery operations, we are seeing more and more frequent practices that verge on the borderline of legality, first and foremost the Mystery Pack, i.e. the surprise pack in which the customer pays a lump sum in exchange for a pack containing products selected by the seller according to the merchandise category of selection. One can thus spend, for example, ten € and receive up to five packs of chocolates of different brands, chosen by the app, or up to 3kg of mixed loose fruit and vegetables.

Most operators correctly state the list of possible allergens in Annex II of Regulation (EU) No 1169/2011, but fail to give all other necessary and mandatory information. Article 14 of the aforementioned Regulation is in fact very clear on this point: *“mandatory food information, except the particulars provided in point (f) of Article 9(1), shall be available before the purchase is concluded and shall appear on the material supporting the distance selling or be provided through other appropriate means clearly identified by the food business operator”*.

To better understand what the points named in this article are, let us take number 9, paragraph 1, and see the information that must be available to the customer before purchase:

*“(a) the name of the food;*

*(b) the list of ingredients;*

*(c) any ingredient or processing aid listed in Annex II or derived from a substance or product listed in Annex II causing allergies or intolerances used in the manufacture or preparation of a food and still present in the finished product, even if in an altered form;*

*(d) the quantity of certain ingredients or categories of ingredients;*

*(e) the net quantity of the food;*

*(f) the date of minimum durability or the ‘use by’ date;*

*(g) any special storage conditions and/or conditions of use;*

*(h) the name or business name and address of the food business operator referred to in Article 8(1);*

*(i) the country of origin or place of provenance where provided for in Article 26;*

*(j) instructions for use where it would be difficult to make appropriate use of the food in the absence of such instructions;*

*(k) with respect to beverages containing more than 1,2 % by volume of alcohol, the actual alcoholic strength by volume;*

*(l) a nutrition declaration.”*

Thus, the only content that is not mandatory is the BBE or the expiry date as it would be difficult for the retailer to determine which lot is being sold and to update the assortment each time if the lot changes. To really make this possible, mystery packs would not have to be sold at all, but how can we still make the customer aware of what is required without having to eliminate them altogether? Even a list of the products, which could be included in the description of the pack, would suffice, so that the customer could read the ingredient tables in the product card of each one and decide later whether to accept the possibility of these being packaged in or not. This is especially relevant when deciding to sell loose bakery products that may lead to gluten contamination, or loose fruit and vegetables, where items such as broad beans, celery, peppers, strawberries or peaches, which may cause severe allergic reactions in some individuals, should be appropriately indicated before purchase or excluded from these packages altogether. Failure to report the mandatory information as per Article 14 of the Regulation may result in the application to the responsible party of an administrative fine of between 2000 € and 16000 € according to Article 7 of Legislative Decree No. 231 of

2017, and obviously companies that have economic means and departments in charge of the legal validation of the products they sell, are at the higher end of this cost range, especially if the competent authority verifies the repetition of the error after an initial report.

Also to be considered in the topic is the selection made by the algorithm on the quantity in pieces of each article, which is often not mentioned upstream, as well as the use case (included in (g) and (j) of the list of mandatory information). For example, if we decide to create a 'pantry' bundle and provide the customer with a range of products from this assortment, the customer should know that he or she may also draw 30 packets of baking powder or coffee capsules that he or she may not be able to use due to lack of equipment. While it is true that these are not compulsory notes, they are nevertheless part of fair information practice and the customer should know that he can protect himself in case the right disclaimers are not arranged. These, in fact, are part of product advertising, which is regulated in Article 7(4)(a) of Regulation (EU) No 1169/2011, and if the information is not *“accurate, clear and easy to understand for the consumer.”*<sup>33</sup>, the FBO can be sanctioned for a sum between 3,000 € and 24,000 € according to Article 3 of Legislative Decree No. 231 of 2017.

We have addressed this issue by looking at grocery delivery, but even food delivery often makes use of loyalty techniques such as the 'free side dish' or the 'dessert on the house', and these are often not properly communicated to the customer, who could make a selection of dishes based on his or her dietary needs and then find himself or herself delivered with a gift that could contaminate and make the entire contents of the order unusable and dangerous. As repeatedly stated in the previous chapter, no form of prevention can be as effective as information to the customer by the FBO because, no matter how much we try to contain the risks, no one knows better than the customer whether or not he or she can consume a given foodstuff, and this is precisely why we must make expert and conscious use of the platforms at our disposal.

Let us take a closer look at precisely the use of platforms as a means of communicating allergens in food delivery.

