Pontifícia Universidade Católica
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Ellen Silvia Lopes Gonzalez Aguilera

Redesigning Restaurants' Food Systems

Food Design for Sustainable Best Practices

Tese de Doutorado

Thesis presented to the Programa de
Pós-Graduação em Design of PUC-Rio in partial
fulfillment for the degree of Doutor em Design.

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Rio de Janeiro
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To those who have come first, who have been pioneers, and fought for a better food system, for good, clean and fair food for everyone. For shedding light on such an urgent matter.

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Abstract

Aguilera, Ellen Silvia Lopes Gonzalez; Quaresma, Maria Manuela Rupp. **Redesigning restaurants' Food Systems. Food Design for Sustainable Best Practices**. Rio de Janeiro, 2025. 290p. Tese de Doutorado— Departamento de Artes e Design, Pontifícia Universidade Católica do Rio de Janeiro.

The Food and Beverage industry plays a significant role in shaping food systems, contributing to environmental and social sustainability challenges. Despite growing awareness, there remains a gap in practical tools and strategies that effectively integrate sustainability into restaurant operations. This research addresses this gap by exploring how Food Design principles can be applied to transform Food Service food chains, adopt sustainable best practices, and foster environmental responsibility within the industry. The study adopts a practice-led research approach, combining ethnography, Design methodologies, and participatory strategies to investigate and intentionally design sustainable food habits. The research merges desk research, field studies in sustainability-oriented food-service venues, and collaborative participation of stakeholders, including chefs, restaurateurs, and experts, enriched through international collaboration and validation of findings. The outcomes of this study highlight the potential of design to realign food systems within HoReCa sector. Emerging themes include the co-creation of sustainability-oriented policies, the development of tools that facilitate everyday operations, and strategies to mitigate negative impact caused by the sector. The research culminates in the development of an artifact designed to support F&B in adopting more sustainable practices while maintaining economic viability. This artifact is based on the developed concept of Circular Food System, offering practical guidance to industry professionals. The research has significant practical implications for the sector, bridging academic knowledge with industry practice, it contributes to building sustainable food systems providing actionable insights for Food Service. The intended audience includes HoReCa professionals and scholars in Food Design and sustainability. Ultimately, this research aims to foster a more responsible and resilient F&B sector, balancing environmental consciousness with business feasibility and consumer engagement.

Keywords

Circular Food System; Sustainable Best Practices; Restaurants; Food Design; Service Design.

Resumo

Aguilera, Ellen Silvia Lopes Gonzalez; Quaresma, Maria Manuela Rupp. **Redesenhando os Sistemas Alimentares dos restaurantes. Food Design para Práticas Sustentáveis**. Rio de Janeiro, 2025. 290p. Tese de Doutorado — Departamento de Artes e Design, Pontifícia Universidade Católica do Rio de Janeiro.

A indústria de Alimentos e Bebidas desempenha um papel significativo na formação de sistemas alimentares, contribuindo para os desafios de sustentabilidade ambiental e social. Apesar da crescente conscientização, ainda há uma lacuna em ferramentas e estratégias que efetivamente integrem sustentabilidade às operações de restaurantes. Esta pesquisa aborda essa lacuna explorando como os princípios do Food Design podem ser aplicados para transformar as cadeias da restauração, adotar melhores práticas sustentáveis e promover ética e responsabilidade ambiental no setor. O estudo adota uma abordagem de pesquisa orientada pela prática, combinando etnografia, metodologias de Design e estratégias participativas para investigar e projetar hábitos alimentares sustentáveis. A pesquisa mescla revisão de literatura, estudos de campo em estabelecimentos sustentáveis de serviços de alimentação em colaboração com chefs, donos de restaurantes e especialistas, enriquecida por meio da colaboração internacional e validação por pares. Os resultados deste estudo destacam o potencial do Design para reconfigurar o sistema alimentar no setor de restauração e hotelaria. Os temas emergentes incluem a cocriação de políticas orientadas à sustentabilidade, o desenvolvimento de ferramentas que facilitam as operações diárias e estratégias para mitigar o impacto negativo causado pelo setor. A pesquisa culmina no desenvolvimento de um artefato projetado para dar suporte ao setor de A&B na adoção de práticas mais sustentáveis, mantendo a viabilidade econômica. Este artefato é baseado no conceito desenvolvido de Sistema Alimentar Circular, oferecendo orientação prática aos profissionais da indústria. A pesquisa tem implicações significativas para o setor, unindo conhecimento acadêmico com a prática da profissão, contribuindo para a construção de sistemas alimentares sustentáveis. O público-alvo inclui profissionais da restauração e hotelaria e acadêmicos em Food Design. Em última análise, esta pesquisa visa promover um setor de A&B mais responsável e resiliente, equilibrando a consciência ambiental com a viabilidade empresarial e o engajamento do consumidor.

Palavras-chave

Sistema Alimentar Circular; Melhores Práticas Sustentáveis; Restaurantes; Food Design; Design de Serviço.

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"What is certain, however, is that gastronomy is also an important political lever. We do not always have the means, with our votes, to make our voices heard. But we have in our hands, by choosing what we eat and why we eat it, a considerable lever of direct democracy. We can no longer eat without thinking about what we eat and how we eat. This is an issue of individual freedom to refuse to let ourselves be poisoned by a system, already moribund, which no longer makes sense, a pathetic headless duck that continues to run without even knowing where it is taking us. If we decide to open our eyes rather than passively opening our mouths in the face of all the impostures they want to make us swallow, we can make a choice not to abdicate ourselves for the benefit of what only serves the interests of short-term for a few. Yes, we must regain awareness of what we eat and give ourselves the will to choose with complete lucidity. Because, if 'we are what we eat*' and if we no longer know what we eat, then we no longer know who we are.*

At the heart of this awareness, chefs have a special place. We are fortunate to work in a profession of passion, pleasure, and transmission. But this opportunity also charges us with a new responsibility. That of being, in a way, transmitters of humanity. The taste for our profession and our vision of gastronomy must motivate us to transmit the history, the origin, the knowledge of the products that we transform, to bring to fruition the diversity of terroirs on the Earth and germinate spaces of conviviality between men.

Let's decide, together, to turn the table!"

- Alain Ducasse

Glossary of terms

Food: the F*ood Guide for the Brazilian Population* (Brasil, 2014)[1] outlines that “food refers to the intake of nutrients, but also to the foods that contain and provide the nutrients, how foods are combined and prepared, the characteristics of the way of eating, and the cultural and social dimensions of eating practices” (Brasil, p.15). It reinforces that these aspects influence health and well-being. While proposing the ingestion of natural, minimally processed, or processed edible ingredients to produce

> “culinary preparations that result from the combination and preparation of these foods, and particular ways of eating constitute an essential part of the culture of a society and, as such, are strongly related to people’s identity and sense of social belonging, their sense of autonomy, the pleasure provided by food and, consequently, their state of well-being” (Brasil, p. 16).

We add FAO's definition (FAO CAC, 2019, p.1) of food:

> “it means any substance, whether processed, semi-processed or raw, which is intended for human consumption, and includes drinks, chewing gum and any substance which has been used in the manufacture, preparation, or treatment of food, but does not include cosmetics or tobacco or substances used only as drugs”,

And finalize with Pollan's (2006, 2008, 2009) determination of food: edible substances prone to rotting, made with less than five pronounceable ingredients.

We endorse the idea that food is central to human life. It touches all spheres, from health to power, justice to pleasure, and culture to well-being. Providing people with the best food we can within these aspects is crucial to understanding where we are and where we are going (Gonzalez, 2022).

In this research, we will treat food as the nutritionally, culturally, and socially appropriate edible substances that shape and are shaped by human identity, surrounding ecosystems, and well-being. It consists of natural or processed substances intrinsically consumed in a gastronomic human experience for pleasure and/or health.

Food Systems: According to FAO (2018, p.1)

> “Food Systems encompass the entire range of actors and their interlinked value-adding activities involved in the production, aggregation, processing, distribution, consumption, and disposal of food products that originate from agriculture, forestry or fisheries, and food industries, and the broader economic, societal and natural environments in which they are embedded.”

For the Latin American Network of Food Design— Red Latinoamericana de Diseño y Alimentos, RedLaDA (Reissig, 2022), food systems are

[1] It is important to highlight that in many Latin languages, including Portuguese, Food can be translated into “Comida” and “Alimento”, and that those words might differ in meaning. For this study, Food is used interchangeably for both, and has been done so when translating literature, interviews and other data collected.

> “the set of actors, interactions, elements that are exchanged in different instances, environments and territorial scales, whose purpose is to create, transform, distribute, acquire and appropriate (cook and eat) food for the inhabitants of a determined place. Food ecosystems can be understood transversally and at different simultaneous scales. (...) Food ecosystems are considered to encompass all situations where food is present, whether in a tangible or intangible way.”

In a more concise version, “Food Systems are all people, places, and practices that contribute to the production, capture or harvest, processing, distribution, retail, consumption and disposal of food (FAO; GAIN, 2023).”

This research merges these definitions, seeing Food Systems as complex, interconnected networks of people, places, and processes that enable food production, processing, distribution, consumption, and disposal.

Sustainability, as defined by the UN in 1997, is “meeting the needs of the present without compromising the ability of future generations to meet their own needs.” (UN, n.d.). In Mager et al. (2020, p.102), the authors bring yet another reference from the UN: “Sustainability is defined as the harmonic condition under which societies and economies can thrive without harming nature, thus fulfilling social requirements without adversely affecting future generations’ well-being”. It is a global issue, but shall be treated from a local perspective.

Sustainable Food System, therefore,

> “is a food system that delivers food security and nutrition for all in such a way that the economic, social, and environmental bases to generate food security and nutrition for future generations are not compromised. This means that:
> It is profitable throughout (economic sustainability);
> It has broad-based benefits for society (social sustainability), and
> It has a positive or neutral footprint on the natural environment” (FAO, 2018, p.1).

HoReCa represents the Hotel, Restaurant, and Catering sector. This study focuses mainly on food and beverage services providing complete meals or drinks for immediate consumption, like traditional restaurants, cafés, or bars, whether the customer eats the prepared meals on the premises, takes them out, or has them delivered (Pedersini, 2012). **Food Service** or **Food and Beverage (F&B)** includes businesses, institutions, and companies responsible for any meal prepared outside the home, inclusive of restaurants, catering, cafeterias, and the hospitality sector (ReFED, n.d). We will use these terms interchangeably throughout the text.

Gastronomy is the transdisciplinary study of food and eating as human-centered experiences. It encompasses the arts and humanities, natural, applied, social, and political sciences to explore food's role in culture and history

(Brillat-Savarin, 2009; Montanari, 2008; Poulain, 2013; Ducasse; Regouby, 2017).

Sustainable Gastronomy “means cuisine that takes into account where the ingredients are from, how the food is grown and how it gets to our markets and eventually to our plates” (UN, n.d.-b)

Food Design: According to Reissig and Lebendiker (2021, p.75), “Food Design can be used as a systemic and integral approach to better comprehend the enormous and highly complex food universe.” The authors augment by referring to the RedLaDA (2024) definition:

> “Food Design is any action that improves our relationship with food in various instances, senses and scales, at a personal or collective level, and in the context of food ecosystems composed of edible products and materials, spaces, territories, technologies, experiences, processes, and practices, tangible and intangible. It uses the resources of Design to better understand, envision, and participate in the senses of care and health of these ecosystems for the good of all living beings within the planet that hosts us. It is a way of being and interacting with food ecosystems, of rethinking ourselves as active decision-makers, accomplices, and caretakers of food transversality, from our individual and daily practices, those of our jobs, or from social and time. These put into perspective the many voices, knowledge, and wisdom necessary to improve food contexts from their origins and in their entirety. It is a community that seeks to take care of life from the sense-think-actions of design that transit the food pluri-verses.”

This definition intends to frame a critical, propositive attitude toward the broad scope of food, as highlighted by the words “action, improves, and relationship. Francesca Zampollo (2024b, p.3) delineates Food Design as

> “the conscious and deliberate creative process that brings innovation to living beings and the planet on anything related to food and the act of eating: from production, procurement, preservation, transportation, preparation, presentation, consumption, and disposal,”

Sustainable Food Design:

> “There is no possible way to make Food Design if it's not based on the sustainability of all systems involved. It has to be environmentally conscious, economically viable, culturally meaningful, and socially inclusive. It is about aspiring to a future where good, clean, and meaningful food will be possible for everyone on the planet as much as for the earth itself” (Gonzalez, 2022).

In this research, we always seek an implicit definition of Sustainable Food Design as a systemic, intentional design approach to shaping food-related culture, experiences, products, and systems. Sustainable food design improves our relationship with food on multiple levels— individual, collective, material, and experiential— grounded on innovation and always considering sustainability's environmental, social, and economic dimensions.

Territory: Two complementary definitions that distinguish land from “land-in-use” were brought:

> “The territory does not exist in nature: it is a dynamic, stratified, and complex succession of successive cycles of civilization; it is a complex system of relations between the communities located there (and their cultures) and the environment” (Magnaghi, 2000),

and “The territory can also be considered as a collective work, which is socially produced and expressed in narratives” (Krucken et al., 2017, p.24).

We have adopted that territory is not a fixed geographical space, but a layered, dynamic system shaped by historical, social, and environmental interactions. It reflects collective identity and is expressed through narratives and practices. When referred to as a local, it is complemented by its relationship to the global, emphasizing contextual knowledge, resources, and traditions of the surroundings.

Terroir: In the documentary “Behind the Plate” (Ferraz & Meirelles, 2020), chefs share their views on food, culture, and the multiple aspects of the terroir. Wwhether geographic, emotional, or historical, it shapes culinary creations and can be comprised within 5 meters or 5 thousand meters, from today or from a thousand years ago, from sentimental, emotional surroundings or geopolitical environment to simply geographical surroundings. Taste and flavor are woven with environmental, cultural, and societal factors. The profound interplay between the land, culture, and society generates memories that, in turn, shape culinary creations. Following Manzini's notion of systemic change through participatory approaches (Manzini, 2015a), culinary references worldwide recognize that food carries cultural diversity and universal importance.

Terroir, for us, is the taste of a place.

Short Food Supply Chain: is closely linked to terroir and community and

> “does not necessarily refer to the distance traveled. The important proximity is of another type. It is a proximity between farmer and consumer. Ideally, there would be no intermediaries in this chain. We would know who produces the food and how it is produced. An important aspect is that the short supply chain is guided not only by economic value but by a series of symbolic, cultural, ethical, and environmental meanings” (Prato Cheio, 2023, 00:31:27).

Artisanal products: according to UNESCO (1997), are

> “products that are produced by artisans, either completely by hand or with the help of hand-tools or even mechanical means, as long as the direct manual contribution of the artisan remains the most substantial component of the finished product. The special nature of artisanal products derives from their distinctive features, which can be utilitarian, aesthetic, artistic, creative, culturally attached, decorative, functional, traditional, religiously and socially symbolic and significant”.

1
Introduction: About Food, Design, and Systems

"You can change the world with every bite" (Kenner & Robledo, 2023, 01:31:19').

This project addresses commercial food and beverage venues through Design, understanding, and permeating the economic, social, and environmental aspects. Our[2] research is focused on critical issues in the food production and consumption chain in Hotels, Restaurants, Catering, and similar businesses from the systemic and sustainable perspectives of Food Design. By analyzing contemporary urgent matters of the productive limits of the planet, the research builds the scenario for food design practitioners to consciously act, innovate, interact, and propose solutions for the questions posed. The Food Design discipline foments and offers tools to understand, implement, and support the process of social transformation.

Food encompasses social, cultural, sensorial, aesthetical, and nutritional aspects of what we eat, along with its positive and negative impacts on the territory, environment, human health, and relationships established through or with the food. The different human interactions with food reflect on a different food scape, or food landscape, defined by FAO & FFI (2021) as the "physical, organizational and sociocultural spaces in which residents encounter food and food-related issues. The interaction of different food identities determines the overall culture of the places where *humana communitas* reside."

The Food Guide for the Brazilian Population (Brasil, 2014) defines food and how it should be consumed to ensure the health of individuals and the environment. It claims that an adequate and healthy diet derives from a socially and environmentally sustainable food system guided by five principles:

- Food is more than nutrient intake;
- Recommendations on food must be in tune with the times;
- Adequate and healthy food comes from a socially and environmentally sustainable food system;
- Different types of knowledge generate the knowledge for formulating food guides;
- Food guides increase autonomy in food choices.

Recommendations on diet should take into account the impact of the forms of food production and distribution on social justice and the integrity of the environment. To achieve these goals, the guide strongly endorses the following, amongst other recommendations (Brasil, p.125):

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[2] Writing this thesis in first person is an informed decision, aligned with the philosophical positioning of the research, grounded the autoethnographic approach, as a gastronomy specialist on one side, and design researcher on the other one, supported by literature, discussions, and practice as references.

- Make natural or minimally processed foods the basis of your diet. In a wide variety and predominantly of plant origin, natural or minimally processed foods are the ideal basis for a nutritionally balanced, tasty, culturally appropriate diet that promotes a socially and environmentally sustainable food system;
- Limit the consumption of processed foods;
- Avoid the consumption of ultra-processed foods;
- Eat regularly and mindfully in appropriate environments and, whenever possible, with company;
- When eating out, prefer places that serve freshly prepared meals.

Food interactions are deeply connected with climate change and the current climate crisis and tend to be even more impacted as this balance collapses with crop failures, shortages, and rising food prices. There is no human well-being if our feeding model damages our health and the environment (Mantovani, 2024).

So much of the food production, processing, distribution, and waste is hidden from citizens' eyes, and its impact numbers are no different. The world's land area is 13 billion hectares, of which more than one-third are classified as agricultural. The remaining planet's land surface is occupied, as shown in Figure 1: 10% is covered by ice-covered lands, 15% by deserts, 39% by forests and grasslands, and only 1% by human settlements and all its infrastructure. The agricultural area occupies the remaining area, divided into cropland and permanent meadows and pastures, the last accounting for the largest share of the world's agricultural area — ⅔ of it (Ritchie & Roser, 2019).

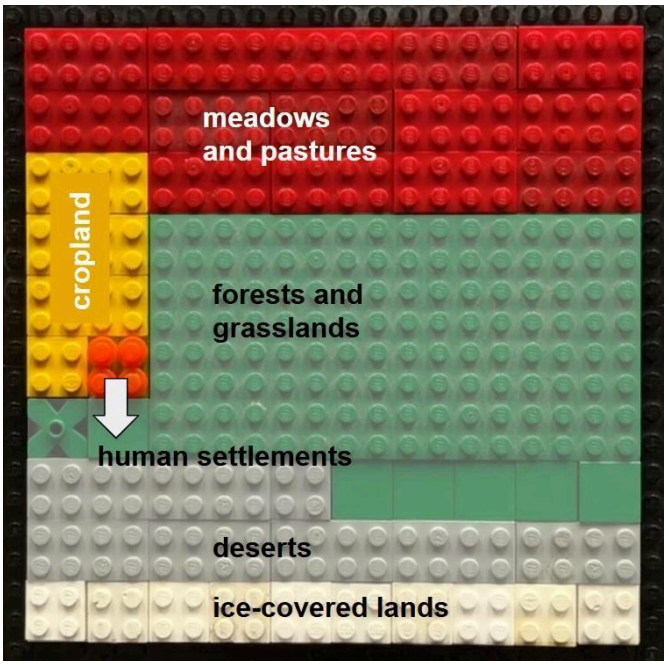

Figure 1. Land use. Source: Instagram account, Holleman, 2024 @forkranger.

In this document, Agriculture (thus agricultural area) refers to all food-production-related activities, including animal and vegetable-based foods for human consumption, according to the FAO (2023, figure 3). See Figure 2 for details.

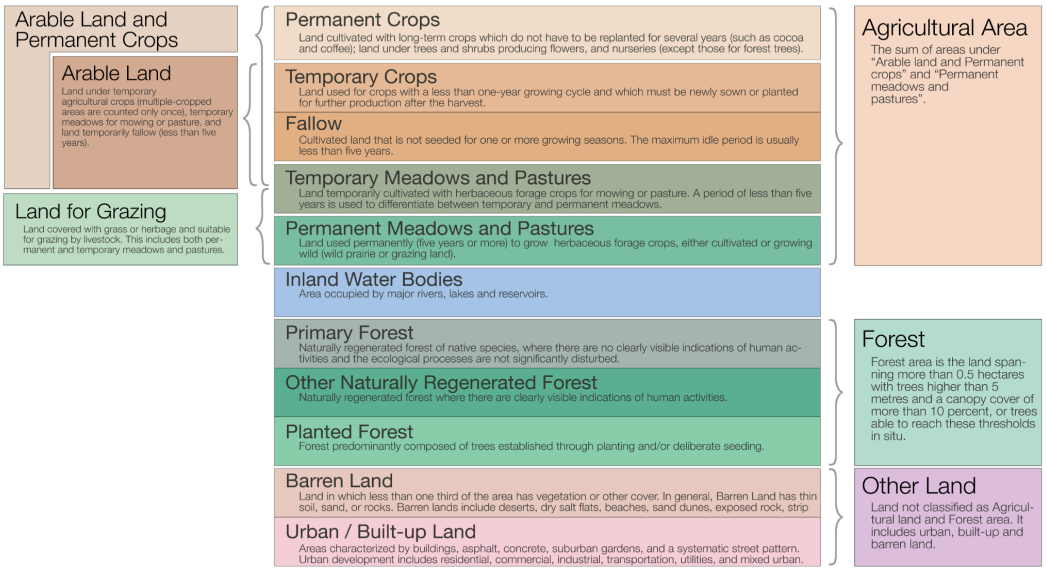

Figure 2. Agricultural areas subgroups. Source: Ritchie & Roser, 2019.

The land reserved for food production has increased rapidly over the past 150 years, negatively impacting climate and natural resources. According to Ritchie and Roser (2019), 71% of those emissions come from growing food, not its transport, packaging, or consumption. Figure 3 exemplifies how much agriculture is responsible for biodiversity loss and soil and water degradation, with agriculture being responsible for over a fifth of global carbon emissions.

Figure 3. Food systems are at the heart of the global environmental crisis. Source: Geneva Environment Network, 2024.

People have become so detached from the food they eat that, to some, there is no evident connection between what is grown and eaten, what is on supermarket shelves, and what is in the fields or ranches. Moreover, newer

generations are disconnecting from the tasks inherent to cooking. Eating has increasingly become a lonely, absent-minded act of self-feeding (WHO, 2017).

For food systems to play a vital role in society's quality of life, ensuring that all parts can be as healthy as possible, the system must be equally accessible and in balance, promoting joint health, equality, labor, and animal welfare. It must be an agricultural system that nourishes the planet and the people - consumers and those who grow our food.

“The way we eat has changed more in the last 50 years than in the previous 10 thousand” (Kenner & Robledo, 2023, 00:44:00). This statement reinforces the necessary debate on our current food systems, especially in Western civilizations, which are heavily based on the agri-food business, where food and workers are severely abused in assembly lines.

Humans, animals, and all components of nature are being disrespected, with food grown too far from the consumer's eyes; one wonders why. It is urgent to shift how we choose, produce, process, and consume our food in ways that are no longer damaging to our bodies and nature, sustainably, and ensure that the growing population is fed and adequately nourished. When making informed decisions about every food item bought and consumed, we can change the system (Kenner & Robledo, 2023).

According to the UN's Global Sustainable Development Report 2023 (UN, 2023b), transforming food systems involves a holistic change of behavior from producers to distributors and consumers, directly impacting the decisions made, social norms, and practices toward a more sustainable lifestyle. Adding to that, food accessibility, food waste, and food safety, among other food-related issues, demand urgent, collaboratively proposed solutions, approaching both cultural and technological aspects. As stated by Dan Barber (2015), “We cannot think about changing parts of our (food) system. We need to think about redesigning the system”, and that encompasses and affects all its components (see Figure 4).

Food—the essence of basic needs—is an object of design, and as such, it is part of the reflections on over and hyper-consumption, along with the sources and methods by which this generous good is treated (Stummerer & Hablesreiter, 2021).

The health of people and the planet is intertwined and failing because of the food system model. The current contradictory scenario of food scarcity and abundance has resulted in over 2.6 billion obese people and almost 800 million hungry or undernourished individuals. One in five deaths is linked to diet-related problems (SRA, 2024).

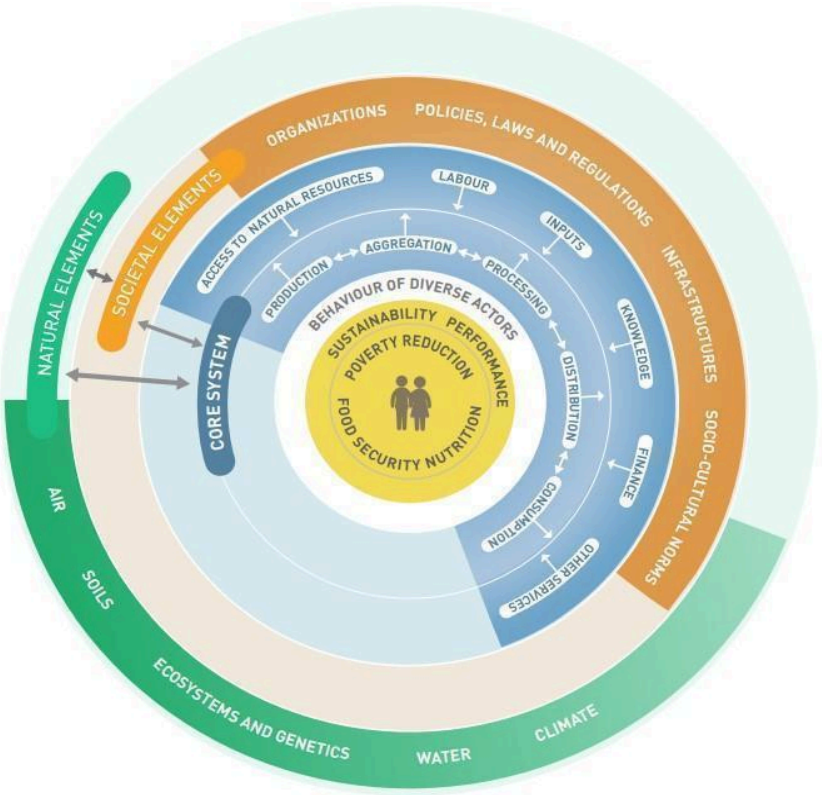

Figure 4. The Food System. Source: FAO, 2018, p.1.

Different ways to develop a sustainable, systemic approach exist when Design encounters food. The topics addressed may include but are not restricted to the construction of meaning, symbols, and scale. These can be made tangible as products, processes, environments/surroundings, materials, practices, systems, technology, and experiences, subject to projection. The designer's role is to integrate all the arguments, stakeholders, and scenarios, concatenating the efforts of all the actors involved in the process.

This countercurrent of change in the social pattern is also approached by Cipolla and Manzini (2009) as a process of social innovation, with solutions created by groups or communities that evidence demands, market niches of products and services with the potential to address. And perhaps deal with, most appropriate to the most current social, economic and environmental adversities. The change in food culture is a construction of society, which outlines the future of markets with its consumption habits, production, and the actors involved. Food, as much as cooking or eating it, is a political act (Pollan, 2006).

In the context of the food system, producers, consumers, and chefs can play the designer part and will have a prominent part in the debate for the construction of alternatives for inventive scenarios. This will stimulate the local economy, social transformations, and sustainability. Design practice involves (and develops) skills to empower all participating stakeholders and enables them to create, transform, and give resilience to developing projects, as shown by Manzini (2015). Similarly, Morgan (2009) affirms that Design plays a significant

role in fostering equitable and sustainable food systems, and anyone working towards a respectful social, economic, and ecological approach to this system can be seen as a food planner and food designer.

Designing services, proposing alternatives, and conjecturing sustainable food systems as an object of study of Systemic Design is an exercise, as possible as it is necessary for experts in the area, always considering aspects of economic, social, and environmental sustainability as the basis of any Design project. Manzini (2015) points out that designers are specialists capable of planning planetary solutions, altering ways of life, changing society's values, and revising production and consumption patterns. The agri-food chain is directly connected to these issues. The systemic design of this chain must include qualitative and quantitative aspects, be judicious in the design of the mesh and the evaluation of variables, and be attentive to the location and everything pertinent to the territory.

For Design, food can be treated variably, being the material to design for as much as the material to design with. There are numerous ways to address these two comprehensive concepts, which often intersect with sustainability. Design, therefore, must integrate sustainability into its core approach, playing a crucial role in facilitating projects dedicated to achieving balanced development objectives (Mager et al., 2020). Because redesigning the food system exceeds food-related issues, this is where Design convoys processes and methods, bringing together, in a participatory frame, the territory, producers, consumers, and food professionals to propose actions, generating innovation (Krucken et al., 2017, p. 23).

To make designing food sustainable, we must question the relationships between food systems and resource consumption —how food is grown, processed, and consumed and its social, political, economic, and ecological consequences (Buckley, 2021). In a broader view, sustainability is “a lens through which the subject is perceived, in this case, Food Systems” (.Zampollo, 2024a), and can be achieved in five non-linear and related steps: user's experience, context of intervention, designer's area of influence, and materials, ingredients, waste. Those aspects are present throughout this research, from the study object to the cases studied and propositions.

Food Design extends its reach across multiple aspects, encompassing the design of edible and non-edible objects, visual media, experiences, and product-service systems tied to food's complete lifecycle (Reissig, 2022; Schifferstein, 2015). Stummerer & Hablesreiter (2021) state it “is probably the oldest design discipline” and has gone from curiosity to a serious design field, bellowing with contemporary food-related issues. It's also seen by Zampollo (2023) as “the most exciting design discipline because it seems to me to be the

space with the most potential to bring light into issues that are rooted into the core of being a human being". The author remarks on the importance of Food Design as a discipline of responsibility and action towards "innovation, security, equity and justice", a discipline with room for immediate positive change.

> "If we all ate food that is truly economically, socially, and environmentally sustainable, we would change the world tomorrow. If we designed food products, services, systems that are truly economically, socially, and environmentally sustainable, we would change the world tomorrow" (.Zampollo, 2023, p.199).

Massari (2021, p.8) remarks that design is always system thinking-centered and, when applied to the agri-food sector, enriches critical transdisciplinarity, resulting in creativeness to foster sustainable creative processes. This thought is complemented by Zampollo (2024b), affirming that the creative processes that bring innovation to the aforementioned aspects of food design shall be taken consciously and deliberately. It should be addressed with sustainable principles (Sustainable Food System), influencing or determining the acquisition, circulation, use, and manipulation of materials, ingredients, and components of food-related products and elements of the food system. The aspects of sustainable food design that are most relevant to this research are highlighted in green (Figure 5). Marije Vogelzang (in Zampollo, 2021[3]) reinforces that sustainable Food Design should be a natural path for those who make it, but it is not enough. It needs to be made desirable, or people will never adopt it.

Stummerer and Hablesreiter (2021) accentuate the importance of food and Food Design as a discipline:

> "The most wonderful thing about food design is the ability to make changes happen, because nothing can touch, excite, or repulse people emotionally as much as food. Food design reaches people emotionally and directly, and that is exactly what can trigger a debate, thoughts, and ideas for a different way of life. For the sight, the smell, the taste of food seduce us as much as the table community. When we eat, we humans are willing to let ourselves go, to act intuitively and spontaneously, and to open ourselves to new things. This distinguishes food design from all other design disciplines." (Stummerer & Hablesreiter, 2021, p. xxiv).

Finally, the RedLaDA (2024) refers to Food Design as

> "any action that improves our relationship with food in various instances, senses and scales, at a personal or collective level, and in the context of food ecosystems composed of edible products and materials, spaces, territories, technologies, experiences, processes, and practices, tangible and intangible. It uses the resources of Design to better understand, envision, and participate in the senses of care and health of these ecosystems for the good of all living beings within the planet that hosts us. It is a way of being and interacting with food ecosystems, of rethinking ourselves as active decision-makers, accomplices, and caretakers of food transversality, from our individual and daily practices, those of our jobs, or from social and time.

[3] Food Design Voices is a project by Francesca Zampollo, featuring food designers, researchers, and chefs from around the world, reflecting over the subject, its relevance and approach to sustainability.

These put into perspective the many voices, knowledge, and wisdom necessary to improve food contexts from their origins and in their entirety. It is a community that seeks to take care of life from the sense-think-actions of design that transit the food pluri-verses."

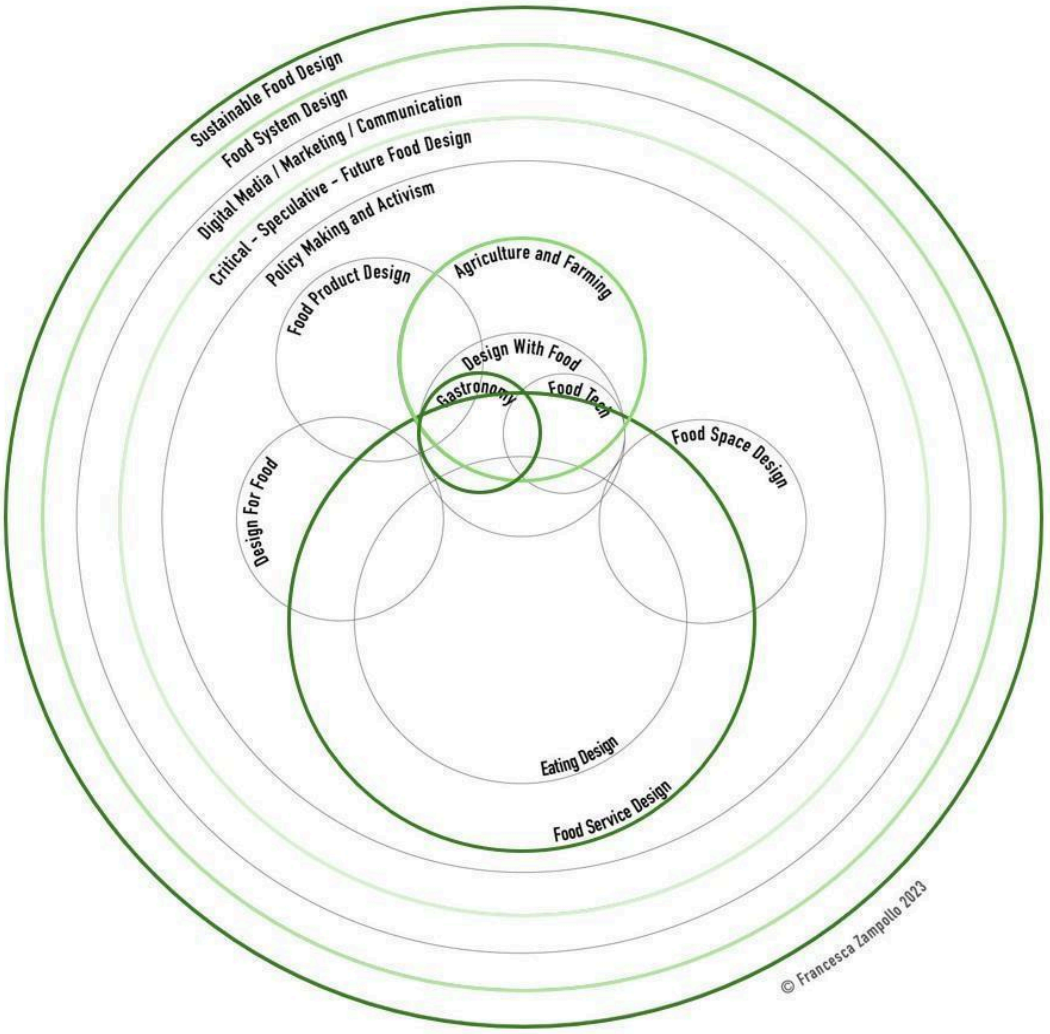

Figure 5. Research-focused areas of the Sustainable Food Design. Source: adapted from Zampollo, 2024.

Only by collectively redesigning food systems can connections be restored and new bonds made in a circular, complementary manner to nurture land and people without depleting natural resources or human health. Designers are entrenched in the ability to link specialists and laypeople, weaving networks of food, sustainability, technology, strategy, politics, and culture-related professionals, among others, who would otherwise focus on bits of the chain rather than the whole picture (Vogelzang, 2010).

This research outcomes, following the proposed methodology, shall contribute theoretically to the Food Design discipline, partnering with a replicable Design proposition considering environmental balance, economic viability, and business interest, designed to be commercially and ethically valuable, encouraging the reduction of the harmful effects caused by the current

commercial food system, and amplifying the positive influence on human and environmental health.

1.1 Theme and Research Outline

> *"When did we start thinking that food should be fast, cheap, and easy? It has never been since the beginning of civilization. Suddenly, good food is only available for those who can afford beauty and culture. It's elitist. Living a good life, who's culturally rich, is considered elitist. It's immoral to feed people with food that will make them sick. If we really focused our attention globally, we could feed ourselves in harmony with nature." (Waters, 2021, p.160).*

The food system intertwines and permeates human relationships and culture like few others because it is a condition for survival (Stummerer & Hablesreiter, 2021). Its impact is no less on the economy, directly responsible for about ⅓ of greenhouse gas emissions, ½ of human-induced pressures on biodiversity, and 10% of the world's GDP. Furthermore, large cities consume almost 80% of all food produced (EMF, 2021a).

If the Green Revolution was the answer to the post-19th century war baby boom and population growth, this demand for food productivity increase came at a high cost (Soria López et al., 2022). Preconizing longer food supply chains, deforestation for agricultural land, and extended food engineering, with the vast use of chemicals, this model has depleted and polluted soils, waterways, and degraded natural resources on which the food system relies.

Climate change significantly threatens global food security, affecting agriculture, forestry, fisheries, and aquaculture, which sustain over a billion livelihoods. Rising temperatures, changing living conditions for plants and insects, and climate-related disasters like droughts and floods reduce food quality and stability (EMF, 2021b). These repercussions will worsen, conveying yet another food-related issue: scarcity, potentially putting 80 million people at risk of hunger by 2050; with the anticipated three-billion-person population increase, urgent action is required to mitigate the impending dangers of ecosystem collapse (Willett et al., 2019)

The environmental burden scales when we add the negative impact on our health caused by the agrifood system. The “diseases of civilization” (Ducasse & Regouby, 2017, p.23), or chronic food illness (obesity, cholesterol, diabetes, and certain types of cancer), are responsible for astonishing numbers of deaths, surpassing 11 million per year, or over 22% of total deaths among adults around the globe (Asfin et al., 2019). Those numbers are closely related to industrial food, which is nutritionally low and high in sugars, salt, and fat. Besides, these food-like preparations are responsible for standardizing the taste across cultures and are highly addictive, thus increasing sales. We are currently experiencing a

food transition, with an overflow of food resources, a widely spread poor diet, and a complete disconnection of food origins and preparations (Ducasse & Regouby, 2017, p. 12, p.23).

In the face of prevailing natural, social, and economic imbalances, the imperative of sustainability underscores the critical need for effective measures to ensure ecological equilibrium. According to the chef and restaurant owner Alice Waters,

> "Sustainability is a big part of stewardship. The basic concept of sustainability is that if you take something out of the environment, you put something else back in to replace it, thus avoiding the depletion of natural resources and maintaining an ecological balance. A sense of equilibrium, even fairness, is embedded in sustainability" (Waters, 2021, p.23).

Paradoxically, the same system that feeds people, encompassing current models of production, consumption, and lifestyles, disrupts our health and the planet's harmony, putting our future at risk. By embracing sustainability concepts, it is possible to reconnect with and emulate nature. Harmonizing technical advancements with political, social, human, and intellectual progress alongside environmental preservation emerges as a vital societal advancement process. Agri-food systems must become more resilient and embrace transformative adaptation strategies to combat the present challenges. The UN Climate Change — COP28 UAE (2023) — emphasized the importance of sustainable agriculture and resilient food systems; during the event, the FAO also launched a Global Roadmap for Achieving the Sustainable Development Goals (SDGs) to adapt agri-food systems to climate change and reduce environmental impact (FAO, n.d.).

Yet another negative impact of our current food system and agricultural model, mainly seen in Brazil and developing countries, is worth mentioning. Farmers and other food-producing workers are among the most socially and economically vulnerable and are often subject to some degree of hunger or nutrient deficiency. This system is market-oriented, and those who produce food have the least access to it (Recine et al., 2021).

Adopting sustainable and ethical food choices fosters community, cultural preservation, and regional economic strength while promoting animal welfare and environmental stewardship (Warde, 2016; Waters, 2022). HoReCa professionals can raise consumer awareness, encourage informed decision-making, support local farmers, and preserve traditional agricultural practices (Waters, 2008). By sourcing locally, food design initiatives strengthen food security, reduce reliance on distant supply chains, and contribute to resilient, sustainable food systems. These choices drive upheaval, support rural communities, and prioritize cultural and environmental well-being, highlighting the transformative potential of sustainability in the food industry.

The EAT-Lancet Report (Willett et al., 2019) outlines guidelines for the restaurant industry, emphasizing previously addressed issues related to food systems and stressing how they can present themselves as opportunities for innovation and societal transformation. They are multidisciplinary and have been co-created to develop models that reinforce the importance of gastronomic culture for the economy, society, and the environment. There is room for new business models and metrics, and the future of food is directly involved with this change in lifestyle and consumption patterns. Consolidating a more resilient food system that adjusts and does not impose itself on nature is more than necessary. Many organizations and bodies have proposed manifestos, guidelines, reports, and awards for more sustainable restaurant practices, although only some have presented parameters or minimum standards. Other regulations and certifications, however, provide rules for acquiring the stamp. However, they either look deeper into specific segments of the food chain or fail to cover the needs of the commercial Food and Beverage industry.

Past environmental exploitation and economic concerns, the F&B industry historically failed sustainability in unbalanced social relationships for profit and growth. An entire sector that systematically abuses every layer of its food system, potentially culminating in its downfall. From agribusiness practices filled with chemicals, animal wrongdoings, uneven market pressure on food producers, recurrent “farm to table” labor incidents - from conditions akin to slavery in crops and food processing plants to overworked, harassed, and underpaid staff in restaurants — too little to no transparency on the supply chain, the business has it all.

In an article for Eater, Lindsay Danis (2021) sets the tone of the debate, affirming, “Restaurant workers are made to feel powerless by design — and that keeps abusive chefs and toxic kitchens unchecked.” It portrays how abusive working conditions in the F&B services are deeply ingrained and often glamorized. Hierarchy, professional ascent, and low wages are some dysfunctional industry dynamics that trap workers in a cycle of misconduct. Immaturity and inexperience, high turnover, and customer service pressure (or satisfaction at all costs) make it harder for team members to identify, resist, or report mistreatment without fear of retaliation. All forms of persecution happen throughout the hospitality industry, from co-workers to superiors to customers, with the food-service industry leading the sexual harassment claims (Kim et al., 2020; Meiser & Wilson, 2023; Work Shield, 2023).

Sociologists studying restaurant work argue that mistreatment is often perceived as an inevitable aspect of the job, reinforced by decades of glorified toxic kitchen cultures. Famous chefs and television programs romanticize the excessive working hours, yelling, physical threats, substance abuse, hygiene,

and food safety issues in kitchens in a cycle of violence that perpetuates and reverberates, embedding deeper into the fabric of HoReCa (Novaes et al., 2024)

Beyond food service venues, exploitation extends to the broader food supply chain. Roughly two-thirds of the global workforce is employed in the food sector, where forced labor and exploitative recruitment practices are recurring. Migrant workers comprise a significant portion of the labor force and often experience precarious conditions with little legal protection (Planche & Wuchold, 2021). Modern slavery is a persistent issue in food production, particularly in industries dependent on seasonal labor, such as agriculture, where unethical recruitment, bonded labor, and wage theft are common (McGregor et al., 2018).

The F&B sector is a significant source of employment worldwide, although at the expense of those who nurture it. Addressing persistent imbalances — including low wages, unsafe working conditions, lack of equity, and limited social protection — is one crucial sustainability pillar that needs attention to improve the entire food system (ILO, n.d.).

The Food Design approach to this conceptually complex theme sees Food Systems in the bigger picture, understanding and overcoming economic, social, and environmental impediments toward a more inclusive and sustainable business model. The result is a service system aligned with a more ethical business and conscious consumption model. Supported by the tripod of sustainability, we focused our actions on the groups of stakeholders more directly related to Food Service businesses, essential players of the Food System, connecting food producers and consumers. This involves agriculture, gastronomy, and Food Service Design in a critical, systemic, and sustainable standpoint. Founded by this background, we propose a specifically designed F&B service system (tangible outcome). It brings sustainable tools and practices concerning sensory qualities, user experience, equitable human relations, transparency, and social, economic, and environmental balance to restaurants and other food and beverage venues.