### **2.1.2 Express dishes: the role of the platform in allergen reporting**

Since 2014, all caterers have been obliged to make available to the public the list of allergens present in each dish displayed for sale, following Regulation (EU) No 1169/2011, which defines, in Article 44, the guidelines for national provisions for non-prepacked food.

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<sup>33</sup> Paragraph 2 of the same article, included in the application of Paragraph 4

On 9 May 2018, Legislative Decree 231/2017 came into force, thus bringing clarification on this point regarding mass catering in Article 19, paragraph 8. It is very important to highlight this paragraph because it contains information that is not irrelevant to the analysis we are carrying out on delivery platforms.

Doing a brief search (*as of December 2022 updates*), among the major players in Italy, we see that no less than two (Deliveroo and Just Eat) refer us to the contact of the restaurateur so that we can ask him for more information on allergens in the dishes. Uber Eats and Glovo do not have this banner either. If we then want to filter the restaurants available on the platform to find only those that exclude the allergens we do not want, only Deliveroo and Uber Eats have the filter, but it is not performant as it is extremely generic ('allergy-friendly') and refers to very few restaurants, which use the gluten-free flag, but do not specify any other allergens on the menu.

But why is it not performing? Perhaps the platforms do not yet have this functionality?

The answer is no. Working with restaurateurs who have relied on my advice, I have had the opportunity to create their menus on all of the platforms I have examined, and all of them, without exclusion, allow a description to be added to the dish and, in some cases, even actual identification tags for an Allergens section. The problem exists, however, in the widespread habit of the average Food Business Operator of not making subsequent changes after the first upload of the menu by the platform, because they have no desire to spend too much time on an activity they often consider secondary. Platforms, on the other hand, have no legal responsibility to health authorities on this point and do not oblige the restaurateur to enter this information precisely so as not to make a process that already alienates many entrepreneurs from food delivery even more difficult.

With this additional information we can look more conscientiously at paragraph 8 of Article 19 mentioned above, breaking it down into points.

1. *“In the case of non-prepacked foodstuffs or foodstuffs not considered as sales units, served by mass caterers, as defined in Article 2(2)(d) of the Regulation, the indication of the substances or products listed in Annex II of the Regulation is mandatory. This indication must be provided, in such a way that it can be traced back to each food, before the food is served to the final consumer by mass caterers and must be displayed on a menu or in a register or on a notice or other equivalent system, including digital, to be kept clearly visible.”* The point is clear: it is not enough to put up a generic sign indicating all the allergens that can be found in the shop. In fact, it is necessary to have for each food a complete list of the allergens present, according to the nomenclatures provided by Annex II of Regulation (EU) No 1169/2011, and

these must be present **before the food is served**, equating digital systems (i.e. a delivery platform, for example) to the paper sign that we will find on the restaurant menu. It is also not enough for them to be consulted on each food by clicking on a button that opens the allergen list: they are to be kept **clearly visible**, so even when we go to write the description of a dish, we must place the allergens prominently and, if the platform allows us to place them in a special area, to do a little preliminary study on the user experience of that section in that platform before relying solely on the medium provided, because the allergen search button will not always be visible at first glance and we must take into account the average consumer, whom we have previously discussed, when we make our assessments on the clarity of information. Not taking for granted that these are visible is the best form of prevention we can put in place for our customer.

2. *“If digital systems are used, the information provided must also be in written form and easily available to both the competent Authority and the end consumer. Alternatively, a warning of the possible presence of the same substances or products that may cause allergies or intolerances may be displayed on the menu, in the register or on a special sign that refers to the personnel from whom the necessary information should be requested, which must be in written documentation that is readily available to both the competent Authority and the end consumer.”* This point is very important if we review what we have said about the banners that some of the platforms show when searching for the allergen list, suggesting that we contact the restaurant.

In fact, it is true that if we do not put the allergen list on every single dish, we can still refer the customer to the restaurateur, but it is also true that the information we provide must come from **written documentation** and therefore previously ratified by the FBO, which ensures that there are no variations to the dish after this ratification, and that this written information must be **easily available** to the final consumer. This point might seem like a contradiction: how can we make written documentation available to the customer if this customer is not in the restaurant to consult it? How can we provide the customer with a downloadable document with the allergen menu if the platform does not allow us to upload it online?

The most obvious answer seems to be: we cannot assume that the written information can be easily found if we do not include it in the description of each dish on the menu.