Design plays a crucial role in remodeling and transforming the food system by fostering transparency, shaping consumer behavior, and promoting ethical practices. It encourages sustainable relationships, bridges gaps between production and consumption, and supports social innovation while respecting local contexts. Designers can drive systemic change through methods and strategies, creating opportunities for a more equitable, environmentally resilient food culture (Lomba, 2020). The characteristic Food Design and Service Design processes can improve the dialogue between tradition and newness, two fundamental aspects of food. They also provide a systemic view of food subjects, products, and services comprised by the HoReCa corporations, valuing the gastronomic aspects of F&B providers. Furthermore, we have the opportunity to

connect consumers and producers through chefs, restaurants, and other F&B firms with storytelling, giving visibility to generally invisible stakeholders and making stronger connections within the community (Krucken et al., 2017)

Given these scenarios, reevaluating the food system processes is paramount. This is why Design must integrate sustainability into its core approach, enabling projects to reach equitable development objectives (Mager et al., 2020). This research focuses on the sustainability challenges of Food Service businesses. Field studies in southern Brazilian and northern Italian food companies are allied with consolidated sustainability principles and renowned gastronomy awards, which have been studied and used as guidelines. These policies will be confronted with restaurant operations to understand where the business is considering sustainability aspects, how far it is from achieving sustainable goals, and how to accomplish them.

Our work is the outcome of the learnings from theoretical knowledge and field immersion, resulting in a replicable and tangible project proposition. It seeks to promote the interest and demonstrate the feasibility of sustainable best practices in Southern Brazilian HoReCa businesses through collaborative strategies. These replicable tools have been designed to enable enterprises to adopt more balanced and inclusive standards and practices, thereby initiating a transformative process at the local level, with the potential for a broader global footprint.

The opportunity to immerse in field studies and analyze the mechanism of sustainable-oriented restaurants has answered questions and incited many others, supported ideating tools to aid the food & beverage business in understanding their responsibility and impact on society. Policies, instruments, services, and co-created proposals with decision-making individuals in targeted activities made the desired scenario feasible: something to guide HoReCa establishments towards a better approach to the health of their customers and the planet, with economic interest and environmental preservation. The result is a tangible and valuable service system with transformative potential at the local scale, a first step towards the desired global footprint to reinforce values identified by the consumer, conversing with the user experience. It also has a marketing appeal capable of influencing the entire sector.

1.2
Research Question

How can Food Design serve the food system in restaurants and other food and beverage commercial venues, establishing better gastronomic practices, reducing adverse environmental effects, and positively impacting people's health, culture, and economy?

1.3
Purpose

This research offers a comprehensive overview and analysis of sustainability-focused food service ventures. It aims to develop strategies that enhance access to a food system, fostering valuable, sustainable, and inclusive user experiences within the HoReCa industry for associates and consumers alike. The research also seeks to design approaches that allow establishments to adopt heightened standards and sustainable best practices by promoting the feasibility and interest in endurable food systems for restaurants.

The participatory creation of guidelines, leveled with financial interest and viability concerns, global impact reduction, and consumer appreciation, aims to generate positive and lasting environmental, social, and economic effects. This endeavor also intends to elevate local stakeholder engagement by identifying, mapping, and evaluating restaurant initiatives to enhance and evolve food systems.

This investigation aims to establish a contemporary and comprehensive panorama and deepen the analysis of sustainability-oriented Food Service businesses. It will support proposals to increase access to a food system that promotes products, services, and user experiences with more value, coherence, and inclusion. The second outcome intends to encourage interest in and the viability of sustainable best practices in the food and beverage industry. It will design strategies that allow restaurants to achieve higher ethical standards and operational protocols, helped by the proposed service system.

Design research aims to develop knowledge, reflect upon it, and, in turn, apply it to design artifacts and their use in relevant contexts, pertinent for building Design theory as much as for Design practitioners (Manzini; Vezzoli, 2003). Proposing a service system as a resulting component of this work is setting these principles into practice, with an innovation strategy based on learnings from the research merging knowledge, products, and services, decreasing environmental impact. According to Morelli (2002), designing such a system is a socially constructed and interactive sequence of phases encompassing context analysis, development, and testing, resulting in the proposition, the definition of the artifact, prototyping, and implementing the outcome. Throughout the proposition process, one must know the stakeholders' different cultural, social, and technological affinities. These characteristics are reinforced by Mendes et al. (2015), noting that a service system incorporates the designated user's products, activities, and cultural importance while combining interactions and perceived and attributed values.

1.4
Embedded Knowledge

In the course of this investigation, the gastronomic background of the researcher has enabled to transcend mere observation, engaging in participant observation, interacting with the investigation subject, and opportunely intervening. We have taken advantage of this practical knowledge, carrying it into the research procedure, aligned with constructivist and ethnographic worldviews, to make sense of the acquired information, building meaning from the process learnings. This was reflected in all stages of the design methodology, from data gathering through literature review and field immersion, data analysis, collaborative action planning, and iterative evaluation while monitoring and adapting to validating usability, concept, and value with specialists.

1.5
Specific Goals

- Become familiar with the state of the art on Sustainable Food Systems and their relation to Food Service companies (Chapters 3 and 4)
- Collect technical information on the operation of sustainability-oriented commercial food and beverage businesses (Chapter 3);
- Examine aspects related to the design of food services as sustainable systems (Chapters 3 and 5);
- Through participant observation, engage in food service operations to comprehend the scenario and collaboratively ideate and prototype service solutions (Chapters 5 and 6);
- Combine academic knowledge with gastronomy practice, approaching relevant sustainability issues on the daily operation of a selected set of restaurant venues (Chapters 5 and 6);
- Develop a replicable artifact that is environmentally balanced, economically feasible, and business-oriented, with concept and value validated by industry experts (Chapter 6), willing to:
    - Promote interest in and feasibility of sustainable food systems in restoration by designing strategies for restaurants to achieve sustainable standards;
    - Overview paths and possibilities for the development of a replicable model for the proposed artifact;
    - Escalate the participation of stakeholders at local levels by identifying, mapping, and evaluating restaurant business initiatives to develop and improve food systems;
    - Increment interest and positively influence consumption habits.

Table 1 shows the main structure of this document, organizing the chapters and sections and the results presented in each one.

Thesis Structure

chapters	objectives	content
01 Introduction	Circumscribe the research theme and objectives	Theme, relevance, research question, and objectives.
02. Methodology	Use PLR and Service Design Thinking research methods to collect and analyse qualitative data, enabling deeper understanding of context operation and needs	Critical analysis of collected data, context of interest map, system personas, knowledge gap identification. Idea clusters, product-services to be developed.
03. HoReCa Sustainability Manifestos, Initiatives, Certifications and Awards	Present updated F&B sector initiatives	Introduction and critical reflection on recognized chefs and restaurants work, manifestos, and accreditation bodies. Examining accreditation processes and considerations on HoReCa sustainability Initiatives, manifestos, certifications and awards.
04. Definition of the current scenario: Sustainable Food Design and Sustainable Food Systems	Disclose the current scenario and intersection of Sustainable Food Design and Food Systems	Delineating sustainable Food Design principles, the global impact of and circularity principles. Reflections on the crossings of these topics.
05. Field Studies: Sustainable Food Systems Into Practice	Contextual learning and critical analysis	Presentation of the field immersion data collection, contextual prototyping, and learnings. Critical analysis of Sustainable Food Systems within the F&B sector (context of interest).
06. Circular Food System Principles	A product-service system grounded in sustainable best practices and constructed knowledge designed for and wihtin the HoReCa sector	Circular Food System concept and application in the proposed artifact. Tools, service concept and outline, service map, user journey. Fully operational prototype and validation of product-service system,
07. Conclusion	Synthesize and critically reflect upon study outcomes.	Summary of investigation learnings, critical positioning, and results from the research process.
08. References		

Table 1[4]. Thesis structure.

[4] All tables and graphical synthesis produced for this document and too big to be read in A4 format can be found in the Appendix.

2
Methodology

"We have to be at the table where decisions are made" (Opolo, 2024).

The present qualitative research (Creswell & Creswell, 2018) was developed to explore and understand user-related meanings and actions in context, with a sustainable, systemic, and critical look over a complex challenge or wicked problem (Buchanan, 1992), namely HoReCa Food Systems.

This work features what David and John Creswell (2018) nominate as typical characteristics of the (Social) Constructivist philosophical worldview[5] to look at the complexity of the study object and build knowledge from it. This transformative orientation has shaped the investigation steps with the influences of Ethnography and in-context behavior observation by a specialist (Creswell & Creswell, 2018). With these epistemologies, we sought to comprehend the broader and more focused aspects of sustainable practices in the food and beverage business through the lenses of Design researchers, Food Designer, and gastronomy professional.

We have adopted primarily bottom-up, inductive procedures, generating insights from the investigation learnings rather than starting with a theory. The applied methods and tools align with the constructivist and ethnographic principles, focusing on distinct surroundings and social interactions to comprehend more intricate aspects of this thesis.

2.1.
Practice-Led Research

Research can be conducted with practice as its central focus to improve proficiency, as often seen in academic and professional study in arts, medicine, teaching, design, and engineering. This methodological approach, also known as "Action Research", allows creative processes into the investigation, using field-based and participatory methods and tools to understand, legitimate, and advance "the individual practice and the practice of the field, to build theory related to the practice, and to gain new knowledge or insights" (Skains, 2018, p.85).

According to Linda Candy (2006), practice-led research (PLR) is a creative, project-oriented, circumstantial process that answers the research question. Skains (2018, p. 86) indicates four key areas in which practice-related examination methodologies are suitable and pertinent: theoretical, conceptual,

[5] "general philosophical orientation about the world and the nature of research that a researcher brings to a study" (Creswell & Creswell, 2018, p.54).

dialectical, and contextual, "in which the practice is an effort to bring about social change". We fell on the last area.

This creative strategy can lead to specialized insights, generated and written as academic research, constructing knowledge and (social) innovation, as Design should continually do (Krucken et al., 2017; Zampollo, 2024b). Two interdependent and iterative outcomes emerge from PLR to advance understanding or unexplored findings about or within practice: a mandatory textual component and a creative output. Although the tangible derivative is optional in PLR, in a doctoral thesis, it is also subject to examination and claim to an original contribution to the field. However, in both cases, the creative process is more important than the final product, whose role is to subsidize the reporting of results. The textual component describes the innovation embodied in the artifact, and its conclusive interpretation is complemented by it (Candy, 2006).

As suggested by Candy (2006), the PLR shall have the following basic structure (depicted in Table 034 page 45):

- Introduction: present the problem, the context, the method, the outcomes;
- State-of-the-Art Review: critically present results of the Literature Review, which shall provide a view of the field of study;
- Methodology: describe and justify the research methods used;
- New Studies: study core. Learnings and reflection result in two outcomes: thesis per se and an artifact— to be presented and explained;
- Results: evaluation and reflection, results as promised in the Introduction;
- Conclusions: discussion with a broader perspective on the results, implications for the domain, future works;
- References: reference and mentioned works.

This study falls into Practice-Led Research for combining contextual sense-making (through observation and analysis of inquired and the implicit knowledge of practice), embedded knowledge, and theory, revisiting concepts, arguments, and understanding the gap. Discussion in this case has resulted in two outcomes: a design project and a written document, combined to answer the research question, producing a more robust framework to fill the gap in knowledge (Skains, 2018).

2.2. Service Design

"Before we change the future, we need to re-design the present" (Massari, 2021, p. 322).

During this PLR in Design, we anticipated the opportunity to present an artifact at the end of this investigation process. From the beginning, this research was likely to combine product and service or be a service system. The creative

design process requires systemic thinking, simultaneously dealing with multiple and complex issues. This results in innovation strategies integrating products and services toward structural changes in how production and consumption—in this case, Food Systems—are organized (Ceschin & Gaziulusoy, 2016).

According to Pacenti and Sangiorgi (2010, p.27), towards the end of the 1990s, three areas of design research focused on services rather than products loomed, namely

- “Service Design as a field;
- investigations into Product Service Systems;
- and investigations into social innovation and sustainability”.

Their boundaries remain blurred, folding over each other to this day, sharing common interests, methods, and tools. In a series of works, Manzini (Manzini, 1993a; Manzini, 1993b, Manzini; Manzini. Pacenti, 1995) reflects upon the growing service economy and defends the concept of a *product-service*, suggesting products would be increasingly turned into integrated service components, thus requiring a specific Design discipline (Pacenti & Sangiorgi, 2010). The author leans into Service Design for sustainability and social innovation (Manzini & Pacenti, 1995; Manzini & Vezzoli, 2003), advocating strategies to co-produce services with users and providers alike.

With extensive discussion on the Design approach to service systems versus products and specific literature review concerning Product-Service Systems (Costa et al., 2018; Mendes et al., 2015; Manzini & Vezzoli, 2003; Vezzoli et al., 2014, Vezzoli et al., 2015; Silveira & Santos, 2020) and Service Design (Manzini, 1993a, Manzini, 1993b, Manzini; Pacenti, 1995, Morelli, 2002, Pacenti; Sangiorgi, 2010, Meroni; Sangiorgi, 2011; Wetter Edman, 2009) a synthesis from the authors and their works (Table 2) more aligned with the methodological path chosen for this research was done, as the scheme below (Figure 6). Both propositions (SDT and PSS) share a shift from product-centric to service-oriented systems, where artifacts integrate with services, focusing on reducing environmental impact, being economically beneficial, and bringing social innovation.

PSS is a strategy of shifting production and consumption patterns by designing an integrated system of products and services that together can meet customer's needs instead of physical products only (Manzini & Vezzoli, 2002a). It provides structure for sustainability and systemic transformation, optimizing resource efficiency, thus reducing environmental impacts, particularly with the concept of access-based service rather than ownership of a product. The focus is on system-level efficiency and innovation, considering the entire life-cycle of a solution (Meroni & Sangiorgi, 2011).

Service Design thinking is more concerned with enhancing user interactions, promoting social innovation through good Design principles. It is a human-centered process, where user experience is key, and takes advantage of co-creation processes, making propositions more efficient and suitable to users.

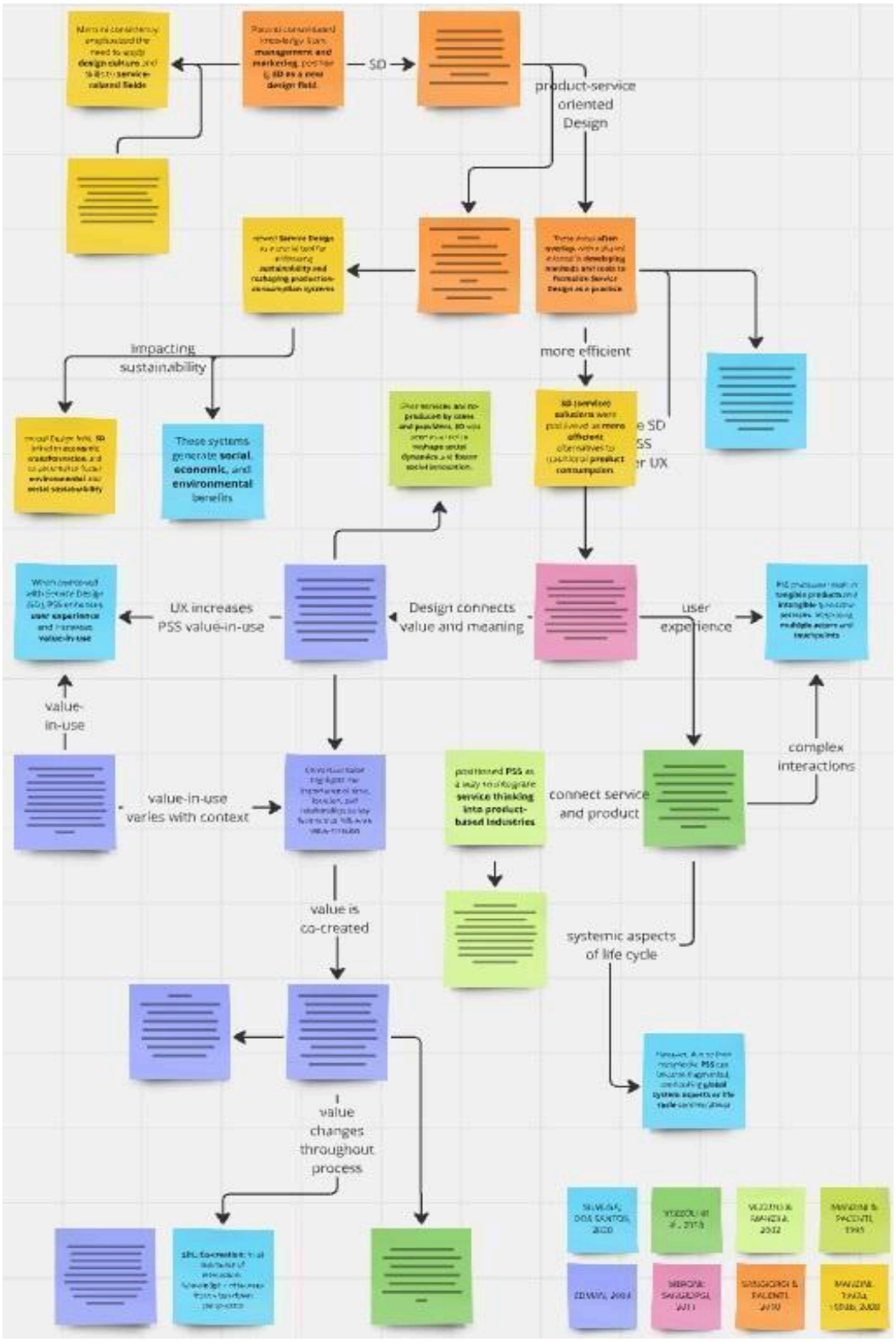

Figure 6. Service Design Thinking and Product-Service Systems Analysis.

Service Design Thinking & PSS

Aspect	PSS	SDT	Intersection
Definition	innovatively combine products and services to fulfill user needs	user-centered, participatory, multidisciplinary approach	*create holistic service-like solutions, going beyond product-only*
Value Creation	considers systemic efficiency, sustainability, and multi actors networks, it´s based and affected by use	preconizes co-creation of value, or value-in-use during service	*PSS focuses on macro-level system efficiency, while SDT works towards micro-level user experience*
Co-creation	different stakeholders act at different stages (particularly production and consumption), the process can be fragmented due to its size and complexity	happens mainly in the stages of ideation, building insights with experts, while further project stages can happen without user	*both emphasize participatory methods. PSS generally has collaboration throughout the process, whereas SDT focuses on front-end engagement*
User Role	users co-design during the conception and operational phases	users are central but co-design at particular stages	*SDT is user-centered while PSS considers a broader group of stakeholders and their engagement*
Sustainability	goes from owning a product to using a service, ideally reducing environmental impact	sustainability and social innovation are desired consequences	*both share sustainability potential*
Design Scope	rethinks production-consumption cycles	foresees service opportunities, not always grasping the full lifecycle of the system	*PSS envisions systemic change at long-term while SDT addresses more immediate spectrum of touchpoints*
System thinking	more complex in range of stakeholders, engagement and environments	iterative, human-centered, thus more adaptable	*SDT can be combined with PSS for more user-centered frameworks*

Table 2. Synthesis of Concepts: SDT and PSS approaches to service and product service systems.

The artifact proposed as one of the outcomes of this research follows Service Design thinking to project a service system that considers the importance of the context of use, time, location, and relationships. As emphasized by Manzini, Service Design culture and skills are crucial for addressing sustainability and reshaping production-consumption systems (Manzini & Vezzoli, 2003).

Upon pursuing Service Design to achieve the desired service system in this study, we have not gone deeper into Product-Service Systems (PSS) theories and discussions.

Regarding sustainable global issues, and in this case particularly food systems, it is advisable to address them locally, with customized solutions that fit the smaller ecosystem context and collaborative and innovative ways of solving a complex problem. This approach solves future demands, encompassing a balance of all stakeholders' needs and perspectives toward social, environmental, and economic improvement (Mager et al., 2020).

It is also possible to envision a purpose-driven economy rather than a profit-driven one that supports emerging social and local movements and embraces circular product and consumption models. “Service Design has the potential to foster a society where sustainability is the main driver” (Mager et al., 2020, p.107).

Aligned with the previously presented concepts, the choice for Service Design methods was reinforced by Bonacho's (2021, p.229) affirmation that “as in design, food problems are “wicked/ill-defined.” In a holistic approach, no single discipline will be able to understand and create solutions to the innumerable challenges and contradictory aspects of the food system”. Similarly, Stickdorn et al. (2018, “Key Takeaways”, p.719) remark: “Service Design is better applied to wicked or ill-defined problems (...) rather than deterministic problems”. Moreover, Service Design draws from ethnographic methodologies for data collection and insights, used to “understand and document the knowledge, relationships, and beliefs of social or cultural groups, often through long-term participant observation” (Polaine et al., 2013, p. 49).

Ethnography is a recurring path in Design research as alluded to by Stickdorn and Schneider (2014) and Marsh (2018), as its development entails a comprehensive engagement with the environment – observing, interacting, proposing, and prototyping – throughout every stage of the research journey. This makes it possible to collect objective and subjective data, generate ideas, develop and implement concepts, designing projects relevant to user s everyday lives (Stickdorn et al., 2014 p.110).

Design encompasses the culture and practice of organizing elements to fulfill their intended functions and convey meanings. The design processes used in this research involve inclusive participatory design approaches that engage all participants in various capacities (Manzini, 2015). When connecting academic knowledge and field experience, the study intends to cross reflections and hands-on actions to promote changes via the fundaments of human sustenance: the food systems.

To achieve the aimed results, we have combined design methodologies as suggested by Marsh (2018, p,199). Service Design methods of investigation were the adequate choice to reflect the desired turnouts of this study: a creative project bringing innovation and increment for Food Design (in all its instances) and a written piece, or the thesis itself, capable of iterating with the artifact and enhancing knowledge in Food Design. Notably, this PLR contributes to sustainable food systems and practices for HoReCa, increasing knowledge in the field and practice. This study amalgamates academic insights with the empirical knowledge built by stakeholders within the culinary domain, including food producers and suppliers, chefs/restaurant owners, and service staff. This holistic

approach is meticulously tailored to address the sustainability challenges intricately woven into the daily functioning of the chosen array of restaurants.

As a conscious process of creative and iterative activities or methods, this study portrays a combination of consciously chosen steps, from problem definition to desk and immersive data collection, from data analysis to ideating and validating (Zampollo, 2023). The research process followed several iterative stages, starting with exploring and then collaboratively ideating and prototyping, followed by validation with experts and users.

This process adheres to the Design Council's (2024) Double Diamond design thinking process for innovation framework (Figure 7), continuously broadening the field to collect information and raise awareness, then narrowing it down to define more focused objectives based on the following premises (Stickdorn & Schneider, 2014; Stickdorn et al., 2018[6]):

- human-centered: empathize and exchange with all individuals. Upon interacting with food producers, cooks, restaurant owners, and service staff, the immersions comprised essential stakeholders in the system;
- collaborative: co-created processes increase acceptability, efficiency, and applicability. By bringing together different perspectives, knowledge, and expertise, the collaborative approach helped to create more comprehensive and effective processes validated by the specialists;
- iterative: exploring, adapting, and experimenting with user interaction and feedback was vital, and participant observation provided opportunities to build and prototype the proposed solutions iteratively. Every day, operational issues have been tested and validated in a real context, making necessary adjustments to enhance functionality and user experience;
- sequential: interconnected actions and steps contributing to an optimum user experience for different users simultaneously with artifacts;
- real: grounding the Service Design process in real-world situations and contexts made possible with participant observation and concept testing. Apart from tangible elements, it was possible to evaluate value perception, emotions, and experiences qualitatively;
- holistic: in all its touchpoints and ecosystems, this approach considers the interests, concerns, and requirements of all parties involved in the service ecosystem, including suppliers, employees, and partners. By considering the broader picture and interconnected relationships, it was possible to meet the diverse needs of stakeholders (Stickdorn et al., 2018).

[6] “This is Service Design Doing” has an extended version of methods available online, with the downloadable version consulted throughout this study from https://www.thisisservicedesigndoing.com/methods, referred to as Stickdorn et al., 2018b.

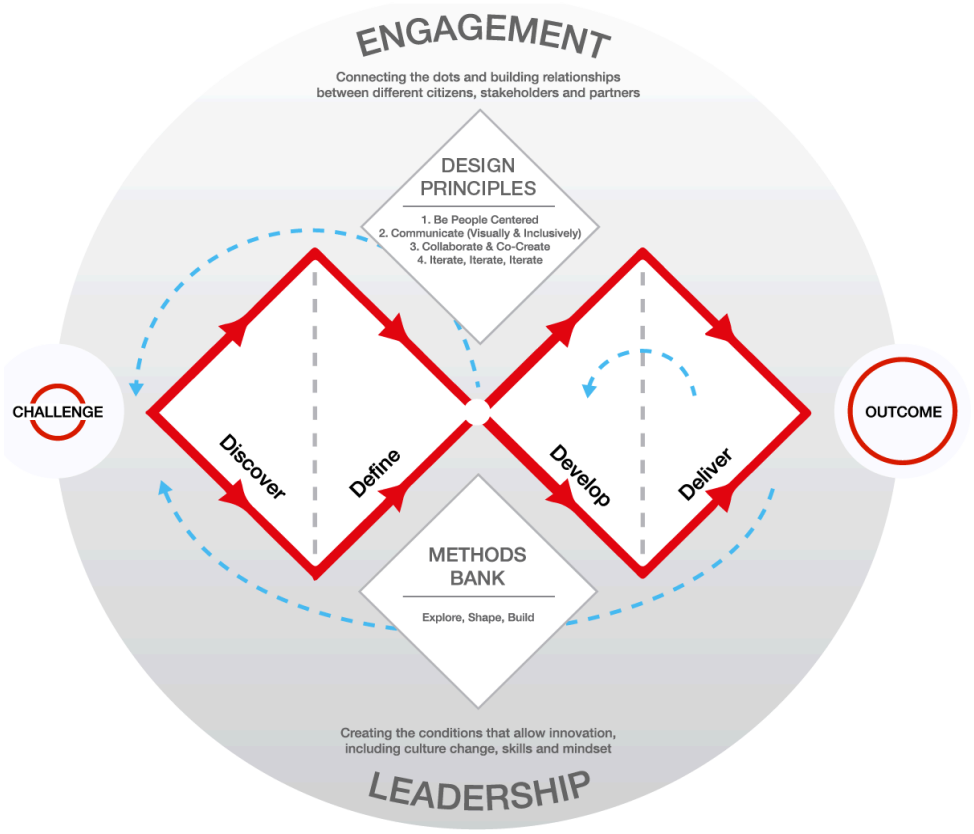

Figure 7. Double Diamond Framework for Innovation. Source: Design Council, 2024

Figure 8 below represents the general guidelines of this work's structure. It demonstrates how constructivist positioning interconnects with Practice-Led Research and (Service) Design methods.

The intersection of the three methodological references accentuates the inductive path to learning and proposing a resolution to a wicked problem through Design processes. First, through data collection, identifying the knowledge gap; then, via data analysis and ideation, building the responses from reality/practice, a social construction with participatory methods; then prototyping and validating with experts.

As indicated by PLR, the outcomes are a written piece (critical) aiming to advance expertise about or within the practice and a complementing artifact resulting from the Design process.

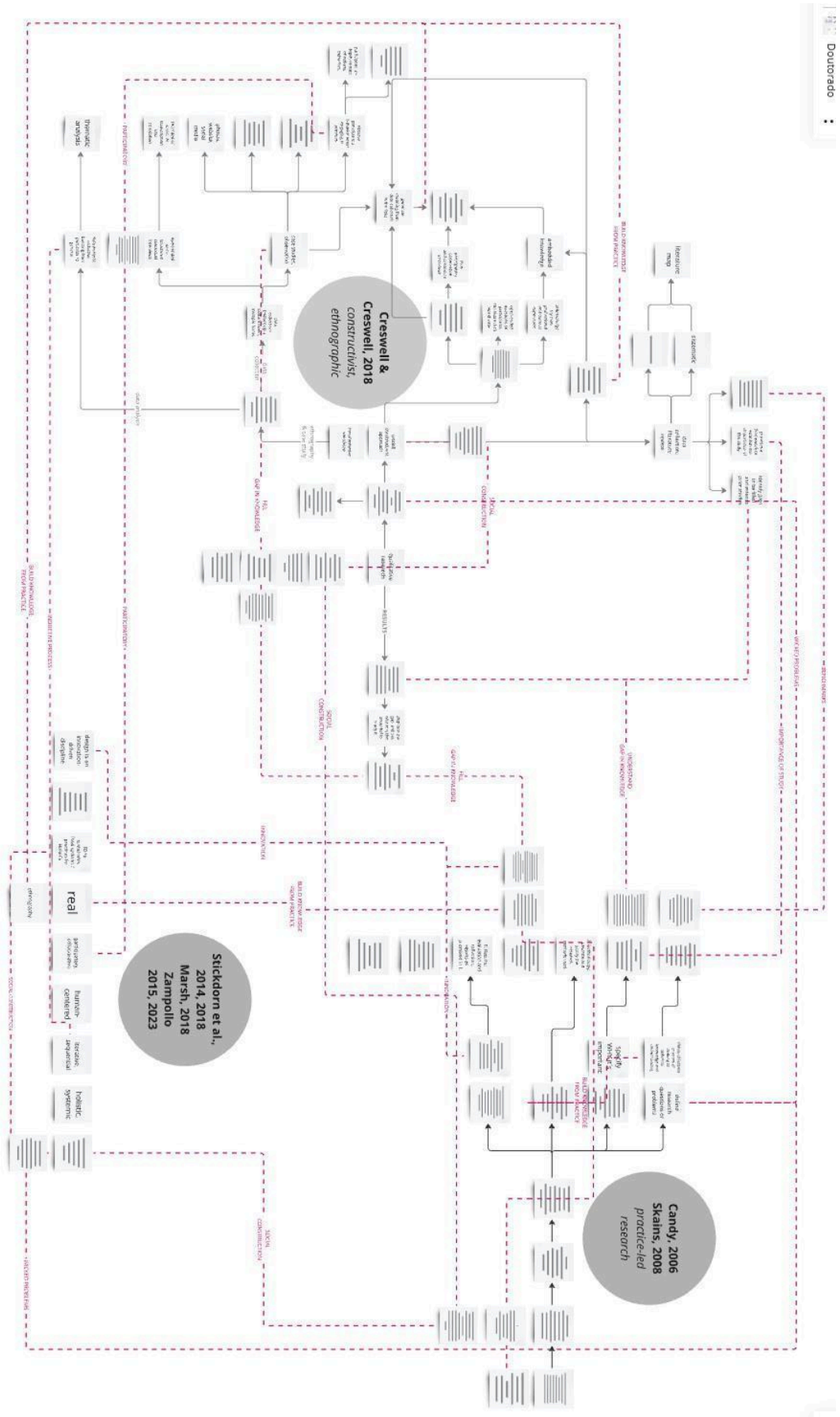

Figure 8. Methodology Path.

We highlight the most significant procedures employed (Creswell & Creswell, 2018, p.61). They will be explained in more detail in the upcoming chapters:

- open-ended, in-context interviews;
- multiple forms of data collection (literature review, observation, complementary documents, and media, to name a few);
- field studies (Suryani, 2013; Yin, 2009) to collect data and develop an in-depth analysis of distinct activities or processes over time;
- participant observation of selected groups over time;
- data analysis, generating meaning from data collected and experience.

The results of this process include a visually organized set of data collected and analyzed to comprehend the potential and relevance of the knowledge gap this research will fill (Tables 3 and 4).

Methodology Synthesis

PLR & Service Design	Design as an artifact	Problem Relevance
Application of Service Design thinking and methods as a research process to conduct PLR in Design, proposing an artifact, and incrementing field knowledge, iteratively	Following Practice-led research advice, an artifact will be proposed for sustainable HoReCa business, following Design methods	Food Design as a transversal, multidisciplinary axis of social, economic, and environmental impact, tackling commercial F&B food systems in a sustainable manner
Design Evaluations	**Research Contributions**	**Communication of the Research**
Participant and collaborative processes to ideate, prototype, and validate stages of the Design Challenge with specialists	Present a validated and replicable artifact grounded in Sustainable Food Design and Service Design theory	Results shall be obtained with and presented to multi-disciplinary teams, with the researcher in a privileged position to contribute to Food Design practice as a professional in the HoReCa sector and academically, building knowledge

Table 3. Methodology Synthesis.

Methodology Application

	method	objectives	results	chapters
Research Methodology	PLR: Fundamenting theory, field and professional practice to build knowledge. Participant and collaborative processes. Desk research: **SLR + CLR**. Field Data Collection: **Participant Observation, Contextual Interview**. Data analysis: **Thematic Analysis**	Apprehend qualitative data, enabling deeper understanding of context and of sustainability-oriented F&B operations and needs	Critical analysis of the literature review, field notes, identify stakeholders, understand research context and knowledge gap	02. Methodology 03. HoReCa Sustainability Manifestos, Initiatives, Certifications and Awards 04. Definition of the current scenario: Sustainable FD & SFS 05. Field Studies: SFS Into Practice
Ideate	Insights collected from Desk and Field research phases + professional experience	Build understanding and meaning from real life, co-design sessions, cluster and synthesize insights	Idea clusters, product-services to be prototyped	05. Field Studies: Sustainable Food Systems Into Practice
Prototype	**Contextual Prototyping** with HoreCa specialists, providing agile development of proposals and increments	Prototype in-context, and collaboratively build parts of the system, iteratively	Tools, service concept and outline, service map, user journey	05. Field Studies: Sustainable Food Systems Into Practice 06. Circular Food Systems Principles
Validate	**Concept and Value** test with immersion professionals and industry specialists	validate value perception of the proposed system, evaluate usability	Fully operational prototype of product-service system,	06. Circular Food Systems Principles
Communicate	Reporting methods applied and results, critical analysis of theory, thesis	A product-service system grounded in sustainable best practices and knowledge designed for HoReCa services by a F&B and Sustainable Food Design specialist	Written document, discussion, conclusion	

Table 4. Methodology Application and corresponding Chapters.

2.3. Data collection: Literature Review

This investigation's developments will significantly contribute to the Food Design field by offering a comprehensive and in-depth analysis of sustainability-focused Food Service enterprises. The practice-related goal is to develop strategies that enhance access to sustainable food systems in restaurants and similar businesses and promote valuable and inclusive user experiences.

The research seeks lasting environmental, social, and economic benefits for commercial food and beverage systems by creating participatory guidelines that consider economic interest, global impact reduction, and consumer appreciation.

Taking a broader perspective of Food Design as a pathway to foster innovation, this research initiated a comprehensive literature review investigating the convergence of sustainable, systemic design and food. This exploration extended further into the specialized academic literature governing F&B sector services and sustainability protocols. The study examines multiple dimensions of the HoReCa, particularly the restaurant industry's food system, focusing on identifying constraints, implications, and prospects for integrating Design within this complex framework. The analysis of the collected data (depicted in Figure 10, p.54) highlights the theoretical gap to be filled and has guided the subsequent Immersion phase.

Based on published material, the literature review for this work focused on Food Service food systems sustainability, as well as its practices, standards, and goals. Having this subject background was the first step to building knowledge from context, identifying gaps to be filled, and implying the relevance of this investigation. (Creswell & Creswell, 2018, p.79). Academic literature intersecting design and food was systematically scrutinized, and a complementary review of gray literature was conducted to understand an encompassing portrayal of the most up-to-date and relevant scenario of systemic and sustainable Food Design. Gastronomy events and media complemented these results, sustainability reports and guidelines in the food industry, and other noteworthy sustainability and gastronomy-related material covering the last decade and, whenever relevant, supported by older initiatives or references. This material supported us to set benchmarks and compare the results with other findings. As constructive research, the literature review does not intend to provide all answers; instead, it constructs meanings from context, participants, and experience (Creswell & Creswell, 2018; Candy, 2006).

2.3.1.
Systematic Literature Review

We carried a systematic literature review (Godin & Zahedi, 2014; Webster & Watson, 2002) with the objective of mapping the state of the art regarding Food Design, sustainability and food systems, based on the following questions: RQ1: How has Design approached food? RQ2: How has Food Design approached food systems? RQ3: How have food and design approached sustainability? This SLR was conducted based on string search, manual exclusion, screening of abstracts, and record accepted publication on a table (containing: Title, Author, Year, Published at, DOI / Link, Keywords, Abstract, Literature Type), screening whole pieces and in-depth reading of the selected items.

The search comprises open-source publications from 2003— the year of the registered first appearance of the term “Food Design” (Guixé, 2003) in a book

or published material till December 2024. Published pieces must be in English, French, Spanish, or Portuguese and include academic articles, books, book sections, conference proceedings, and magazines.

To outline the state of the art for the present work, the literature review should bring answers to the following questions:

How has Design approached food?

How has Design approached gastronomy?

How has Design approached HoReCa businesses regarding sustainability?

How has Food Design approached food systems?

How have Food Systems and Design approached sustainability?

The selected databases were: Scopus, Web of Science, International Journal of Food Design, Academia, ResearchGate, and Design Research Society (DRS) Digital Library. The search strings comprise “food design” OR “eating design”, OR “food system” plus AND “sustainab*”; added by AND NOT biology OR medic* OR nutrition* OR pack* OR 3D OR insect as shown in Table 04 below.

The search was limited to titles, abstracts, and keywords and, whenever possible, excluded knowledge fields related to biological, medical, and engineering. The Inclusion and exclusion criteria established for manually refining the search are as follows and have been applied to suit the research interests and focus. For this reason, some themes related to food have been discarded, for they could be too broad or too complex on their own to be encompassed in this research:

- publications should encompass systemic, service, or collaborative design solutions for everyday problems;
- publications should discuss food systems (or related/specific aspects) as the main subject;
- publications should address matters on a local scale but replicable
- publications include official entities like FAO, UN, governmental bodies;
- publications should not address religious or traditional foods;
- publications should not discuss functional food and food substitutes, nor labels;
- publications should not present food shape or processing of food, nor relate to manufacturing or industrial products;
- publications should not depict food design through art only;
- publications should not comprehend microbiology, sensorial analysis of food texture/flavor;
- publications should not present isolated, singled-out cases;
- publications should not depict governance or public policies.

Criteria	RQ1: How has design approached food?	RQ2: How has food design approached food systems?	RQ3: How have food and design approached sustainability?
string include / exclude			
eating design OR food design		AND NOT 3D	AND NOT medic*
AND sustainab*		AND NOT pack*	AND NOT biology
		AND NOT nutrition*	AND NOT insect
2003 to 2024			
Other I/E criteria			
publications should encompass systemic, service or collaborative design solutions for everyday / wicked problems			
publications should discuss food systems (or related/specific aspects) as the main subject			
publications should address matters in a local scale, but replicable			
official publications include FAO, UN, Governmental bodies			
publications should not address religious or traditional foods			
publications should not discuss functional food and food substitutes nor labels			
publications should not present packaging, food shape or processing of food. no fd as industrial product			
publications should not present fd though art only			
publications should not comprehend microbiology, sensorial analysis of food texture/flavor			
publications should not present isolated, singled out cases			
publications should not depict governance, public policies			

Table 5. Criteria for Systematic Literature Review.

From the first results, the keywords searched for on the publications had to be at least one of the following: food design, eating design, community, sustainability, participatory design, food service, collaborative design, food systems, food consumption, food experience, network, codesign, social innovation, networked economy, short food supply chains, food future, territory, systemic design, collaborative network, product-service, innovation, regenerative economy. After this second screening, the chosen literature was downloaded to a reference > to be read folder and moved to a reference > read folder when appropriate.

The resulting numbers from all repositories searched are shown in Table 05. Particularly for Academia, the initial 1550 results declined to 358 when narrowing results from 2019 onwards. This reduction made it possible to identify recurring and more relevant authors and search for their specific contents (Table 06). In addition, Academia's algorithm would periodically update the search, sending e-mails with suggestions— entitled, for example, “24 new papers matching “food design” OR “eating design” OR “food system” AND “sustainab*” were just uploaded”- that would be screened and filtered.

Results	RQ1: How has design approached food?	RQ2: How has food design approached food systems?	RQ3: How have food and design approached sustainability?

Systematic Literature Review

Search Field	Website	Initial Results / Read and used as Reference
DRS digital Library	https://dl.designresearchsociety.org/	**319 / 32**
International Journal of Food Design	https://www.intellectbooks.com/international-journal-of-food-design	**81 / 38**
Web of Science	https://www.webofscience.com	**214 / 12**
Scopus	https://www.scopus.com/search	**37 / 7**
Academia	https://www.academia.edu/	**1550 / 358 / 46**

Procedure		
apply search string to search engines		
I/E criteria for titles and abstracts		
abstract screening		keywords: food design, eating design, community, sustainability, participatory design, food service, collaborative design, food systems, food consumption, food experience, network, codesign, social innovation, networked economy, short food supply chains, food future, territory, regenerative design, collaborative network, product-service, innovation, regenerative economy.
record accepted publications on a table containing:		Title, Author, Year, Published at, DOI, Link, Keywords, Abstract, Literature Type
screening full publications		
in depth reading chosen publications		

Table 6. Systematic Literature Review results after screening.

Systematic Literature Review

	Title	Author	Year	Published at	DOI	Link	Keywords	Abstract	Literature Type
SCO	The experience of the natural world in a moment of fine dining-interwoven	Bonacho R., Gerardo A., Pires M.J.	2020	Proceedings of the 2nd international conference on food design and Food			design for sustainability	*[No abstract available]*	Conference Proceedings
SCO	Food design methods to inspire the new decade. Agency-centered design towards	Massari S.	2020	Experiencing food: Designing sustainable and social pratices.			engagement, scale	*[No abstract available]*	Conference Proceedings
SCO	Where interaction design meets gastronomy: Crafting increasingly playful	Altarriba B. F., Lutz R., Isbister K.	2020	Second International Conference on Food Design and Food Studies,			territorial development	*[No abstract available]*	Conference Proceedings
WOS	Supporting Food Design Processes: Development of Food Design Cards	Lee, Y; Breuer, C; Schifferstein, HNJ	2020	INTERNATIONAL JOURNAL OF DESIGN			Card Set; Creativity;	*Food design is a relatively new discipline that requires designers to become familiar with several*	Article
WOS	Food Design Thinking: A Branch of Design Thinking Specific to Food Design	Zampollo, F; Peacock, M	2016	JOURNAL OF CREATIVE BEHAVIOR	10.1002/jocb.148	http://dx.doi.org/10.1002/jocb.148	food design thinking; design	*Is there a need for a set of methods within Design Thinking tailored specifically for the Food Design*	Article
WOS	FOOD DESIGN AS THE ACTUAL DIRECTION OF THE	Tetiana, B; Artem, A	2018	NATIONAL ACADEMY OF MANAGERIAL STAFF OF CULTURE			food; food design; culture;	*Purpose of Research. The purposes of the article are to substantiate the understanding of food*	Article
DRS	Food+Design - transformations via transversal and transdisciplinary	Juri, Silvana; Massari, Sonia; Reissig, Pedro	2022	DRS Biennial Conference Series. The chairs' introductory editorial for the		https://dl.designresearchsociety	gastronomy	*The role of design and designers is changing. As users get involved with designers in thecreation of*	
DRS	Designing with Empathy: Implications for Food Design	Hermannsdóttir, Hafdís Sunna;	2016	DRS Biennial Conference Series		https://dl.designresearchsociety	Identity design; Brand mark	*A broken food system has resulted in a wide disparity between food producers and consumers,*	
DRS	Troubling the impact of food future imaginaries	Wilde, Danielle; Dolejsova, Marketa;	2021	Nordes Conference Series		https://dl.designresearchsociety	perishability; sensory;	*Global scale transformation is urgently required if we hope to stabilise socio-ecological systems.*	
ACAD	The Circular Food Economy	ZAMPOLLO, Francesca	2018	Academia.edu			food industry	*This article examines local food system (LFS) development pathways inthe context of recent*	Article
ACAD	Design-Driven Innovation VS User-Centred Design. Not Really...	ZAMPOLLO, Francesca		https://www.academia.edu/12638395/Design_Driven_Innovation_VS_User			design practice; food design;	*What are the differences and similarities between Design-Driven Innovation and User-Centred*	Paper
ACAD	Short Food Supply Chainsas drivers of sustainabledevelopment	BRUNORI, Gianluca		https://www.academia.edu/32860037/Project_acronym_FOODLINKS_Kno			engagement, scale	*new territories for the discipline are opened. It isspossible that from now on design will be a*	
IJFD	What design can bring to the food industry	Schifferstein, Hendrik N.J.	2016	International Journal of food Design. Volume 1: Issue 2	https://doi.org/10.1386/ijfd	https://www.intellectentaconnect.com	chef, designer, facilitation; food	*Even though designers are specifically trained to create and build new products, their contribution to*	Article
IJFD	The specifics of food design: Insights from professional design practice	Bordewijk, Marielle; Schifferstein, Hendrik	2020	International Journal of Food Design, Volume 4, Number 2, 1 August 2020.	https://doi.org/10.1386/ijfd	https://www.intellectentaconnect.com	design practice; food design;	*What makes food design different from other types of industrial product design? Based on over twenty*	Article
IJFD	Food Futures: How Design and Technology Can Reshape Our Food System, Chloé	Fuster, Albert	2020	International Journal of Food Design, Volume 4, Number 2, 1 August 2020.	https://doi.org/10.1386/ijfd	https://www.intellectentaconnect.com	Food Design; Multidisciplinary	*The industry seems unfamiliar with the ways in which designers operate and may be unaware of*	Book Review

Table 7 Systematic Literature Review selected references.