I would add another point by giving an example: if the celery-allergic customer hastily decides to dwell on a pasta dish in which the description of the dish only states 'spaghetti with meat sauce - contains gluten and lactose' and has no reason to believe, due to his own culture, due to the misleading evidence in the title of the two main components of the dish (pasta and

meat) and due to omission of information that celery is used in the preparation, he will not even be led to contact the restaurant to ask for more information on the matter and will feel sufficiently confident in his purchase, only to find out later that the soffritto in which the meat has been seasoned uses celery.

The incomplete description, in this case, has an even greater impact on the consumer's health than a total lack of information, as it leads him to believe that the only allergens contained in the dish are harmless to his well-being.

Unless the act constitutes an offence, Article 23 provides for a fine of up to 24,000 € for anyone who omits the indication of substances that may cause allergies and intolerances.

Let us look at one last piece of information that often does not appear on the app when we want to place an order, but which is present in this legislative decree and clearly stated:

*“With regard to the foodstuffs referred to in paragraph 8, the obligation set out in paragraph 2 (g) also applies<sup>34</sup>, without prejudice to the cases of derogation provided for<sup>35</sup>”*: according to this decree, one piece of information that must also be provided in mass catering, by paper, digital or equivalent means, is the designation 'thawed' on all food that has already been thawed during preparation, under penalty of the offence of fraud in trade, according to the Supreme Court, with imprisonment of up to two years or, alternatively, a fine of up to 2065 euro<sup>36</sup>. It is very rare if not impossible to find cases of online menus that present this information along with the information about the dish, despite the fact that the penalty for this in Article 23 of Legislative Decree No. 231/2017 is between 1,000 € and 8,000 € for the FBO. The reason why it is good to bring forward both topics in this section is that they fall under the same sanction framework and deal in a stringent manner with all omissions or misleading information that may put the consumer's health at risk; while it is true that a defrosting has a lower chance than an allergen of harming the end customer, we are always referring to a type of service where, once the dish has been delivered to the user's home, we do not know what use he will make of it and we must assume the worst possible case in which he might decide to re-freeze the dish or in any case not to consume it immediately, keeping it at room temperature. Given that often no useful information is placed on the packaging for the consumer, also to facilitate service and issue as many dishes as possible using the same packaging model, the platform becomes our greatest ally in educating the customer on how to

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<sup>34</sup> "The designation 'thawed' in Annex VI, point 2 of the Regulation, without prejudice to the cases of derogation provided for".

<sup>35</sup> Article 19, Paragraph 9

<sup>36</sup> Article 515 Criminal Code (Royal Decree No. 1398 of 19 October 1930)

store and consume the product without incurring microbiological and/or physiological risks, and above all on the quality of the raw materials.

It is therefore to be considered a GMP to carry out training on the platform used and periodic sample tests on different dishes to assess the communicative effectiveness of each part of the menu. Any changes or additions to the menu, whether made by the FBO directly from the terminal or by Customer Service, must always be reviewed taking into account the needs of the average consumer and possible changes to the user experience brought about by new formal or functional updates.

## **2.2 Discussion on traceability and the need for a transport document**

The topic of paper information provided to the customer in the delivery world is undoubtedly a burning one.

The truth is that the operators of the major food delivery (and grocery delivery) players themselves have never given unequivocal answers to seemingly trivial questions such as: 'do I have to print out a receipt for my customer'?

At present, most delivery platforms require the restaurateur, sometimes contractually<sup>37</sup>, to print the receipt for the end customer with an item list and the total amount purchased by the customer, to be affixed to the bag together with the order sheet printed by the printer supplied to the restaurant.

In grocery delivery, even, some platforms opt for the digital receipt sent by e-mail to the customer or accessible from the app.

Let us try to see these points through the lens of the sanctions framework and an analysis of the possible risks to the traceability of the food we send to our consumers.

Presidential Decree No. 633 of 26 October 1972, Article 21 is clear on the content required on the invoice and the correct way to state the various items and is confirmed by Article 1 of Presidential Decree No. 472 of 14 August 1996, which tells us that the obligation to allow the “*control of goods during transport for the purpose of acquiring data and information useful for ascertaining the correct application of tax rules*”. It also tells us that the data on the invoice must contain compulsory information, including the company name, quantity, nature, quality and name of the products sold, as well as information on the recipient, and must be sent within thirty days of the sale transaction, in sequential numbering.