2.3.2.

Complementary Literature Review

Considering the relative novelty of the Food Design subjects, allied with abundant conferences and publications on food, the following sources have also been screened for pieces, although not systematically: EFood and Red Latinoamericana de Diseño y Alimentos events and publications, Diálogos de Cocina, Food Studies and Food Studies journals, Ellen MacArthur Foundation, The Sustainable Restaurant Association, The World's Fifty Best, Guide Michelin, Chef's Manifesto, CIA Menus of Change, HoReCa Sustainability Reports (from the past 10 years), and other Food Service-related events, seminars, websites and relevant material.

Complementary literature review

Search Field	Website
Research Gate	https://www.researchgate.net/
Blucher Design Proceedings	https://www.proceedings.blucher.com.br/
OSFD	https://www.fooddesignthinking.org
EFood experiencing Food: Designong Sustainable and Social Practices	http://efood.fa.ulisboa.pt/index.php/previous-editions/efood-2017
RedLaFD	https://www.lafooddesign.org/
Food Design Day	https://theforkorganization.com/event/world-food-design-day/
Diálogos de Cocina	https://dialogosdecocina.com
Food Studies / FS Journal	https://food-studies.com
Ellen MacArthur Foundation	https://ellenmacarthurfoundation.org/
TheSRA	https://thesra.org/
The World´s 50 Best	https://www.theworlds50best.com/awards/sustainable-restaurant-award
MAD	https://madfeed.co
Guide Michelin	https://guide.michelin.com/
The Slow Food	Thousands mobilize to call for food systems that empower people, not companies - Slow Food

Keywords			
food design	future	community	collaborative design
sustainability	participatory design	food service	network
food systems	food consumption	food experience	food future
social innovation	networked economy	sfsc	product service
regenerative design	food environment	colaborative network	regenerative design
co-design	territory	innovation through design	regenerative economy

Timeframe	
2003	Guixé term Food Design, Food design. Barcelona: Galeria H2O, S.L., 2003. ISBN 9788493255404
2024	December

Table 8. Complementary Literature Review criteria.

As the aforementioned online database is Design or Food-specific, the keywords screened for were: food design, eating design, community, sustainability, participatory design, food service, collaborative design, food systems, food consumption, food experience, network, codesign, social innovation, networked economy, short food supply chains, food future, territory, systemic design, collaborative network, product-service, innovation design, regenerative economy. Results were treated similarly to SLR, making a second file folder of 78 non-academic reference publications. These complementary literature review results were equally saved in folders, then manually screened, and their information was transferred to a table (Table 9). CLR has also resulted in a list of References grouped into categories of “Food”, ‘Design”, and “Food + Design” to be further scrutinized, as depicted by Table 9.

Reference Websites

Food +Design	Notes
https://resourcedny.com/the-kitchen-farming-project	
https://brightly.eco/sustainable-restaurants/	
https://www.theworlds50best.com/awards/sustainable-restaurant-award	
https://www.environmentalleader.com/2017/12/time-fire-restaurant-sustainability-heres/	
https://thesra.org/	
https://www.activesustainability.com/sustainable-life/have-you-heard-about-sustainable-restaurants/	
https://brightly.eco/sustainable-restaurants/	
https://ellenmacarthurfoundation.org/	
http://efood.fa.ulisboa.pt/index.php/previous-editions/efood-2017	
https://www.proceedings.blucher.com.br/article-list/ped2018-314/list#articles	
https://dl.designresearchsociety.org/drs-conference-papers/drs2014/researchpapers/85/	
https://theforkorganization.com/event/world-food-design-day/	
http://www.ijdesign.org/index.php/IJDesign/article/view/3467/909	
https://www.fooddesign2021.org/	
https://dl.designresearchsociety.org/	
https://humancities.eu/about/project/	

Design	Notes
https://www.researchgate.net/profile/Stefan-Holmlid	Service Design
https://www.fooddesignthinking.org/designing-centered-design	
https://olioex.com/about/	Social Innovation
https://www.alexandria.unisg.ch/250724/	Design Principles for Business-Model-based Management
https://www.desisnetwork.org/wp-content/uploads/2017/04/DESIS_PUBLIColab-Book.pdf	
https://d1r3w4d5z5a88i.cloudfront.net/assets/guide/Field%20Guide%20to%20Human-Centered%20[	IDEO toolkit
https://d1r3w4d5z5a88i.cloudfront.net/assets/guide/Field%20Guide%20to%20Human-Centered%20[	IDEO

Table 9. Complementary Literature Review reference websites.

2.4. Data Analysis: Literature Review

After collection and screening, the information from the literature review was thoroughly read and classified into the context of the interest groups below (Figure 9). The most significant pieces were organized in themes on a map on a

Miro Board for further examination, and sources/authors were highlighted for cross-referencing (Figure 10):

- Methodology
- References for the artifact
- Food Design
- Food System
- Gastronomers and Chefs
- Circular Economy
- Industry Awards and Guidelines
- FAO, ONU, Milan Pact, Bodies
- Sustainability Reports
- References, facts, data
- Field Studies HoReCa

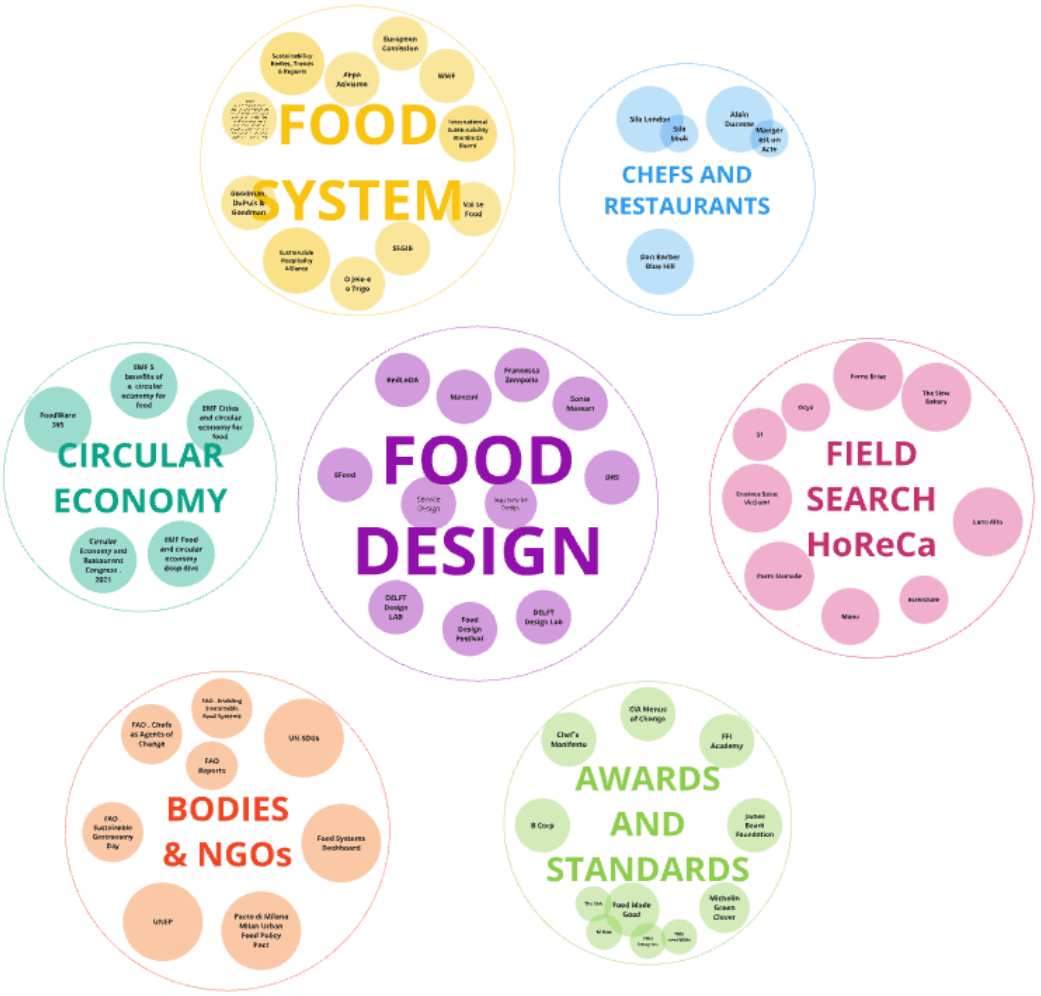

Figure 9. Context of Interest map.

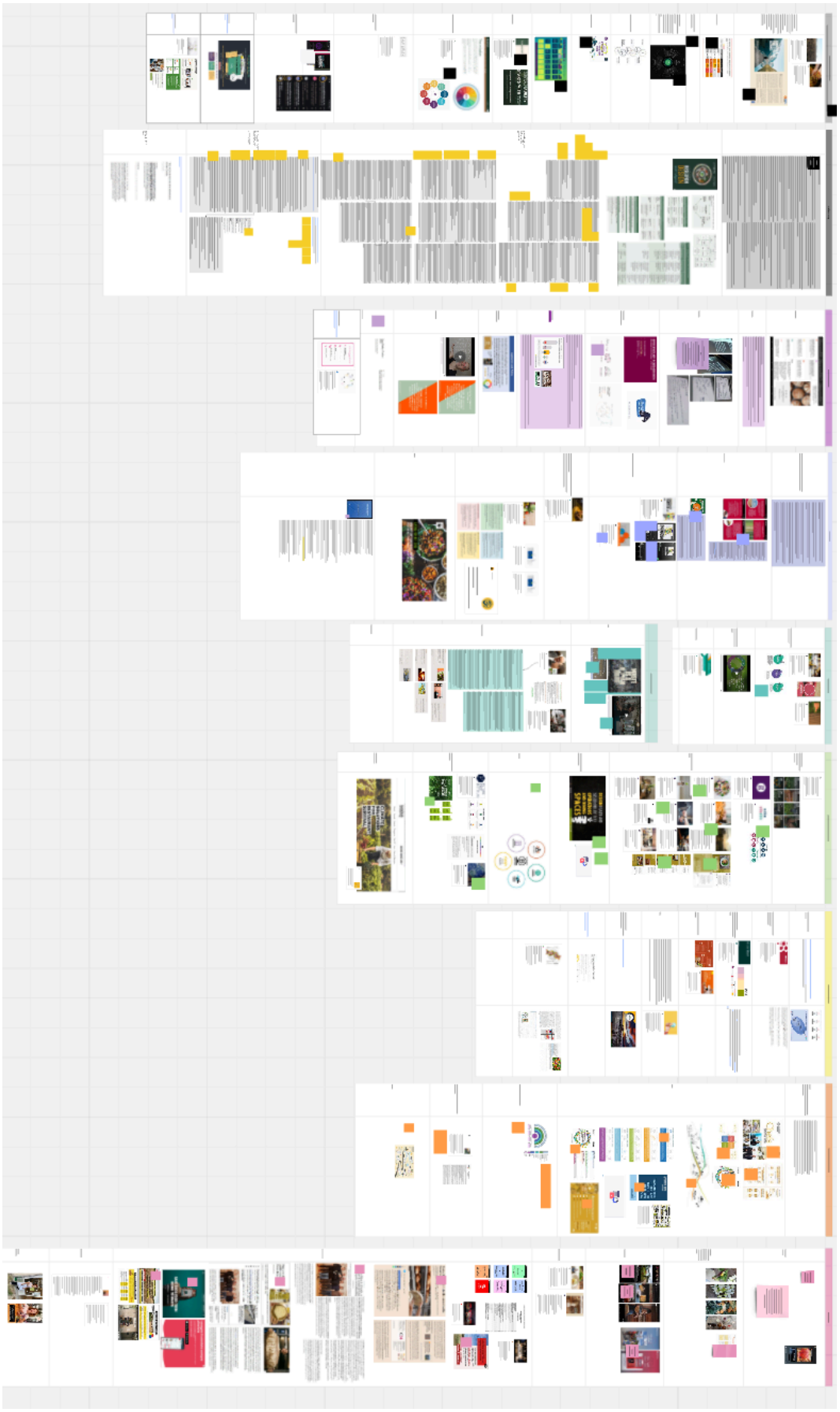

Figure 10. Literature Review Board.

The critical reflection on the Literature Review is presented in Chapter 3. HoReCa Sustainability Initiatives, Manifestos, Certifications and Awards, and Chapter 4. Definition of the current scenario: Sustainable Food Design and Sustainable Food Systems.

2.5. Data Collection: Field Studies

With a systemic, sustainable perspective of Food Design, the field studies phase used emerging insights and integrated academic knowledge with professional practice to foster theoretical review and innovative market solutions while addressing social challenges. The processes used a constructivist perspective to ultimately create an interactive service system to support and engage the restaurant industry in solving everyday sustainability issues.

Collecting and "examining field studies proves especially suitable for dealing with phenomena that are still being formed and whose boundaries are not yet clearly distinguishable." (Massari, 2021, p.316), and immersing in the F&B service environment has proven a great source of contextual understanding and insights for this study.

The selection of enterprises for the immersion was a top-down path, correlating the acquired awareness from the Literature Review with ingrained knowledge of the Food Service experience. They have been selected for aligning with economic, environmental, and social sustainability principles and their location and accessibility for this research: Rio de Janeiro, São Paulo and surroundings, and Curitiba in Brazil, and Bologna, Italy.

By immersing in the operations of the selected F&B venues through Participant Observation and Contextual Interviews (Stickdorn et al., 2018, Marsh 2022; IDEO, 2024a) in 2023 and 2024, we aimed to disclose the complexities of the scenario, envision future possibilities, and, whenever possible, collaboratively prototype innovative product-service solutions. The results of this stage were subject to analysis, and their visual representation is depicted in Chapter 2.6. Data Analysis: Field Studies and present complete details per venue in Chapter 5. Field Studies: Sustainable Food Systems Into Practice, Sections 5.1 to 5.10. The results from the field phase, combined with the knowledge acquired from desk research, produced insights that were prototyped in context and led to a service system. This system has been iteratively improved and validated through a concept usability test, resulting in the final output (Marsh 2018, p.199 Table 17.1). The specificities of these procedures and their development are described in Chapters 5 and 6.

The field studies were conducted in heterogeneous degrees (Stickdorn et al., 2018b, p. 18) in eleven F&B enterprises to learn by observation and practice with the selected businesses, generating insight for innovation, networking, value, and meaning to promote change with impactful solutions. The objective is to pragmatically discuss and present sustainable best practices for the Food Service industry, with meaningful propositions to people and the planet, focused on the three pillars of sustainability and creating value and meaning. Empathy, user experience, usability, information systems, and systemic thinking in the design process were always considered. A synthesis of the Immersion protocol is shown in Table 10 below.

These processes involved assorted stakeholders performing their daily routines, from suppliers to cooks, from service and management teams to business owners, considered specialists in their respective professional domains. As predicted in Service Design research, it has followed an iterative approach, with continuous validation by peers and specialists throughout the study development, thereby generating more tailored solutions. The participatory and empathetic methodology fits perfectly with the profile of this investigation, integrating gastronomic proficiency and expertise into field learning and analysis phases, followed by ideation and validation, resulting in knowledge increment and an artifact.

Observations and interviews happened within the selected venues' working hours and staff working shifts, starting with a proper introduction of the research context and participants briefed about the observation. Tasks and environments would include routine-like activities in various establishment areas, like administrative quarters, production areas, or dining room, ranging from harvesting and purchasing supplies, elaborating and preparing the menu, to enjoying a proper customer experience.

During these assessments, we asked questions related to the collective and individual activities observed and, on scheduled moments, executed the contextual interview to inquire about what was investigated and the professional journey of the team members. Even though Contextual Prototyping (Stickdorn, 2018, p.144 Service Prototypes) or Formative Testing (Barnum, 2010, p. 22) is a further research step, it features in this table, showing the overlaps of methods applied in the immersion period.

Immersion Protocol

	Data collection formats	Risks and Benefits	Actions to Mitigate
General Guidelines	• participants who are being observed know that researchers are present and that they are currently being observed in situations that are relevant to the research question • activities conducted in person, held individually or in small groups, in Portuguese or English, according to each venue • data collected and recorded through written and audio notes to self, photos of the participants, and processes of the daily routine at the establishment • audio notes-to-self transcribed with WhatsApp AI • audio recordings from interviews transcribed with Turbo Scribe • transcriptions or notes translated with AI whenever necessary • necessary stationery items for each session (sticky notes, paper, pen, etc.) are provided by the researcher • login and access to digital tools, when necessary, will also be provided • term of consent for observations, interviews, and contextual prototyping	• collaboration in the research exposes the participant to the risks inherent to the professional activity of a restaurant, including the handling of sharp equipment and utensils, heat sources, and the usual interactions between professionals and customers	• these risks can be minimized using the correct personal protective equipment (PPE), professional posture, and attention in the work areas, where the participants will be observed without interference • all participants involved, including the researcher, are trained and experienced, which mitigates the risk of accidents • in the unlikely event of a physical injury during this immersion, the first aid protocols provided for in the establishment will be followed
		• being observed or interviewed may cause discomfort or embarrassment	• to soothe this feeling, we emphasize that there is no evaluation or judgment during the immersion process and that this process is solely intended to collect information to develop the research • to alleviate possible negative feelings caused, part of the time spent during the immersion is for the researcher to familiarize herself with the macro structures of the teams and only then inquire about a sector or individual participant • empathy is paramount, as openness to questions or interruptions, whether momentary or permanent, throughout the interaction
		• regarding the benefits, participation in this research will not bring any direct individual gain. However, the results of this study may benefit the restaurant industry collectively	• we emphasize that participation is voluntary and that all participants are free to decide about their participation, including withdraw their consent at any stage without penalty

Method	Specific Objectives	Duration	Purpose and Expected Outputs
Participant Observation Work Along	• act as a team member, mixing participant observation with contextual interviews, monitoring, and collecting internal data (documents, recipes, processes, etc.) • collect and analyze data in-depth • attention to how the researcher's presence can influence behavior	• the expected duration of this phase is 1 to 4 months • the sessions will be held during the establishment's opening hours • the sessions will be held during the participant's working shift, with a maximum duration of 2 hours per session	• purpose: identify deficiencies and potentialities in the establishment's ecosystem, learn from practice • expected outputs: insights into internal processes, corporate culture, informal networks, and specific tools or workarounds participants may use
Participant Observation Shadowing	• follow participants through their physical spaces to observe behaviors and experiences. It can range from a few minutes to several hours • researchers may conduct contextual interviews during critical moments and clarify boundaries beforehand	• the expected duration of this phase is one sessioon • the sessions will be held during the establishment's opening hours • the sessions will be held during the participant's working shift, with a maximum duration of 2 hours per session	• purpose: identify deficiencies and potentialities in the establishment's ecosystem, acquire tacit knowledge • expected outputs: an in-depth understanding of participant behavior, including overlooked or unconscious actions, revealed through detailed observations
Participant Observation Day in the Life	• combine participant observation with contextual or retrospective interviews to uncover motivations and attitudes • observe participants' daily lives in context, over a certain period of time	• the expected duration of this activity is 2 to 3 hours • the sessions will be held during the establishment's opening hours	• purpose: understand routines, behaviors, environments, and interactions, often to map stakeholders/develop or validate personas, and explore the broader context of needs. • expected outputs: insights, possible draft of journey maps (timeline of actions) or system maps (stakeholder interactions)
Contextual Interview (in-depth, semi-structured)	• interviewees tend to be more open, relate to the environment, remember more specific details • expert participants bringing valuable perspectives • observe the environment and peers, as interviewees can relate to surrounding elements • document the situational context in which the interview takes place	• the expected duration of this phase is 45 minutes to 2 hours • the sessions will be held during the establishment's opening hours • the sessions will be held during the participant's working shift	• purpose: collect in-depth and secondary information to better comprehend the context • integrate what participant reports with context, element of the environment, bringing up underlying motivaitons for specific actions • expect: in-depth, more detailed information to build knowldge and meaning
Contextual Prototyping	• prototype a version of the product/service in the actual business • conduct fertile sessions to build applicable and appropriate solutions for identified struggles • validate efficiency and effectiveness of co-produced solutions, generating insights to increment the product/service further • as any contextual research, it's an effective way to grasp nuances that are needed to implement a working solution	• the expected duration of this phase is one to four sessions per proposal • the sessions will be held during the establishment's opening hours • the sessions will be held during the participant's working shift, with a maximum duration of 2 hours per session	• purpose: efficiently assess whether or not a prototyped solution is a fit for that context or not • expected outputs: evaluate and/or validate digital and physical artifacts resulting from the generative sessions

Table 10: Immersion protocol.

Being an embedded researcher wholly engaged with participants who were aware of the research purpose facilitated building rapport, establishing trust, and participating in their activities. Familiarity with HoReCa settings and typical professional conduct made interaction with observed nominees and environments comfortable, minimizing behavior alteration and increasing audience respect/engagement. We briefly introduce the participant venues, then on Table 11, Chapter 2.5.1 we reproduce a synthesis of this immersive phase, outlining participants, methods, and other relevant information.

Enoteca Saint VinSaint

The wine bar and restaurant Enoteca Saint VinSaint[7] in São Paulo was chosen because it features rare sustainable, circular practices in Brazilian restaurants. Four staff members and one of the owners participated in the immersion, which took place from August to November 2023. During the Participant Observation, we visited the restaurant's small farm and the remarkable community-based suppliers *Armazém do Campo* and *Instituto Chão*[8].

This wine bar and restaurant has been working only with natural wines and small producers for over 15 years, and around 10 years ago, they began to supply 60% of their produce demand with their farm in the outskirts of São Paulo. They also have chickens and goats responsible for the restaurant's milk supply and complementing eggs. The ingredients purchased come from smallholders in the state and are primarily organic, agroforestry, or from free-range animals.

The chef, nutritionist, and owner, Lis Cereja, discusses sustainable practices, highlighting closed cycles of production and consumption within a restaurant setting. She observes that many restaurants must follow sustainable or closed-cycle principles instead of operating under a linear cycle that generates waste and excessively explores natural resources. The statement on their website describes the restaurant's motto, making them a perfect start for the Immersive phase:

> “Not having a fixed menu. Work with circular production and consumption systems. Think about the menus only after receiving inputs from the garden and organic suppliers. Respect seasonality and food traditions. Rescue, remember, value, simplify. Don't waste. Make the most of the ingredients. Reuse. Meet the producers. Allow nature and farmers to tell us what to use and cook each season. Wines are only natural, organic, and biodynamic since wine is also food. For us, the real value of food lies in the people who produce it and on this small, conscious, local, and sustainable scale.” (Saint VinSaint, 2024).

For this study, a Day in the Life of a Diner was the first experience, followed by one month working with the kitchen and pastry teams and Shadowing sessions with the service team. During this month spent at Enoteca, some

[7] www.saintvinsaint.com.br, Instagram @enotecasaintvinsaint
[8] institutochao.org, armazemdocampo.com.br

components of the proposed service system were ideated and contextually prototyped. The process is further detailed in Chapter 2.8 Prototyping. Subsequently, we conducted Contextual Interviews with the team. A full description of the findings of this immersion, including contextual prototyping, is found in Chapter 5.1 Enoteca Saint VinSaint.

31

Chef Raphael Vieira owns and operates the restaurant 31[9] in São Paulo, Brazil. It offers a vegetarian, authorial menu, where the star is the ingredient. Raphael sources primarily organic food from local small farmers around São Paulo. He produces most of what is served in his tiny kitchen, including vegan cheese and fermented beverages. For this study, a Day in the Life of a Diner was performed, followed by a Shadowing session of the kitchen brigade and a Contextual Interview with the chef. The data collected was analyzed, and the results will be presented in Chapter 5.2 31.

The Slow Bakery

Located in Rio de Janeiro, The Slow Bakery[10] has inspired sourdough bakeries across the county since 2017. It has deeply engraved fundamental pillars: local, free-range, real food, reflecting in gastronomic choices that contemplate working closer to the ingredients, respecting and understanding the whole process, reflecting in more-than-business exchange relations with food producers and customers, leading to local and socioeconomic impacts.

At Slow, fresh produce is selected from partner agricultural producers, and their ingredient availability determines the menu of sandwiches, salads, and pastries, along with what is offered in the team's meals. As smallholders are encouraged, the economic model strengthens the local economy, generating income for the surroundings, and the benefits extend to the community in a chain. Besides ingredient choice preferring local, organic, or agroforestry practices, the bakery holds a delicatessen where cheese, cold cuts, sweets, wines, and other handcrafted products come from the immediate surroundings, and the partnership promotes quality artisan produce, going beyond the commercial relationship.

This research's most extended field study was carried out at this establishment, providing opportunities to observe multiple business aspects, participatory design, contextual prototype and implement a series of tools (Chapter 2.8), which have been incorporated into the final artifact. In these six months (July to December 2023), we closely observed the production (kitchen, pastry, and bakery), administrative, and management teams— Work Along

[9] instagram @31restaurante, www./31restaurante.com.br
[10] instagram @theslowbakery

sessions— and executed Shadowing sessions with the service team. In February 2024, we conducted Contextual Interviews with the selected team members and three suppliers. For the complete immersion phase at The Slow Bakery, see Chapter 5.3.

Lano-Alto

The Lano-Alto[11] is a farm, inn, cheesemaker, and grocery store located in Catuçaba, about 200 km from São Paulo. The venue has been chosen as a business model for its operating principles, quality dairy products, and hosting spaces amid sustainable practices. Lano-Alto features “products made not to last” and is an example of rescuing the local culture and ecosystem. The owners left the communication market to live on the property and explore the surroundings in search of the truth of the food, the original ingredients, and traditional knowledge, living off what exists in the territory.

A Day in the Life of a Guest was performed over a weekend in March 2024. It was combined with Shadowing sessions, during which we observed Lano-Alto's busy, multitasking routine, and conducted the Contextual Interview. The results of this experience are presented in Chapter 5.4 Lano-Alto.

Ocyá

The Restaurant Ocyá[12] is a milestone of sustainable fishing and product development in Brazil, with their web page heading “the sea that feeds us,” synthesizing their understanding well. The first and primary operation is located on a little island in Rio de Janeiro, reached in a quick taxi-boat ride. Since its opening in 2022, the idea was to re-signify the entire fish and seafood consumption chain, valuing fishermen and all types of fish and respecting nature and its cycles. The menu showcases less commercially valued animals, making whole, circular use of ingredients, ensuring high-quality dishes with ethical and sustainable practices.

The chef, a fisherman and diver himself, has expanded to a second restaurant and recently started an academy to join like-minded experts, share the knowledge accumulated over the years, and spread the word about the importance and techniques of this type of business across the country.

The observation at this venue was a Day in the Life of the Kitchen brigade in October 2023, followed on a second occasion by a Contextual Interview with the chef. Restaurant Ocyá is presented in Chapter 5.5.

[11] instagram @lano_alto
[12] instagram @ocyá.rio, www.ocya.com.br

Hotel Arpoador

Hotel Arpoador[13], on the Ipanema beachfront in Rio de Janeiro, features a sophisticated urban beach atmosphere depicted by its clean, sea-inspired design. The restaurant Arp Bar offers a menu rich in local, seasonal ingredients, promoting artisan suppliers and emphasizing the gastronomy of the territory. Sustainability is a substantial value for the operations, so the hotel implements energy-saving and water-conservation practices. Besides, it is affiliated with the BrBio project, an organization dedicated to marine conservation.

The observation at the hotel and restaurant lasted a weekend (December 2023), with a Day in the Life of a Guest technique. On a second occasion, in April 2024, we conducted a Context Interview with one of the owners. Details are described in Chapter 5.6 Hotel Arpoador.

Pasto Nomade

Pasto Nomade[14] is a culinary laboratory in Bologna, Italy, specializing in plant-based and vegan cuisine. The restaurant and catering venue is a Benefit Company[15], emphasizing organic, seasonal, and locally sourced ingredients, collaborating with local producers to ensure ecological sustainability. The restaurant frequently promotes international dinners featuring chefs and ingredients from the vast immigrant neighboring populace and engages in cooking classes, further promoting sustainable and health-conscious eating habits within the community.

During our time at Pasto Nomade, we could do Work Along sessions within the production team, accompany regular service, restaurant events, and catering production, plus a Day in the Life of a Diner and contextual interviews with the owners and kitchen staff. The rich experience provided insights from a different perspective than the previous observations brought by the European context and is presented in Chapter 5.7 Pasto Nomade.

Forno Brisa

A second bakery on the list, Forno Brisa integrates sustainability and circular economy principles into its operations by prioritizing low-impact agriculture, ethical sourcing, and waste reduction. The bakery, chocolate maker, and specialty coffee roaster's commitment to sustainability is reflected in its ingredient sourcing and production processes, where it minimizes waste, values ingredients, and explores tasty ways to repurpose byproducts.

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[13] instagram @arpoador.rio, www.hotelarpoador.com

[14] instagram @pastonomade, www.pastonomade.it

[15] “Benefit companies are for-profit corporate entities that aim to balance out their profit-making purposes with the objectives of transparency, sustainability and the mission of having a positive impact on the environment” (Gambin & Sforza, 2019).

Beyond its products, Forno Brisa champions a cooperative and inclusive business model, reinvesting in sustainable projects and creating a workplace culture centered on shared values and collective well-being.

The immersion at Forno Brisa started with A Day in the Life of a Customer, then Work Along sessions and Contextual Interviews with the pastry and bakery teams, and was concluded with interviews with two management team members. The data and lessons learned from this period are presented in Chapter 5.8, Forno Brisa.

Scovami and Il Fungo Eclettico

These two Bolognese businesses are committed to sustainability in a particular manner, focusing on more specific aspects of responsible, local gastronomy, and they are somewhat linked in the Bolognese food chain.

Scovami[16] is a downtown food market and natural wine bar that sells artisanal confectionery, minimally processed foods, cheese and cold cuts, and low-intervention wines. With a deep respect for terroir and traditional methods, Scovami supports small-scale producers prioritizing biodiversity and environmental stewardship. These producers often make products with ingredients they cultivate themselves. The market also offers a selection of fruits and vegetables from its farm on the city outskirts.

Il Fungo Eclettico[17] is a mushroom urban farm grounded in seasonality and networking. Supplying both selected restaurants in Bologna and directly to final consumers, Il Fungo Eclettico takes advantage of their location by working with species most suitable to the city's weather conditions, crop variety, and bicycle deliveries.

Manu Buffara

Restaurante Manu[18], located in Curitiba, Brazil, is a fine-dining restaurant owned and led by award-winning chef Manu Buffara, known for her deep commitment to sustainability, local biodiversity, and sense of community. The restaurant works closely with small-scale farmers, fishermen, and artisans to source high-quality, seasonal ingredients, reinforcing a farm-to-table philosophy that minimizes environmental impact. Through ethical agriculture partnerships and a strong focus on reducing food waste, Manu integrates sustainability into every aspect of its operations, ensuring that each dish reflects culinary excellence and environmental responsibility.

Beyond its kitchen, Restaurante Manu promotes food education and social impact projects, partnering with the municipality in a community green garden

[16] instagram @scovami_bologna
[17] instagram @ilfungoeclettico, www.ilfungoeclettico.com/
[18] instagram @restaurantemanu, www.restaurantemanu.com.br

and food security initiatives. The restaurant's philosophy aligns with circular economy principles by minimizing waste, prioritizing ethical sourcing, and fostering a deeper connection between gastronomy, nature, and local communities. The chef and her team provide a remarkable dining experience while building a more resilient and sustainable future for Brazilian cuisine.

The observation was carried out in two separate moments: first, a Day in the Life of a Diner, and then, a year later, in December 2024, Shadowing and Contextual Interview sessions with kitchen and service teams, which will be discussed in Chapter 5.10 Restaurante Manu.

2.5.1.
Contextual Interview

The Contextual Interview (Stickdorn et al., 2014, p. 164; Stickdorn et al., 2018b, p.20; Polaine et al., 2013, p.50) or Contextual Inquiry (Marsh p.166) is an ethnographic proposition of interviews consisting mainly of semi-structured, open questions, working as a thread to convoy conversations as naturally as possible. It provided the opportunity to inquire in-depth and gather latent information to perceive the ambiance comprehensively. Some participants in this phase can be considered experts because of their field experience or systemic view of their contexts, bringing valuable perspectives (IDEO, 2024a; Marsh 2018, p.166). As indicated by Marsh (2018, p. 167), contextual interviews start from broad, general inquiries, aiming at established parameters, criteria, or "process flows for design", understanding the context of use and needs of a product/service.

The Contextual Interviews (Stickdorn et al., 2014, p. 164) were conducted in person, held separately or in small groups, in Portuguese or English according to each venue. The recordings (transcribed with Turbo Scribe), translated with AI whenever necessary. Participants were selected according to each venue structure and staff availability, trying to engage various stakeholders. As with the field studies in this research, contextual interviews frequently accompany participant observation (Stickdorn et al., 2018b). This stage of the investigation provided opportunities to inquiry into the context and perceive motivations, points of friction, potentialities, and the daily life of suppliers, production and service staff, and management members about the required efforts to positively influence their surroundings, acting more ethically, inclusively, and sustainably.

Introductory Contextual Interview script

- How long have you worked in the sector?
- Explain in your own words how and when your interest in Food Service arose
- Why do you work at this establishment specifically (motivations)
- What are the pros and cons of working at this company?

- Do you believe in more sustainable ways of conducting a venture in Gastronomy?
- Describe in as much detail as you can your routine at the company
- What are the advantages and difficulties of working in a company that values sustainability?

Immersion Synthesis

Venue	Participant	Method	Period	Duration
Enoteca SaintVin Saint	Owner	Contextual Interview	October 2023	2 hours
	Chef	Work Along + CP . Contextual Interview	October 2023	1 month
	Cook	Work Along . Contextual Interview	October 2023	1 month
	Pastry/Baker	Work Along + CP . Contextual Interview	October 2023	1 month
	Server	Shadowing . Contextual Interview	October 2023	4 hours . 1 hour
	self	Day in the Life (diner)	August 2023	3 hours
31	Chef/Owner	Contextual Interview . Shadowing	November 2023	3 hours
	self	Day in the Life (diner)	November 2023	2 hours
The Slow Bakery	Owner/GM/Baker	Work Along . Contextual Interview	July 2023 . Feb 2024	6 months . 3 hours
	self	Work Along (chef) + Contextual Prototyping	July 2023 . Feb 2024	6 months
	Cook 01	Work Along + CP . Contextual Interview	July 2023 . Feb 2024	6 months . 1 hour
	Cook 02	Work Along + CP . Contextual Interview	July 2023 . Feb 2024	6 months . 1 hour
	Cook 03	Work Along + CP . Contextual Interview	July 2023 . Feb 2024	6 months . 45 minutes
	Procurement	Work Along + CP . Contextual Interview	July 2023 . Feb 2024	4 months . 1 hour
	Stockist	Work Along + CP . Contextual Interview	July 2023 . Feb 2024	4 months . 1 hour
	Consultant	Contextual Interview	February 2024	45 minutes
	Server	Shadowing . Contextual Interview	Sep. 2023 . Feb 2024	4 hours . 1 hour
	Server	Shadowing . Contextual Interview	Sep. 2023 . Feb 2024	4 hours . 45 minutes
	Supplier	Contextual Interview	February 2024	45 minutes
	Supplier	Contextual Interview	February 2024	1 hour
	Supplier	Contextual Interview	February 2024	1 hour
Lano-Alto	Owner	Shadowing . Contextual Interview	March 2024	1 weekend . 2 hours
	self	Day in the Life (guest)	March 2024	2 days
Ocyá	Owner/Chef	Contextual Interview	December 2024	2 hours
	self	Work Along	October 2023	6 hours
Hotel Arpoador	Owner/Chef	Contextual Interview	April 2024	2 hours
	self	Day in the Life (guest)	December 2023	2 days
Pasto Nomade	Chef/Owner	Work Along . Contextual Interview	May 2024	1 week . 3 hours
	Admin/Owner	Contextual Interview	July 2024	1 hour
	Pastry Chef/Owner	Work Along . Contextual Interview	July 2024	1 week . 2 hours
	self	Work Along (cook)	July 2024	1 week
	self	Day in the Life (diner)	May 2024	3 hours

Table 11a. Immersion Synthesis.

Forno Brisa	B2B, Logistics, Quality Manager	Contextual Interview	June 2024	45 minutes
	External Relations & Sustainability Manager	Contextual Interview	June 2024	1 hour
	pastry	Contextual Interview	June 2024	1 hour
	baker	Contextual Interview	June 2024	1 hour
	self	Work Along (pastry and bakery)	June 2024	12 hours
	self	Day in the Life (coffee event, diner)	May 2024	3 hours
Il Fungo Eclettico	Owner	Contextual Interview	September 2024	45 minutes
Scovami	Owner	Contextual Interview	September 2024	1 hour
Manu Buffara	Sous Chef	Shadowing . Contextual Interview	December 2024	4 hours . 1 hour
	Cook 01	Shadowing . Contextual Interview	December 2024	4 hours . 1 hour
	Cook 02	Contextual Interview	December 2024	45 minutes
	Sommelière	Contextual Interview	December 2024	1 hour
	self	Day in the Life (diner)	December 2023	4 hours
Total participants	**30**		**Oct 2023 . Dec 2024**	**14 months**

Table 11b. Immersion Synthesis.

2.5.2.

Participant Observation

Participant Observation, as described by Polaine et al. (2013, p.54), is essentially conducted in the participant's ambiance and

> “provides rich, in-depth, and accurate insights into how people use products, processes, and procedures. It is very useful for understanding context, behavior, motivations, interactions, and the reality of what people do, rather than what they say they do”.

In the course of this study, we conveyed the observations actively, as “Day in the Life” or “Work Along” (Stickdorn et al., 2014, p. 176), or passively, as “Shadowing” (Stickdorn et al., 2014, p. 158; Stickdorn et al., 2018b, p.19). During those moments, observing what participants were consciously or indirectly doing with body language, expressions, or gestures and what they were not doing or expressing is paramount to building an intuitive understanding of gathered data. As an emergent design approach, knowledge is built iteratively throughout the immersion, and the professional upbringing contributes to the judgment and direction of this study, influencing how information is perceived during the observations— and complemented by contextual interviews (Creswell & Creswell, 2018, p.295).

In the interim of this phase, individual or collective interactions were carried out with food producers and suppliers, chefs/restaurant owners, and service staff, providing the opportunity to observe the establishments' routines. Qualitatively, the observation and interaction with participants aimed to gain insights into the question: How does this venue fit sustainability principles and practices into everyday actions, and how could its processes be improved to increase positive impact and reduce negative ones?

Being familiar with the investigation background helped mitigate practical issues, recognizing natural habits and behaviors and typical professional language or codes, like interrupting ongoing actions or events. Understanding the timing and expected outcomes of specific tasks, when to contribute, and when to step back and simply watch. Besides, in a professional kitchen environment, being knowledgeable of sanitary regulations and having technical skills can determine the level of interaction and benefit from the field studies, taking advantage of time spent *in loco*, registering precise information, and recording the best images. The images collected during this study have been treated in such a way as to make participants unrecognizable.

During the immersive phase, observation slots were assigned to make the most of each scenario and its participants. Notes were taken on a notepad whenever possible, due to the working environment in F&B, by audio notes to self, later transcribed via WhatsApp AI, and end-of-the-day journal entries, filled as soon as possible to ensure maximum information documentation, inductively framing the meaning of data collected.

2.6. Data Analysis: Field Studies

Thematic Analysis is a contextualist method of qualitative data analysis that is characteristically constructivist. It acknowledges the “ways individuals make meaning of their experience, and, in turn, the ways the broader social context impinges on those meanings” (Braun & Clarke, 2006, p.81). Organizing information into themes helps compile the essence of a large amount of collected data, accentuating similarities and differences across a data set and constructively leading to unexpected insights.

A theme represents the search for a pattern or level of meaning implicit in a data set that may be of interest to the research question. It can be worked on inductively or deductively. This section results in a Field Thematic Analysis Map (Figure 14, Chapter 2.6).

For the field studies data analysis, we have started the thematic analysis from explicit to the semantic level, or bottom-up, diagnosing patterns, grouping information iteratively, and then inductively categorizing it into themes with significant relation to the research question (Creswell & Creswell, 2018; .Zampollo, 2015, p.11), following the criteria proposed by Braun and Clarke (2006, p.96):

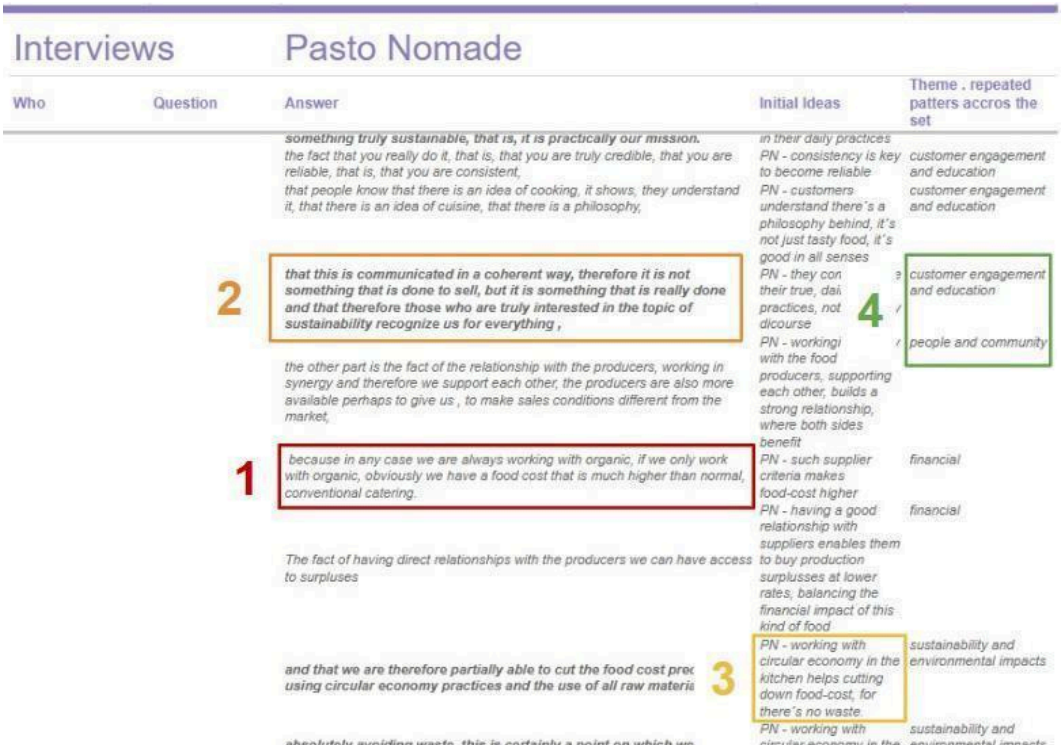
- Analyze, interpret, make sense of the data, rather than paraphrasing
- Analysis and data match each other; the chosen extracts illustrate the analytic claims

- Analysis tells a contextualist, meaningful, and well-organized story about the data collected and the research question
- A good balance between analytic narrative and illustrative extract is laid out.

Subsequently, we worked deductively, reviewing the categories (initial tags) to determine whether more information was needed to support them or how they connected to or fed others (Creswell & Creswell, 2018, p.295). The field studies provided insights for the subsequent phase of this study, particularly regarding the company's approach to sustainability and ethics, daily operations, and the participants' personal reflections.