Invoice and delivery note are two very important documents for finding information on the movement of foodstuffs, and this becomes difficult when a company name may have a name

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<sup>37</sup> I.e., Just Eat.



for each virtual brand that it places on the platform, since by reading the print-outs on the bag, one can recognise the name of the virtual restaurant and, perhaps, the address, but the data are not always clear and also the position of the platform as intermediary varies depending on the type of agreement. In fact, some platforms enter into a 'collaboration contract' with the restaurateur.<sup>38</sup>, other of 'supply of services'<sup>39</sup>, still others rise to 'mandatory' status<sup>40</sup> of the restaurateur, invoicing in his name but declaring in the contract that the entire responsibility lies with the entrepreneur. Adding to the formal ambiguity is also the fiscal one: it is the platform that pays the restaurateur after having deducted its share of the commission, which varies from 30% to 35% of the total sale, effectively deducting the real income from what is entered in the receipt and often the restaurateur also forgets to discriminate in the receipt between service with or without rider paid for by the third party delivery, thus also entering an expense item that does not belong to him if the rider is of the third party. The receipts that the customer receives by e-mail, then, have the platform as the sole issuer, so the restaurateur is not a party involved in this payment, also because, as we said before, the platform then pays the restaurateur the amount deducted. Especially if the courier is from the platform, the kitchen should not issue a receipt each time, but only a transport note to the platform to which it transfers the dish (of which it will keep a copy for 10 years for civil law purposes and at least until tax compliance is ascertained) and then it will be the latter who will draw up a new one for the end customer, also in the form of the printout issued by the device in the kitchen. This is already the case in the world of large-volume food deliveries, where each delivery either has a different TD, as in a relay race, and whoever gets the load from the previous transport keeps documentation and issues a new one in the case of a further stage, or keeps the details of the transporter clearly identified on the invoice in the case of outsourcing to third-party logistics, with only the first transporting company mentioned. This seems like an extra step that does not make much sense for a 20-minute delivery, but instead clearly defines the areas of responsibility, which are currently in practice very much tied to the best practices of third parties but still extremely stringent in terms of the FBO's legal liability. The discourse is different where platforms are used only as aggregators and not as logistical partners. The logistical passage, in fact, in TD, is direct between producer and consumer. On invoicing, then, there is still an unresolved gap in which the producer pays taxes even on revenues never actually obtained if he issues a receipt for the full cost of the dish, for which he should limit himself to issuing a single invoice to the platform when the monthly payment is made.

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<sup>38</sup> Glovo

<sup>39</sup> Uber Eats

<sup>40</sup> Just Eat

Grocery delivery with a white-label app and in-house logistics system, on the other hand, seldom even issues the order print-out sheet, so if the competent authority stopped a rider with shopping bags in his trunk, they would not be able to easily find the tracking information for that merchandise unless they consulted the in-store backlog or the rider's mobile device, but they would still not know who the merchandise was being sold to unless they requested a warrant for access to the customer's personal data concealed by GDPR<sup>41</sup>.

Moreover, some grocery deliveries do not even send an invoice by e-mail to the customer and force him to download it from the app. If he then deleted his account, he would have no way of retrieving information on past purchases. The absence of the TD is then only justifiable in the case of invoicing by midnight of the completed transaction. In fact, it is mandatory for deferred invoicing, i.e. invoicing by the 15th of the month in which the goods are issued.

Correctly defining the areas of competence for issuing invoices is essential as *“whoever violates the obligations concerning the documentation and registration of taxable transactions for the purposes of value added tax or the identification of specific products shall be punished with an administrative sanction of between one hundred and two hundred per cent of the tax relating to the taxable amount that was not properly documented or registered during the financial year”*<sup>42</sup>.

So what does the sender of the foodstuff who does not properly register the receipt risk? According to Article 6, paragraph 3 of Legislative Decree 471/97, a penalty ranging from a minimum of 500 € per violation to suspension of the service in the event of a repeated offence. Using a tax expert's advice to examine the correct issuance of invoices and transport documents is therefore a fundamental aspect of being able to do food and grocery delivery without risk, and it is an investment that, in CAPEX, can greatly reduce subsequent losses that can completely erode the already slim margins of this business model. Addressing this sector as a stand-alone and giving it full dignity (both in its formulation and in the risk assessment required to start this type of business) remains the suggestion that runs through the pages of this study.

Unlike logistics in the classic supply chain, last mile food delivery is an unexplored territory in which there is a lack of literature on case studies and best practices, and never before has the contribution of the experiences of the most shrewd restaurateurs been able to rewrite best practices for the rest of the world and redefine the balance between the various stakeholders,

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<sup>41</sup> [GDPR personal data – what information does this cover?](#)

<sup>42</sup> Article 1 of Legislative Decree No 203 of 5 June 1998

levelling out in favour of all and not just a few big ones the incredible growth potential that we have been seeing for a few years on our apps.

It is in this spirit of sharing experiences and analysing what this industry still lacks in order to move closer to true standardisation that we conclude with an examination of legislative gaps and some proposals for integrating the HACCP method into delivery without burdening the operational processes in the field.

## **CHAPTER 3 - Proposals and additions for a new foodservice**

### **3.1 Legislative vacuum of EU Reg. 1169/11, Art. 14 - Information to customers on time tolerance of removal from sales before expiry date**

The substantial difference between a normal e-commerce and grocery delivery is in the type of average customer. In fact, those who approach grocery delivery have a tendency to want to solve three major problems; lack of time (and this is especially true in the <30' service), non-accessibility to certain products in neighbourhood supermarkets, and transport difficulties, be it from the shop to the home or from the entrance to the floor. In fact, the model of small shopping in ten minutes, even for express delivery, has shifted towards higher average receipts, both to make the cost sustainable for those in charge of logistics and to meet the needs of those who increasingly prefer to cut commission costs and have larger quantities of goods delivered.

With this change of habits, therefore, one plans a shopping spree that lasts for the next few days and does not solve the emergency of a moment. For this reason, guaranteeing the customer that he will be able to consume the products he buys for a certain amount of time cannot be considered a marginal problem, and many platforms that have reduced the 'dead' period (or residual commercial life) to lighten the burden of food waste on the balance sheet, have done so by adhering perfectly to the law, which does not define any constraints for the retailer, who is licensed to sell a product until its expiry date. The customer could therefore buy a product this evening that he could no longer consume tomorrow lunchtime.

Reg. (EU) 1169/11 regulating distance selling in Article 14 fails to address this now relevant issue a decade later. While the call centres of the individual platforms face increasing demands for transparency from customers and hand out apology vouchers in an attempt to keep these consumers satisfied, the quality policies remain unchanged in most cases and even move in the opposite direction, sometimes reducing the permissible time frame for the sale of products by several days. Since we are dealing with foodstuffs and assuming that the

customer might fail to check the expiry dates by trusting the platform, and then consume perished food, the absence of a legal definition of this grey area is problematic for all parties involved.

In this legislative vacuum, it is important to be the first to bring to the attention of the authorities any doubts we may have about a given process step or the legitimacy of the reports made by the client, based on current regulations but also on our own professional experience. Indeed, especially in a sector such as this, which has developed explosively only a few years ago, there is still a lack of reference figures who collect empirical data and study statistical models based on objective surveys and metrics. Therefore, being a pioneer in delivery is also an opportunity to be part of its improvement and, in a way, to accept that bringing one's own experience may put us in front of erroneous practices that we ourselves, in good faith, carry out in our experimentation. Articles 46 and 51 of the Rules of Procedure define the modalities for proposing amendments to the text *“in order to take into account technical progress, scientific developments, consumers’ health, or consumers’ need for information”*, but the European Commission, on its portal, provides a board on which you can leave suggestions by signing up via digital identity<sup>43</sup>. I reported the problem myself and received the following response after a few months: *“Thank you for your submission in which you raise the issue of short ‘use by’ dates in distance selling. Unfortunately your proposal cannot be examined by the Fit For Future Platform as it falls outside its mandate which is to look at ways to simplify EU rules.*

*As you rightly pointed out, there is currently no legal obligation on this, as Art. 14a of the Food Information to Consumers (FIC) Regulation requires that in the case of prepacked foods offered for sale by means of distance communication, the mandatory food information needs to be available before the purchase is concluded, except for the date of minimum durability or the ‘use by’ date. The FIC Regulation further requires that all mandatory particulars must be available at the moment of delivery.*

*The Commission has currently no plans to further regulate this matter. However retailers seem to be aware there is an issue there and some are already taking voluntary initiatives to address consumer’s expectations in this regard.”*

Asking your HACCP consultant for advice when you are faced with customer complaints can help you define the objective limits of legitimacy, and for this reason it is important that anyone working as a consultant has a clear understanding of what they are talking about and

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<sup>43</sup> [https://ec.europa.eu/info/law/better-regulation/have-your-say-simplify/suggestions/add\\_en](https://ec.europa.eu/info/law/better-regulation/have-your-say-simplify/suggestions/add_en)

what all the variables are at play, and that they also bring their input to any revisions to the law.