The analysis of the immersion data has followed a basic protocol, illustrated by Figures 11 to 14, consisting of (Braun & Clarke, 2006):

1. Transcribe, translate (when necessary), and format the individual sets of gathered data into sheets, with different tabs corresponding to each venue and collection method (observation type, interview). One sentence or idea per cell;
2. Familiarize with the information, re-read, note down initial ideas— mark initials from each venue for further tracking;
3. Highlight significant quotes for reference;
4. Generate initial coding for relevant items (example in Figure 11);
5. Assemble codes into initial themes (color-coded), cross-check, and complement information with Literature Review findings (example in Figure 12);
6. Transfer cells to Miro board sticky notes, keep themes with clear definitions, review themes inter and trans-relationally (mark with tags), cluster by theme (like in Figure 13);
7. Assemble and establish relations, creating a map (Figure 14);
8. Write a report on the analysis, intersecting knowledge acquired from the field, literature review, background, and their relation with the research question (presented in Chapter 5).

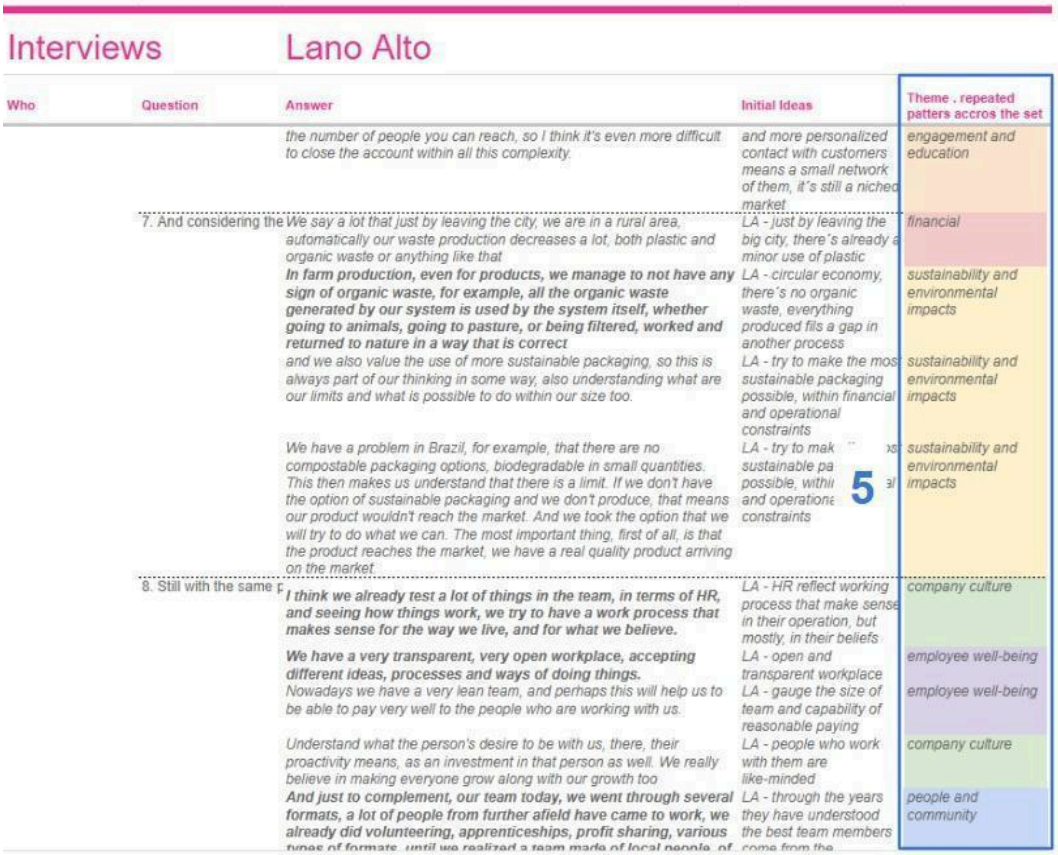


Interviews — Pasto Nomade

Who	Question	Answer	Initial Ideas	Theme . repeated patters accros the set
		something truly sustainable, that is, it is practically our mission.	in their daily practices	
		the fact that you really do it, that is, that you are truly credible, that you are reliable, that is, that you are consistent,	PN - consistency is key to become reliable	customer engagement and education
		that people know that there is an idea of cooking, it shows, they understand it, that there is an idea of cuisine, that there is a philosophy,	PN - customers understand there´s a philosophy behind, it´s not just tasty food, it´s good in all senses	customer engagement and education
		that this is communicated in a coherent way, therefore it is not something that is done to sell, but it is something that is really done and that therefore those who are truly interested in the topic of sustainability recognize us for everything ,	PN - they con… their true, dai… practices, not dicourse	customer engagement and education
		the other part is the fact of the relationship with the producers, working in synergy and therefore we support each other, the producers are also more available perhaps to give us , to make sales conditions different from the market,	PN - workingi… with the food producers, supporting each other, builds a strong relationship, where both sides benefit	people and community
		because in any case we are always working with organic, if we only work with organic, obviously we have a food cost that is much higher than normal, conventional catering.	PN - such supplier criteria makes food-cost higher	financial
		The fact of having direct relationships with the producers we can have access to surpluses	PN - having a good relationship with suppliers enables them to buy production surplusses at lower rates, balancing the financial impact of this kind of food	financial
		and that we are therefore partially able to cut the food cost prec… using circular economy practices and the use of all raw materia…	PN - working with circular economy in the kitchen helps cutting down food-cost, for there´s no waste	sustainability and environmental impacts
		absolutely avoiding waste, this is certainly a point on which we…	PN - working with…	sustainability and…

1 2 3 4

Figure 11. Example of Thematic Analysis Protocol steps 1 to 4.

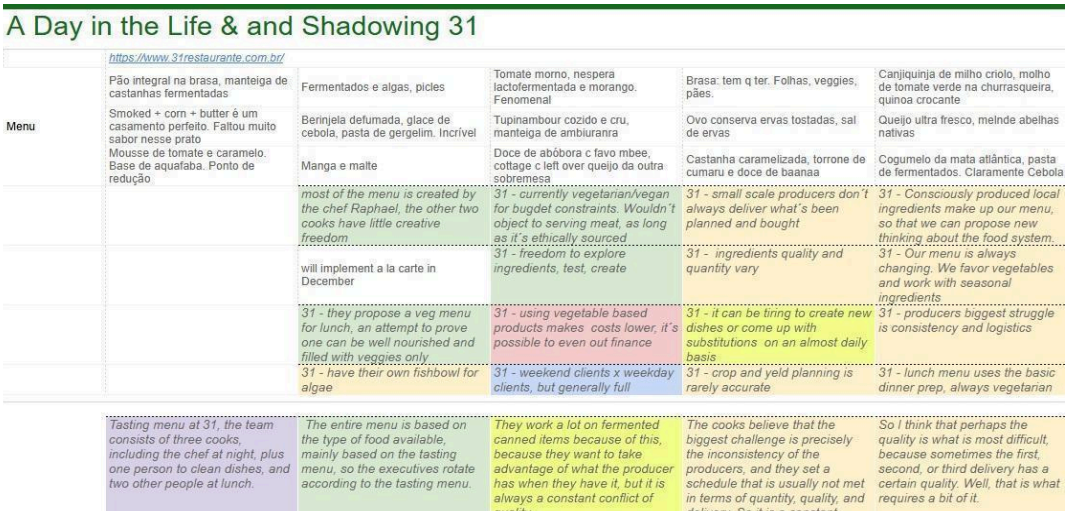


Interviews — Lano Alto

Who	Question	Answer	Initial Ideas	Theme . repeated patters accros the set
		the number of people you can reach, so I think it's even more difficult to close the account within all this complexity.	and more personalized contact with customers means a small network of them, it´s still a niched market	engagement and education
	7. And considering the	We say a lot that just by leaving the city, we are in a rural area, automatically our waste production decreases a lot, both plastic and organic waste or anything like that	LA - just by leaving the big city, there´s already a minor use of plastic	financial
		In farm production, even for products, we manage to not have any sign of organic waste, for example, all the organic waste generated by our system is used by the system itself, whether going to animals, going to pasture, or being filtered, worked and returned to nature in a way that is correct	LA - circular economy, there´s no organic waste, everything produced fils a gap in another process	sustainability and environmental impacts
		and we also value the use of more sustainable packaging, so this is always part of our thinking in some way, also understanding what are our limits and what is possible to do within our size too.	LA - try to make the most sustainable packaging possible, within financial and operational constraints	sustainability and environmental impacts
		We have a problem in Brazil, for example, that there are no compostable packaging options, biodegradable in small quantities. This then makes us understand that there is a limit. If we don't have the option of sustainable packaging and we don't produce, that means our product wouldn't reach the market. And we took the option that we will try to do what we can. The most important thing, first of all, is that the product reaches the market, we have a real quality product arriving on the market	LA - try to mak… sustainable pa… possible, withi… and operationa… constraints	sustainability and environmental impacts
	8. Still with the same f	**I think we already test a lot of things in the team, in terms of HR, and seeing how things work, we try to have a work process that makes sense for the way we live, and for what we believe.**	LA - HR reflect working process that make sense in their operation, but mostly, in their beliefs	company culture
		We have a very transparent, very open workplace, accepting different ideas, processes and ways of doing things.	LA - open and transparent workplace	employee well-being
		Nowadays we have a very lean team, and perhaps this will help us to be able to pay very well to the people who are working with us.	LA - gauge the size of team and capability of reasonable paying	employee well-being
		Understand what the person's desire to be with us, there, their proactivity means, as an investment in that person as well. We really believe in making everyone grow along with our growth too	LA - people who work with them are like-minded	company culture
		And just to complement, our team today, we went through several formats, a lot of people from further afield have came to work, we already did volunteering, apprenticeships, profit sharing, various	LA - through the years they have understood the best team members	people and community
		types of formats, until we realized a team made of local people, of…	come from the…	

5

Figure 12a. Example of Thematic Analysis Observation Protocol step 5.



A Day in the Life & and Shadowing 31

	https://www.31restaurante.com.br/				
Menu	Pão integral na brasa, manteiga de castanhas fermentadas	Fermentados e algas, picles	Tomate morno, nespera lactofermentada e morango. Fenomenal	Brasa: tem q ter. Folhas, veggies, pães.	Canjiquinja de milho crioIo, molho de tomate verde na churrasqueira, quinoa crocante
	Smoked + corn + butter é um casamento perfeito. Faltou muito sabor nesse prato	Berinjela defumada, glace de cebola, pasta de gergelim. Incrível	Tupinambour cozido e cru, manteiga de ambiuranra	Ovo conserva ervas tostadas, sal de ervas	Queijo ultra fresco, melnde abelhas nativas
	Mousse de tomate e caramelo. Base de aquafaba. Ponto de redução	Manga e malte	Doce de abóbora c favo mbee, cottage c left over queijo da outra sobremesa	Castanha caramelizada, torrone de cumaru e doce de baanaa	Cogumelo da mata atlântica, pasta de fermentados. Claramente Cebola
		most of the menu is created by the chef Raphael, the other two cooks have little creative freedom	*31 - currently vegetarian/vegan for bugdet constraints. Wouldn't object to serving meat, as long as it's ethically sourced*	*31 - small scale producers don't always deliver what's been planned and bought*	*31 - Consciously produced local ingredients make up our menu, so that we can propose new thinking about the food system.*
		will implement a la carte in December	*31 - freedom to explore ingredients, test, create*	*31 - ingredients quality and quantity vary*	*31 - Our menu is always changing. We favor vegetables and work with seasonal ingredients*
		31 - they propose a veg menu for lunch, an attempt to prove one can be well nourished and filled with veggies only	*31 - using vegetable based products makes costs lower, it's possible to even out finance*	*31 - it can be tiring to create new dishes or come up with substitutions on an almost daily basis*	*31 - producers biggest struggle is consistency and logistics*
		31 - have their own fishbowl for algae	*31 - weekend clients x weekday clients, but generally full*	*31 - crop and yeld planning is rarely accurate*	*31 - lunch menu uses the basic dinner prep, always vegetarian*
	Tasting menu at 31, the team consists of three cooks, including the chef at night, plus one person to clean dishes, and two other people at lunch.	*The entire menu is based on the type of food available, mainly based on the tasting menu, so the executives rotate according to the tasting menu.*	*They work a lot on fermented canned items because of this, because they want to take advantage of what the producer has when they have it, but it is always a constant conflict of*	*The cooks believe that the biggest challenge is precisely the inconsistency of the producers, and they set a schedule that is usually not met in terms of quantity, quality, and*	*So I think that perhaps the quality is what is most difficult, because sometimes the first, second, or third delivery has a certain quality. Well, that is what requires a bit of it.*

Figure 12b. Example of Thematic Analysis Observation Protocol step 5.

Figure 13. Example of Thematic Analysis Protocol step 6, map divided by Themes.

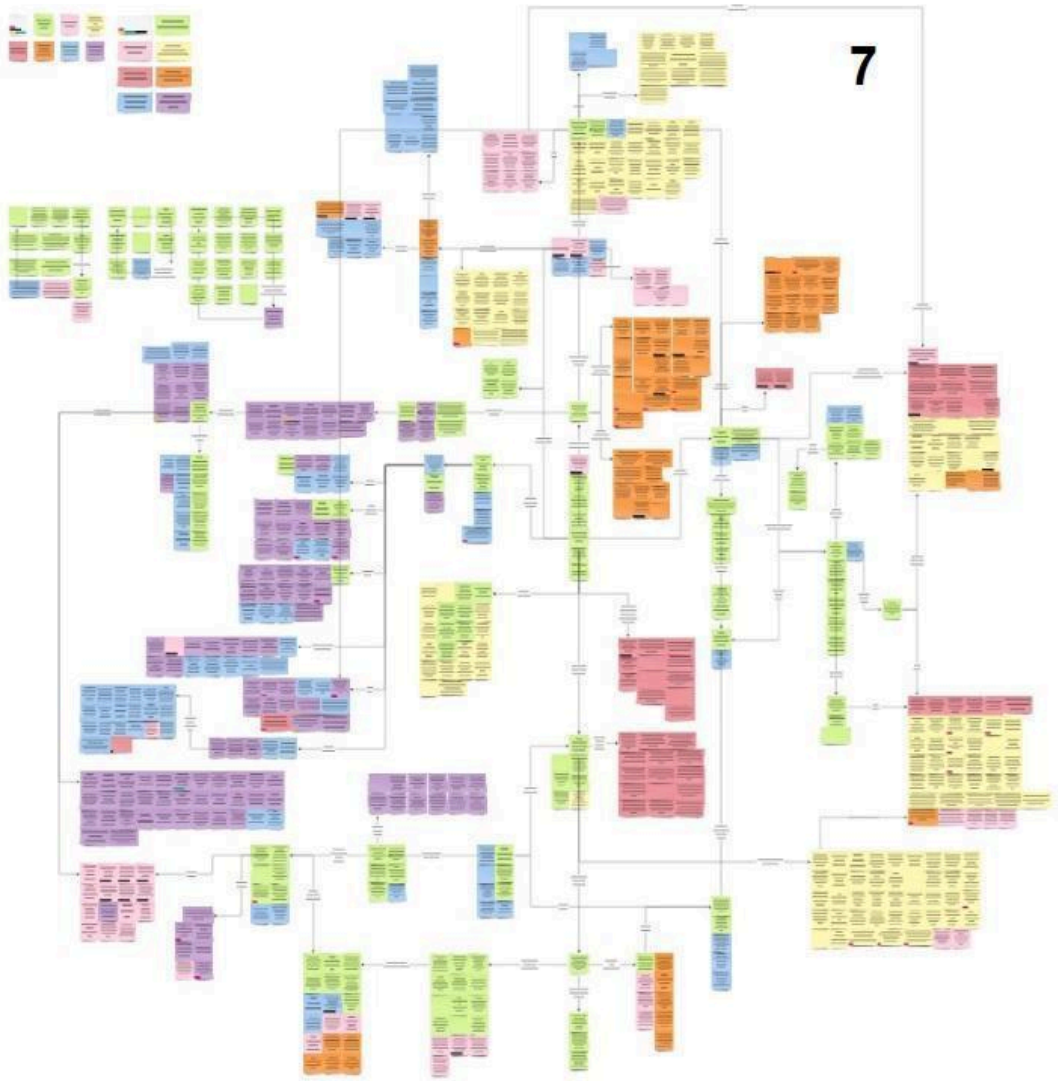


Figure 14. Field Thematic Analysis Map.

2.6.1. Applying Field Data Analysis protocol

After transcribing and translating the interviews, the data was organized into a single file, with different tabs corresponding to each enterprise, and, keeping each sentence or fragment containing an idea per cell, as Figure 15 shows:

Figure 15. Classifying Interviews data.

The text from interviews was read thoroughly, with common, relevant, incident words and concepts highlighted to convey the initial tags:

- people
- products
- company values
- sustainability

- kitchen operation
- management
- relationship.

These initial codes were analyzed across venues and unfolded into initial ideas and primary Themes, which were color-coded for easier visualization:

- company culture: awareness and commitment to sustainability, employee well-being and work culture, customer engagement and education;
- financial and governance: daily routines and tasks, challenges faced in operations, innovation and flexibility in roles, employee roles and responsibilities, salaries, fair practices with suppliers;
- sustainability: use of organic products, support of local and small-scale suppliers, waste reduction strategies, and energy efficiency or green energy use;
- employee well-being: motivation for joining the company, alignment of personal values with company values, career development, and job satisfaction;
- customer engagement and education: customer education, transparency, community engagement;
- law: specific legislation to enforce or forbid behaviors and/or actions.

The data collected during observation (field notes, self-audio files) was compiled in the same file as the Interviews, with one tab per company and one idea per cell, as shown below (Figure 16):

Figure 16. Classifying Observation data.

The inserted information was then carefully read, again, single-company, then across companies, essential words identified and highlighted as the previous set, generating an initial coding, resulting in the following tags:

- people
- production
- waste (ingredients and resources)
- sustainability
- operational
- planning
- management
- team/staff
- customers.

The material from observations was subsequently correlated to the results from the interview phase. Introductory themes rapidly evolved to match the ones proposed previously, understanding some necessary reviews to accommodate odd-fitting insights or eliminating others (like “law”, which at this stage would not be relevant since replicability of this system must adapt to enforce local regulations).

Field data was then crossed with Literature Review insights, resulting in the following final Themes:

- financial
- education and communication
- sustainability and environmental impacts
- tech and tools
- company culture
- people and community
- employee well-being

The immersion has illuminated each of the selected businesses' approaches to the three pillars of sustainability inside the HoReCa environment, as well as its constraints and potentialities. Combining the results represented in the Field Thematic Analysis Map (Figure 14, Chapter 2.6) with the literature review from Chapter 2.3 (Figure 10 Themed Literature Review map), we understood the participants' needs, where structured knowledge can help, and where it lacks. This process has commenced the initial insights for the proposed service.

It has also helped delineate the food system we are directly dealing with, encompassing food and beverage service venues and their immediate production-consumption network (suppliers and customers), with scaling impact on their operation (darker circle), HoReCa and geographical community (intermediate circle), but also further in a city or regional context, as suggested by Zampollo (2024a). This system is represented by (Figure 17 Research Food System Map, based on Stickdorn et al. (2018b, p.57).

This analysis also produced four Personas (Stickdorn et al., 2018b, p.51) emerging from the eight groups identified in the map, seen as active stakeholders, who will be directly affected by the artifact: owner/CEO, cook, service, and back office team.

Figure 17. Research Food System Map.

2.7. Ideation

Following the initial field studies period, ideation was the subsequent step. During this phase, the connections established with the accumulated insights from desk and field research stages plus professional experience became concrete ideas, and the concept of a systemic, human-centered service system with meaningful propositions to embed value-in-use started to become more evident (Baines et al., 2009).

The ideation process was a combination of what Stickdorn et al. (2018b, p. 76) describe as “Ideas from Future-state Journey Mapping” in terms of imagining the “future-state” of the sheets for processes and controls they needed to have and “Agile Development” (Stickdorn et al., 2014, p. 198), giving the proposals a chance to be prototyped, tested (stakeholder interaction) and incremented in a short period. The participants invited for these developments— owners, chefs, cooks, heads of procurement, stock, and communication department, attendants— were the same who would use the tools in real context, and reflected by the Personas, increasing the response and effectiveness of the

process. Once again, the interplay between inductive and deductive thinking yielded potential solutions, which were iteratively prototyped and validated with the selected participants. The co-creation strategy also facilitates the subsequent prototyping and validation, as active involvement fosters a sense of ownership and commitment among participants.

These activities have followed a non-strict protocol based on the methods mentioned above:

- choose participants based on their background knowledge, expertise, and hierarchy;
- gather all relevant information, models, or current-in-use material related to the subject, and contextualize them;
- tackle one item or issue at a time (section of a journey), identifying critical points and opportunities, offering insights gathered from the previous phases of the research (including references and operational protocols from other venues);
- highlight the essential issues to be changed;
- brainstorm, taking notes, and keeping all insights for further evaluation;
- quickly draft a proposition, eliciting how they affect the rest of the journey, what technology and processes are needed, and what is expected from other users (management, colleagues);
- prototype and validate.

With these guidelines in mind, the iterative processes happened during the immersions, every time an issue was perceived or pointed out by the participants. The identified problem was then tracked down to its source and unfoldings, to understand the extension of the solution. Propositions were collaboratively created, tested and refined in context.

Considering the broad spectrum of this challenge, it was split into “more manageable chunks” (Stickdorn et al., 2018b, p.72). Collaborative thematic sessions were conducted individually or in small groups with specific targets for the toolkit during the more extended field studies. Guided discussions resulted in ideas being presented and directed to generate more assertive proposals based on the expertise of the immersion participants through co-creation sessions.

This service system was initially thought to offer free access to literature and tools, with material available for downloading and read-only. A Miro board was used to draft this artifact, compiling insights from the data analysis and ideas gathered from professional experience.

The customer segments identified were all Food Services interested in incrementing sustainability practices, regardless of their reason (company value, award, customer demand, etc.). Besides a constantly updated knowledge base,

the bases of this service system are a network of industry specialists with a focus on sustainability, possible collaboration or partnership with certification bodies for credibility, and the community. The last can be engaged by the online platform products and services, events, training sessions, and guided peer interactions. The initial theoretical inputs of this system can easily be sourced from and connected to our Literature Review findings.

As a social construction, this proposed system combines processes delivered over time with tangible components and multiple possible journeys. It intertwines knowledge built from professional practice, solid information from recognized entities, and technological elements. The process started with planning and research, building understanding from context, gathering and analyzing data, and identifying customer needs. The progression towards a concept development, anchored in a more clearly defined problem, led to a broad scope, a system anchored in interconnected pillars, containing two main parts: a toolkit and a concise knowledge source designed explicitly to foment the HoReCa industry.

Once in operation, the system can be promoted through targeted online advertising in social media, professional network and referral program, industry partners and influencers, HoReCa events, and in a second step, directed digital marketing, like newsletters.

The product-service needs to be presented concisely and eye-catching to grasp Food Service professionals' attention and much-engaged time, and may be done by a website, social media, newsletter, and relationship-based (Figure 18).

As we progressed designing the tools, we invested in drafting an overall structure for this system, conceding that it would be presented to the public through a website with various interaction channels besides the uploaded media. The initial structure resembled a modular educational program, associating theoretical knowledge and practical training. These content modules originated from the themes previously identified from immersion, plus the theoretical and embedded knowledge built to this point, resulting in ten *areas of expertise*, depicted by a Content Analysis Diagram (Figure 19).

First naming and general visual concept ideas started appearing at this time, encompassing a systemic view of the project, the will to grow, the focus in Food Service operations. It would include words like sustainability, education, restaurants, service, system, kitchen.

Subsequently, a Business Model Canvas (Stickdorn et al., 2018b, p156) was drafted to quickly visualize and evaluate the proposition without writing a complete, market-driven business plan (Figure 20).

Figure 18. Artifact draft.

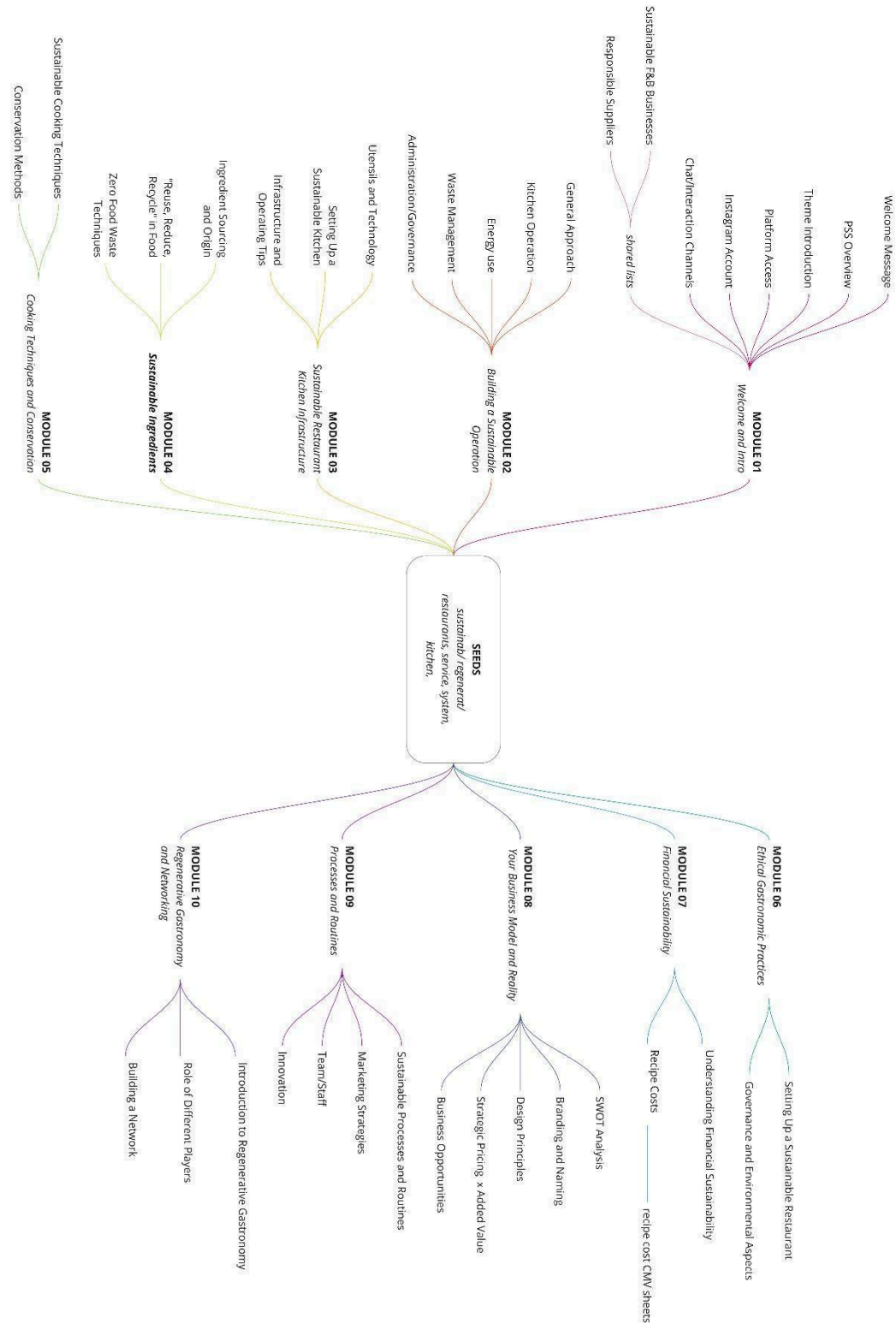


Figure 19. Content Analysis Diagram.

Figure 20. Artifact Business Model Canvas.

Considering the international application of this project and its academic nature, a suitable professional should be involved before it is launched commercially. The same applies to the graphic design of the initial prospect, which was submitted to a speculative budget with licensed designers for informational purposes. One further step to the free access content would be hiring the service in a consultancy format in case the enterprise felt the need for this support to evaluate, implement, or improve the business concepts and operations.

The fundamental insights from these sessions were buffered, combined with critical reflections and ideas accumulated in this study, inspiring the proposed artifact— presented in Chapter 6. The primary module idea started developing into a Circular Food System concept, regrouped by macro-areas, more tuned with the HoReCa operations and connected with the literature review (Figure 21).

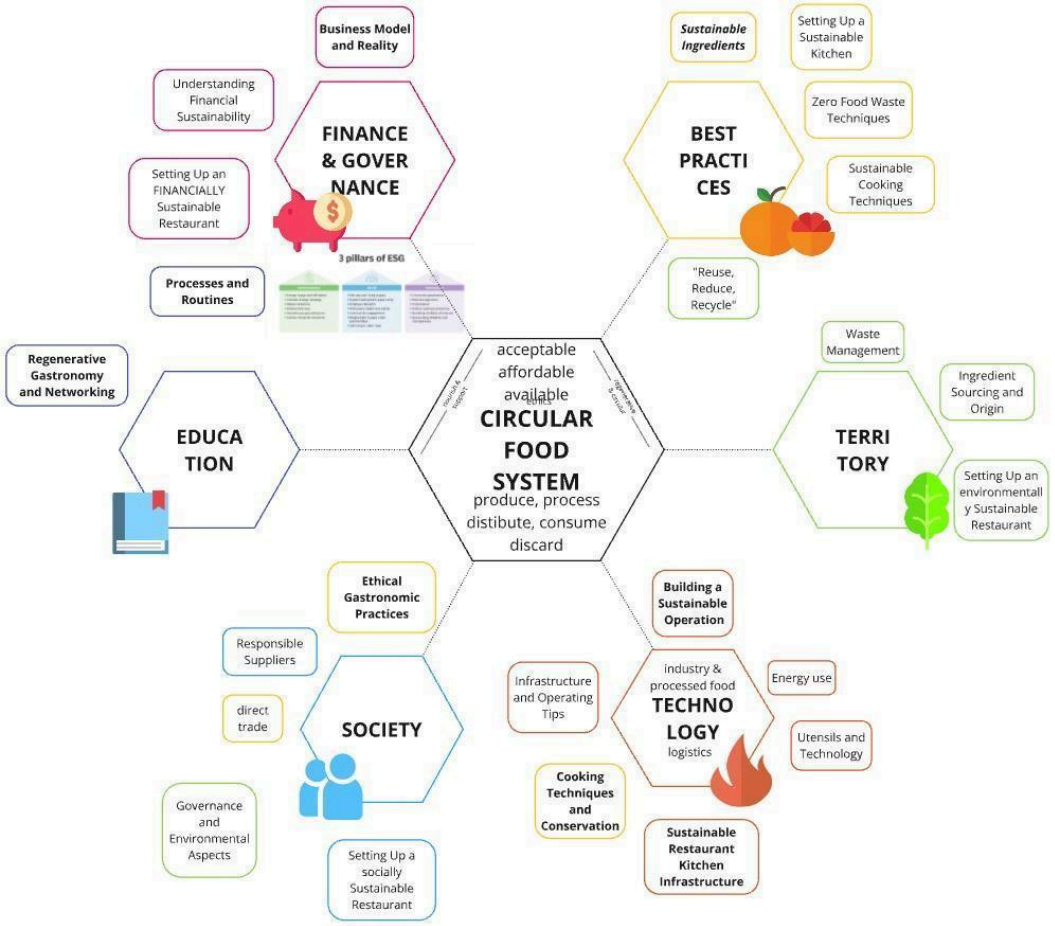


Figure 21. Circular Food System Insight map.

Content distribution and access was then categorized into practical/operational information, comprising the toolkit (lists, sheets, cards), interaction channels (Instagram, LinkedIn, WhatsApp, e-mail, forms, and website), and theory (curated content based on the Circular Food System

principles and links to original data source for deeper interest) as shown on Figure 22.

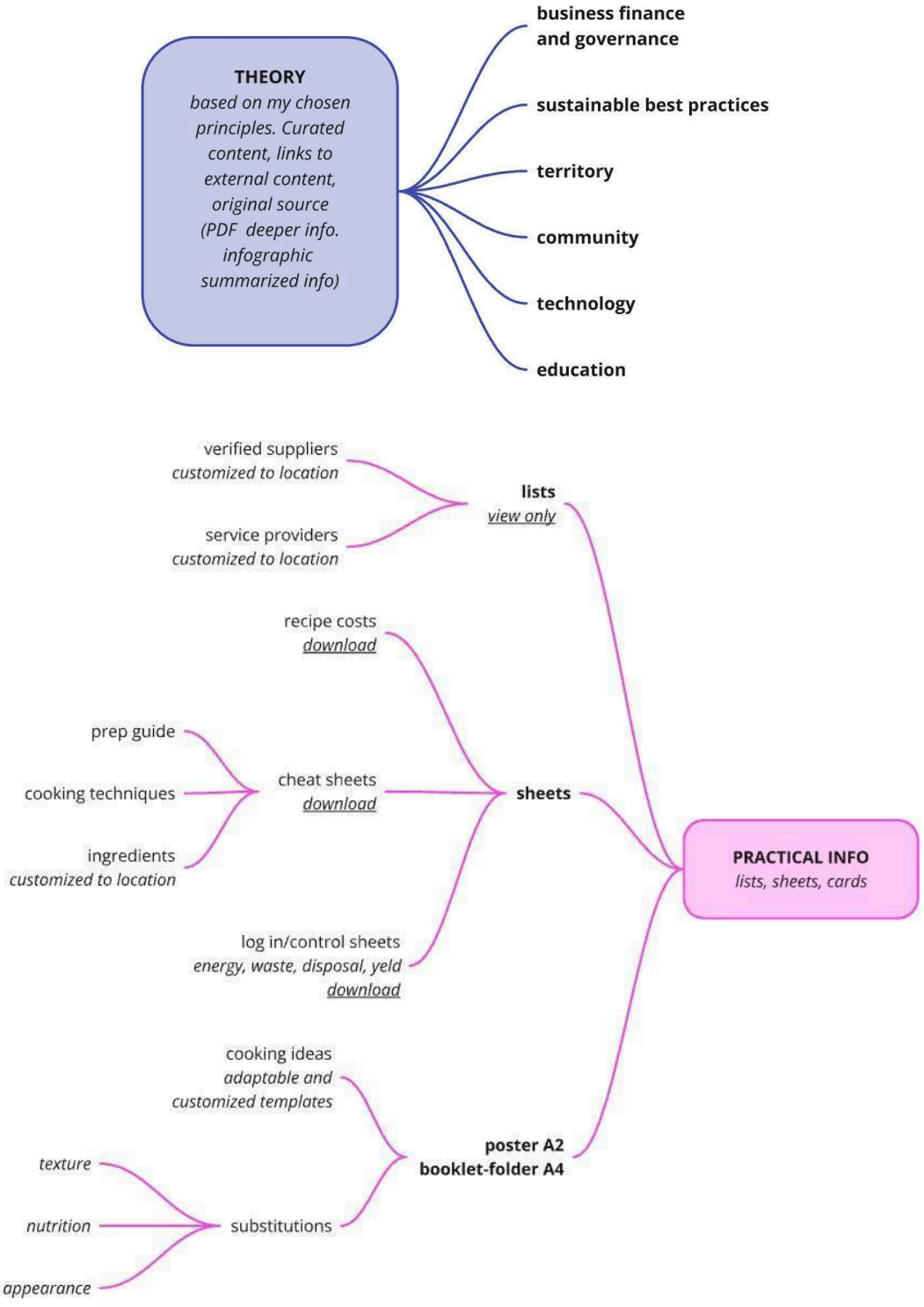


Figure 22a. System content categories.

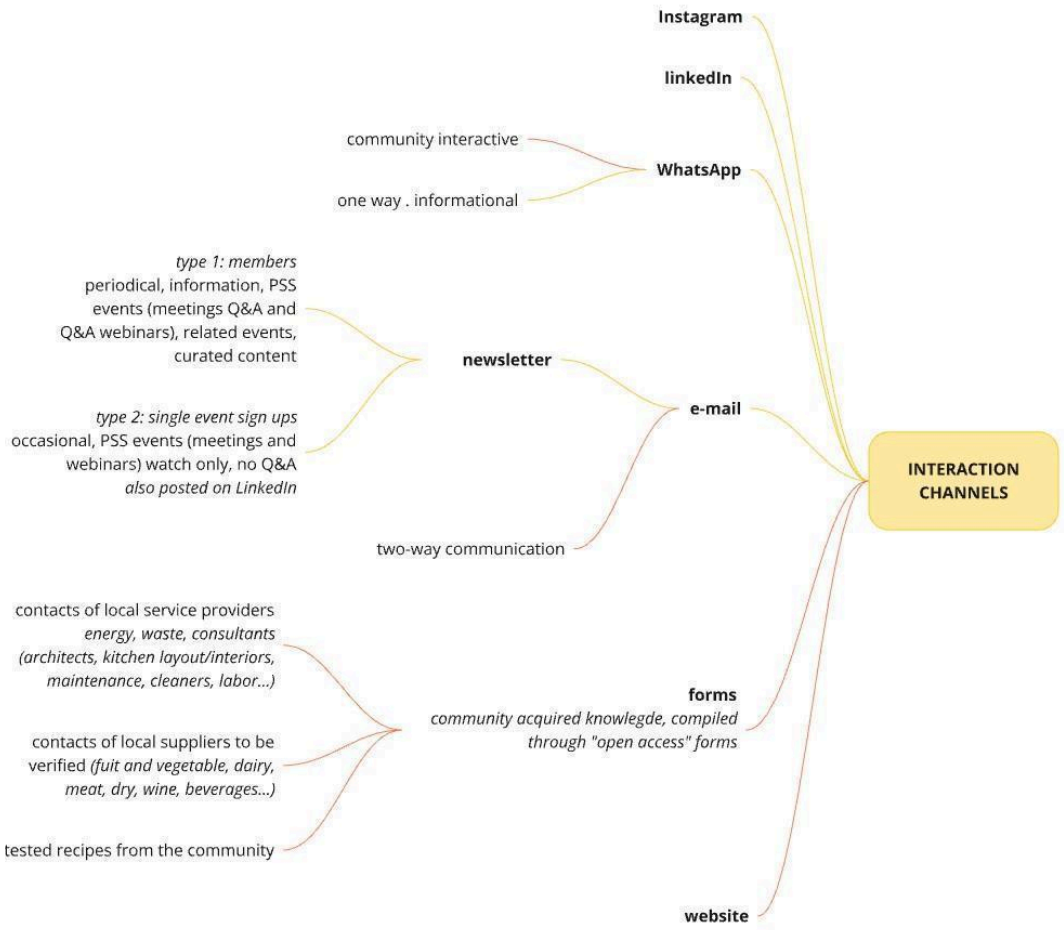


Figure 22b. Artifact content categories.

The platform was conceived to be free-access, with content availability separated into non-members and members (sign up required, increase engagement and database), and a secondary service development as a consultancy (Figure 23).

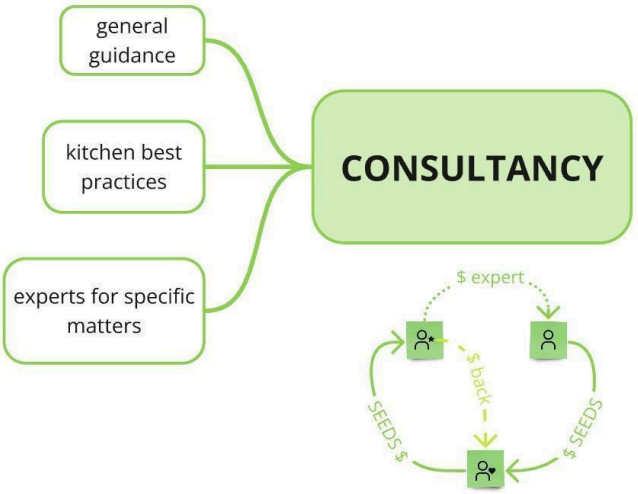


Figure 23a. Artifact access paths

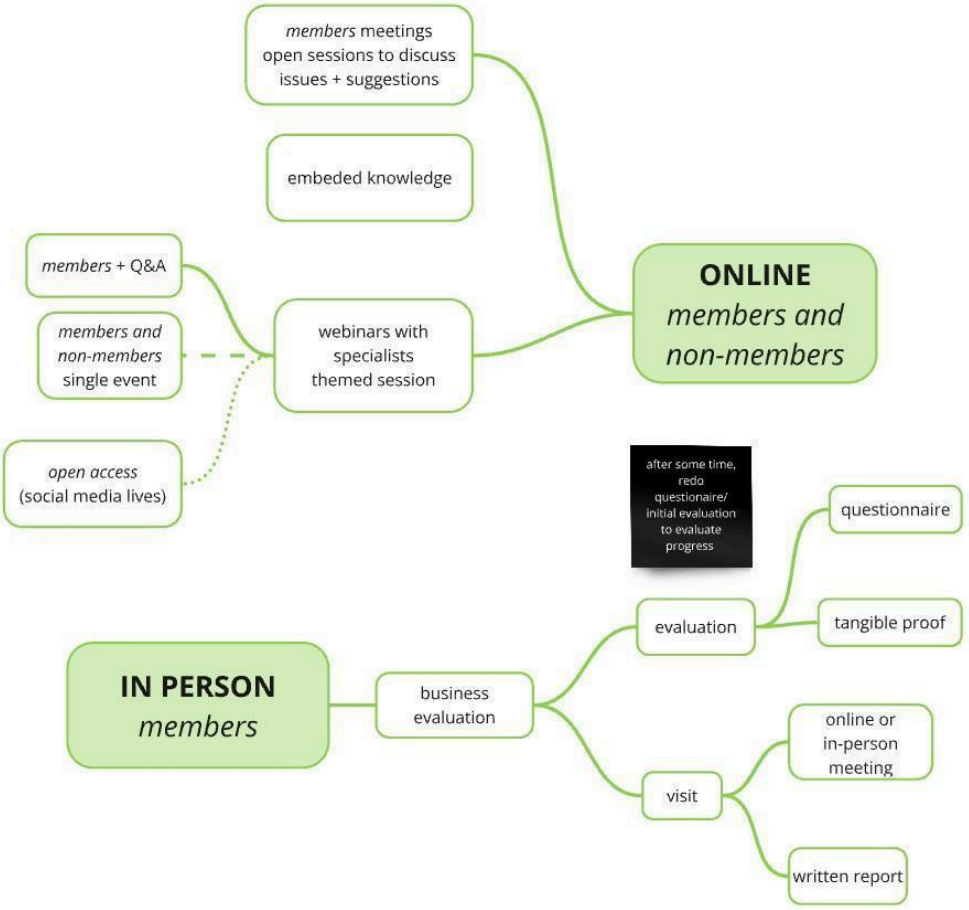


Figure 23b. Artifact access paths.

2.8. Prototyping

The prototyping phase dived further into the study's scope, leveraging learnings and insights from the field with comprehensive literature reviews. This phase encompasses the presentation, validation, and refinement of co-created solutions throughout the immersion process. These findings are translated into visual representations, textual documentation, and practical tools integrating the artifact system (IDEO, 2024b; 2024c). Engagement with specialists and carefully selected participants underscores the validation process (Manzini, 2015). Interactions occurred seamlessly within the chosen participants' work shifts, fostering a holistic engagement with the proposed solutions.

A few methods framed this stage, which happened during the Work Along observations, particularly associated with solving immediate issues in the daily operation of the businesses. “Contextual Prototyping” (Stickdorn et al., 2018a, p.419) suited this need, accommodating the iterative process of developing and incrementing the tools in context with the users and testing efficiency in real-time. Similarly, using "Agile Development" (Stickdorn, 2014, p. 198) and “Formative Testing” (Barnum, 2011, p.14) to diagnose and fix problems while the product is in development, the prototyping phase adheres to the focal "key objectives" of the

processes, fostering adaptability and evolution throughout the project's lifespan. Given the iterative and co-creative nature of the process, rapid testing, evaluation, and refinement of proposed solutions were feasible.

Chapters 5.1 Enoteca Saint VinSaint and 5.3, The Slow Bakery present and illustrate the specifics of this prototyping phase, which is part of the artifact's toolkit. These two companies have hosted the more extensive immersion periods, allowing for deeper understanding of the operational issues, and permitting collaborative ideation sessions, with immediate contextual prototyping and validation. Some insights were brought from Enoteca to The Slow Bakery, where there was even more time to test and increment.

2.9. System Concept and Value Usability Test

The ultimate phase is the validation phase. It follows the iterative progression of immersion, ideation, and prototyping, culminating in refined solutions, which are subsequently evaluated and treated to attain an optimal answer. Based on the outcomes of the preceding stages, the proposed artifact consists of various tools, schemes, and data presented as a service system. As per the Practice-Led Research methodology, the artifact is an important outcome of the research process, although optional.