Precisely in support of those who will have to advise on the next food and grocery delivery business, we summarise the GMPs that they will keep in mind when drawing up an HACCP manual, and remember that this will vary enormously depending on the type of actions carried out in the daily life of the business.

### **3.2 New GMP in digital catering and last mile grocery delivery**

Let us therefore take up everything we have talked about so far by drawing the lines of what points differentiate food delivery from classic catering and how grocery delivery should distinguish itself from simple large-scale distribution through additional measures to protect the consumer.

We have seen that the main problems faced by food delivery, for example, are customer education on the conditions of use of the dish, the correct storage temperature in case of non-immediate use, and above all on the allergens present in each dish.

Therefore, to be considered appropriate as GMP is the inclusion in the kitchen of a sticker for each dish, apart from the type of packaging to be used to package it (which should be stored in a special space in the kitchen, away from possible contamination), on which the list of ingredients and instructions for the correct maintenance of the dish are pre-printed. On this, leave a space for manually entering the time of last temperature-controlled storage. By this, it is meant that any cold dish to be stowed at +2°C or +4°C is registered as soon as it leaves this temperature range for the last delivery stage and that the same applies to hot food already reclaimed by cooking as soon as it reaches a temperature below +65°C. If the means of transport permits refrigeration or heated storage, provide for the start of registration from the moment the dish leaves the trunk. It is important, however, to do this in conjunction with clear indications of which dishes are already thawed and how much time can elapse between this temperature-controlled interruption and consumption or re-storage before there are serious health risks. The **customer in fact has no scientific competence** to determine how much time he has before he has to dispose of a dish and it should become a good rule to already give all the necessary information. In order to know the shelf-life of each dish, it might be advisable to test the food with an analysis of the core temperature of the product over a certain period of time and possible additional tests for microbiological values to be used as a reference for subsequent preparations. In essence, we want to determine an 'expiry date' valid

not only for the preparation, but also for the entire finished dish under certain storage conditions.

As mentioned above, the subject of allergens is even more sensitive, and treating dishes almost like pre-packaged food will certainly not do the customer any harm. Clearly indicating risky ingredients in the list and any cross-contamination that may occur in the kitchen is a due act for consumer protection, and iconic labels that also help those who may have language barriers is a gold standard that few still implement. Any complimentary dish or side dish should be appropriately marked after purchase or isolated from the rest of the bag to avoid unintended contamination and thus a real risk to the customer's well-being.

Precisely in order to close on the information needed by the customer prior to purchase, there is a renewed need to formalise the degree of training given to all operators, but above all to the RHACCP, on delivery platforms work, and thus make it compulsory that all changes to menus take place in the shortest possible time, also in digital form, and that all allergens and thawed products are highlighted and immediately recognisable to the customer. When teaching the team during HACCP training courses, therefore, the consultant must ensure that he has the knowledge to be able to bring these issues to the right attention or identify who in the team can train their colleagues in the correct use of the terminals and the online interface. In any case, it remains the responsibility of the FBO to verify that there is always identity of content between the updated paper menu and the online menu.

Also, check that not only the dish, but also all upselling and cross-selling propositions (e.g. "Would you like to add a slice of cheesecake to your combo?") have the necessary information for the customer to make informed choices.

For a true detection of how an online menu presents itself to the consumer, it must become good practice to carry out periodic surprise orders, whereby the HACCP advisor's pre-filled audit assesses how clear the information provided to the customer is, what the actual temperature ranges are on arrival, and any possible variables useful for limiting the risk to public health and subsequent penalties for the FBO.

In training the team, we also recall the importance of knowing the FCMs you are working with and the legal requirements they must have in order to be used in delivery to the end customer. The mandatory declaration of conformity must also be requested in the case of one-off purchases and the whole team must know where to find this documentation in the event of an inspection by the authorities. Finally, attention should be paid to the sanitisation of the surfaces where these FCMs will be stationed and to the cleanliness of the platform

printing devices, which should be contacted with disposable gloves at the beginning of the food assembly line.

In grocery delivery, there is little deviation from these points; here too, an in-house reporting system should be implemented, whereby field workers can report any discrepancies between the information on the label and that published in the app and thus support the sales team in detecting non-conformities on several hundred products in the assortment.

When packaging the bags, care must be taken to separate food-grade products from chemical products or those not intended for human use, favouring a differentiation of the different orders even in batches through the order identification number and the number of paper bags or thermal bags attached to that order, to avoid handing the customer an order that does not belong to him. The goods must be placed inside the trunk, avoiding crushing or spillage that could cause unintentional contamination of the rest of the goods, and bakery products and loose fruit and vegetables must be packaged (handled with disposable gloves), minimising the possibility that allergens from one order could contaminate all the bags in the trunk, which will be strictly included in the list of surfaces to be sanitised regularly.

In addition to these notes on the GMP that we can implement in digital foodservice, let us close for the sake of completeness on what technical characteristics the means of transport

used must have and the need to regulate them for a real standardisation of this industry.

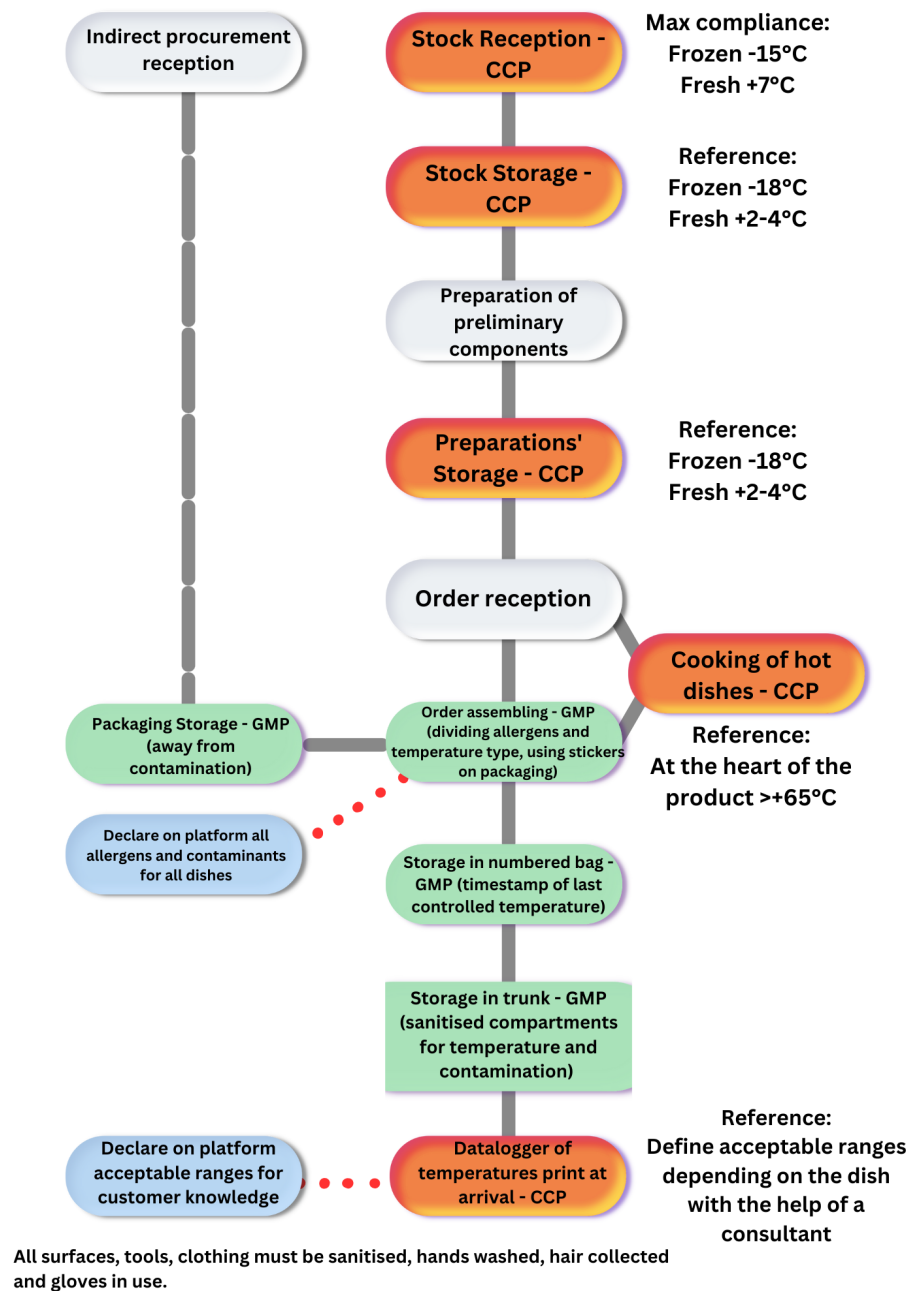


Figure 6. Revision of a flowchart for a dark kitchen's HACCP manual

### 3.3 Considerations on the regulation of the technical characteristics of the means of transport

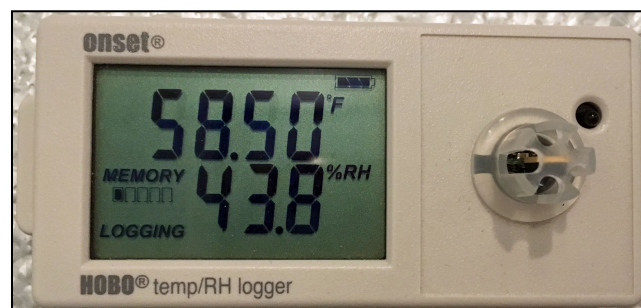
We have seen that in the transport of goods or foodstuffs from the warehouse/laboratory to the end customer, the critical points for customer safety are those relating to contamination and temperature control.



In order to truly guarantee a distinction in batched orders and proper storage at a controlled temperature, the normal rider's box can no longer be considered sufficient and it is necessary to rethink the vehicle as an integral part of a food chain in which delivery within a safe time range for the food cannot be guaranteed when at room temperature.

Express food delivery will therefore have to equip itself with vehicles capable of keeping cold food refrigerated and hot food heated, with compartments to divide temperature areas at  $+2^{\circ}\text{C}/+4^{\circ}\text{C}$  or  $+65^{\circ}\text{C}$ . Grocery delivery (as well as food delivery in the case of ice cream or preparations to be kept in the freezer), on the other hand, will have to ensure that it can keep frozen and deep-frozen products at no more than  $-15$  degrees Celsius as the maximum temperature for compliance.

Although the timeframe is therefore short compared to the average delivery time for refrigerated lorries to unload supplies, the same mentality should be adopted with regard to the delivery driver's vehicle, which should be able to record the temperatures in the hold through a special data logger device installed in the trunk. Would an isothermal bag suffice? Given that the maximum tightness index is specific to the individual manufacture and that we must always refer to the manual in the data sheet for this, it could only suffice in the case of absolute certainty of a short delivery time, a certainty that is difficult to have especially if an algorithm could group orders together or if the delivery man to whom we entrust our food is not our employee.



**Figure 5. A data logger's display. A few models allow for printing, so that the whole cold chain can be tracked and used in case of inspection**

For this reason, imposing the use of fridge/warming compartments must be considered as the next step of the legislator who wants to guarantee the minimum risk to public health. This equipment, installed on riders' boxes, must become a norm whose non-enforcement by