This section presents the methods and prototyping protocol based on Carol Barnum's (2010, p.145) formal test plan, used to validate the concept and value perception of the resulting artifact. Polaine et al. (2013, p. 128) infer the need to check the concept and value understanding by asking users if they:

- understand what the service is/does;
- see value in it when applied to their life;
- understand how to use it.

The reflections and final results, after the testing and perfecting phases, are presented in Chapter 6.3.

The complete system, portrayed as a website, has been tested as a moderated, in-person, qualitative system concept usability test (Rubin & Chisnell, 2008; Barnum, 2011; Polaine et al., 2013; Stickdorn et al., 2018a). The website was designed using Canva, and all external links were available to the users (Google Suite items — open access— or full version of theoretical references).

The objective was to identify and evaluate the overall experience of the platform with different types of users and, more precisely:

- to gauge the perceived utility or value of the proposed system;
- to assess its practical in-context applicability;
- to trace an initial service journey based on the test protocol.

2.9.1.
Usability Test Data Collection

Although the tests were conducted in context, they could not be experimented in full validity due to establishments' operational constraints; hence, assessing the real-time learning curve and practical application of the proposed artifact was not possible. Still, we understand estimates are close enough at this stage, particularly after spending quality time at venues. Scenarios were presented to each participant to simulate everyday situations and determine when and when the artifact would be used. The tests resulted in qualitative data acquired from the participants, presented in Chapter 2.9.1. Usability Test Data Analysis.

The objective of the test was to gauge:

- Is the concept clear to the user?
- Have they previously experienced similar platforms, knowledge-base, or tools?
- Do the proposed resources meet the users' interests and needs?
- Can users find the necessary information to complete the proposed tasks without assistance? (is it efficient)
- Are all the resources easy to access or download (whenever possible)?
- Is it clear where and when each resource applies?
- Can users successfully fulfill the proposed task using the available resources? (effective)
- What are the resources' general and specific gaps or faults?
- How easy or difficult was the general website navigation?
- How well does the website respond to the needs and goals of the user?
- What are the navigation obstacles, errors, and recovery?

Location and setup

The sessions were conducted in person and at the participants' workplace. Even working with routine-based scenarios, testing the platform in the work environment brought the experience closer to reality, and the users were directed to use web or mobile versions accordingly. More administrative-like tasks involving sheets and planning were primarily conducted on a computer, likely in an office environment. At the same time, instant decisions or practical information could be accessed inside the kitchen on a mobile. The establishment's computer or personal smartphone has been used for this test through the links provided.

The sessions were performed and monitored by a single researcher (recorded with a mobile device). Information was manually registered for each scenario using paper notecards designed for this specific purpose (Table 12). Figures, interviews, and debriefing sessions were registered with a mobile device

when appropriate. The recordings were transcribed with Turbo Scribe and translated (if not already in English).

Notes . September 2024

User profile		Task name	Time	Issues	Positive aspects	Quotes	Observations
name, role		sign up					
Interview		database and tools					
1. As a cook interested in sustainability, do you do online research?		recipe cards					
2. What reference websites or projects do you have?		cheat sheets					
3. What mainly drives your attention at them?		verified suppliers					
4. What do you consider your main struggles when doing this type of research?		cost sheets					

Table 12. Notecard for Concept and Value Usability Tests

The usability tests were carried in English or Portuguese and adjusted to each party's choice of language. The system concept tests focus on the contents, tools, information provided, and value perception, keeping specific graphic design and informational architecture concerns secondary. The website was designed to host the information and tools offered by the service system and direct users to more specific communication channels, so testing more comprehensively has allowed us to gather data on usability measures.

The tests were conducted from September to December 2024, starting with a pilot for technical and instruction adjustments[19] and then proceeding with selected users. Participants were chosen based on their expertise and/or previous engagement with the research (from observed companies, for example). The sessions were conducted in Bologna, São Paulo, and Rio de Janeiro.

Recruiting participants

Participants were mainly selected from the field studies phase, considering different career experiences and positions in the HoReCa operations. They were, nevertheless, all professionals with a certain level of decision-making, culinary skills, and basic Google Suite familiarity. There were 19 participants, acting individually or in pairs or trios as in Barnum's Co-Discovery (2011, p.218)— on typical professional situations. For a global perception and value assessment,

[19] The pilot was tested online with two experienced professionals, one chef and business owner and one executive chef, whose familiarity with technology is notably above average for the market, making great contributions at this stage.

two industry experts were also consulted without performing the task-based part of the protocol (Table 13).

Concept and Value Usability Test

Venue	Participant Role	Tasks	Period
Enoteca SaintVinSaint	*owner*	concept and value overall analysis	November 2024
	chef	sign up, scenario chef	November 2024
	experienced cook	sign up, scenario experienced cook	November 2024
	junior cook	sign up, scenario junior cook	December 2024
The Slow Bakery	*owner*	concept and value overall analysis	October 2024
	head of operations	sign up, scenario chef, concept and value overall analysis	October 2024
	chef	sign up, scenario chef	October 2024
	experienced cook	sign up, scenario experienced cook	November 2024
	experienced cook	sign up, scenario experienced cook	November 2024
	junior cook	sign up, scenario junior cook	November 2024
Ocyá	*owner*	concept and value overall analysis	October 2024
Pasto Nomade	*chef/owner*	sign up, scenario chef, concept and value overall analysis	September 2024
	experienced cook	sign up, scenario experienced cook	September 2024
	junior cook	sign up, scenario junior cook	September 2024
	junior cook	sign up, scenario junior cook	September 2024
CB	*industry expert*	concept and value overall analysis	October 2024
ML	*chef Instructor*	sign up, scenario chef, concept and value overall analysis	December 2024
JN	*chef/owner*	Pilot: sign up, all scenarios, concept and overall analysis	August 2024
RD	*executive chef*	Pilot: sign up, all scenarios, concept and overall analysis	August 2024
Total participants	**19**		

industry expert: business owner, consultant, instructor, head of operations, etc.
chef: full decision-making power, management position
experienced cook: over 2 years experience, senior position at job
junior cook: over 1 year experience, middle position at job

Table 13. Concept and Value Usability Test Participants.

The system test was carried out to assess qualitative data, such as the usability, effectiveness, and overall value of the proposed service. Participants were assigned tasks, starting with a quick browse through the website so they would get familiar with the platform and then sign up. The tasks at this stage included visualizing and/or downloading tools, accessing the knowledge base, and signing up for newsletter and mobile-based communication groups.

Participants were given assignments according to their profile scenarios, executed randomly to avoid bias, as proposed by Rubin and Chisnell (2008, p.75) “Within Subjects”. The pilot sessions lasted around 1h20min and included all scenarios and technical adjustments (like Google Suite limited access or broken links). The standard session lasted approximately 45 minutes, with 15

minutes for introductory and debriefing questions and 30 minutes for task-focused.

For the “industry expert” profile, the specific tasks were skipped, and the test was more focused on gauging overall value perception, with the presentation of the system's concept and its functionalities. All personal information needed for signing up or logging in was preset to reduce unnecessary exposure of the participant's personal details.

The brief introductory interview was intended to gather impressions on the individual's particular interests and depth of knowledge of sustainable practices, which might impact the overall experience. As the tests were conducted solo, the researcher introduced the subject, conducted the interviews, presented the tasks, and monitored the participants, taking notes (on individual Notecards) and recording the participants' actions/reactions via audio or photos from a mobile phone. The Pilot and subsequent standard tests followed a written script (Rubin & Chisnell, 2008, p.154; Barnum, 2011, p. 167) to prevent bias or forgetting steps and ensure that all participants were offered the same paths and conditions.

Tasks

Participants were given scenario descriptions according to their category, with tasks 1 and 2 being the same (browsing and sign up), and the others presented in random order. The test evaluated whether participants accomplished the tasks and how much time was needed—this sequence aimed to measure the website's user-friendly design and wording. As previously mentioned, the “industry expert” profiles did not follow the tasks but freely browsed with an explanation of content and tools and gave overall feedback. Tasks and scenarios are described in Table 14. Concept and Value Usability Test Protocol.

System Concept & Value Usability Test

Introduction

Present the projetc;
Present the Cconcept and Value Usability Test;
Explain the moderator´s role - unscripted follow-up questions could emerge to clarify participants' behavior and expectations;
Clarify any questions regarding computer and mobile use;
Inform of the Protocol for the session (Table 13) - read and conducted similarly to avoid bias or interfere minimally with the results;
Thinking aloud - explain what it is and the importance of this practice.

Background interview

Participant´s experience and knowledge in kitchen operation
Participant´s experience and knowledge of Google Suite, navigation
Participant´s interest or understanding of similar databases/tools

Specific Questions

1. As a cook interested in sustainability, do you do online research?
2. What reference websites or projects do you have?
3. What mainly drives your attention at them?
4. What do you consider your main struggles when doing this type of research?

Table 14a. Concept and Value Usability Test Protocol.

System Concept & Value Usability Test

Scenarios . Tasks

Cooks

1. BROWSE: After a busy morning service, you're in the kitchen during a brief break when you overhear a colleague talking about a new platform offering sustainable cotent and practical tips for kitchen operations. They're mentioning how it helps chefs deal with some of the daily challenges like menu planning, ingredient substitution, techniques. Curious, you decide to check it out for yourself.
2. SIGN UP: You grab your phone, search for the platform, and find it easily. The sign-up page pops up, offering the chance to create an account. You enter your details, feeling optimistic about potentially improving your kitchen's sustainability practices.

Junior Cooks

3. RUINED PRODUCE: It's a hectic day in the prep kitchen, and you're feeling the weight of the clock. The kitchen is buzzing with activity, and there's barely a moment to think. The chef had planned an Asian-inspired salad featuring eggplants, but when the delivery arrived in the morning, you found most of the eggplants ruined by worms. "It´s nature, she says". The plan has gone out the window, and now you need to think quickly. With time running out, you remember the new platform the chef mentioned—it's been a bit of a lifesaver lately. You quickly log into the website and try to find recipe ideas or ingredient substitutions
4. INGREDIENT OVERLOAD: It's the afternoon, and you've just finished prepping for the dinner rush when you realize that there's been a huge delivery of pumpkins. The chef ordered them as a secondary ingredient, but now there are so many that you can't possibly let them go to waste. You know it's going to be a challenge to use all these pumpkins, and there's a risk your regular customers might start noticing the abundance of pumpkin in everything if you're not careful. You browse the tools section for a quick guide on how to cook pumpkin in multiple ways and not waste any bit —roasting, steaming, and pureeing—and decide to use these techniques to create a variety of preparations: roasted pumpkin wedges, pumpkin puree to replace the original eggplant in one dish, and pumpkin added to a stir-fry for a twist on the original menu.

Experienced Coooks

After signing up, you find yourself on the platform's homepage. The content is neatly organized into two main sections: one dedicated to in-depth theoretical resources on sustainability in the HoReCa industry, and another offering practical tools to help you implement these practices in your daily work.
3. RUINED PRODUCE: You´ve just received a delivery with a batch of bananas that were meant for the day's dessert. As a produce-based menu, receiving items in short advance is just part of your routine. However, when you open the crate, you see that the bananas are already over-ripe—too mushy for the intended dish of banana fritters. The chef had planned to use them, but now you need to make a decision quickly to ensure they don't go to waste. You take a moment to think it through. You've got a solid grasp on ingredients, and you know that ripe bananas must be perfect for some recipe. You can´t make drastic changes to the menu without the chef, and you still need to meet the expectations of the customers. You quickly check the platform for ideas on how to use overripe bananas without taking a big risk.
4. LAST MINUTE SUBSTITUTION: During the lunch service, a customer reported an allergy to tomatoes but insisted on having the dish. The server has tried to explain this, but it is no use. Now you have to adjust quickly. It´s a nice, recurring customer with this newly found dietary restriction. This request comes in during the busiest part of the service. You take a deep breath, assess the situation, and consider your options. You know the newly discovered platform will help you.

Chefs

1. BROWSE: You're in the middle of your workday, handling a not-so-busy lunch service, when a colleague mentions a new platform designed to help improve sustainability in kitchen operations. They mention it's free and offers resources like case studies, checklists, and tools to make it easier to address challenges like food waste and energy management. Intrigued, you decide to take a moment to check it out.
2. SIGN UP: After quickly navigating to the website, you're prompted to sign up for free access. As you sign up, you learn that while all the content seems to be is free, you need to create an account to access or download specific tools and receive updates via a newsletter. You decide to sign up using your details, eager to explore more about how sustainability can be integrated into your kitchen."
3. NOT ENOUGH: You're preparing for a big weekend event, and one of the key dishes—sweet potato gnocchi—is essential for the menu. However, your usual supplier calls to inform you that they don't have enough sweet potatoes to fulfill your order, and they can't provide a timely substitute. You can't alter the dish, as it's a signature item, and the event's reputation is on the line. You know all too well that some last-minute changes could affect both quality and costs. You decide to log into the platform for help.
4. PRICING: You've just finished designing the weekly menu for your restaurant, and now it's time to ensure the prices reflect your costs while maintaining profitability. Each dish has been carefully crafted, but you need to do the math to make sure your pricing is in line with the food cost percentages you've set for your business. However, you don't have a cost sheet. You've been so busy with other tasks that it's always been pushed to the back burner. You've tried setting one up in the past, but the formulas and design were too much to handle, and it ended up being more trouble than it was worth. Now, you're facing the challenge of pricing everything without the organized structure you need. You remember seeing something in that new platform, they must have something to help you get started.

Table 14b. Concept and Value Usability Test Protocol.

System Concept & Value Usability Test
5. HIRING: Your restaurant is expanding, and you need to hire a new member for the team. However, finding the right person for the job can be time-consuming, and you want to ensure you're choosing someone who aligns with the values of your restaurant. You heard your HR manager saying something about an up-to-date list of potential candidates, each with professional information, previous experiences, and detailed recommendations. You find the one candidate that stands out to you, and upon scheduling the interview, she mentions a few embarrassing situations from her previous job. You don't risk being this kind of company, and want to get more knowledgeable of standards on workplace culture, sustainability, and ethical practices. You decide to interview the candidate and look for guidelines to ensure your company is ethical and aligned with your values. 6. RESOURCES: As the chef/manager, you are constantly aware of the impact of energy, water, and food waste on your restaurant's costs and sustainability efforts. You want to improve the management of these resources, but tracking them manually has always been challenging. You turn to the platform to see if it can help. **Debriefing and post-test Questions** https://docs.google.com/forms/d/1JPe249S4Qsh14DFBlL7ScDe6ljpLk_6KTwhCJxV9H48/edit **Observe** How easy or difficult was the general website navigation? How well does the website respond to the needs and goals of the user? Can users successfully fulfill the proposed task using the available resources? (is it effective?) Was their experience was satisfying or enjoyable (engaging)? Quotes The appropriate use of wording and terminology Steps or paths taken to reach the desired content Common path errors and inconsistencies, and recovery.

Table 14c. Concept and Value Usability Test Protocol.

Post-test debriefing

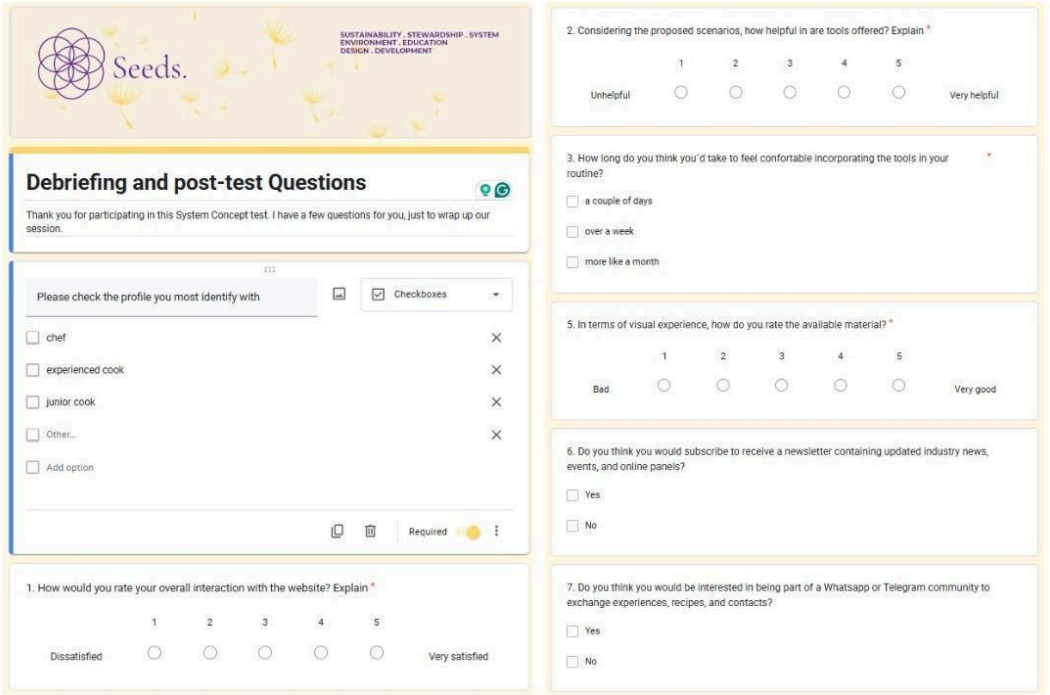


Figure 24. Debriefing Questionnaire.

After the test, participants were invited to follow a link to a questionnaire (Figure 24 above), made up of broad, open-ended questions to gather information about:

- Concept clarity of the service system;
- Proposed resources meeting or not the users' interest and needs;

- Users find the information they need to complete the proposed tasks without assistance (Efficiency);
- Resources simple to access or download (whenever the case);
- Clarity about the location and use of each resource;
- Will to sign up for access, newsletter, community group;
- General and specific gaps or faults or the resources offered.

Observation

Each session had a notecard, which allowed information to be entered manually. Throughout the observation, actions or reactions expressed verbally ("Think Aloud" method) or in facial expressions, body language, and other nonverbal articulation (suggesting positive or negative participation) were recorded under Observations. The notes tried to register:

- How easy or difficult was the general website navigation?
- How well does the website respond to the needs and goals of the user?
- Can users successfully fulfill the proposed task using the available resources? (is it effective?)
- Was their experience satisfying or enjoyable (engaging)?
- The appropriate use of wording and terminology
- Steps or paths taken to reach the desired content
- Common path errors and inconsistencies, and recovery.

2.9.2. Usability Test Analysis

After the tests were terminated, notecards were gathered and analyzed as described in Chapter 2.6, resulting in a Usability Test Thematic Analysis Map (Figure 25 below).

After this, implementation started. Some were more structural, such as presenting contents in a different order, while others were practical, with sheets indexed or modified according to newly discovered functions. Whenever relevant, we have provided visuals of the platform/tools pages to illustrate specific issues brought up during the test and how they were dealt with. All the final results, with implemented improvements, are presented in Chapter 6.4.

Overall, the analysis resulted from a qualitative evaluation of the sessions, covering:

- Thoughts and comments expressed verbally or in facial expressions, body language, and other nonverbal articulations suggesting positive or negative participation;
- Quotes representing insights, critics, or relevant thoughts;

- Post-task and Post-test debriefing interviews with open-ended questions when participants could express their feelings towards the experience.

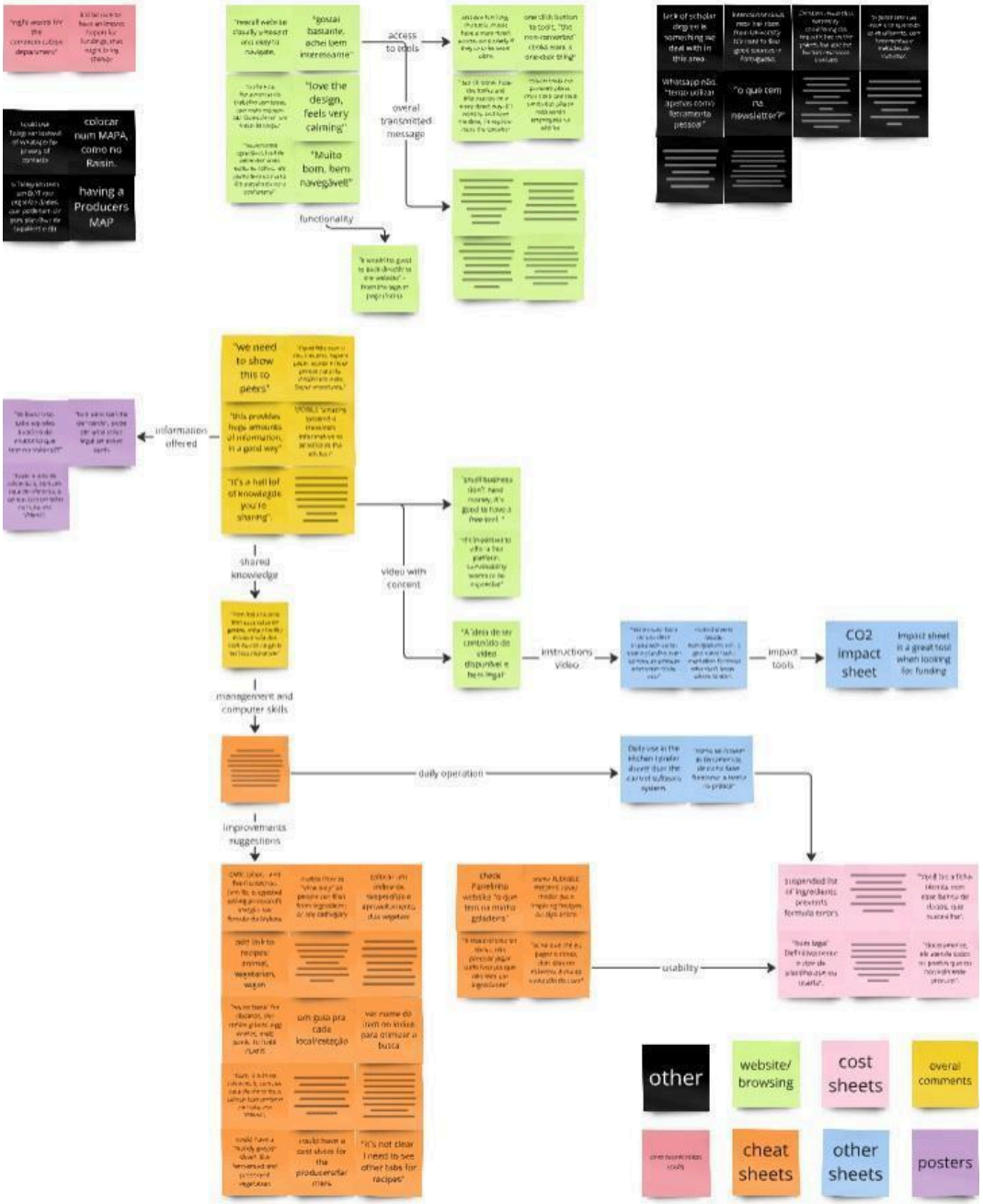


Figure 25. Usability Test Thematic Analysis Map.

We have also been able to secondary assess:

- The appropriate use of wording and terminology
- Steps or paths taken to reach the desired content
- Common path errors and inconsistencies.

Based on the proposed structure, these next chapters present the results from literature review (Chapters 3 and 4) and field studies (Chapter 5) critical analysis. The intersection of these insights is shown in Chapter 6, with an artifact proposition and validation, a complementary piece in the PLR process. Final considerations in Chapter 7 conclude this study.

3
HoReCa Sustainability Initiatives, Manifestos, Certifications and Awards

“Food can express culture more than words can, with one bite. It's beyond the language barrier” (Omar Sartawi in MIRZA, 2021).

This chapter brings the first results of the literature review, more specific to the F&B sector, depicted in Figures 09 and 10 in Chapter 2. During content analysis, the resulting reference board and context of interest map have highlighted the intersections of Food Design with international bodies and NGOs (FAO, UN, European Commission, etc.), sustainability reports, awards and certifications, circular economy principles, and food systems entities and stakeholders. Insights regarding references for the proposed artifact were also collected during this stage.

The HoReCa sector is a complex, intricate system, ranging from its supply chain to final consumers. For those trying to implement and support more ethical practices within the industry, debates, manifestos, educational programs, networks, supply chain certifications, and awards seem to be a way to undo or at least reduce the damage already done and a path to a more positively impacting, less degrading industry.

Those working closely with the food systems, seeing themselves as food designers or not, are key stakeholders in shaping the necessary collective transformations. Schifferstein (2020) argues that interventions in the food production-consumption chain linked to sustainability are a shared responsibility. The author also emphasized creative chefs' inspirational power, stimulating peers and researchers to collaborate in practical applications of Food Design (Schifferstein, 2023). This cooperative effort from restaurant owners and chefs is helping shape more balanced food systems, or at least delineate what it should be. Chefs use their media access and recognition to demonstrate support for fair practices, bringing other players together. Food producers, policy-makers, and consumers must join this effort for an actual positive change.

This chapter showcases some practical examples of chefs' voices, industry certifications and awards, or other worldwide initiatives. It also reflects on their impact and practical application, weighing their effectiveness and adequacy. It also considers their relevance and practical application, pondering whether they are effective or adequate. Collectively, these perspectives edify the power and responsibility of gastronomers and (as) food designers in promoting sustainability principles and moving the HoReCa industry forward.

3.1
Gastronomers, Chefs and Restaurants

"The most important ingredient in cooking? Culture. With culture comes knowledge, with knowing it with consciousness comes awareness, with awareness comes commitment." (Ducasse & Regouby,2017, p. 98).

The word *restaurant* originates from the French verb *restaurer*, meaning *to restore* or *to refresh.* Initially, it referred to places offering restorative broths and later evolved into establishments providing meals for nourishment and recovery (Walker, 2010). Far from restoring, we have seen a sector growing with negative impact in multiple aspects of its system. The restaurant (HoReCa) culture has broadly shifted toward profit and quantity over equity and quality, becoming an essential player in the food chain crisis. The word's etymology aligns with this research belief on restaurants' role in restoring individuals and entire food systems. When decision-makers become conscious of their role and responsibility, some inspiring professionals and businesses show there is still room for change.

From a sustainable point of view, production, consumption, and disposal need to be re-signified. Beyond promoting sustainability, proposing changes in individual consumption habits culminates in a culture shift. Food production processes must pass through the pillars of reduction, full use, reuse, and recycling. Besides analyzing the food chain at all stages, it is essential to review individual consumption habits. Participatory, collaborative, and circular economy models fit into the understanding that the economy, environment, and society are interdependent parts. There is a budding awareness of each actor's role, with changes in their choices resulting in long-term effects. The food industry must share responsibility with the final consumer, with initiatives reinforcing regionalism, embracing social and environmental health, and connecting for systemic change.

In September 2022, the online panel *The Contribution of Gastronomy to the Achievement of the Sustainable Development Goals* (SEGIB, 2022) brought specialists to discuss critical aspects of gastronomy's transformative potential within the context of achieving the SDGs by 2030. During the debate, the specialists emphasized the capacity of gastronomy to elevate local agriculture and small-scale producers while encompassing broader cultural and territorial dimensions. They also introduced methodologies and strategies for utilizing gastronomy to advance SDGs, presenting Sustainable Gastronomy as a framework for strategic decisions along with gastronomy's potential for responsible transformation and economic collaboration, especially in addressing regional inequalities in Latin America.

The panelists underscored the role of gastronomy as a driver of sustainable development, aligning with the SDGs to address climate challenges and ensure global nutrition through cooperation and long-term community engagement. Complementary, they emphasized responsible consumption and waste awareness in gastronomy. For Iñaki Gaztelumendi, the F&B sector is

> "a sector that has been one more expression of an economic system that has rested uncritically on a growth model that causes territorial imbalances and social inequality, and that has evident participation in activities that generate greenhouse gases, that consume excessive natural resources and that produce waste. On the other hand, gastronomy suffers directly from the consequences of the dominant economic thinking, climate change, and the overexploitation of the planet" (SEGIB, 2022, p. 16).

Pioneer in the farm-to-table movement, chef, and restaurant owner Alice Waters wrote a few rules describing what gastronomy should be and represent:

> "Eat locally and sustainably. Learn where your food comes from and how it is produced. Seek out a diverse variety of vegetables and fruits from small, local producers who take care of the land. Buy eggs, meat, and fish from producers whose practices are organic, humane, and environmentally sound. Eat seasonally. Choose food in season. Even where the growing season is short, organic gardening and farming can extend it: Greens can be grown in cold frames and greenhouses, and there are always local foods that can be stored, dried, and canned for the winter months. Eating seasonally inspires your menus, gives you a sense of time and place, and rewards you with the most flavorful food. Shop at farmers markets. Farmers markets create communities that value diversity, honesty, seasonality, locality, sustainability, and beauty. Get to know the people who grow your food. Think of yourself as a partner with the farmers, learning from them and working with them. Plant a garden. It is deeply satisfying to eat food you have grown yourself, in your own backyard or in a community garden. Even a pot of herbs on your windowsill can transform your cooking and connect you to the changing seasons, as can foraging for wild foods and harvesting fruit from farms that allow you to pick your own. Learn what the edible landscape has to offer. Conserve, compost, and recycle. Take your own basket to the market. Reuse whatever packaging you can. Keep a compost bucket nearby when you cook to recycle kitchen scraps. The more you conserve, the less you waste, the better you feel. Cook simply, engaging all your senses. Plan uncomplicated meals. Let things taste of what they are. Enjoy cooking as a sensory pleasure: touch, listen, watch, smell, and, above all, taste. Taste as you go. Keep tasting and keep practicing and discovering. Cook together. Include your family and friends, and especially children. When children grow, cook, and serve food, they want to eat it. The hands-on experience of gardening and cooking teaches children the value and pleasure of good food almost effortlessly. Eat together. No matter how modest the meal, create a special place to sit down together and set the table with care and respect. Savor the ritual of the table. Mealtime is a time for empathy and generosity, a time to nourish and communicate. Remember, food is precious. Good food can only come from good ingredients. Its proper price includes the cost of preserving the environment and paying fairly for the labor of the people who produce it. Food should never be taken for granted." (Waters, 2017)

French chef Alain Ducasse affirms eating is a civic act while cooking is a political one, for it carries the daily commitment to preserving and caring for the planet's existence and maintaining our well-being (Ducasse & Regouby, 2017).

Food professionals should have a necessary global and systemic approach to food based on five qualitative core components: health, culture, economics, society, and the environment, all interconnected. Ducasse proposes a *Universal Declaration of Humanist Gastronomy*, stating it's up to the citizens to change what is on our plates, matching the one proposed by Waters, with rights for all and duties for each, comprising five articles (IDEM, p.208):

> I. “The right for all to benefit from clear and transparent information and traceability on products, which requires accessible, exhaustive, readable, and understandable information and traceability for all on the origin of products, their cultivation, breeding, or manufacturing methods. It is everyone's duty to be informed and to be responsible for their choices, being fully aware of the impacts of what our individual food choices imply for our health and our economic, social, cultural, and environmental environment;
> II. The right for all to receive an education in taste, providing all citizens with access to a culture of taste as a lever for health and diversity to combat the standardization of industrial taste. Also, developing taste education at school for all children from a very young age. It is everyone's duty to cultivate their senses, to learn, and to transmit;
> III. The right for all to be connected to the land and the earth, to promote the diversity of regions, cultures, and cuisines of the world, and to reconnect cities with nature, preserving arable land around cities. It is everyone's duty to respect and protect the earth and its rhythms, favor the purchase of seasonal and local products, and learn to respect the earth and the laws of nature to better feed ourselves and preserve our future;
> IV. The right for all to have human health preserved and improved, inseparable from the health of all living things – fauna and plants, to promote agroecology and penalize industrialized agriculture, which is destructive to our biosphere. To promote and support behaviors that make quality accessible to all. It is the duty of each person to commit to acting for the preservation of living biodiversity, develop your own individual contribution by monitoring your behaviors and their effects, and raise awareness and encourage as many people around you as possible to follow this commitment;
> V. The right for all to experience the pleasure and conviviality of meals, to support and highlight, behind each product, each producer who delivers a story of humanity and passion, developing a culture of exploring diversity, empathy, and conviviality around meals at all levels of society. It is everyone's duty to change their behavior towards otherness and sharing, opening up to culinary diversity to create a new global social bond and cultivate the shared pleasure of conviviality, hospitality, and transmission around meals to develop relationships that generate innovation and create value.”

In the documentary *Behind the Plate* (Ferraz & Meirelles, 2020), internationally acknowledged chefs recognize their role in changing the path the F&B sector has taken. To Manu Bufara, one of the threats to gastronomy is globalization, where everyone consumes the same foods and products and travels more than people. The ideal moment for food is from field to table, and ending mono-crops is essential, as significant health issues arise from a heavily industrialized food system. Respecting the land, farmers, and local microcosms worldwide can stimulate economies, and supporting local products empowers families and brings about change through knowledge. Through cooking, we can

pass on the knowledge and educate others. Dan Barber thinks similarly, stating culinary craft can spread wealth and change attitudes through taste. Consuming lower (primarily plants and smaller animals) in the food chain can feed the world sustainably, attaching self-interest to environmentally sound practices. Restaurants can drive change by focusing on technique and innovation, as chefs are uniquely positioned to promote better food for all (Ferraz & Meirelles, 2020).

The Slow Food Terra Madre event hosted a debate around “The Chef according to Slow Food,” in which Magnum Nilsson (chef and Mad Academy[20] founder) shared his views. To him, how we eat is at the heart of today’s global crises. He believes chefs have significantly more opportunities than individuals to drive change. Every decision in the kitchen—from sourcing ingredients to portion sizes—shapes what and how people eat daily. Nilsson highlights the need for knowledge, continuity, and deeper relationships with producers, stating: “Every single decision you make gives you the opportunity to make that change.” And complements, “Here (at Terra Madre), we are cooking a revolution” (Nilsson, 2024).

Another fiercely engaged chef is Douglas McMaster, from “zero waste” restaurant Silo[21]. Based on the preciousness of food, hence the impossibility of wasting it, Doug started his business in 2011 (in Australia), understanding that one of the many disruptive steps would be not having a bin in his kitchen. His decision, also a bold statement, provoked a reverse design process because there was no place for waste. By questioning all standard industry practices and resulting in even more questions, he started acting to change, facing multiple failures and some rewarding discoveries. Silo has been based in London since 2019, where he and his team continuously experiment and creatively push the limits of food flavors, textures, and no waste (McMaster, 2019). The philosophy about food spread to all areas of the business, designing a practical framework and comparing a regular, industrial food system to the one developed at Silo (Figure 26).

Silo's team understands composting is the ultimate resource for food, so everything gets used to its maximum before having this destination. Douglas advocates that waste is a human thing, for it does not exist in nature. He sees how limitation breeds innovation and understands there is no way to design out a problem if one works with the same thinking that has started it, compelling his team to keep creative, cook carefully, and waste nothing (Global Innovation Forum, 2023).

Besides sourcing primarily local, seasonal, low-footprint ingredients—and every other item—the restaurant buys most food items in bulk and in their most

[20] www.madfeed.co/mad-academy
[21] www.silolondon.com

natural form, triggering suppliers to deliver in returnable or compostable packaging, like stainless steel containers or plastic crates. Forward-thinking attitudes, like investing in high-quality food preparation containers and utensils, impact products' shelf life and do not generate unnecessary disposals. When local is not an option but an important feat on the menu, like chocolate and coffee, they opt for responsible sourcing and low-footprint logistics, like sailing boats (McMaster, 2019).

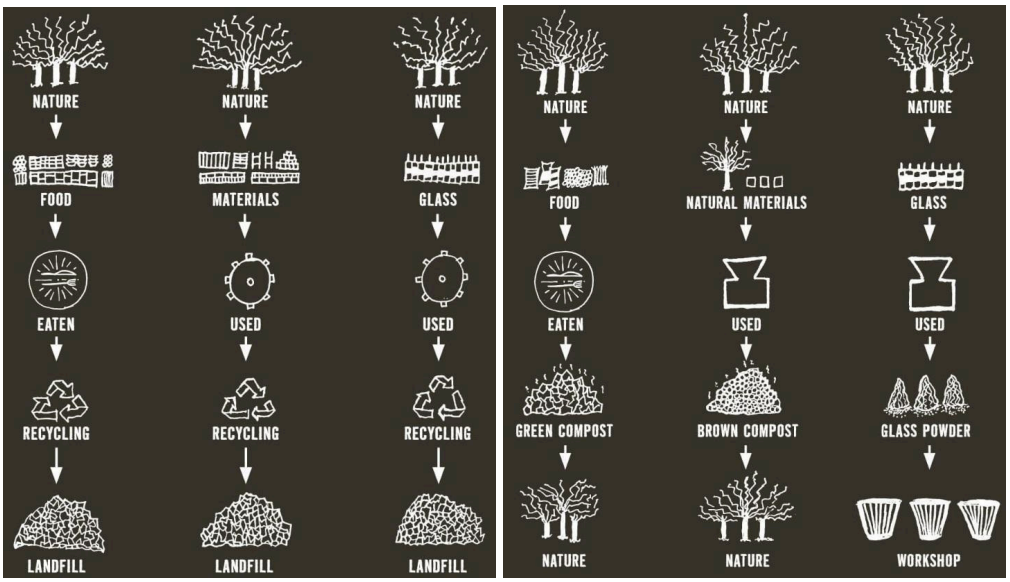


Figure 26. Comparing industrial to Silo's Food System. Source: McMaster, 2019, p.48)

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Besides sourcing primarily local, seasonal, low-footprint ingredients—and every other item—the restaurant buys most food items in bulk and in their most natural form, triggering suppliers to deliver in returnable or compostable packaging, like stainless steel containers or plastic crates. Forward-thinking attitudes, like investing in high-quality food preparation containers and utensils, impact products' shelf life and do not generate unnecessary disposals. When local is not an option but an important feat on the menu, like chocolate and coffee, they opt for responsible sourcing and low-footprint logistics, like sailing boats (McMaster, 2019).

Silo kitchen team uses about 98% of the food they receive, while the F&B sector loses a third. Imagining how to make the most of every ingredient gives Silo a food cost three to five times lower than equivalent fine-dining restaurants.

While food “scraps” are turned into new preparations using extensive knowledge and technique (fermentation being key), glass wine bottles and broken glasses, for example, are powdered and create a “glass porcelain”, becoming new dinnerware or lampshades for the dining room. When maximizing the resources, we can minimize waste (Financial Times, 2022).

Projects like Silo are still considered extraordinary in the HoReCa sector. Most F&B businesses operate within legislation-enforced commitments or even under them. A growing number of chefs and restaurateurs, more aware of the global crisis and the imminent food system crisis, congregate in networks, discussion groups, or broadly, at summits and events to discuss the sustainability of the future of gastronomy. During the first International Circular Economy and Restaurants Summit, held in Barcelona (FRS, 2021), experts and academics joined efforts to debate more sustainable practices for the restaurant industry, summarized as:

- An initiative to establish a direct connection between restaurateurs and the concept of circular economy, evolving sustainability to include scientific indicators that determine what constitutes a sustainable restaurant, certifying venues accordingly;
- Highlight advancements in products and processes within the restaurant industry that correspond with progress in the human aspect, causing further professionalization of the sector through training policies and improvements in working conditions, providing holistic education for the workforce;
- Emphasis on the international contributions presented at the congress reinforces networks' importance. External ideas and experiences are welcomed to foster growth and knowledge sharing;
- Academic contributions underscore the importance of sustainability education in leading institutions nationwide. Dialogues among representatives from various educational institutions highlighted a commitment to quality education that incorporates sustainability as a core aspect of training professionals in the sector;
- The fifth and final conclusion underlines the significance of circular economy in planning all phases of service production in the restaurant industry. Sustainability is an ongoing process that emphasizes social responsibility and responsible resource management. It is a collective commitment and states that sustainability is not the problem but the solution.

3.2
Una carta en constante evolución. Carta abierta a cocineras y cocineros de hoy y de mañana

Una carta en constante evolución. Carta abierta a cocineras y cocineros de hoy y de mañana[22] (Casillas et al., 2021) is the updated collaborative response from alumnae of Basque Culinary Center to a letter written by a group of world-famous chefs (members of the same institute's Council Board), the *Carta abierta a los cocineros del mañana*[23] (Adrià et al., 2011). This revised version of the letter carries the new generation of cooks' vision for the future of gastronomy and their part in the sustainable development of the food system. The manifesto recognizes the broader implications of their profession beyond the dining table. It emphasizes the power of gastronomy knowledge and its practitioners' responsibility to operate within a territory of pleasure, conversation, creativity, and social well-being (Basque Culinary Center, 2021). The collective calls for the commitment to a more sustainable, equitable, and responsible culinary industry, focusing on meaningful actions that contribute to positive change, affirming “if the world changes, cooking changes”. The four structuring pillars were revised, and the updated manifesto establishes (Casillas et al., 2021):

- Relationship with Nature: work from nature and with it. Chefs should reduce all natural resources waste, add value to reuse, and understand that recycling is a last resort. We should divert from the exploitative model and restore biodiversity;
- Sustainable Knowledge: the culinary field is a transdisciplinary ecosystem where different specialties converge. An open dialogue with past and future collectively to build knowledge and culture;
- Professional Community: chefs must prioritize the well-being of their teams and work towards fair labor conditions. Leadership should be based on empathy, respect, and communication, eliminating discrimination and inequity. Foment a sense of cooperation and community above individuality;
- Societal Impact: chefs are the link between sustainable development, producers, and consumers. Their work is to build and transmit knowledge, promote better eating practices, and construct cultural identities with socio-economic development;
- Values: the manifesto highlights the importance of the collective. It values curiosity, equity, creativity, pleasure, respect, commitment, biodiversity, horizontality, transdisciplinarity, honesty, coherence, transparency, humility, proximity, culture, responsibility, cooperation, transformation,

[22] “A letter in constant evolution. Open letter to cooks of today and tomorrow.”
[23] “Open letter to the cooks of tomorrow.”

balance, and teamwork. It opposes waste, precariousness, abuse, hunger, malnutrition, immobility, inequalities, individualities, machismo, racism, xenophobia, ageism, homophobia, glass ceilings, arrogance, mistreatment, and indifference.

3.3 Chefs Manifesto

Another collaborative effort from FAO to address food system challenges and promote sustainable development, the *Chef's Manifesto* (SDG2 Advocacy Hub, 2017), employs chefs as influential advocates for a better food future. The manifesto recognizes that without food, no other progress is possible. It also sees chefs' influence on what we eat and how we view food, using their influence to inspire change in kitchens, communities, and beyond. It establishes:

> "Good food begins with farmers. It starts with those working on the frontlines of our food system and climate crisis, often under difficult circumstances. These men and women, both large and small-scale farmers, need equal access to tools and resources so they can grow good food.
> Good food is nutritious. From breastmilk to fortified foods, healthy food, that is safe to consume, allows people to prosper and reach their fullest potential.
> Good food saves lives. It is the foundation of a healthy life. Without good food, health and well-being are at risk. It must be affordable and accessible for all.
> Good food is vulnerable to disruption. From climate and conflict. It is in jeopardy every day; when violence starts, and peace is threatened, when water rises and rain does not fall, when democracy fails and power shifts – good food is threatened.
> Good food is not always a choice. Billions of people around the world cannot choose good food. It may not be available, affordable, or accessible. Good food needs effective policy & politics, smart technology, fair pricing and a level playing field. Good food needs successful farmers, clean water and healthy soils & seas.
> Good food powers people and economies. It is a positive investment in the next generation, helping children to learn better and keeping them in school. Improving food production and access to nutritious food increases a person, a community and a nation's productivity and economic growth.
> Good food makes progress possible. It fuels our ability to solve our hardest problems. Only if we are healthy and strong can we hold those in power accountable, fight injustice at all levels and stand up for the vulnerable. We need to be strong, of mind and body, to face the challenges of the new decade. To be at our best we must have good food, first.
> Good food is about love. Love of flavor, health, celebration and adventure. Love of children, friends and family. Love of people and planet. Love of our neighbor and 7 billion others we do not personally know" (SDG2 Advocacy Hub, n.d.).

The Manifesto positions chefs as potential drivers of the food production-consumption chain, sharing responsibility with consumers to achieve food systems practices closer to the SDGs. They understand that the F&B industry has influential power and significant impact from suppliers to consumers. The Manifesto's overarching goal is to foster a collective commitment to a new food future that is equitable, sustainable, and globally impactful. The collective of

chefs has developed projects with specific targets, *Hungry for Action*[24] (directed to fighting hunger), *Beans is How*[25] (a global campaign to increase beans consumption), Climate Conscious Catering[26](big services with tasty, nutritious, affordable, and planet-friendly), along with a joint initiative with the EAT Foundation: *Eat Forum*[27] holding meetings and a podcast channel.