delivery platforms and independent players must be sanctionable and traceable to poor food handling practices.

To ensure effective detection of non-conformities, the customer must be able to find on app the temperature range he can expect when the food arrives, and he must be able to get printed proof from the rider (from the data logger) of the correct temperature on delivery, with the possibility of being able to refuse a non-compliant load and appeal to the relevant authorities (fig. 5<sup>44</sup>).

In fact, until these public health requirements are tied to a specific and clear sanction framework, anyone operating in the sector will be neglecting fundamental requirements for the correct transport of foodstuffs in last mile delivery, which are instead considered to be of indispensable importance in all other stages of the food chain, as per Article 1 of Regulation (EC) No. 852/2004 and the subsequent Article 4, letters c) and d), which include among the FBO's responsibilities the “*compliance with temperature control requirements for foodstuffs*” and the “*maintenance of the cold chain*”.

The law will therefore also have to provide for the technical characteristics suitable for achieving transport compliance, and will also take into account the needs of small businesses (which might see delivery as an important means of livelihood and therefore should not be placed at a disadvantage) and additional operational requirements such as the division of compartments not only by temperature, but also by order sequence or allergen content.

## CONCLUSIONS

The delivery of packaged or express food to the customer's home within 30 minutes is now a habit that will probably never leave our routines and will continue to grow.

The spirit of experimentation and explosive development that we have witnessed in recent years will soon have to reckon with the perennial demands of food safety, which remains the guideline and beacon to watch in every business where food is handled.

Today's consultants will need to be familiar with this new variant of service, knowing how to disentangle the real operational and/or economic needs from the health needs. Giving the FBO that relies on them clear direction on the correct measures for ideal handling, from an accurate flow chart to the equipment designed for this new food service, via indispensable staff training, will only be possible once they understand what the last mile delivery is and how quickly it can change in this still germinal state.

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<sup>44</sup> Temperature Data Logger, [https://commons.wikimedia.org/wiki/File:Data\\_Logger.jpg](https://commons.wikimedia.org/wiki/File:Data_Logger.jpg)

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