This framework for system change is founded on eight principles for gastronomers (SDG2 Advocacy Hub, 2017):

- Ingredients grown with respect for the earth and its oceans;
- Protection of biodiversity and improved animal welfare;
- Investment in livelihoods;
- Value natural resources and reduce waste;
- Celebration of local and seasonal food;
- A focus on plant-based ingredients;
- Education on food safety, healthy diets, and nutritious cooking;
- Food that is culturally appropriate, affordable, and accessible for all.

3.4 The Sustainable Restaurant Association Food Made Good Standard

"As chefs, we have huge power to influence what people eat – it is the single most impactful action people can have on the planet." Raymond Blanc Obe (SRA, 2024a).

The Sustainable Restaurant Association (SRA) is a British enterprise dedicated to accelerating the transition towards a sustainable future for the hospitality industry, emphasizing social progress and environmental restoration. Recognizing the implications of the climate crisis and its connection with our current food systems is at the core of SRA beliefs (SRA, 2024a). The Food Made Good Standard (FMGS) is central to their mission, a sustainability certification explicitly designed for HoReCa businesses. Rooted in practical actions, this holistic accreditation encompasses every aspect of sustainability relevant to modern F&B businesses, providing clear direction, support, and third-party certification (SRA, 2024b).

The standard

> "sets out what 'good' looks like in hospitality, providing chefs and restaurateurs with the tools to improve what their business is doing, share their successes, and inspire their customers by dishing up food that not only looks and tastes good, but does good, too" (SRA, 2024c).

FMGS is built on a 10-point framework divided into three areas: Sourcing, Society, and Environment, as shown in Figure 27. It addresses companies' behavior, actions, and progress and guides further improvement (SRA, 2024c).

[24] https://sdg2advocacyhub.org/hungry-for-action
[25] https://sdg2advocacyhub.org/beans-is-how/
[26] https://sdg2advocacyhub.org/climate-conscious-catering/
[27] https://eatforum.org/initiatives/chefs-manifesto

Throughout 2023, the board searched for more practical ways to offer support and practical problem solutions for the F&B sector, resulting in a first example of what promises to be a comprising toolkit. This initial product touches renewable energy sources (SRA, 2023). The standard seeks to align more closely with the UN SDGs as part of its continuous improvement targets. Structuring questions directly related to global concerns while maintaining local applicability, the SRA aims to reach further, expand internationally, and ensure that food businesses worldwide can effectively implement sustainability practices. To achieve this, they expect to launch a revised program by 2026, relying on collaborations or reputable organizations like the Ellen MacArthur Foundation (Holiday, 2024).

Figure 27. Food Made Good Standard Framework. Source: https://thesra.org /the-food-made-good- standard/framework/

Food Made Good is the most extensive Food and Beverage sustainability certification, accrediting over 10,000 professional kitchens in 73 countries worldwide (SRA, 2024a). A major effort nowadays is to establish minimum standards and ensure baseline sustainability requirements across all participating businesses, granting the program's expansion. These include policies such as prohibiting the use of endangered fish species and setting minimum standards across sustainability categories. Another increment to facilitate engagement is the language of the questionnaire, avoiding overly academic terminology and instead focusing on straightforward, specific questions that cater to professionals working in fast-paced kitchen environments (Holiday, 2024).

Presently, enterprises willing to be certified can apply through a 250-question online assessment and then further submit documentary evidence (invoices, written policies, etc.) to verify their claims. They receive individualized feedback, including a final report with an overall score and area-specific evaluations, allowing them to prioritize actions for improvement. If the interested

business is not ready to take the entire assessment, it can start with a short quiz to leverage where the company might be regarding the FMG standards (SRA, 2024c). In general lines, the FMGS assessment is structured around three fundamental pillars:

- Policies and Commitments: governance, policies, and formal structures that support sustainability pledges;
- Action: what the business is actively doing to promote sustainability;
- Marketing and Communication: how the business shares and implements its sustainability initiatives.

Beyond the assessment, the platform provides tips and additional tools (under development) to guide businesses in implementing sustainability practices. Based on their assessment results, companies receive suggested actions, encouraging them to adopt a forward-thinking, practical, and solutions-oriented approach to sustainability. The Food Made Good Standard is a critical pathway in advancing sustainable food systems worldwide by fostering a global yet locally adaptable methodology (Holiday, 2024; SRA, 2024c).

3.5 Michelin Green Star

The Michelin Guide Green Star prizes environmental stewardship initiatives in distinguished restaurants, recognizing efforts toward a more balanced food system. The award has emerged from the industry's need to align and showcase remarkable initiatives, encouraging eco-responsible actions in establishments known for culinary excellence and holders of a Michelin Star or BIB Gourmand praise. It acknowledges a restaurant's constant commitment to its daily operations and aims to reward the collective efforts in a more ethical, conscious approach to fine dining. Like the other Michelin appreciations, the Green award is granted upon desk research and dining experiences from the inspectors. It is not conducted via the submission process, with specific requirements or proofing documentation (Guide Michelin, 2023).

Although not officially established or standardized, general rules for obtaining the Michelin Green Star award can be divided into three main pillars (HUANG et al., 2023):

I. Food Procurement:
    a. Food source and supply chain;
    b. Use of local, organic, seasonal ingredients;
    c. Fairtrade policies;

II. Food Preparation:
    a. Have a low ecological footprint (energy and water use);
    b. Reduce and effectively manage food waste;

c. Handle and recycle general waste (reverse logistics, disposal, recycling);
d. Minimize the use of plastic and non-recyclable materials;

III. Food Presentation:

a. Sustainable menus (content and communication);
b. Community outreach (or community-based activism).

The Green Star promotes environmentally ethical gastronomy, highlighting ingredient origins, opting for local and seasonal produce, and respecting nature. It also encourages concrete initiatives that drive advancement and transformation across the industry, inspiring others in the F&B sector with its value perception and wide acceptance (UNRIC, 2021).

Out of over 15,000 Michelin-recommended restaurants, approximately 500 have received the Green Star in 34 countries. These establishments lead the way, inspiring others through their dedication to sustainability. The Michelin Green Star restaurants list can be found in printed Guides, on the Michelin website, and on social media (Guide Michelin, 2023).

3.6 Menus of Change

The Menus of Change (MoC), a joint initiative of the Culinary Institute of America (CIA) and Harvard T.H. Chan School of Public Health, is an extensive project combining academic knowledge to support practical application, which in turn feeds back to the food service industry literacy, generating trans-sectorial change.

With a holistic appeal integrating nutrition, public health, environmental stewardship, and social responsibility, the projects under this umbrella explore innovative strategies to reduce food waste, enhance nutritional choices, and foster sustainability (MENUS OF CHANGE, n.d.). Within their programs' ecosystem, we can find the *Menus of Change University Research Collaborative* – focused on university cafeterias, *Healthy Kids Collaborative* – a national initiative to foster healthy, flavorful foods for children, *Plant-Forward Kitchen*[28] - strategies to reimagine menus and flavor development from plants, and *Healthy Menus R&D Collaborative* – to craft sector-specific solutions towards healthy food and beverage choices. MoC also promotes annual summits with the latest tools and guidance for HoReCa professionals.

The program offers 24 guiding principles to provide F&B professionals with strategies integrating environmental and nutritional aspects and recipe

[28] www.plantforwardkitchen.org

development guidance toward health and sustainability, summarized as (CIA, 2024):

- Plant-forward diets suggest transforming protein menu concepts and elevating plant-based protein, aligning with the reduction of the environmental impact of dining operations by decreasing reliance on animal products;
- Food waste reduction emphasizes the effective production, promotion, and upcycling of food to minimize waste, a key aspect of the food industry;
- Reduced portion size: by advocating for smaller portion sizes and emphasizing quality over quantity, to decrease all resources waste;
- Food literacy reinforces the importance of education in promoting healthier and more sustainable food choices. It recognizes that informed consumers are more likely to support sustainable dining practices.

3.7 B Corp Certification

“Driving continuous improvement for high-quality social and environmental business standards" and "measuring a company's entire social and environmental impact" are two of the defining sentences presented on the website for B Corporations, or B Corp, leading inclusive, equitable, economy-certified enterprises. Since 2006, they have offered a transparent, comprehensive tool for general business performance analysis in companies that believe success measurement exceeds economic revenues and dedicate effort to reducing social and economic inequality and promoting healthier natural and human environments (B Corporation, 2022a).

B Corp certification is a pioneer in systems change certification and is known for building trust between suppliers, consumers, and communities alike. Responsible businesses are willing to commit even further, promoting continuous global improvement and social change, and assign to B Corp certification to assess and improve performance unceasingly. For the food businesses, the main distinction between B Corp and similar organic/fair trade labels is the opportunity to authenticate the broader range of processes involved in the food supply chain. It also reflects consumer recognition and supplier relationships, constructing a wider community web. On the other hand, as previously mentioned, it is not specifically tailored for the F&B sector, overseeing some crucial characteristics of these business models (B Corporation, 2022b).

Interested companies must register, comply with local legal requirements, and apply for the B Corp Assessment. Some criteria may vary, but general stages include a minimum social and environmental evaluation score, resulting in the

certification. In general terms, the Impact Assessment is a simple tool designed to help for-profit companies measure, manage, and improve their positive effects on various aspects, guiding them to mitigate negative ones. It involves responding to questions related to business practices and outcomes.

An interested company starts the B Impact Assessment by registering on the website. Next, through a series of questions across five categories, aiming to evaluate and improve the company's environmental and community influence (B Corporation, 2022c). The five criteria considered in the B Corp Impact Assessment are: governance, workers, community, environment, and customers.

It is remarkable that among 7.276 B Corp certified companies, only 868 are related to Food products, beverages, or Restaurant service, out of which 27 are in Brazil. Of the total, scarcely 39 are restaurants, and, not surprisingly, there are only two restaurants in the country (B Corporation, 2022b).

3.8
Brazilian and International Certifications

Food business sustainability certifications are highly relevant, as they signal responsible and ethical practices along the food chain, assuring consumers that products are produced with environmental consciousness, social responsibility, and economic development. The designations reach multiple demands and ensure that particular frames of the food production-consumption chain are respected. From resource conservation to fair labor practices, these authentications strengthen market relations and build consumer trust. The most widely used or referenced to in Brazil are: IBD Organic[29] (organic production and fair trade protocols), Certified Humane Brazil[30] (ensure that animals do not endure physical or psychological harm or environmental discomfort), FSC | 100% Community[31] (social seal, indicating that all raw materials come from small producers or communities), Rainforest Alliance Certified[32] (encourages continuous improvement, provides sustainability training, and benefits farmers related to forestry products), IFOAM[33] (ensures common standards, verification, and market identity), and Fair Trade[34] (covers products *in natura* and minimum processed foods).

3.9
Taking the Sustainability Tests

[29] www.ibd.com.br/selo-organico-ibd
[30] certifiedhumanebrasil.org
[31] www.fsc.org
[32] https://www.rainforest-alliance.org/
[33] www.ifoam.bio
[34] https://www.fairtrade.net

For this study, we reviewed the preliminary, free-access evaluations from FMGS and B Corp based on the researcher's artisan pastry company. These simulations aimed to gather further information from the questionnaires, understand how the proposed parameters suit the HoReCa business model within an integrated view, and evaluate the impact on stakeholder-focused groups.

B Corp and FMGS

B Corp	Governance	Workers	Community	Customers
	Mission & Engagement	Financial Security	Environmental Management	Customer Stewardship, Health & Wellness
	Ethics & Transparency	Health, Wellness & Safety	Air & Climate	Education & Impact Improvement
		Career Development	Water, Land & Life Conservation	
		Engagement & Satisfaction	Renewable Energy	Arts, Media & Culture
		Workforce Ownership & Development	Toxin Reduction	Economic Empowerment
			Resource Conservation	
			Environmental Education	Support for Purpose-Driven Enterprises
			Environmental Innovation Practices	Serving those in Need

FMGS	Governance	Workers	Community & Customers	Environment
Policies and Commitments		Staff Wellbeing	Community Engagement & Social Impact	Ingredient Sourcing
Actions	Commitment to reduce environmental impact on : food waste, non-organic waste, carbon emissions, energy or water use			Environmental Impact, Energy, Waste Management;
	Partner with suppliers who pay fair wages, empower workers, and use sustainable practices	Pay the lowest wage equivalent to - or higher than - the living wage for the area;	Consider the amount of salt, sugar and fat when developing recipes;	Do not serve endangered seafood species or seafood with significant sustainability concern
	Ingredients certification or high social-environmental standards;		Support our community through staff volunteering, donations and collaboration with local charities and organizations;	Work to increase seasonal, local, heritage ingredients
	At least a portion of energy coming from green source			Significant reduction of waste production in the last 12 months;
				Actions to reduce our carbon footprint;
Marketing and Communication	Communicate about our efforts to source ingredients sustainably;	Front-of-house team is trained to communicate about sustainability efforts to diners.	Communicate about our efforts to treat our staff fairly and support the community;	Communicate about our efforts to improve our environmental impact;

Table 15. B Corp Impact Assessment and Food Made Good Standard quiz Structures.

The knowledge apprehended from these two submission exercises is synthesized in Table 15 above. While not divided into the same impact areas as

the B Corp questionnaire, for comparative purposes, the questions on the FMGS quiz were structured similarly, with Environment added on the FMGS and merging Community & Customers.

While taking the B Corp Impact Assessment (BIA)[35], it was clear that some fundamental practices for food and beverage venues go against B Corp standards, for instance, selling alcoholic beverages, which is generally part of a restaurant's consumer experience and dining culture and an essential source of revenue. One notable positive aspect was the workforce, as many restaurants rely on migrant staff, which is allied to minimum wage, high labor rotativity, and poor working conditions. As for gender equity, international commercial kitchens are flooded with male-dominant staff, with women sparingly achieving higher positions.

A couple of set steps required during the affiliation process divide the process into three general moments

- assess - focused on the impact on the company's stakeholders, evaluating general policies and practices;
- compare - the impact report offers the chance to review and compare provided details with benchmarking information;
- and improve - the candidate can access a tailored improvement report that provides guidelines for implementing a positive impact.

The assessment distinguishes between daily operational impact and the overall impact of the business model (Table 15 above), providing a holistic view of a company's social and environmental contributions. The impact categories assessed, and their subdivisions became more evident as we advanced on the test, and they can be defined as:

- Governance: the target is to evaluate the company's mission, social/environmental engagement, ethics, and transparency. It also analyzes the company's ability to protect its mission and how much it involves internal stakeholders in decision-making through its corporate structure;
- Workers: evaluates the company's contributions to its employees' career development, financial security, health & safety, co-ownership or shares participation, and overall satisfaction;
- Community: this topic acknowledges the business' engagement with and its impression on the communities in which they operate. This includes diversity, equity & inclusion, charitable giving, supply chain management, and overall economic impact. It is particular about models addressing

[35] https://app.bimpactassessment.net/get-started

community problems, like fair trade sourcing and local economic development;

- Environment: this area addresses the company's environmental management practices, including its footprint on air, climate, water, land, and biodiversity. It discerns environmentally innovative production processes and products/services with positive environmental consequences;
- Customers: an appraisal based on the quality of offered products/services, ethical marketing, data privacy, and customer feedback. It also recognizes products or services addressing specific social problems, like health or education.

As for the FMGS, the webpage offers a quiz for those “not quite ready to get the standard”[36](SRA, 2024b). The submission was simple, and the questions are clear-cut to governance and operational protocols, tackling a few macro issues more directly. Compared to the BIA, the quiz gives a faint taste of the bigger picture. It is divided into three major groups, with the following questions regarding:

- Policies and commitments:
  - ingredient sourcing; plant base forward thinking;
  - staff wellbeing;
  - community engagement (social impact);
  - environmental impact, energy, waste management; target to reduce environmental impact on food waste, non-organic waste, carbon emissions, energy, or water use;
- Actions:
  - ingredients certification or high social-environmental standards;
  - work to increase seasonal, local, and heritage ingredients;
  - partner with suppliers who pay fair wages, empower workers, and use sustainable practices;
  - do not serve endangered seafood species or seafood with significant concerns;
  - pay the lowest wage equivalent to — or higher than - the living wage for the area;
  - consider the amount of salt, sugar, and fat when developing recipes;
  - support our community through staff volunteering, donations, and collaboration with local charities and organizations;

[36] https://thesra.org/the-food-made-good-standard/food-for-thought

- ○ significant reduction of waste production in the last 12 months; actions to reduce our carbon footprint; at least a portion of energy coming from renewable and/or nuclear sources;
- marketing and communications
  - ○ communicate about our efforts to source ingredients sustainably;
  - ○ communicate about our efforts to treat our staff fairly and support the community;
  - ○ communicate about our efforts to improve our environmental impact;
  - ○ front-of-house team is trained to communicate about sustainability efforts to diners.

3.10 Considerations on HoReCa Sustainability Initiatives, Manifestos, Certifications and Awards

Throughout this research, sustainability standards and guidelines for the HoReCa industry have served as valuable references, providing pathways to set updated goals for the F&B sector. While chefs worldwide have become increasingly aware of their role, influence, and responsibility—organizing around meaningful debates and advocating for change—we still face significant challenges. Many HoReCa operations continue to disregard the climate crisis, ethical governance, and their businesses' broader impact on both local and global scales.

Manifestos are interesting representations and boosters of more significant, broader movements, driving attention to the issues gastronomy encounters and often perpetuates. However, they are far from sufficient. As generalist recommendations for the F&B sector, they raise awareness but are rarely translated into tangible actions to change daily operations. In a way, they hover above the immediate struggles those engaged in this food system face. For businesses already navigating the complexities of survival, financial stability, and operational demands, it is challenging to envision professionals voluntarily adding even more weight to their already demanding agendas.

The referred programs (Food Made Good Standard, Michelin Green Star, Menus of Change, and B Corp) represent notable efforts to elicit and promote sustainability within profit-oriented businesses. They share similar goals, although their effectiveness, lasting impact, and methodologies differ.

The Menus of Change, endorsed by the CIA and Harvard research base, merge academic expertise with practical application toward systemic change in gastronomy and public health. Due to this connection, MoC offers a more comprehensive scope, encompassing nutrition, environmental stewardship, food literacy, and social responsibility. With its ecosystem of programs, MoC extends

actions to institutional dining, food policy, and culinary education, reinforced by its annual summits, where professionals meet to exchange practices and insights and increase knowledge.

The Michelin Green Star operates within Michelin's existing framework, meaning only restaurants already accredited by the Guide can receive the Green award, limiting its accessibility and reach. It prizes restaurants for their efforts toward sustainability, mainly environmental, backed up by culinary excellence, representing a highly symbolic gesture. The endowment is based on inspectors' observations, desk research, or even calls to check on ordinary aspects of responsible ingredient sourcing, waste management, or energy efficiency, to mention a few. However, the process lacks transparency, as the prize is granted without formalized criteria or verifiable documentation. Although they mean significant influence, setting trends amongst peers, they may be misleading, remarkably, when concrete actions are not grounded or continued after initial recognition. This path can result in emptying core values and weakening efforts to promote ethical sourcing, labor practices, and sustainability, as they do not guarantee a meaningful impact. This subjective protocol has led to criticism regarding its legitimacy and depth (SRA, 2024d; MILLER, 2020).

In contrast, the Food Made Good Standard provides an increasingly structured, evidence-based assessment of a venue's sustainability performance. It offers a clear roadmap for businesses to improve their environmental and social impact through an extensive process, which includes a 250-question assessment, documentary proof, and tailored feedback. FMGS aims to move beyond mere recognition, supporting HoReCa businesses to implement, measure impact, and continually improve sustainable practices. Willing to tighten their alignment to the UN Sustainable Development Goals and a more inclusive approach, the standard is accessible to a broad range of food businesses.

The B Corp certification is the most well-perceived sustainability certification brand by customers, accrediting businesses of varied sectors. Unlike most specific accreditation labels, which focus on particular product attributes or sections of the production-consumption chain, B Corp evaluates the company within its processes and in a broader scope (touching suppliers and customers) through five key impact areas. Its structured certification process boosts transparency and accountability, ensuring businesses commit to long-term improvements. However, its generalist approach means it lacks tailored criteria for the distinctive challenges of the HoReCa industry, such as ingredient sourcing and waste management strategies, or even lacks an understanding of the cultural value of serving alcoholic beverages as an integrating part of a meal. Table 16 below depicts a succinct SWOT analysis of the selected programs.

Considering how much superficial, market-oriented commitment is being made, reflecting upon all these initiatives is important, making room for greenwashing and distraction from the much-needed changes and genuine improvement in this sector. In any case, manifestos, awards, and certifications are not enough to address all challenges in the HoReCa. We count on individual enthusiasm and will to change, but must rely on public awareness and structural, governmental policies to frame and enforce real transformation.

Awards and Certifications

	Michelin	FMGS	MoC	B Corp
Approach	Recognition-based	Certification-based	Research-driven, primarly advisory	A broad, cross-industry certification
Scope	fine-dining restaurants in the Michelin Guide	All HoReCa business	Restaurants, institutional food service, policy-makers	A broad, cross-industry certification
Strenghts	High visibility and esteem due to Michelin's prestigious brand Influences fine dining and mainstream gastronomy	Objective evaluation Transparent and comprehensive framework with structured guidance Third-party verification provides credibility	Strong academic and research foundation Integrates public health, nutrition, and sustainability.	Broad, cross-sector impact; trusted certification with rigorous assessment; enhances brand credibility and consumer trust.
Weaknesses	Subjective evaluation, lacking transparency in the process No documentary proof required Criticized for potential greenwashing	Lengthy and detailed assessment may be a barrier for smaller businesses Primarily UK-based, with limited global reach	Focused on institutional and academic collaborations rather than direct restaurant certifications Implementation depends on voluntary adoption	Not specifically tailored to the F&B sector Does not account for industry-specific challenges such as food sourcing or waste reduction in detail
Opportunities	Could improve credibility by introducing clear sustainability criteria and third-party verification	Expansion to more countries and adaptation to different cultural contexts Simplification of certification for easier adoption	Strong potential for integration into restaurant training programs Influence on large-scale food service operations.	Opportunity to develop an F&B-specific track; potential for stronger partnerships with hospitality sustainability programs
Threats	Could face declining trust and be seen as a marketing gimmick rather than a legitimate sustainability certification	Competition from other sustainability certifications may dilute its potential Can be expensive, limiting access to smaller businesses	Slow adoption in commercial restaurants May struggle to compete with more marketing-driven certifications.	Risk of being perceived as too broad or corporate-oriented for small, independent F&B businesses Can be expensive, limiting access to smaller businesses

Table 16. Awards and Certifications SWOT analysis.

Rather than pulverize initiatives and projects, it would be more efficient if sustainability concerns and efforts congregated to consolidate a more universal, inclusive set of standards and protocols to which all HoReCa could direct for

guidance. An action pathway beyond symbolic recognition. An award praising commitment to tangible improvements in the F&B industry, based on solid, structured knowledge to foster a culture of sustainability within dining operations and engage customers in sustainable dining choices.

4
Definition of the current scenario: Sustainable Food Design and Sustainable Food Systems

This chapter brings literature review outcomes and reflections on the present food systems scenario, looking through Food Design professionals and perspectives, international bodies, and organizations who make consistent efforts to make our food production-consumption chain more balanced and less negatively impacting.

4.1
Sustainable Food Design

There is no Service Design without users and no food service without society. Food (or the lack of it) relates to and cuts across individuals and communities, affecting them economically, socially, and culturally. Individuals impact their environment when dining out, promoting interactions among multiple players, values, and scenarios. When designing, we must think beyond the plate and look at the entire chain and focus on the users, their relationships, among users and between users and the whole food system, the experiences, services, and products composing this unit (Bacci, 2019).

Designing services, proposing alternatives, and conjecturing sustainable food systems as an object of study of Systemic Food Design (see Chapter 1, Figure 6) is an exercise that is both possible and necessary for professionals in the area. Sustainable Food Design is more of an attitude than a Design subdiscipline because it is impossible to design disregarding the footprint left by our choices. Thinking about the design of any product or system without considering visions of economic, social, and environmental sustainability is no longer a choice or a specific objective but the basis of any Design project (Zampollo, 2023). Manzini (2015) points to designers as professionals capable of planning planetary solutions, with innovation in ways of life, in society's values, and changing production and consumption patterns. The agricultural chain is directly connected to these issues. The systemic design of this chain must contemplate qualitative and quantitative aspects, be mindful of users and resources, and be aware of the territory's location and context.

A system's design is intimately connected to the relationships it can foster. When we project closer to the subject, we engage in more careful networks. Regionalizing the food system promotes the development of local society and economy, benefits the environment, and encourages connections (Manzini, 2010).

According to Zampollo (2017), Food, Society, Environment, and Technology are fundamental pillars (Figure 28) on which designers, chefs, and food-related

professionals should base their projects and investigations. Significant matters must be considered within this complex system. The food source matters considerably in supporting more resilient food systems in restaurants. Where food comes from is connected to human-nature interaction, community relationship arrangements, and economic effects. Likewise, it is deeply bonded to ethical factors, including animal welfare, crop diversity, raising, harvesting, trading, distribution, losses, and waste.

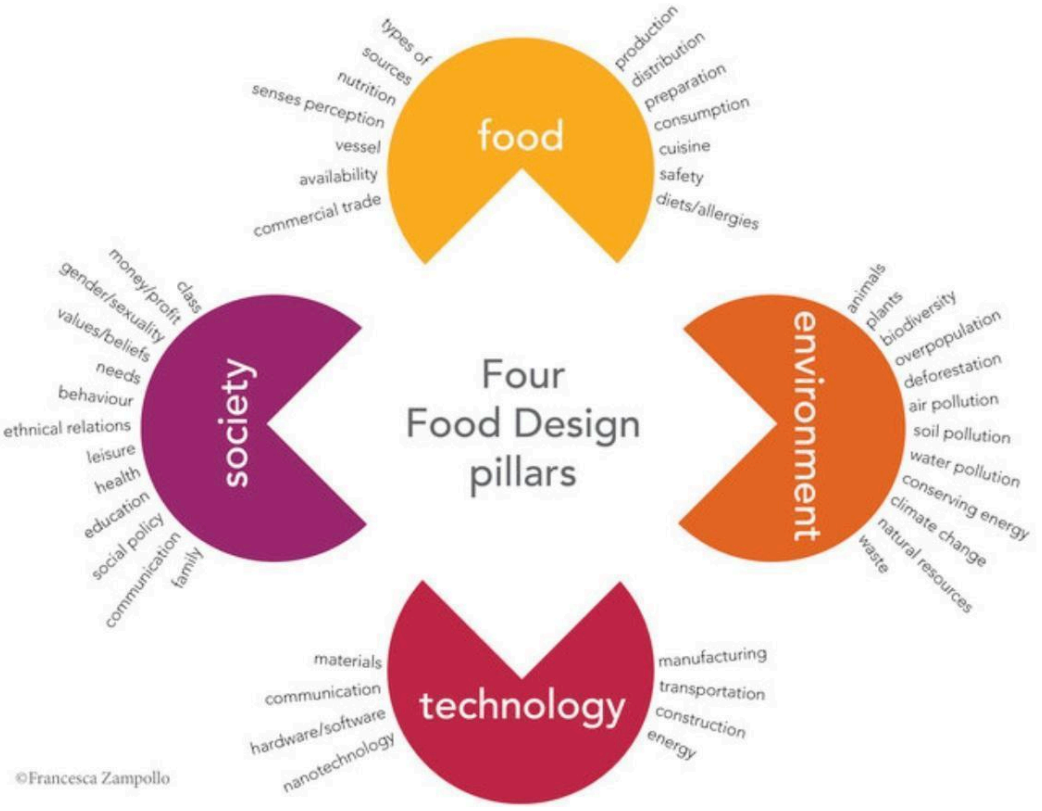


Figure 28. Four Food Design Pillars. Source: .Zampollo, 2017.

Food preparation and service highlight aesthetic features. Its preparation and consumption reflect culture and context awareness and shall contemplate safety, nutrition, and restrictions, not forgetting cooking process techniques and plating. As an integral part of the environment, fully merged with the ecosystem, society shall use natural resources mindfully and circularly. Design innovation based on a circular economy relies on designing waste out of the system as a path to restore and regenerate, minimizing negative results (.Zampollo, 2018). When food is the material to design with, the responsibility is even more remarkable, for wasting it means throwing away essential survival supplies.

Technology encompasses the production of edible items, their transportation, and processing. Besides nurturing, food is a material for designers to work with, and food services offer many opportunities for food production, communication, and distribution technologies, with more or less negatively impacting alternatives.

To achieve sustainability, society and the economy must prosper in harmony with the environment, meeting present needs without compromising the future. When working interdisciplinary and collaboratively, different meanings and pleas converge into innovative solutions that suit the entire community and reflect more resilient systems (Verganti, 2012).

Lastly, the Red Latinoamericana de Diseño y Alimentos enhances access to culturally and economically suitable food, incorporating local knowledge and values alongside transparent nutritional information. It advocates widespread health and well-being by ensuring access to nutritious and enjoyable food, upholding environmental and societal harmony by preventing harm, and ensuring equitable and sustainable practices (RedLaDA, 2023).

4.2
Food Systems and Global Impact

"Gastronomy is a cultural expression of the world's natural and cultural diversity." (FAO, n.d.)

The principles outlined in the Rio 92 Declaration (UN, 1992) reinforce the imperative of ensuring future generations' quality of life as an individual and collective responsibility. The UN introduced the Sustainable Development Goals (SDGs) to echo this sentiment, with goals such as Zero Hunger, Gender Equality, Decent Work and Economic Growth, Sustainable Cities and Communities, Responsible Consumption and Production, Climate Action, Life Below Water, and Life On Land directly engaging with supply chains and food systems, and to most of them, in different measures (UN, 2023a). These goals are highlighted in Figure 29.

Figure 29. SDGs directly engaged with Food Systems. Source: adapted from https://www.un.org/sustainabledevelopment/news/communications-material/

"As the prime connection between people and the planet, food and agriculture can help achieve multiple Sustainable Development Goals" (FAO,

2018a), and by nourishing people and land appropriately in the present, we can guarantee that future generations will feed the growing population.

To make food nutritious for everyone, including the ecosystem, all stakeholders in the agricultural system have to participate and benefit from economic development, have even and balanced working and pay conditions, and have equal access to all resources. These are premises for five key principles orienting the transition to more sustainable food and agriculture systems (Figure 30) developed by FAO (2018b, p.8):

- Increase productivity, employment, and value addition in food systems;
- Protect and enhance natural resources;
- Improve livelihoods and foster inclusive economic growth;
- Enhance the resilience of people, communities, and ecosystems;
- Adapt governance to new challenges.

Figure 30. Five Key Principles of Sustainability for Food and Agriculture. Source: https://www.fao.org/sustainability/en/

These principles have an integrated impact on the SDGs, in various degrees, and are divided into 20 actions (FAO, 2018, p.15), from which nine are more closely tackled in this study by implementing more conscious HoReCa practices:

- Connect smallholders to markets;
- Encourage diversification of production and income;
- Enhance soil health and restore land;
- Reduce losses, encourage reuse and recycle, and promote sustainable consumption;
- Empower people and fight inequalities;
- Improve nutrition and promote balanced diets;
- Address and adapt to climate change;
- Strengthen ecosystem resilience;
- Strengthen innovation systems.

These actions consider the choices F&B enterprises can make when buying ingredients regarding human factors, food growth, identity, territory, and ethical values associated with food commercialization, preparation, consumption, and disposal. This awareness has the potential to drive significant transformative shifts.

The concept of *sustainable diets* introduced by (FAO; WHO, 2019) was not designed to be an enforcement; instead, it suggests that countries with existing dietary guidelines integrate the recommendations into their regimes. FAO reinforces the importance and value of traditional food cultures, particularly on habits left aside in modern societies, with nutritional consequences, techniques, and taste references lost or forgotten (UN, 2023a). These principles elicit the importance of the relationships intertwined in food systems and their impact on planetary and people's health. A low environmental impact diet contributes to the food security of the present and future generations, promoting eco-biodiversity and equitable economic conditions for all. There must be a balance between the conservation of all life forms and agricultural cultivation for food production (FAO et al., 2020).

The public campaign *Good Food for All* was launched at the First UN Food Systems Summit (UN, 2021), emphasizing food system players' critical role in driving transformative actions in food production and consumption in driving transformative actions in food production and consumption. Short food supply chains are considered grand partners in achieving the SDGs by 2030. These local systems are central to a healthier territory, empowering individuals to reach their potential, fostering community strength, driving economies, and preserving the environment.

Aligned with these values, Junta Local, a community of food producers and artisans in Rio de Janeiro, points out that good, clean food relies on respect for local particularities and diversity, for food, producers, and land. It is not simple to do that when facing industrial food system standardization, where low costs, quantity, and maximum profit are prized. It is based on the understanding that food reflects its territory, people, time, and space in which it is produced, and that makes it unique (Nasser, 2023). The food-specific journalist from O Joio e o Trigo stresses the strength of developing a diet with a local and social grounding. The economic benefits are immediate, with incomes held in the community, maintaining the farmers and artisans in the territory, and valuing the stewards of the land, who embrace food culture and culinary traditions (Prato Cheio, 2023, 00:39:12).

Another collaborative project from the UN, FAO, UNESCO (United Nations Educational, Scientific and Cultural Organization), and international organizations is *Sustainable Gastronomy Day* (FAO, 2024), promoted to raise awareness of its contributions to sustainable development and global impact. The project implies how eating local foods that are sustainably produced impacts people's well-being, the economy, and the ecosystem. Because we are using our natural resources in largely unbalanced ways, we need to start being more conscious when buying food, pressuring local businesses like restaurants and hotels to offer more

seasonal, territorial vegetables, fish, and artisanal products (FAO, 2021). Another way HoReCa venues can contribute is by shifting to greener energy sources, establishing partnerships with local governments, and using chef's media exposition to raise public awareness through gastronomic shows and portrayed behavior (FAO, 2024).

4.3
Circularity

The circular economy[37] principles define it as “restorative and regenerative by design” (EMF, 2019). When we adopt a systemic design perspective, all processes tend to be circular, continuously generating energy or resources for another system.

Understanding the impacts of the current food system, the Ellen MacArthur Foundation (EMF) has proposed a food-specific approach to circularity, launching projects and studies on the theme under the broader scope of *The Big Food Redesign* (EMF, 2021b; 2023; 2024), The concepts are very similar to the *Circular Living* proposed by FAO and the Future Food Institute (2021), aiming at eliminating waste, investing in sustainable food practices and resource management. These agencies evoke the relations of the food systems and cities, developing a series of protocols to achieve improvements.

> “Few things are as interwoven with human existence and culture as food. At the most basic level, we need it to survive. Beyond sustenance, food can bring joy and take a central place in cultures around the world, often as the centerpiece of celebrations and festivities. The current food system has supported a fast-growing population and fueled economic development and urbanization. Yet, these productivity gains have come at a cost, and the model is no longer fit to meet longer-term needs. Shifting to a circular economy for food presents an attractive model with huge economic, health, and environmental benefits across the food value chain and society more broadly.” EMF, 2019, p.8)

All three main global issues posed by the Milan Protocol underpass the food system: malnutrition and obesity, food waste, and sustainable agriculture, nominating the concern about what we eat, how we eat, and how much we eat (MASSARI; ALLIEVI, 2016). For every dollar spent on food, society pays two dollars in health, environmental, and economic costs (Figure 31).

The food-specific circular approach, or Circular Design for Food (EMF, 2021a, p.16), combines food design with circular economy principles, resulting in a framework of informed design toward nature-positive artifacts, developing food that benefits nature, producers, and businesses. It encompasses organic (mostly

[37] Circular Economy is a systems solution framework that tackles global challenges like climate change, biodiversity loss, waste, and pollution. It is based on three principles, driven by design: eliminate waste and pollution, circulate products and materials (at their highest value), and regenerate nature.”

edible) and inorganic materials, going from product concepts to ingredient choice, sourcing, and packing (Zampollo, 2019).

Figure 31. Societal Costs related to food consumption and production. Source: EMF, 2019.

The circular food design foresees the systemic elimination of waste (therefore pollution) and regeneration of nature (minimizing natural resources exploitation). “Changing our food system is one of the most impactful things we can do to address climate change, create healthy cities, and rebuild biodiversity” (EMF, 2019), alleviating the costs to society and the environment. The studies from EMF indicate that the scenario can be changed with a few tangible actions (Figure 32).

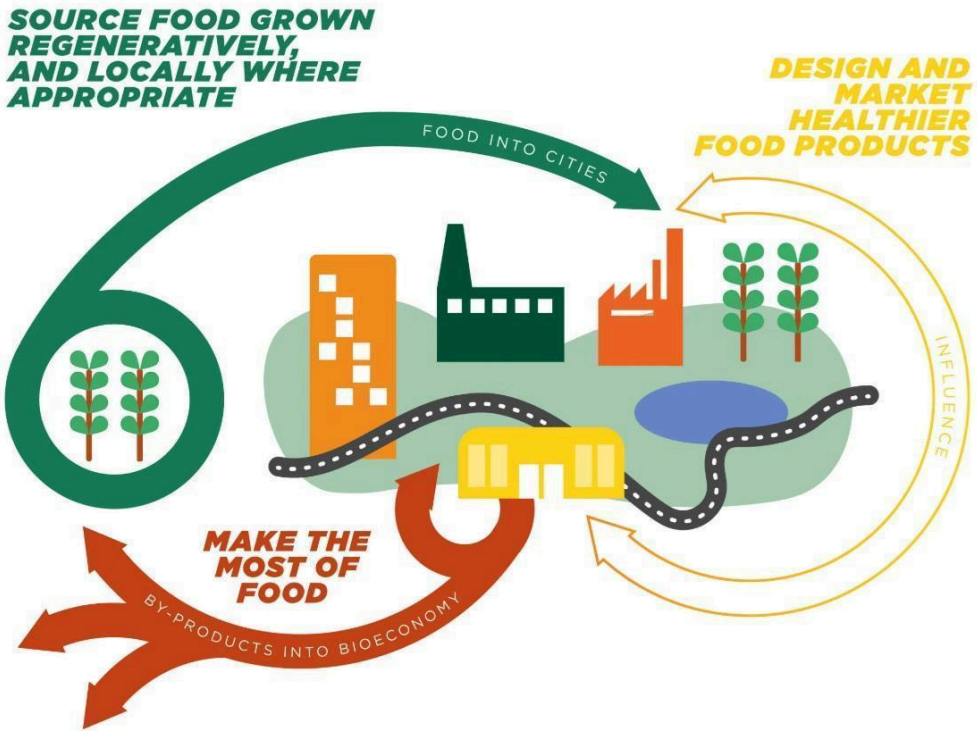


Figure 32. Circular Economy for Food. Source: EMF, 2019.

Sourcing food grown sustainably and locally, where appropriate, and promoting positively impactful approaches to food production ensure that the food entering cities enhances rather than harms the environment. These practices, such as organic fertilizers, crop rotation, and agroecology, support healthy ecosystems and improve foods' taste and nutritional value. Collaboration with farmers and adopting circular urban farming systems are essential in

achieving this ambition. While urban farming can provide some vegetables and fruits, cities can substantially source food from peri-urban areas, fostering a more diverse and resilient agricultural system and reducing packaging waste and supply chain lengths. “Rather than bending nature to produce food, food can be designed for nature to thrive by rethinking the ingredients they use and how they're produced, they can provide choices that are better for customers, better for farmers, and better for the environment.” (EMF, 2021a, p.14).

Make the most of food, shifting towards a circular food system where the concept of waste is eliminated. As major destinations for food, cities are equipped with structures and tools to increase the use of by-products, transforming them into valuable materials like organic fertilizers and bioenergy. These initiatives reduce waste management expenses and create revenue streams (EMF, 2022).

Design and market healthier food products, for they should not only be nutritious but also sustainably produced. Organizations in cities, including food brands, retailers, and restaurants, have long influenced food preferences and habits and can now support sustainable food systems (EMF, 2019). Food designers can innovate plant-based protein alternatives, utilize food by-products, and develop products and recipes that reduce waste. It is also part of their strategy to market these products, effectively reaching ethical and aesthetic demands.

EMF (2023) focuses on urban food systems because half of the world's population currently lives in cities, and that number is expected to grow. By 2050, 80% of the food will be eaten in cities. Solutions can be found in short food supply chains and networks. The proximity of citizens, retailers, and service providers (40% of cropland is within 20km of cities) makes new business models possible (EMF, 2019). In the same study, the food chain depicted by the specialists puts all stakeholders in charge of action, building a circular economy for food in cities (Figure 33 below).

The actors more engaged in this research, “Restaurants and other Food Providers”, are appointed three immediate actions:

- Source sustainablly grown ingredients;
- Prevent food waste and valorize unavoidable food waste and organic by-products;
- Design meals that provide consumers with access to circular food options.

Figure 33. Stakeholders' role in building a circular economy for food in cities. Source: EMF, 2019.

HoReCa businesses can use circular food design to boost their actions, making sustainability commitments more achievable. From purchasing to preparing to communicate ingredient choice, source, and presentation, food professionals have many pathways to use creativity for a more equitable and balanced food system. The menus can portray more diverse ingredients, thinking away from the mainstream high-impact crops-dairy-animals. This can boost agrobiodiversity, plant-based solutions, and regenerative crops on the one hand and, on the other, open a myriad of flavor and texture possibilities, enhancing food culture. We must not forget waste when a third of the food produced is not eaten; upcycling high-value ingredients and by-products means increasing profit margins, technology development, and nutrition, alleviating the pressure on the ecosystem.

4.4 Crossing Sectors

"The loss of agrobiodiversity has and will transform not only what and how we eat but who will have the resources to eat at all. Because behind every one of these foods and drinks are the people who rely on them for their livelihoods- from field hands and factory workers to grocery clerks and chefs" (Sethi, 2015, p.19).

Gastronomy is widely seen as a potential transformation tool, shifting current depleting models to more balanced ones. It can happen in deliberate choices, like deviating to renewable energy and resources, embracing local farmer markets, developing the local economy with small businesses, and playing the intermediary role between other economic sectors - industry and service

(SEGIB, 2022, p.17). When discussing social-centered initiatives, the HoReCa sector has the opportunity to balance local economies, keeping rural areas out of extreme poverty and exploitation. By keeping the food supply chain shorter, the decision-makers can improve the lives of those who produce, manufacture, and serve the industry, from farmers and artisans to cooks and servers.

Producing good food is to care about provenance, regardless of its display on white cloth tables or street food stalls. There must be a collective effort to minimize food and resource waste, increase best practices, buy food from respectful food chains, and bring awareness to customers about the food, as well as the places and community involved in the production (SEGIB, 2022). As illustrated by EMF (2021a) and Zampollo (2019), the food cycle can be diverted to preparations, upcycling, or donation, helping the hunger fight while strengthening the ties and responsibility in communities. It can also feature the reuse and recycling of non-edible items (Figure 34).

Figure 34. Circular Design for Food. Source: EMF, 2021a, p.16.

When the product has ceased to serve its primarily designed function, it can serve a secondary, non-intentional purpose- presented in the case studies of Enoteca Saint VinSaint, The Slow Bakery, and Pasto Nomade. Items can also be recycled and re-signified, gaining added value, as shown by Silo Restaurant and Enoteca Saint VinSaint. There are yet other cases when a shared economy happens, or at least the optimized use of tools and equipment, such as the case of Ocyá, Forno Brisa, and The Slow Bakery sharing food processing equipment (slicer, vacuum sealer etc.) or concentrating production in one store and expediting to the others.

In recent decades, international bodies and organizations have emphasized the need for change in the food system, from production to disposal, including consumption. Food Design is a fundamental tool for shaping new horizons and designing systems in which nature and individuals thrive, are healthy and are balanced. Food Design must be thought systemically, understanding that the diversity of agro-cultures is intertwined with human culture and embracing variety with sustainable models, with exchange and space for ecosystem evolution. Designing food products to use more diverse ingredients can also provide people access to a greater variety of food flavors and expand the nutritional profile of diets, taste education, and acceptance of diversity, with culinary traditions playing a prominent role in cultural multiplicity (Sethi, 2015).

Systemic sustainability is directly linked to new economic models, and the circular economy provides ways to go beyond undoing the damage already caused by the current food system. It proposes tools to reduce negative impact on ecosystems and thus consolidate positive global impacts and build ecosystem health (EMF, 2021a). Food Designers have the potential to act along the entire chain, from agro-industrial production systems to the creation of products and services that enhance the consumption of a healthier model for people and the planet, making proposed solutions accessible. Some promising ways to achieve the necessary changes are the production of food in a local, environmentally friendly way, with farming models in harmony with nature, and peri-urban and urban areas (EMF, 2023).

A new economy and business model that responds to the local needs of society, in which there is trust, collaborative services, and interpersonal relationships at different levels. The design decisions of a product-service must comprehensively look at the system, from the producer to the consumer, and the social, economic, and environmental impacts generated by their interactions. To ensure that this design results in truly positive impressions, it is necessary to balance the needs and demands of all actors and the resulting global consequences. This balance requires looking closely at effects on collective health and the environment, collaborative dynamics, products and services with a circular and collaborative character, and public and financial policies enabling a food system with fewer negative and more positive results.

Collaboration between international bodies, leaders, policymakers, food designers, and food professionals aggregates empirical knowledge, inspires thought-provoking discussions, raises insights, and combines practical and academic references to build meaning and implications for the food system within restaurant contexts.

5
Field Studies: Sustainable Food Systems into Practice

"Our fight for real food and wine, for clean production, for the regularization of small wine and food producers, our attempts to change legislation, our quest to break the food supply chain that causes waste, to restore dignity to rural people and health to our soils, to promote better living conditions for farmers and more balance for the environment… is in the same sphere as the urban fight for dignity and housing. If the farmer no longer has work in the fields, he could be the homeless person of tomorrow. Poison, monocultures, the lack of appreciation for the knowledge of the peasant, all of this has to do with the guy who asks for money while your car stops at the traffic lights. So yes, the choices of what you eat and drink change the landscape of the world. And health. And economic and social systems. And housing" (Lis Cereja,2022).[38]

Observing the everyday operation of selected HoReCa companies was crucial to understanding where theory and practice meet, how close we are to achieving specific standards, and how long the journey is to make sustainable gastronomy a reality. The venues chosen for this study illustrate how sustainability consciousness can be reflected in practical actions toward social, economic, and environmental issues. This chapter shows how these companies operate in general lines, deal with particular subjects, and what initiatives can be replicated. Many mistakes were made in their learning journey, but when knowledge is shared, we can all move forward together and focus our efforts on new challenges. If they do not mean success, they will not make the same mistakes our peers have made. The consensus is that we need to stop harming and start regenerating—one step at a time.

Every venue has contributed to building the proposed artifact, and the key learnings are presented individually. These pieces come together as a set of findings and lessons from data collection and analysis of the field observations and interviews (Chapters 2.5 and 2.6). They also encompass collaborative Ideation and Contextual Prototyping (Chapters 2.7 and 2.8). The synthesis of immersions, combined with the reflections introduced in Chapters 3 and 4, resulted in the proposed artifact in Chapter 6. Knowledge and meaning are being constructed together, then feeding back the field of Food Design.

5.1
Enoteca Saint VinSaint

Day in the Life

The observations at Enoteca started with a Day in the Life of a Diner in August 2023. The experience was taken solo, and first impressions of the brunch

[38] Post on the Feira Naturebas Instagram account on April 14, 2022.

service were registered. The restaurant is set in an antique house in a quiet neighborhood. Upon arrival, one feels welcome, surrounded by memorabilia, cozy furniture, and friendly staff. What was immediately noticed were tall, on-wheel blackboards featuring the daily menu carried around the dining room by the attendant while presenting the house and dishes to the clientele. With a table on the corner, facing the kitchen and bar, it was possible to see food and drinks coming out, and also a sort of mini emporium by the bar, with wine, coffee, housemade soap, and other artisanal products on display for sale (Figure 35).

Figure 35. Day in the Life of a Diner at Enoteca Saint VinSaint.

Enoteca has a long history of promoting their suppliers on-site (sometimes with collaborative dinners or events), on their website and social media, via podcast[39], and at the Naturebas Wine Fair[40]. Although already known, this information was given during the service when the sommelier presented wine suggestions for the meal. As the hours went by, some options got crossed off the menu, as some items are only offered in limited amounts, and last-minute substitutions may occur (one of the cheeses proposed in the platter got substituted). The food menu presents organic, seasonal items, often matching the producer's name or territory. Preparations are constantly changing, and the selection of fermented and upcycled items is evident for those with a more attentive eye. The alcoholic section features over 400 labels, primarily wines, but not all made from grapes. Minimum intervention and artisanal production are the rules, and they're described as one telling a family story.

After this observation, we agreed on a month-long immersion in the restaurant, from mid-October to mid-November, to accompany the production team (kitchen and pastry/baker sectors) in Work Along sessions, Shadowing the service team and conducting Contextual Interviews. Following the staff's routine week after week has clarified how the company's values are put into practice, as much as their barriers. This period followed the Immersion Protocol (Table 10,

[39] https://www.olapodcasts.com/channels/criadosolto
[40] https://feiranaturebas.com.br

Chapter 2.5), with a general introduction of the research to the entire team and the first few sessions used to get acquainted with the staff.

Work Along

The Work Along sessions were conducted for a month within the kitchen brigade's working hours and recorded in Journal and mobile registration through audio notes to self and photos. Because of the characteristics of the professional kitchen environment, most Figures were used as references to register an event that would be later described or considered (Table 17).

Work Along and Shadowing Enoteca Saint Vinsaint

Topic	Initial Ideas	Theme . repeated patters accros the set
Abundant local cheese.	*ESV - showcasing small producers on the menu and site, giving them visibility and direct access to customers*	*people and community*
40% of the veg variety comes from the Garden, the bulk items from Instituto Chão and Instituto Feira Livre	*ESV - the urban garden supplies 40% of vegetable variety, but some are in smaller quantities. They rely on Instituto Chão and Feira livre for the bulk of vegetables.*	*sustainability and environmental impact*
	ESV - The garden has had some planning for planting, but has also indigenous species. Whenever season comes, they have to absorb all the production. So the menu and the kitchen need to be ready for this	*sustainability and environmental impact*
60% of the menu is plant based	*ESV - the menu is mostly plant based, but the meat still plays a central role in dish description and customers attention*	*sustainability and environmental impact*
week 1 menu: black rice with garden vegetables, fried egg and salad / lamb pressé, Creole cornmeal polenta, toasted vegs and salad / chicken, gravy, fried cassava and salad / baguette with cheese and Bolognese lamb / garden vegs with boursin or egg / chicken dumpling with dashi and ginger / nasturtium ravioli with pumpkin and brazil nut filling, green velouté / pumpkin and sweet potato lasagna / cocada / panna cotta with fermented blackberry jelly / churros with ganache and coffee	*ESV - the sample menu features 9 dishes, from which 5 are vegetarian. The meat cuts used are "old chicken" and lamb´s neck. The leafy greens , pumpkin, some of the garden vegs, and flowers used for the saladas come from the urban garden. Cheese from the local producers, fermented blackberry jam is made with recycled fermented blackberries (for wine), cocada uses the coconut pulp form the coocnut milk, and the coffee used for the churros comes from leftover coffee grinds*	*sustainability and environmental impact*
On the board/online menu can be easily updated. BUT board menu needs to be constantly updated, only one member writes on several copies of the board	*ESV - because the restaurant has no fixed menu, the options are daily writen on blackboards, either fixed on walls, or moveable throughout the dinning room. They need to be checked and re-writen multiple times a week. There´s always the risk of forgetting something, mispelling, or incomprehensible hand writing*	*tech and tools*

Table 17. Notes from the Work Along and Shadowing Journal.

The menu construction, which is 60% plant-based, happens bottom-up and top-down at Enoteca. Sometimes, the (chef) owner comes with a reference picture, an idea, or an experience she has had and wants to recreate something along these lines. Quite often, without notice, she would drop down kilos of a fruit pomace or bags full of a specific fruit tree leaf, and the production team knew it meant dealing with it the best they could. On other occasions, however, the ideas would come up from the team members based on their references or something they saw while at the restaurant's farm or in the markets.

Seasonality is enormously respected because produce, including their farm or ethically selected suppliers, comes from nearby. It was enlightening to visit the restaurant's farm several times as part of the Work Along sessions with the chef and see how nature's cycles are featured on the menu. Less conventional plants are abundant in the area, and those in the kitchen are continually challenged to use them in multiple preparations. It was the case with pitangueira leaves turned

into a flavored salt and white ginger lily, becoming a sort of sweet pickles for a cheese platter.

In terms of animal products, conscious procurement is fundamental. Enoteca uses fish and seafood from reputable local fishermen, poultry, and red meat sparingly. The kitchen works mainly with secondary meat cuts, like lamb necks and old hens from their egg supplier. When chickens grow old and no longer lay enough eggs, they get “discarded” by the industry. With this raiser, though, they are butchered and sold. Knowing how to handle the ingredients to make the best of them is paramount in this type of operation. These are often tougher cuts, but with technique and time, they become splendid dishes. As a result of the Work Along sessions with the chef and cook, amongst other dishes, an “old chicken” ballotine with the pitanga leaves salt, upcycled breadcrumbs farce, and confit farm carrots served with heritage cornmeal couscous and Brazil nut farofa featured on the menu (Figure 36).

Figure 36. Farm to table, in all its evidence. Source: Enoteca Saint VinSaint and author's repository.

From flowers to green beans, from goat's milk (only when there are goat kids) to leaves and herbs, what nature provides has to be used. Because of the vast number of preparations, some with extensive shelf life, such as preserves, cured, or fermented, some items may be forgotten in the back of the fridge or pantry when a dish is discontinued or temporarily unavailable. It is of the utmost importance to have stock control and frequently revisit and rotate these stock spaces. Planning production is also a fundamental step when operating in such an environment to minimize shortage during service, which leads to team distress and impacts customer experience.

Around 60% of Enoteca's menu plant varieties come from their farm, but it cannot supply bulk items year-round. On two occasions, we made external purchases with the chef, going to the markets to buy fruits, vegetables, and other ingredients. These two suppliers are non-profit organizations fostering small-scale, mostly organic agriculture. They offer fresh fruits, vegetables, cereals, grains, ethically garnered animal products, and multiple eco-friendly household items. They work transparently on costs, networking, and sourcing

(Figure 37). Again, nature rules the choices, and we buy what is more abundant in quality and at a reasonable price.

Figure 37. Instututo Feira Livre and Instituto Chão. Source: institutes' repository.

The menu items are based on available produce, and the total use and reuse of the ingredients are contemplated. Transforming the by-products of one recipe into an input for another represents economic and environmental awareness and respect for the food and its producers. Cooking techniques and ingredient whole use can transform, for example, a coconut into vegetable milk and its pulp (pomace) into various forms of sweets, bread, and crumbs. Another classic example of the restaurant challenge taken during the observation is fermenting seasonal fruits to make drinks and, with its residues, producing jellies, sauces, and other recipes, adding value to what could be discarded. Dishes are always finished with fresh, edible flowers and herbs from the garden, and, weather permitting, they are collected from the green roof at the restaurant.

In the Work Along sessions in the pastry/bakery, we tried to organize demands and insights, plan the menu, and focus on inevitable technical struggles. We developed a series of recipes, including a tiramisu version made with house made mascarpone and upcycled coffee grinds, panna cotta with white ginger lily pickles, olive oil cake with pitanga compote, coconut cake, chocolate PBJ crepes (Figures 38 and 39 below).

Throughout these weeks, one thing became very clear: working with unexpected, non-standard ingredients (like spelt instead of white wheat flour) requires experience and training. At the time, we addressed this prerequisite and how much knowing the fundamental techniques is essential, for creativity needs to be backed up by a repertoire of cooking processes and ingredient substitution. The overall success, including reducing food waste from failed recipe tests, relies on these conditions. We also observed the lack of recipe cards (or files), making it harder to estimate costs, replicate learned processes, or even repeat house favorites without relying entirely on individual memory (Figure 40).

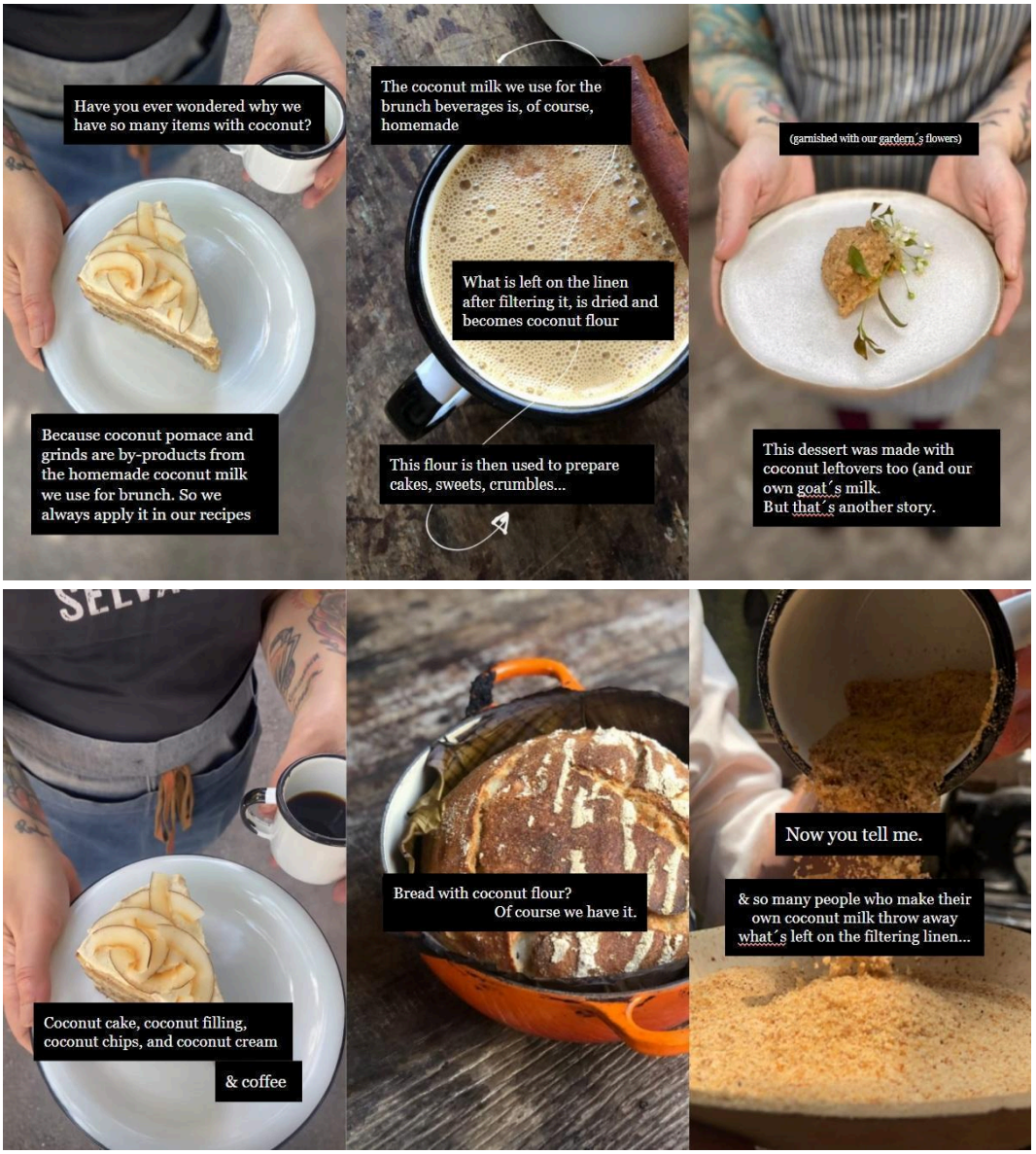


Figure 38. Coconut circular use in milk, desserts, and bread. Coconut cake made during immersion. Source: adapted from Enoteca Saint VinSaint Instagram stories (October 2023—subtitled in English).

Figure 39. Farm to table in practice with goat's milk and artisan chocolate ganache, and PBJ chocolate crepes. Source: author's repository and Enoteca's Instagram stories (October 2023—subtitled in English).

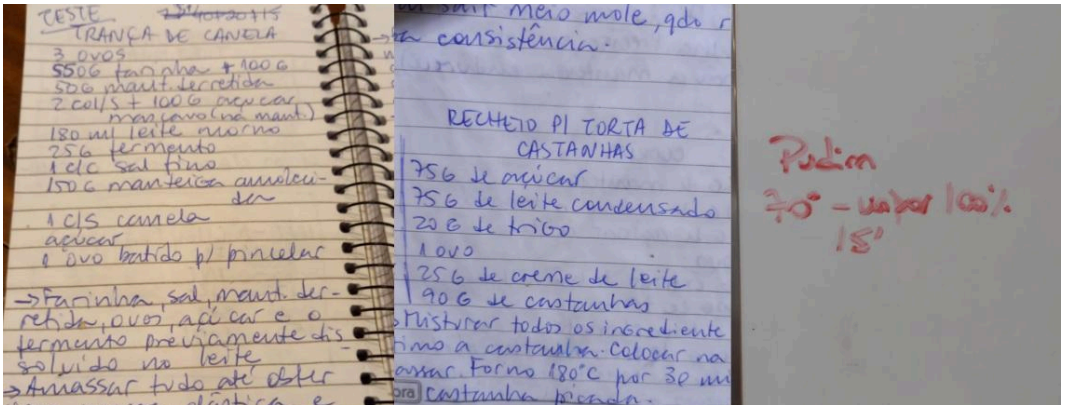


Figure 40. Recipe notebooks and notes on the whiteboard.

During the participant observation, this was addressed collaboratively, and a recipe file was drafted to help organize recipes, going from personal notebooks to a corporate set of files available on the restaurant's computer for consulting or printing. This recipe compendium can be printed when finished, leaving a hard copy per sector within reach. Moreover, ingredient substitution prediction was suggested and added to these recipe sheets, calling for general items, like “green leaves” instead of spinach or “fruit compote” instead of strawberries (Table 18).

The first version of this tool was contextually prototyped with the chef, pastry/baker, and general manager and then altered to better suit their needs. They pointed out the importance of having the suppliers' names alongside the ingredients for further reference when writing the menus online or on the blackboards. Likewise, adjustments were made to the costs of produce originating at the restaurant's farm based on a fixed operational cost added to market value (Table 19).

Food Cost Enoteca Desserts

CANDIED PAPAYA	QUANTITY	UNIT	PRICE	COST	METHOD
sugar	0.35	kg	R$3.73	R$1.31	"Peel the papayas, cut them into four parts and remove the seeds. Grate them finely, place them in a bowl, cover them with water and add 1 tsp of baking soda. Let them soak for 10 minutes. Drain, wash them and cook them over medium heat with the sugar, water and tonka bean zest. When the papaya looks crystallized and crunchy, turn off the heat and let them cool. Store them in a
water	0.50	l	R$0.00	R$0.00	
bicarb soda	0.005	kg	R$12.30	R$0.06	
cumaru	0.005	kg	R$600.00	R$3.00	
green papaya	1.00	kg	R$8.00	R$8.00	
Yeld	*0.4*	*kg*	*Total Cost*	*Cost per portion*	
			R$12.37	**R$30.92**	

SEASONAL FRUIT COMPOTE	QUANTITY	UNIT	PRICE	COST	METHOD
sugar	0.20	kg	R$3.73	R$0.75	Place in a heavy-bottomed saucepan and cook over medium heat until it reaches the desired consistency. Place in sterile jars.
fruit	1.00	kg	R$28.00	R$28.00	
Yeld	*1*	*kg*	*Total Cost*	*Cost per portion*	
			R$28.75	**R$28.75**	

VEGAN CHOCOLATE GANACHE	QUANTITY	UNIT	PRICE	COST	METHOD
dark chocolate 70%	0.20	kg	R$100.00	R$20.00	Heat the water and dilute the coconut milk. Melt the chocolate in a bain-marie. Mix well to combine.
coconut milk solids	0.02	kg	R$158.00	R$3.16	
water	0.20	l	R$0.01	R$0.00	
Yeld	*0.4*	*kg*	*Total Cost*	*Cost per portion*	
			R$23.16	**R$57.90**	

Table 18. Food Cost sheets per sector.

Ingredients Enoteca

PRODUCT	UNIT	PRICE	TYPE	SUPPLIER
acai	kg	R$24.00	fruit & vegetables	ASAS RJ
demerara sugar	kg	R$3.73	fruit & vegetables	NATIVE
brown sugar	kg	R$10.50	fruit & vegetables	INSTITUTO CHÃO
chocolate 70%	kg	R$32.90		LUIZA ABRAM
iceberg lettuce	un	R$8.40	fruit & vegetables	INSTITUTO CHÃO
curly lettuce	un	R$24.00	fruit & vegetables	SITIO
amburana	kg	R$49.50	dry storage	EMPORIO POITARA
blackberry	kg	R$40.00	fruit & vegetables	SITIO

Table 19. Food Cost Sheets Ingredient Tab.

Saint VinSaint's team separates waste into recyclables and organics for composting and animal feed. The inorganic recyclables are taken to a municipality collection unit, and the organic residues are returned to the restaurant's farm for composting or animal feed, closing the cycle.

They also transform leftover wine into vinegar for culinary use and worn oil into soap, flavored with local herbs or residual coffee grinds or citrus peels. Making natural cleaning products reduces expenditure and environmental impact as a secondary result, but it also means education (Figure 41). Partnering with one of the farm's responsible people, who makes the soap for the restaurant and sells production surplus at a farmer's market, Enoteca offers a homemade soap workshop that spreads knowledge, increases revenue, and engages the community. All these initiatives positively impact the restaurant's small ecosystem, generating income and promoting sociocultural exchanges.

Figure 41 Soap made from used oil and coffee grinds, citrus peels, and eggshells. Source: Enoteca Saint VinSaint's repository.

Shadowing

During the Shadowing sessions with the service team, it became evident that the blackboard dynamics are simple but demanding. All the boards must be re-written quite often, and, commonly, at least one or two things change every other day, like cheese types or supplier's name, seasonal vegetables and greens,

fish species, or cuts. This can become overwhelming over time, for the same team member usually does it. Renovating the boards is one step in communicating the ever-changing menu. Prices must be updated in the system, and menus must be uploaded for the QR code reader. Having the cost sheets and suppliers listed enhances the efficiency of these processes and was greatly appreciated.

Storytelling is crucial as a narrative thread in a customer's experience. Attendants need to be knowledgeable about natural wine and constantly updated on the provenance of the ingredients, preparations, and any peculiar anecdote worth telling. Every dish has a meaning and a reason, from the fermented butter on the *couvert* to the after-meal coffee or digestive. As the same team participates in the Naturebas Wine Fair, they have the opportunity to meet the producers, taste their wine, and engage in conversation. That experience alone leads to many tales to be told for the clientele. This was another considerable moment during the Shadowing sessions (Figure 42).

Figure 42. Shadowing with the service team.

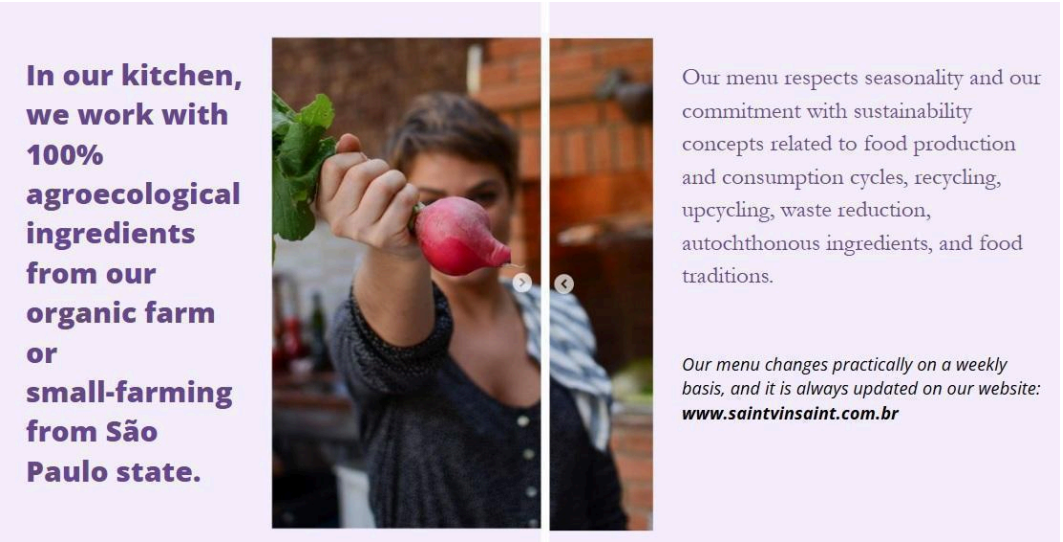


Figure 43. Instagram pinned post introducing Enoteca. Source: Enoteca Saint VinSaint Instagram (October 23, 2024—translated to English).

Another essential practice is social media communication. Enoteca's Instagram constantly and clearly spreads its values and practices, always emphasizing its choices and processes. They elicit staff suppliers' stories,

products, and actions, often featuring them on posts. Their website offers a contact list of suppliers who are, really, partners. Sharing these genuine relationships with customers is a potent weapon for spreading the sustainability culture. If one has just discovered them or is part of the loyal clientele, there is always something new to learn (Figure 43 above).

Enoteca's website states the basis of its operation, which is local, organic, seasonal, human, and planet-centered, where time and nature prevail. It says:

> “Not having a fixed menu. Working with circular production and consumption systems. Thinking about menus only after receiving the ingredients from the farm and organic suppliers. Respecting seasonality and food traditions. Recovering, remembering, valuing, simplifying. Not wasting. Making the most of the ingredients. Reusing. Getting to know the producers. Allowing nature and farmers to tell us what to use and cook in each season. Wines, only natural, organic, and biodynamic because wine is also food. For us, the real value of food lies in the people who produce it and on this small, conscious, local, and sustainable scale” (Enoteca Saint Vin Saint, n.d).

Contextual Interview

The observations were complemented by Contextual Interviews, as described in Chapter 2.5. The Contextual Interview protocol questions were developed in the course of the month-long period spent at Enoteca. During the observations, these questions were somehow asked of the participants during Work Along conversations or, even more informally, during lunch breaks. The interviews were conducted individually, recorded with a mobile, and subsequently transcribed and translated. As a consequence of a more extended immersive period, the general interpretation and significance of the questionnaire had already been grasped, with behavior observation and ordinary chatting during the immersion. Despite this, interviews revealed more individual perceptions of the operation, providing a moment for in-depth reflection and venting their feelings. The awareness shown by most of the team members is a combined result of singular and acquired consciousness manifested in their routine actions.

Enoteca is continuously implementing processes, trying to close as many cycles as possible, and it is a daily learning experience. In general, restaurants follow a linear logic of consumption and disposal, with great expense and waste of resources. Enoteca's incessant work also extends to the chef's blog and podcast, which seeks to expand the culture of food and wine consumption with her practices.

Learnings

- Circular economy is reflected in preparations and restaurants' farm, with creative recipes and waste repurpose. Using coffee grinds, leaves, coconut by-products, oil or organic residues to farm, closing the cycle;

- Storytelling on suppliers, ingredient sourcing, sustainable practices and values, connecting diners with the entire supply chain. Transparent relationships through the food chain strengthens connections from suppliers to customers;
- Events like wine fairs and collaborative dinners to promote products and producers, informing and engaging the community;
- Continuous learning and adaptation to achieve sustainability in all sectors, from culinary techniques to wine and beverages;
- The menu is essentially local and seasonal, representing the territory, its biodiversity, and stakeholders;
- Financial balance can come from managing resources, diversified revenue streams (soap, events, courses, less noble meat cuts, plant-focused menu, own farm);
- A dependable relationship with local suppliers, non-profit ethical markets, and the farm itself ensures connection to and valorization of the territory.

Struggles

- Lack of standard recipes file and cost sheets leading to inefficient recipe reproduction, consistency, and cost control;
- Inventory management of both raw and manipulated foods, incurring potential waste;
- High demand for knowledge about non-standard or upcycled ingredients and techniques.

5.2 31

Contextual Interview

The plant-based restaurant 31 was born to feature a less environmentally aggressive cuisine, mindful ingredient choice, and slender operation. The first interaction with the chef was an on-site interview in November 2023 (Table 20). As per protocol, the questions were intended as a pathway to a conversation. The chef and owner related how the business started, his ideals, daily struggles, and the F&B sector's responsibilities and impacts. As the person behind designing and planning most of the operation, the chef constantly interacts with suppliers and decides when and how items will feature on the menu, their presentation, and communication strategies

The chef reiterates his general belief in food service and sustainability: “I don't use the term sustainable; I use the term responsible because no restaurant will be 100% sustainable. To begin with, it is never for self-sustenance. You will always have a chain not exclusively for your sustenance.” Through his militancy

throughout the years, the chef has influenced customers and team members to eat more consciously, start fermenting experiments at home, and diversify their eating habits as part of the 31 microsystems.

Interview 31

Who	Question	Answer	Initial Ideas	Theme . repeated patters accros the set
	What do you like and what don't you like?	This responsibility of a more responsible kitchen, less aggressive for the environment,	31 - sector's responsibility of being less envrironmentally aggressive	company culture
		and that encourages small producers, right?	31 - sector's opportunity of developing small producers	people and community
		What I don't like is the lack of government support for small businesses that try to be responsible for the environment, that avoid waste and everything else.	31 - lack of government support and initiatives	sustainability and environmental impacts
		And this complicates everything, because it's not very easy to be a vegetarian, haute cuisine restaurant in the downtown area of São Paulo, let alone using good products and trying to be the most accessible possible. So I think this lack of support, lack of support from the industry itself sometimes complicates things a bit.	31 - sort of new business model need to find its market niche	financial
	5. Do you believe in more sustainable and ethical ways of running a Gastronomy business?	Yes, I think we try to do that constantly here. Every day more and more avoiding waste,	31 - constant improvement of practices	sustainability and environmental impacts
		so using up all the peels to make flavouring powder, to make missô, garum, shoyus... Everything we send to the trash can, first we try to think of a transformation possibility, so as not to have this waste.	31 - circular economy in the kitchen	sustainability and environmental impacts
		And we manage to reach, I don't know, 85% total utilization of the products. Fruit peel turns into liqueur, onion skin turns into powder, pumpkin peel turns into missô, anyway, these things always happen like this, it's really cool.	31 - reducing food waste	sustainability and environmental impacts
		I think that if all restaurants cared about this, things would be better, in the same way that there would be less waste and people would be more aware, and restaurants would encourage their customers to also be more aware.	31 - practices that are not so difficult to be replicated and could make a big difference	customer engagement and education
	6. What are the advantages and difficulties f working in a company that values	So, the difficulty is precisely the lack of, not even professionalism, but of qualification of some small producers,	31 - lack of professionalism from suppliers	people and community
		this means that sometimes they don't know how to properly manage your deliveries or supplying the products, taking care of the products themselves, managing to have	31 - supply consistency and quality can improve	people and community

Table 20. Interview notes and analysis.

The kitchen team manages to use about 85% of the received inputs, transforming fruit peels into liqueur, vegetable skins into powder to finish dishes, tougher peels are fermented for miso, and so on. One recurring issue was the lack of a sense of collectiveness among peers. If knowledge and experiences were exchanged more openly, everyone would benefit from lessons previously learned, and customer engagement could be encouraged more broadly. He stressed the absence of policies to support more sustainable food systems for F&B, emphasizing how difficult it is for small-scale companies, from farmers to cheesemakers to restaurant owners like himself.

31 opens for lunch and dinner, with an executive formula format in the day and a tasting menu at night. Lunch options generally use the same base preparations as the dinner menu and are always vegetarian or vegan, lowering food costs and helping to make financial ends meet. This proposition has an idealistic reason, too: the chef wants to prove one can be well nourished and feel satisfied with vegetables only.

Regarding suppliers, the chef relates the inconsistency in the quality and quantity of produce and logistics to be the most common issues. The uncertainty of deliveries leads to stress, even for the most planned menus. To avoid surprises, he has long-established cooking methods to extend the shelf life of fresh ingredients, keeping them for extended periods. That allows the restaurant to organize expenditures, investing in bulk quantities of highly seasonal items while preserving them to ensure they can be on the menu for a longer, more programmed period. Waste management is still a problem, for most suppliers find it hard to operate plastic-free, and the general market logic is completely

inverted: organic items need to be packed and labeled to protect and differentiate them from conventional farming items, genetically modified and full of pesticides.

Plastic use is controlled, but sanitary regulations and supplier constraints are still barriers. They invest in resistant food-grade plastic and stainless-steel containers and do not use a vacuum sealer to avoid single use of the material.

Day in the Life and Shadowing

After the interview, we arranged for a combination of Day in the Life with Shadowing (Table 21). The table booked was the counter dividing the kitchen and dining room. This privileged location enabled interaction with the chef during service, who promptly answered questions about preparations, cooking techniques, and overall working routine.

A Day in the Life & and Shadowing 31

	https://www.31restaurante.com.br/				
Menu	Pão integral na brasa, manteiga de castanhas fermentadas Smoked + corn + butter é um casamento perfeito. Faltou muito sabor nesse prato Mousse de tomate e caramelo. Base de aquafaba. Ponto de redução	Fermentados e algas, picles	Tomate morno, nespera lactofermentada e morango. Fenomenal	Brasa: tem q ter. Folhas, veggies, pães.	Canjiquinja de milho criolo, molho de tomate verde na churrasqueira, quinoa crocante
		Berinjela defumada, glace de cebola, pasta de gergelim. Incrível	Tupinambour cozido e cru, manteiga de ambiuranra	Ovo conserva ervas tostadas, sal de ervas	Queijo ultra fresco, melnde abelhas nativas
		Manga e malte	Doce de abóbora c favo mbee, cottage c left over queijo da outra sobremesa	Castanha caramelizada, torrone de cumaru e doce de baanaa	Cogumelo da mata atlântica, pasta de fermentados. Claramente Cebola
		most of the menu is created by the chef Raphael, the other two cooks have little creative freedom	*31 - currently vegetarian/vegan for bugdet constraints. Wouldn´t object to serving meat, as long as it´s ethically sourced*	*31 - small scale producers don´t always deliver what´s been planned and bought*	*31 - Consciously produced local ingredients make up our menu, so that we can propose new thinking about the food system.*
		will implement a la carte in December	*31 - freedom to explore ingredients, test, create*	*31 - ingredients quality and quantity vary*	*31 - Our menu is always changing. We favor vegetables and work with seasonal ingredients*
		31 - they propose a veg menu for lunch, an attempt to prove one can be well nourished and filled with veggies only	*31 - using vegetable based products makes costs lower, it´s possible to even out finance*	*31 - it can be tiring to create new dishes or come up with substitutions on an almost daily basis*	*31 - producers biggest struggle is consistency and logistics*
		31 - have their own fishbowl for algae	*31 - weekend clients x weekday clients, but generally full*	*31 - crop and yeld planning is rarely accurate*	*31 - lunch menu uses the basic dinner prep, always vegetarian*
	Tasting menu at 31, the team consists of three cooks, including the chef at night, plus one person to clean dishes, and two other people at lunch.	*The entire menu is based on the type of food available, mainly based on the tasting menu, so the executives rotate according to the tasting menu.*	*They work a lot on fermented canned items because of this, because they want to take advantage of what the producer has when they have it, but it is always a constant conflict of quality.*	*The cooks believe that the biggest challenge is precisely the inconsistency of the producers, and they set a schedule that is usually not met in terms of quantity, quality, and delivery. So it is a constant challenge to produce the menu.*	*So I think that perhaps the quality is what is most difficult, because sometimes the first, second, or third delivery has a certain quality. Well, that is what requires a bit of it.*
	In addition, they believe that the profile of professionals has to be a group of people who are very engaged and very keen to carry out this proposal, so it's not just any professional profile and there's obviously a technical	*There are a handful of suppliers that they count on, there are some things that they know will be fixed, but also because of this inconsistency, they rely a lot on things that they can produce in advance, such as fermented*	*Even now, for example, during the peach harvest, they won't work with fresh peaches in the wild, they'll work directly with the fermentation, since they're already fermenting, so this is also something that, well, could*	*31 - To find new ways to use ingredients and make the most of them, we invest in our own research. To this end, an initiative called Projeto Içá was created together with the restaurant, a research group*	

Table 21. Day in the Life of a Diner and Shadowing notes and analysis.

The kitchen team comprises five cooks, one kitchen hand, and the chef, who rotate between lunch and dinner services. To balance the male and female staff hierarchy, the chef usually hires a female sous chef and partners with an organization focused on transgender people's work placement. The chef creates most of the recipes and then passes instructions to his team. A well-trained staff is crucial for this operation, and those applying for a position at 31 typically have a gastronomy background and are often conscious of sustainability principles.

Sitting at the counter provided the perfect observation spot for a regular working shift. The restaurant was at its maximum capacity (31 diners). The dinner menu featured criollo corn and heirloom tomatoes in different preparations, making the most of seasonal ingredients. The dishes were mainly vegan, with fermented, smoked, dried, and charbroiled vegetables as centerpieces. Meat can be included, but rarely, due to ethical sourcing and budget constraints. Cheese and dairy are used sparingly and never mindlessly (Figure 44).

Figure 44. Dinner menu items in preparation.

As a plant-based restaurant, the preparations try to boost flavor extraction with cooking techniques generally applied to meats, maturating, and aging. Sauces and marinades are key elements in flavor development, along with quality ingredients. Despite not having a garden to grow vegetables, they have invested in an aquarium to grow different algae species, a splendid source of umami flavors.

Throughout the service, there were indications of whole use and circular use of items, confirmed by the chef, which only enhanced the main objectives of the restaurant without missing out on flavor and impeccable presentation. The atmosphere was clean, and the attendants were knowledgeable about the menu items, indicating provenance and the producers' names.

The restaurant invests in training and research initiatives to find new ways to use ingredients and maximize their use. A partnership with Projeto Içá was created to research sustainability issues in food production. The main objective initially is to explore the possibilities of fully utilizing the ingredients—through fermentation, maturation, drying, and freeze-drying, for example.

Learnings

- Advanced plant-based preparation techniques to extract the most of ingredients, while keeping customers interest, partnering with research projects;
- Maximizing ingredient use and minimizing waste represent the company's values and are central to financial balance (the kitchen uses about 85% of the produce received);
- Partnering with inclusive-forward organizations and offering specific job placements to achieve an equitable workplace;
- Invest in high-quality food-grade containers to reduce inorganic waste;
- Prepare food items to extend shelf life and have supply stability, going around the inconsistency of small-scale suppliers.

5.3
The Slow Bakery

The most extensive immersion lasted six months and started in July 2023. The choice was based on Slow Bakery's ingrained ethics, sustainability principles, and history of above-average consciousness and actions, which have permeated the company since its conception in 2015 (Figure 45).

Figure 45. The Slow Bakery's core values: 100% Sourdough, Long Fermentation, Wild Yeasts, Free Range, Real Food, and Local, Pasture-raised Animals. Source: The Slow Bakery repository.

In the course of the study, observations, co-creative sessions, and in-context prototyping provided rich research material. Participation and interaction happened in-depth, and this exchange made trying and testing replicable solutions possible. Several conducts were analyzed, and increments were collaboratively proposed and tested. As with the previous two venues, a broad question was posed during this experience: How does this venue fit sustainability principles and practices in everyday actions, and how could the processes be improved to increase positive impacts, reduce negative ones, and be replicated in similar contexts?

Work Along sessions started with a protocolar introduction to all staff. As a recurrent customer and former coworker to some team members, getting acquainted was reasonably quick. The observation happened primarily in the bigger of the three stores, where production and distribution occur. The first to be observed were the kitchen and pastry brigade, understanding their routines, chain of command, and internal relationships. These employees are named *Cook 1, 2,* and *3* for recording and privacy protection purposes, regardless of their actual function/sector. Then, immersion sessions covered the office team, with those in charge of procurement and stock. Further, we developed a closer connection with the bakery team *per se*, and the service staff. Several immersion events happened simultaneously but will be treated separately for explanatory purposes (Figure 46 below).

Although Slow is a bakery by name and concept, it offers many pastry items and a complete kitchen operation. It serves all-day brunch options and an assortment of delicatessen items, both house made and from selected artisanal partners. Dry goods like ethically produced chocolate, coffee, jams, wine, and even the flour used for the bakery's sourdoughs are regularly sold. Moreover,

on-demand or festive season menus, occasional farmers' markets, and catering events on-site or externally are offered (Figure 47).

Figure 46. Participatory Observation sessions interacting with customers, team members, and recipe development.

Figure 47. The Slow Bakery artisanal products. Source: The Slow Bakery's repository.

The choice of ingredients and products for resale is based on quality and origin while strengthening the local economy and understanding some of its constraints as a small-scale income distribution mechanism. The team visits the producers whenever possible to ensure they meet their promises. In commercial food operations, the conscious choice of ingredients determines kitchen operation, menu structure, and the type of relationship that will be established between the parties involved in the chain. The smaller the distances covered by the food, the smaller the losses, and the greater the quality and the freshness of products.

At The Slow Bakery, fresh produce, dairy, and meats are selected from partner agricultural and artisan producers. The availability of ingredients determines the menu of sandwiches, salads, and pastries, which is also reflected in the staff meals. By encouraging smallholders, the economic model strengthens the local economy, generates income for the surroundings, and extends the benefits to the community in a chain. There is reduced waste with less distance and time, providing fresher, healthier foods in better general conditions and lower environmental consequences with refrigeration, displacement, and storage warehouses. Economic efficiency is also due to the full use of inputs, reuse, and recycling in shorter paths.

Work Along and Contextual Prototyping

During the first week, when the operation was observed throughout, more questions than answers were raised, and an action plan to address issues in smaller sections was codesigned with the owner and head baker. The initial sessions revealed a series of discontinuous or unplanned processes, which led to menu item availability inconsistency, reverberating from procurement to communication to broken customer expectations.

Slow's menu has always featured fixed items centered around real food, ethically sourced produce, and a deep respect for time and nature. Both savory and sweet products remained consistently listed on the menu, with seasonality primarily reflected in specific items, such as a *garden vegetable tartine* (which varied based on supplier availability) or the jam served with homemade yogurt or panna cotta.

Farmers and artisan producers have always been highlighted on the menu and in the deli. Key ingredients like milk, dairy, cheese, tapioca flour for cheese bread, bread flour, salt, molasses, honey, pork, red meat, eggs, and chicken are sourced directly from carefully selected producers, with criteria ranging from animal welfare and processing methods to taste. These long-established relationships with suppliers go beyond mere commercial transactions. However, relying on sole-source suppliers for many items while fostering strong and dependable partnerships also leaves the Bakery vulnerable to shortages or supply disruptions. This inconsistency has occasionally led to the temporary discontinuation of customer favorites or having to hold a bigger reservoir of certain items, which means money held in a perishable stock. Knowing suppliers and their products and extending the network with alternative options can aid in deterring these constraints. Production teams must be willing to adapt, with previously tested recipes or background knowledge, to accommodate variations in different products, and communication protocol must be ready to inform customers. The office team has to exchange information with the suppliers, establish first contact, and have paperwork ready for a first order. It allows for last-minute purchases without bureaucratic delays.

The Slow Bakery is committed to sourcing all fruits and vegetables from organic or agroforestry crops. However, purchasing decisions often hinged on price and availability, with orders placed based on the best deals or the widest variety of items. Tracing the roots of these unwanted effects, we found out that orders were passed on to the purchaser by the kitchen team based on experience, not inventory, and from that, all decisions were made at her discretion. This lack of protocol led to recurrently buying non-organic fruits and vegetables to cover the list received from the kitchen, excessive or missing items, and little seasonal variety. As a result, the proportion of organic produce was

often scattered among the lot. While this approach ensured a more stable supply of ingredients and minimized frustration for both the production team and customers, it compromised core ethical and environmental company values. There was little rapport between farmers and the purchaser, who simply ordered what was listed, not necessarily knowing the culinary purpose of the selected item.

After discussing the subject with the cooks and the purchasing department, we understood the need to deploy stock control sheets, verified by the chef, who would also carry the fruit and vegetable purchasing process until the end, ensuring recipes would be adapted or modified with updated availability status or any delivery restrictions. With that information, the menu became more reflective of seasonal items, including salads and spreads to be sold at the deli, optimizing resources. With a growing bond with the farmers, we could make the most of produce, using bumper crops—abundant seasonal fruit and vegetables with reduced prices—to stock on preserves for the deli and later use, like kimchi, pickles, compotes, and pesto. The last was added with carrot fronds, which used to be discarded, and now, product costs have been lowered while eliminating food waste.

Adapting vegetable purchases to supplier availability requires menu flexibility and clear communication with the production team, service staff, and customers. During participant observation sessions with the cuisine and pastry teams, the professionals highlighted issues with ingredient instability and a lack of direction. These remarks accentuated the broken chain of command, from stock-taking to ordering and ultimately using ingredients. Production had no precise planning and reflected time, staff, and resource availability. Recipes for recurrent preparations were written on the tiled walls, meaning they hadn't been cleaned recently, and there were no updated recipe files.

During participatory sessions, the most relevant ideas proposed to improve the appointed discontent points resulted in the following:

- Stock inventory and purchase lists. A simple stock count in a handwritten list ensures orders and menu planning will be made according to stock instead of relying on one's memory and guessing estimates. During this implementation, we went from handwritten to hand-filled tables divided by the stock's sector and/or physical location (Figures 48 and 49). Although this was a considerable increment, it still had to be transcribed into a digital order, wasted paper, and demanded the office team print and hand out copies. This process was time-consuming; handwriting or blurred Figures sometimes led to mistakes. So, a digital version of the inventory and order was designed and divided by sector and food type (dry storage, dairy, animal protein, fruit and vegetables). It also contained a price and a

supplier column, to be updated by the purchaser, which could be used to compare previous buying prices. As weeks passed, we added a delivery estimate column, minimizing inquiries from the production team (Table 22). The stockist filled in the inventory, and each team responsible could fill in the orders based on that information. The procurement had it all handy, ready to pass on to suppliers. One last improvement was a column featuring the intended use of vegetables and fruits to guide team members. Color code per sector and store were implemented;

- A Production Schedule (Table 23) was designed to optimize supplier deliveries, culinary processes, and resulting by-products and save resources. This plan was iteratively tested to embrace new findings and constraints (like long fermenting times, equipment shared by different sectors, and bread oven chambers agenda). Using the remaining heat from bread baking, we could now bake and roast kitchen preparations without turning the oven on: vegetables for the tomato sauce, meatballs, chicken, staff meal, vegetables for salads and spreads, and pork, which roasted overnight at a low temperature (Figure 50). These processes have increased productivity (multiple items and more significant cooking processes without consuming gas or energy, human resources, and pots) and significantly decreased energy consumption. Another excellent finding was using the whey from yogurt production (drained to achieve a thicker consistency), previously discarded, to marinate pork. The original recipe used a large number of organic oranges, and the new version rendered the meat even more tender, with the intended acidity and no waste;
- Organize and standardize recipes. They were printed and updated as executed, all the while being adjusted (qualitatively and quantitatively). The ingredient list was linked to the file and updated bi-weekly so extraordinary price oscillation could be monitored and items substituted accordingly. Color code per sector was implemented (Table 24);
- Weekly planning for staff meals, including leftovers from recipes like egg whites, leaving room for personal creativity and upcycling of service items (Figure 25);
- Weekly planning of deli salads and lunch menu, making the most of seasonal ingredients, and foreseeing last-minute substitutions to accommodate natural events. Collaborative brainstorming and references resulted in a separate file to index recipe ideas (Tables 26 and 27);
- Split the menu into a fixed section and a dynamic, weekly-set lunch menu and daily specials (Figures 51 and 52);

- Improve communication with customers on existing blackboards (Figure 56).

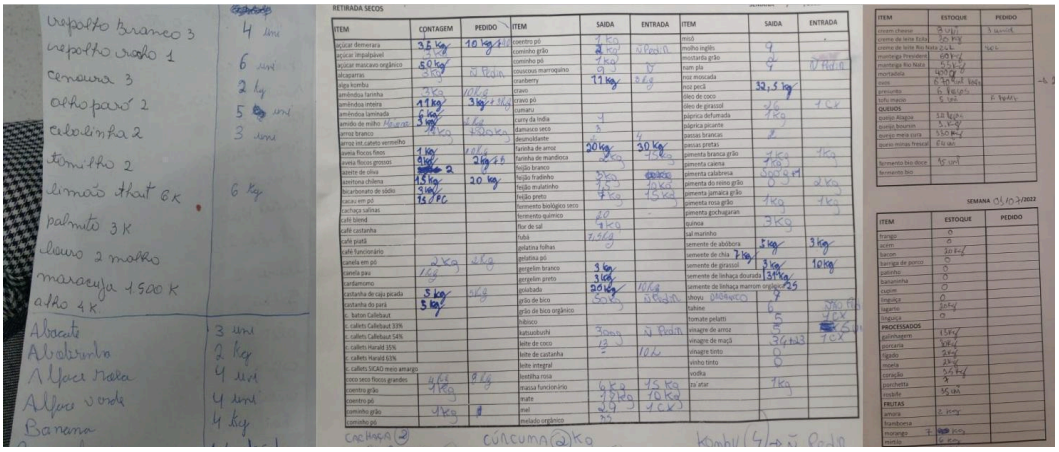


Figure 48. Implementing stock inventory before orders from scratch, then with a first printed version of the inventory and request list

DRY STORAGE — **WEEK / /2023**

ITEM	STOCK	ORDER	ITEM	STOCK	ORDER	ITEM	STOCK	ORDER
demerara sugar			coriander powder			miso		
powdered sugar			cumin grain			worcestershire sauce		
organic brown sugar			cumin powder			grain mustard		
capers			Moroccan couscous			nam pla		
kombu seaweed			cranberry			nutmeg		

Figure 49. The printed version of stock inventory and request lists per food type/stock location.

Order Deli

PRODUCT	UN	TYPE	PRICE	STOCK BT	ORDER BT	STOCK JB	ORDER JB	STOCK LEB	ORDER LEB	SUPPLIER	DELIVERY
cheese azul do bofete	kg	cheese	118.75	0.00	0.82			0.00	0.00	Queijo da Serra Dourad	10/10/2023
cheese brisa	un	cheese	94.5	1,882.28	5.00	1.87		0,464 g	6.00	Leite & Tradição	10/13/2023
cheese bela catarina	kg	cheese	147.8	0.27	0.90			0.00	5.00	Queijaria do Sertão	10/11/2023
cheese cuesta	kg	cheese	82.3	0.99		1.18		0,954 g		Canto dos Ares	10/13/2023
cheese morbier	un	cheese	128.9	2.00	5.00	4.00		1 un	6.00	Queijo da Colina Verde	10/13/2023
cheese soberano jovem	un	cheese	112.45	0.13	3.00	2.00	5.00	0.00	6.00	Fazenda do Sol Nascen	10/14/2023
cheese canastra capela velha	kg	cheese	139.6	2,899.10	2.00	4.88	2.00	2.88	2.00	Queijaria do Vale Encar	10/14/2023
cheese canastra claudio	kg	cheese	98.2	2,550.75	2.00	1.818	2.00	2.18	3.00	Sítio do Queijo Antigo	10/14/2023
cheese sant paulin	kg	cheese	157.35	2,230.80		3.718		0.00	5.00	Queijo da Lua Cheia	10/14/2023
cheese crottin	un	cheese	89.95	8.00		10.00		10.00		Fazenda do Sol Nascen	10/15/2023
chocolate L. Abram Cassipore 81	un	chocola	24.8			4.00		1.00		Cacau Selvagem	10/10/2023
chocolate L. Abram Acará 70	un	chocola	17.9	3.00	5.00	6.00				Chocolate da Mata Atlã	10/13/2023
chocolate L. Abram Purus 70	un	chocola	29.75		5.00					Sabores do Cacau	10/11/2023
chocolate L. Abram Tocantins 70	un	chocola	21.5	3.00	5.00	4.00		5.00		Ouro Negro	10/13/2023
banana candy bar	un	jams	19.85	2.00	6.00		6.00		5.00	Doce Colheita	10/13/2023

Table 22. The digital version of stock control and request list per sector/store.

Figure 50. Oven use to optimize time and resources.

Kitchen Production Schedule

MONDAY		TUESDAY		WEDNESDAY	
40l	YOGURT		FRUITS AND VEGETABLES	4X	PESTO
2kg	SOAKED BEANS		FINISH SALADS		JAR EVERYTHING
6kg	SOAKED CHICKPEAS		COOK CHICKPEAS AND BLEND		CHECK CHAMBER
1X	CAPONATA	40l	STRAIN YOGURT	8un	MARINATE ROAST BEEF
	PREP SALADS	40kg	TOMATO SAUCE	25kg	THAW MEATBALL MEATS
	PREP LUNCH		COOK BEANS	40un	GRATED HALF-CURED CHEESE
40un	GRATED HALF-CURED CHEESE		MARINATE BOTTOM ROUND	2un	GRATED PARMESAN
	GRATE JERSEY CHEESE	10kg	THAW MEATBALL BASE	40l	YOGURT
2un	GRATED PARMESAN			1X	CAPONATA
15kg	PREP TOMATO SAUCE			2kg	SOAKED BEANS
20l	BÉCHAMEL			3kg	MUSTARD SAUCE
8un	THAW BOTTOM ROUND				
10kg	CARAMELIZED ONION				

THURSDAY	FRIDAY	SATURDAY
MARINATE AND ROAST PORK	40l YOGURT	FERMENT MUSTARD
PORCHETTA	SHRED CHICKEN	STRAIN YOGURT
SHAPE AND ROAST MEATBALLS	SHRED PORK	CLEAN HOOD

Table 23 Production plan, after successive changes to quantity and schedule.

Food Cost Refreshments

SWITCHEL	QUANTITY	un	PRICE	COST	R$8.71
honey	0.50	l	R$44.00	R$22.00	
apple vinegar	0.40	l	R$15.00	R$6.00	
water	3.00	l	R$0.70	R$2.10	
ginger	0.20	g	R$11.84	R$2.37	
Yield	*4.1*	*l*	*Cost*	*Cost per liter*	
			R$32.47	R$7.92	

MATE CONCENTRATE					R$2.40
mate	1.00	kg	R$29.00	R$29.00	
water	20.00	l	R$0.70	R$14.00	
lemongrass	0.15	g	R$4.50	R$0.68	
dilution	**part concentrate 4**		**parts water**		
Yield	*20*	*l*	*Cost*	*Cost per liter*	
			R$43.68	R$2.18	

LEMONGRASS CONCENTRATE					R$0.84
water	10.00	l	R$0.70	R$7.00	
lemongrass	0.15	kg	R$4.50	R$0.68	
dilution	**part concentrate 4**		**parts water**		
Yield	*10*	*l*	*Cost*	*Cost per liter*	
			R$7.68	R$0.77	

HIBISCUS CONCENTRATE					R$2.73
water	10.00	l	R$0.70	R$7.00	
hibiscus	0.50	kg	R$35.65	R$17.83	
dilution	**part concentrate 4**		**parts water**		
Yield	*10*	*l*	*Cost*	*Cost per liter*	
			R$24.83	R$2.48	

Food Cost Pastry

VANILLA EXTRACT	QUANTITY	un	PRICE	COST	R$309.10
vanilla bean	0.10	kg	R$2,160.00	R$216.00	
vodka	1	l	R$65.00	R$65.00	
Number of portions	*1*	*l*	*Cost*	*Cost per portion*	
			R$281.00	R$281.00	

SLOW BUTTER	QUANTITY	un	PRICE	COST	R$83.14
35% cream	8	kg	R$32.90	R$263.20	
fleur de sel	0.04	kg	R$33.38	R$1.34	
Yield in kilograms	*3.5*	*kg*	*Cost*	*Cost per kg*	
			R$264.54	R$75.58	

MOLASSES BREAD	QUANTITY	un	PRICE	COST	R$2.73
plant-based milk	1.60	l	R$11.60	R$18.56	
coconut oil	0.32	l	R$63.56	R$20.34	
demerara sugar	0.72	kg	R$4.40	R$3.17	
molasses	0.56	kg	R$16.10	R$9.02	
apple vinegar	0.10	l	R$15.00	R$1.50	
cinnamon powder	0.30	kg	R$26.40	R$7.92	
nutmeg	0.02	kg	R$131.75	R$2.64	
vanilla extract		l	R$309.10	R$0.00	
salt	15.00	kg	R$8.16	R$122.38	
rinforzata flour	1.20	kg	R$9.99	R$11.99	
cocoa powder	0.80	kg	R$47.58	R$38.06	
baking powder	0.05	kg	R$28.60	R$1.43	
semi-sweet chocolate callets	2.80	kg	R$58.97	R$165.12	
Yeld	*95*	*un*	*Cost*	*Cost per portion*	
			R$235.57	R$2.48	

Table 24. Food Cost and Standard Recipes per sector.

Real Food

BREAKFAST

BREAKFAST WITH CHEESE EVERY OTHER DAY, ONE DAY A WEEK WITH EGG+EGG WHITES

PASTRIES FOR LUNCH, FRUIT SALAD ON SATURDAY

BOTAFOGO LUNCH

MONDAY: PASTA AND DISPLAY (YAKISSOBA, PASTA SALAD)

TUESDAY: ROASTED VEGETABLES, SAUCE IN MODERATION, RICE, BEANS, SALAD

WEDNESDAY: CHICKEN, OFFALS OR EGG + WHITE WHITE, RICE, BEANS, SALAD, FAROFA

THURSDAY: PORK (SAUSAGE, BACON, RICE, BEANS, SALAD, VEGETABLES, BEANS, CASSOULET,...)

FRIDAY: VEGETARIAN WITH SAUCE (FEIJOADA, MOQUECA, CURRY, SPINACH CREAM)

SATURDAY: SINGLE PAN (QUICHE, SANDWICH, SALAD, SOUP, PATTY, LASAGNA, LUNCH UPCYCLE, BAIÃO DE DOIS, TROPEIRO, MALUCO RICE, ESCONDIDINHO, COUSCOUS)

Table 25. Staff meal guidelines.

Lunch Formula	Deli Salads
WEEK 01	WEEK 01
CANJIQUINHA WITH MUSHROOMS, BACON, AND RED WINE	2 MELONS, SPINACH, TOASTED PECANS, MINAS CHEESE, MINT HONEY OLIVE OIL, LIME JUICE AND ZEST
PORK SLAW	POTATO WITH HERB EMULSION (TOFU MAYO)
CHICKPEAS WITH EGG, AVOCADO, AND VEGGIES	BABAGANOUSH (LEB + EGGPLANT), DEDO PEPPER, CILANTRO YOGURT, MANGO
WEEK 02	WEEK 02
EGGPLANT AND ZUCCHINI LASAGNA	INDIAN OKRA
CHICKEN CAESAR SALAD WITH CROUTONS AND PARMESAN	BANANA CEVICHE
CHICKPEAS WITH EGG, AVOCADO, AND VEGGIES	GUACAMOLE / CAPONATA
WEEK 03	POTATO MAYONNAISE WITH 7-MINUTE EGG
POLENTA WITH CHICKEN AND OKRA	WEEK 03
ROASTED VEGETABLES WITH HUMMUS (BEETROOT, PUMPKIN, CHICKPEAS)	PEACH, NECTARINE, ARUGULA, PROSCIUTTO, BALSAMIC GLAZE
ROAST BEEF WITH ROOT VEGETABLES AND GINGER SAUCE	ROASTED SWEET POTATO WITH TAHINI DRIZZLE
WEEK 04	BEETROOT AND WALNUT SPREAD
SEAFOOD CASSOULET	KALE, QUINOA, AND POMEGRANATE SALAD
VEGAN / CHICKEN SLAW	
CARROT HUMMUS WITH VEGETABLES (CARAMELIZED CARROTS)	

Table 26. Weekly lunch menu and Deli specials, featuring seasonal ingredients.

SALAD	COMPONENTS
PUMPKIN AND LEEK	AB. DICES OF KABOCHA, THINLY SLICED PULLED LEEK, VINAIGRETTE
KABOCHA PUMPKIN, RAISINS AND WHITE CHEESE	AB. 1/2 MOON KABOCHA, RAISINS SOAKED IN VINEGAR, KALE, CRUMBLE WHITE CHEESE, PARSLEY, CORIANDER
CARAMELATED KABOCHA PUMPKIN	AB. ROASTED KABOCHA WITH CARAMEL (MUSTARD AND MOLD OR MISSO WITH SHOYU) CHIVES AND SESAME
ROASTED PUMPKIN WITH CALABRESE SAUSAGE AND ROSEMARY	PUMPKIN, SAUSAGE, ROSEMARY
PUMPKIN, SESAME AND BASIL	PUMPKIN, SESAME, BASIL
ROASTED PUMPKIN WITH GOAT CHEESE AND SUNFLOWER	PUMPKIN, FRENCH BEANS (OR ANY OTHER GREEN), GOAT CHEESE, SUNFLOWER SEEDS
PUMPKIN, CARDAMOM AND SEEDS (SOFT YOGURT OPTIONAL)	PUMPKIN+CARAMELATED ONIONS+SEEDS (CUMIN, CORIANDER, PUMPKIN, SUNFLOWER)+CARDAMOM+CINNAMON STICK+CALABRESA
MARINATED ZUCCHINI WITH MINT AND PEPPER	GRILLED ZUCCHINI SLICES OR GRILLED SLICES, FINGER PEPPER, MINT (EXTRA: BUFFALO MOZZARELLA)
GRILLED ZUCCHINI WITH HAZELNUT AND PARMESAN	GRILLED ZUCCHINI SLICES OR GRILLED SHEET, PARMESAN AND HAZELNUT SHAVES
GRILLED ZUCCHINI, FENNEL AND MINT	ZUCCHINI SHEETS, JULIANA FENNEL AND MINT
RICE WITH BANANA AND DRIED MEAT	BASMATI OR NEEDLE RICE, PLANTAIN, FRIED DRIED MEAT, CORIANDER
THAI RICE	NEEDLE RICE, GARLIC, PEPPER, GINGER, PETIT POIS, MOYASHI, SHOYU, CORIANDER, LEMON JUICE, SESAME, SUNFLOWER
WATERCRESS, RICOTTA AND QUAIL EGG	WATERCRESS, CORIANDER, BASIL, DILL, CHESTNUT, SESAME, WITHOUT PUMPKIN/SUNFLOWER, CALABRESA PEPPER, GARLIC,
RICE WITH LENTIL AND RED WHEAT RAGUZINHO SAUSAGE	BROWN NEEDLE RICE, LENTILS, TOMATO CONCASSÉ, CALABRESA SAUSAGE
RICE WITH LENTILS AND CRISPY ONIONS	BROWN NEEDLE RICE, LENTILS, ONION FRIED

Table 27. Ingredient substitution guide and recipe ideas.

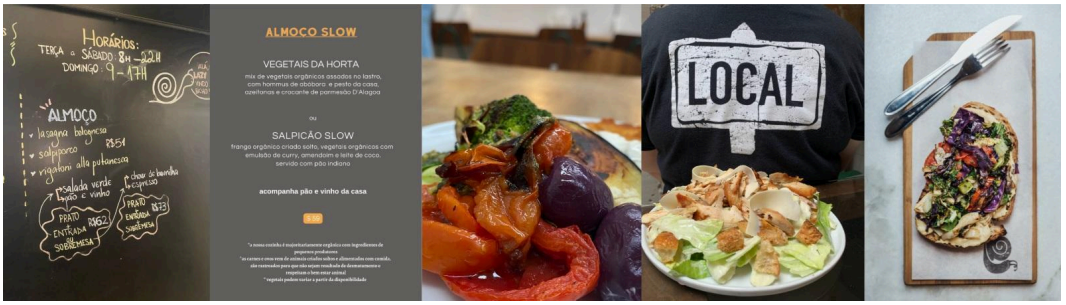


Figure 51. Weekly lunch menu and specials communicated on blackboard and social media, featuring seasonal ingredients. Source: author's and The Slow Bakery's repository.

Figure 52. Seasonal ingredients in lunch options. Source: author's and The Slow Bakery's repository.

After these changes, we targeted internal communication. Separate production and service team email accounts have been created to grant information access. After testing the usability of Google Suite tools in mobile and desktop versions and fine-tuning with participants, files with pertinent information were shared accordingly. Whatsapp groups were organized to broadcast more emergent subjects, reflecting the same function distinctions. Email addresses and passwords for file access were written in each group description, along with necessary Google Drive links (Figure 53). With official communication, follow-ups became more effective, and information circulated faster and more efficiently.

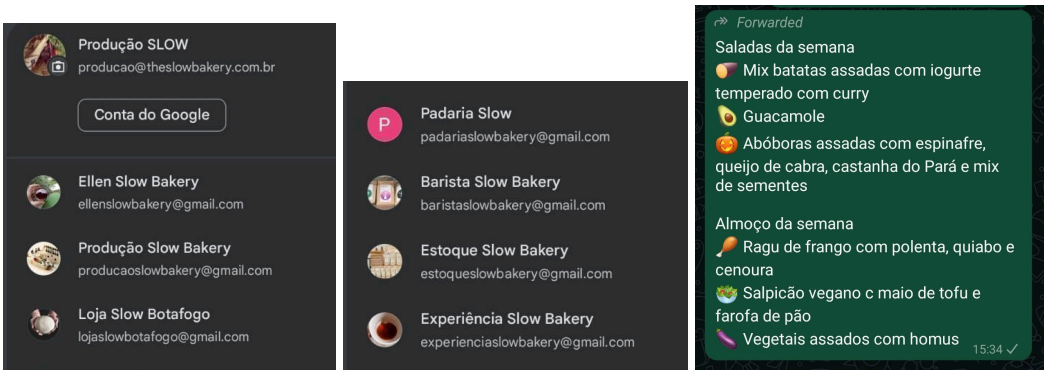


Figure 53. Google accounts to organize and share sector-specific information.

As inclusivity has always been a key factor among The Slow Bakery's diverse staff, all group communication used carefully chosen vocabulary and non-gender-defining pronouns or words that would exclude individuals.

After the first steps of organizing and planning, we went to revising recipes and food costs, crosschecking with reality, from production to service in the kitchen. During a weekly feedback session, the recipe-yield subject emerged and crossed with the lack of portion control during service. To avoid single-use plastic, Slow didn't weigh and portion the food individually for service. Although a great way to minimize inorganic residues, this practice led to inconsistent portions being served to the clientele. Still, more than that, there was no effective cost control, pricing, and food waste. We also noticed some processes generated

by-products or were time or energy-inefficient, so they also needed attention. So that was step two:

- Portion control and assembling guides prevent food loss, food waste, and uneven results. Weigh and establish standard measuring cups per item for quicker action during service. This measure has resulted in a set of updated recipe folders and cards containing portion control and assembling information for service (Figure 54, Table 28). Over the implementing weeks, they have been collaboratively improved, checked for possible faults, and set on the best format for daily use. When the final versions were approved, some items were printed and encased in plastic for hygiene purposes and then fixed on the wall; some were left in a plastic folder to be consulted upon demand.
- Menu planning and description to cater for interchangeable items such as leafy greens (including beet leaves and carrot fronds), garden vegetables, cheese of the day (using spare bits from cheese boards and deli cheese), seasonal fruit jam, clericot using any open bottle of wine from the bar and seasonal fruit, and pink or yellow smoothies (seasonal fruit). The choice of words is key in communicating with clients, and it should add value and reflect sourcing, seasonality, and freshness rather than scarcity or unplanning. Dish descriptions include *of the day*, *mixed garden vegetables, seasonal,* and *ask your attendant* when referring to a fluctuating composition of products. The wording enhances interaction, giving the floor staff dialogue opportunities and connecting farmers, cooks, and customers. When it becomes clear that the dishes reflect a more balanced food chain without losing gastronomic appeal, customers understand and value less perennial menus (Figures 55 to 57).

Figure 54. Portion control with measuring cups.

Portion Control

ITEM	WEIGHT	MEASURING
bonzaço cheese	40g	1/3 cup
bonzaço pickles	20g	1 pink spoon
bonzaço roast beef	50g	weigh
bonzaço tomato	30g	4 slices
club sandwich BLT aface	10g	4 small leaves
club sandwich BLT bacon	30g	4 slices
club sandwich BLT mayonnaise	30g	2 tablespoons
club sandwich BLT tomato	40g	4 thin slices
kimchee kimchee	20g	2 tablespoons
béchamel croque	25g	1 tablespoon
onion fluffy croque	30g	2 tablespoons
mustard croque	10g	1 tablespoon
parmesan croque	10g	1 pink spoon
ham croque	25g	1 1/2 slice
shredded chicken	100g	1 cup
garden vegetables	60g	1 cup
limonese chicken	20g	2 tablespoons
kimcheese kimchi	20g	2 tablespoons

Kitchen Assembling

CROQUE plate, fork and knife salamander

1/2	SANDWICH BASE with cheese
1.5	SLICE HAM
1/2 tbs	MUSTARD inside
1/2 tbs	BECHAMEL inside
1/2 tbs	MUSTARD outside
1 tbs	BECHAMEL outside
1 pink spoon	GRATED PARMESAN

CROQUE MADAME plate, fork and knife salamander

1/2	SANDWICH BASE with cheese
1.5	SLICED HAM
1/2 tbs	MUSTARD inside
1/2 tbs	BECHAMEL inside
1/2 tbs	MUSTARD outside
1 tbs	BECHAMEL outside
1 pink spoon	GRATED PARMESAN
1	EGG sunny side up

CROQUE FOFA plate, fork a salamander

1/2	SANDWICH BASE with
20g	CARAMELIZED ONION
1/2 tbs	MUSTARD inside
1/2 tbs	BECHAMEL inside
1/2 tbs	MUSTARD outside
1 tbs	BECHAMEL outside
1 pink spoon	GRATED PARMESAN

GRILLED CHEESE wood board grill

1	SANDWICH BASE with cheese
1 pink spoon	SHREDDED CURED CHEESE
1 pink spoon	GRATED PARMESAN
1	SANDWICH BASE without cheese

BLT bread grilled, griddle bacon

2	SLICED BREAD
2 tbs	MUSTARD
70g	BACON
4	TOMATO
2 leaves	LETTUCE

GRILLED CHEESE & BANAN grill & griddle

1	SLOW SLICE
1/2 cup	SHREDDED CURED CH
1	SMALL BANANA
1 pin	CINNAMON
1 tbs	BUTTER

Table 28. Portion Control and Assembling Guide.

Figure 55. Seasonality in beverages and cakes. Source: author's and The Slow Bakery's repository.

Figure 56. Seasonality featuring in choux of the day. Source: author's and The Slow Bakery's repository.

Figure 57. Seasonal ingredients for desserts. Source: author's and The Slow Bakery's repository.

Another round of ideation and contextual prototyping macro session was performed, which was related to production and losses and expedition to the stores, as raised by the participants. At the time of the observation, all three Slow Bakery stores requested finalized products (cakes, preserves, and bread loaves) and manufactured products (sauces, grated cheese, and sandwich fillings) through WhatsApp. This practice led to many mistakes due to lost messages within the group, outside service hours, privacy issues, forgotten items, and an overall lack of control. The first Control sheets were paper versions, collected daily and transcribed to a file. All of them included food loss control cells (Table 29).

Production Control	/ /2023	
ITEM	PRODUCTION YIELD	PRODUCTION LOSS
salad of the day		
meatball		
béchamel		
caramelized onion		
guava chutney		
club sandwich filling 01		
lemon grass concentrate		
hibiscus concentrate		
mate concentrate		
chicken chicken		
hummus		
yogurt		
kimchi		
masala		
mustard		

Sent Items Control			/ /2023	
ITEM	BOTAFOGO	LEBON	JB	LOSS
bread crumbs				
hummus jar				
yogurt jar				
butter chunk				
mustard jar				
pesto jar				
pickles cucumber jar				
salad of the day carb				
salad of the day protein				
salad of the day veg				
meatball				
porchetta				
roast beef				
chicken				
meatball				

Table 29. Production and Expedition Control, per sector, printed version.

We decided to try a digital version because we had similar issues with the inventory and order controls and because these were inter-store orders. Since most of the staff were already familiar with the online control systems implemented so far, a series of production-to-expedition tables were tested,

resulting in six main files: bakery, pastry, and kitchen production and bakery, pastry, and kitchen expedition (Tables 30 and 31).

Production Control Pastry

OCTOBER	TOTAL	BOTAFOGO		TOTAL	JB		TOTAL	LEB	
Item	Produced	Production Loss	Stock Loss	Produced	Production Loss	Stock Loss	Produced	Production Loss	Stock Loss
Lari's cake	781	0	0	0	0	0	0	0	0
apple cake	72	0	0	0	0	0	0	0	0
brigadeiro	49.2	1.2	0	0	0	0	0	0	0
sugar syrup	21	0	0	4	0	0	8	0	0
vanilla choux	1420	2	3	0	0	0	0	0	0
choux base	1831	0	6	0	0	0	0	0	0
choux dough	27.1	0	0.085	0	0	0	0	0	0
choux filling	0	0	0	0	0	0	0	0	0
vanilla cookie	1041	0	4	0	0	0	0	0	0
craquelin	17	0	0	0	0	0	0	0	0
almond cream	48	0	0	0	0	0	0	0	0
pastry cream	38.2	0.065	0	0	0	0	1	0	0
mascarpone cream	0	0	0	0	0	0	4	0	0.12
almond croissant	295	0	4	118	0	1	240	0	5
ganache 1:1	42.4	0.024	0	0	0	0	0	0	0
ganache 1:1.5	35	0	0	0	0	0	0	0	0
red fruit jelly	35.6	0	0	0	0	0	0	0	0
granola in a jar	298	0	1	0	0	0	0	0	0
french toast infusion	13	0	0	48	0	0	15	0	0
condensed milk	4.7	0	0	0	0	0	0	0	0

Table 30. Production and Loss Control, per sector, across stores.

Expedition BAKERY > BOTAFOGO JB LEBLON

WEEK 2					Tue 10/10							Wed 11/10					
Item	price	PRODUCTION	service BT	deli BT	service JB	deli JB	service LEB	deli LEB	PRODUCTION	service BT	deli BT	service JB	deli JB	service LEB	deli LEB
cinnamon roll	R$ 3.20	38		28		10		0	34		24		10		0
cinnamon syrup	R$ 6.50	1.5		1		0.5		0	1		1		0		0
Baguette bread	R$ 8.14	41	2	14		10		15	41	2	29		10		0
Brioche bread	R$ 11.34	15	5	4	1	2		3	18	12	1	1	2	2	0
Brioche bun bread	R$ 1.59	48	6	18	4	8		12	24		13		6	5	0
Brioche bun mini bread	R$ 0.70	80		80		0		0	80		80		0		0
Croissant bread	R$ 1.33	165	11	84		40		30	110	6	74		30	5	-5
Frozen croissant bread	R$ 1.33			0		0		0			0		0		0
Cranberry bread	R$ 9.18			0		0		0			0		0		0
Filone bread	R$ 7.38			0		0		0			0		0		0
Focaccia bread	R$ 3.07	42	3	31	2	6		0	42	4	20	2	6		10
Forma bread	R$ 8.48			0		0		0	33	1	18		6	1	7
Wholemeal bread	R$ 6.04	33		13		10		10			0		0		0
Joelho bread	R$ 13.35	34		22		6		6	35		23		6		6
Miche bread	R$ 10.19	16	2	4		4		6	16		6	2	2	2	4
Nordic bread	R$ 12.73	16		8		4		4	14		6		4		4
Olive bread	R$ 8.18	26		14		7		5	26		11		7		8
Parmesan bread	R$ 8.48	38		20		7		11	38		17		7		14
Rio bread	R$ 8.12	54	4+3	23	3	7	3	13	68	7	38	3	7	3	10
Seed bread	R$ 5.94	46		21		10		15	46	1	20		10	1	14
Slow bread	R$ 8.24	40	6	6	4	5	3	16	54	6	22		10	3	13
Wholemeal bread	R$ 4.66	26		6		10		10	26		6		10		10
TOTAL WEEK 2	R$ 1,303	R$ 3,833	R$ 176	R$ 1,787	R$ 81	R$ 777	R$ 49	R$ 989	R$ 4,037	R$ 293	R$ 1,951	R$ 62	R$ 808	R$ 121	R$ 801

Table 31. Expedition and Loss Control, per sector, across stores.

Throughout the implementation and enhancement period, we proposed a requisition protocol to follow, which was explained in each file's first tab. Generally speaking, the sheets had to be filled daily before 3 pm on each store's individual tab. Production teams had to fill in data on what was sent, and the recipients had to confirm the information. This cross checking prevented items from being forgotten and sent to different stores, and it recorded possible loss/damage in transit. The bread production has always accounted for a small

amount of bread production excess, designed to attend charity programs, and that has also been included in a donation tab for control purposes.

Regarding natural resources, Slow already buys some of its energy from a solar farm. Composting was one of the last efforts toward environmental sustainability implemented at the bakery during the immersion. When questioned about this service, we found out the hired company had been collecting organic and inorganic material together, which triggered a change. After some research, we found out a few companies are starting to offer composting services to Food Service, and trials began.

Training and communication were key at this moment, and during the first weeks of collection, a few questions emerged and were promptly answered. Incidents like throwing spoiled sourdough in the bins only to see them overflowing from fermentation a few hours later have taught a few lessons (to kill the yeast and not kill the composting environment, we were instructed to spray vinegar on the dough). Apart from drastically reducing general waste volume, the company would always provide fertilized soil packets for employees and customers, a product originating from our residues. The staff members were keen on receiving nutritious media for their home gardens and quickly engaged in composting.

Shadowing

The Shadowing sessions were split into two in-store sessions and one external session at a farmers' market. The total time spent on this phase was 8 hours. The first was on a Thursday at lunchtime, and the other was on a Saturday morning, when the bakery reached its maximum capacity. These sessions aimed to understand customer profiles, interaction with attendants, and responses. This session was split between the Deli and the dining room to cover more aspects of the attendants' routines (Figure 58).

Figure 58. Shadowing in-store and at Farmers' Market.

While following the participants around, we could observe how the company values reflect the type of customer and the rapport with the attendants.

Clients tend to be more aware of the food served, open to experimenting, and overall, more understanding of item shortages or modifications.

Other relevant insights, such as the choice of wording on the menu, how to present lunch and daily specials, and the importance of good rapport with the production team, have come from these sessions and were tested during the immersion. When attendants have tasted the products and combined details or selling instructions about them, having an authentic experience, they are more likely to remember sensorial and technical information, making it easier to convey the messages to the customers.

Contextual Interview

The Slow Bakery Contextual interviews were conducted in February 2024 and involved staff members, suppliers, and a consultant. Because of the extensive and intense participatory observation sessions, most of the answers were already predicted, although they were always relevant to complement the data and capture individual thoughts. All participants repeatedly mentioned company values and connections, showing how ideals are reflected in practice.

“We here at Slow happen to work with bread, but what we really work with is people; that's what we've always talked about.” The first interviewee was the owner and baker, who reinforced the notability of a long-term and grounding relationship with the flour producer. Years ago, The Slow Bakery team participated in developing a national, high-quality, stone-ground, wholesome flour (Figure 59).

Figure 59. The Slow Bakery bread, baker, and Slow Flour. Source: Slow Bakery's repository.

Their final product, Slow Flour, is free from bleaching chemicals and additives. The flour is ground on demand, ensuring freshness and keeping maximum nutrition, resulting in incomparable quality and contrasting tremendously with agribusiness white flour. This partnership represents a milestone in the Brazilian flour industry, with the added benefit of being local and

thus cheaper- as a final product and in “hidden costs” (Gonzalez, 2024). This flour is largely used in all sourdough bread preparations and to feed the *levain.*

Another emphasized aspect was the community development stemming from local businesses and partnerships. In the participant's words:

> “I not only believe in more sustainable ways of managing gastronomy businesses, but I am a laboratory for this. And when we talk about sustainability, we mainly talk about relationships. (...) It is a word that has entered a type of use that I believe is much more about responsible relationships. Then, when we talk of relationships, we refer to relationships with the environment, work relationships, relationships with our surroundings, and what is around us. In short, with our society, with our peers here who share the same market.”

This dependability relates to consistently buying from artisan suppliers, oftentimes absorbing a significant part of their production and helping the development of small businesses. It ripples into the small regional economy and expands to new markets. Whenever one spends money on a local business, one is, in fact, investing in the community. Another initiative that boosts the local economy is hiring bakers trained at a technical school from the outskirts of Rio de Janeiro, in São Gonçalo, giving young people from less economically favored contexts the opportunity to work in a consolidated and renowned establishment with career plans and pay above market rates. In an industry that historically does not offer lofty salaries, hiring labor with a high transportation cost is rare and often a barrier to the professional advancement of residents of areas outside the most prominent centers. From the beginning, Slow has invested in talent development and equal opportunity. This policy is ingrained in the bakery's human resources, and promising cases are not let go because of this hindrance.

One major concern was how distant most HoReCa enterprises are from sustainability awareness and actions. It is more than necessary to change this system, and although it may seem grand to be a pioneer, it can also be lonely. Many operational protocols at Slow have been designed from scratch through trial and error. Building knowledge can be very costly in this business, and challenges abound.

When interviewing staff in general, the 5x2 working schedule was a consonance. HoReCa is built on straining six work days a week, and those who work at Slow feel the privilege of two days off a week, which reflects in the quality of their personal lives. Within routine and must-dos, they have the flexibility to organize and prioritize tasks, not feeling pressured to perform to the maximum. They understand there are opportunities to grow within the company. “I feel that my work is valued here, that people need me”, said one of the interviewees, while another said, “Slow makes you feel part of everything, you know? It makes you feel part of everything that is happening.”

Personal and professional development was mentioned by several participants, who feel they are constantly learning and incorporating this knowledge into their habits, like making more conscious choices when buying food, rethinking food waste, and being overall more political about everyday issues, and we quote:

> “It makes me rethink my lifestyle a little, the things I buy, the things I consume, the producers I buy from, which producers I will consume from, and it makes me try. More and more in my life, I value small producers, local commerce, and organic products. This stimulates my creativity; try to work with products in season”.

A second participant

> “For example, not everything is rubbish; in the past, in my house, any leftover vegetables were rubbish; nowadays, because I work at Slow, I don't just throw them away; I know I can transform them, I can do other things with it, because it's still food.”

Non-abusive hierarchical relations and diversity in the team were often mentioned amongst hideous stories of harassment, bullying, and triggers. One participant said

> “This is very deep-rooted in this sector; if you get sick, you are weak and a bad employee. If you don't want to work 6 days a week, you're seen as a bad professional because you want better working conditions, as if you were wrong for desiring a better life. We see better working conditions as possible, but this mentality is very ingrained in people, and it is not possible. It's said that the kitchen is a man's place and is hard work. The Food Service sector is very sexist, and at Slow, it is an environment that is not sexist in general, but outside, it is, so it is very discouraging.”

The contact is also considered respectful and light across and within sectors: “I think communication is vital. We maintain good relationships with everyone on the team, with the suppliers, with the cooks, and with the attendants.”

Not long after the interviews, a polemic job offer for multiple positions in a restaurant in Rio de Janeiro triggered a job offer at Slow, posted on their Instagram account purposely on Labor Day (Figure 60), retaliated against the standard working conditions and pacts offered by the industry. This job offer has become the standard at the Bakery.

The participants also reported how they felt praised for eating food prepared with the same ingredients used by customers. All animal products are free-range or organic, and all vegetables and fruit are offered to the personnel for breakfast and lunch. In their words

> “Because good food is not just for the customer who can pay for it, all those who are here making it all happen, they are eating something that doesn't have preservatives, pesticides, and various chemicals that make things last longer or stay perfect. So every day we are here, and most of our days at work, we eat healthier things than we would if we were elsewhere.”

Wages are above market average, and benefits include co-participative health care, *Slow Money* to be spent within the stores, and one bread loaf per week. The Slow Bakery was the only observed venue offering a dedicated rest area where employees can enjoy their meals and breaks in an air-conditioned room. It was said about the overall atmosphere at The Slow Bakery:

> “The staff actually feels involved in the company's values, in the causes the company supports, in the company's agenda. The staff feels part of it because they eat the same thing as the customers, you know? They are treated the same way; that is very important.”

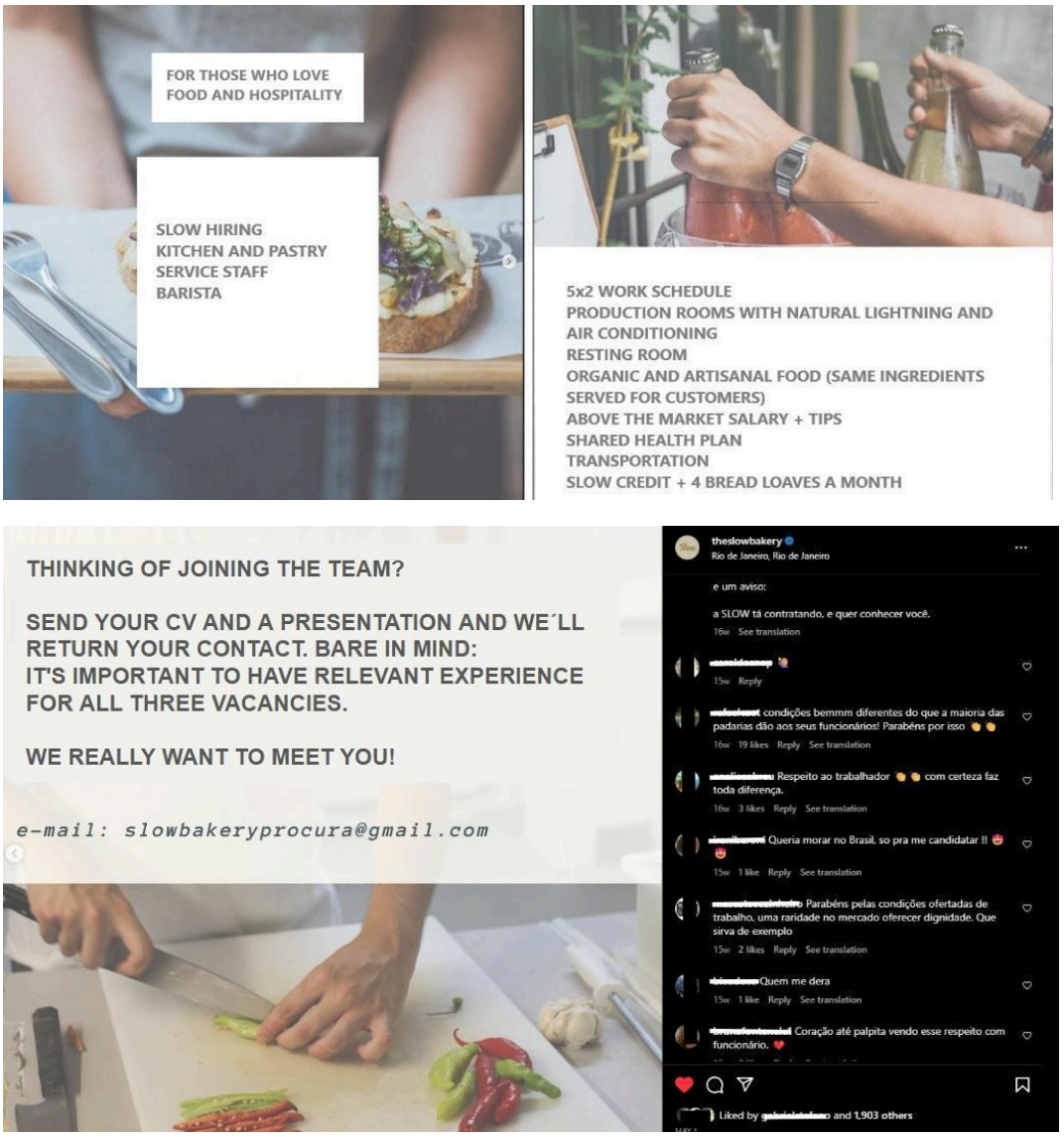


Figure 60. Instagram post and comments on open positions at The Slow Bakery. Source: The Slow Bakery Instagram account on 01 May 2024.

It is common sense that staff need to be more knowledgeable and flexible to work in such a structure, and particularly in the production team, handling ingredient logistics and whole use is paramount. The kitchen team must be over-vigilant with menu planning, procurement, stock control, what has been produced, and items that take a long time to be ready (like the 15-day kimchi), so preparations are not forgotten in the cold chamber. Because organic fruit and

vegetables spoil more quickly, foreseeing their use upon arrival and organizing the prep schedule is crucial. As mentioned,

> “When working with seasonal products, you have to adapt. The menu changes daily or weekly, so you must always be open to changes and work with what is available. I think this can be a big difficulty. An advantage is the quality you offer in your restaurant and your business. You know exactly where the ingredients came from, how that food, that animal, was treated. How it was raised adds a lot of quality to your plate”.

Complemented by the statement,

“the bulk of F&B businesses are there just for profit, industrialized, and there's no respect for food. But food is nature; it's organic, comes from the backyard or the farm, and is grown without pesticides or chemical fertilizers for things to magically happen. And that's it, real food.”

An experienced consultant was interviewed to gain an external perception of the bakery's operation and financial aspects. The general impression is that this structure requires management, close attention, and control over all processes

> “with products that deliver a lot of truth, that seek to be more than an item, but a tangible belief rather than a market demand. So that was something that caught my attention, and it has both sides, positive and negative”.

As a professional with broad market penetration, he sees how the HoReCa sector largely lacks ethics and sustainability, with an entire chain that is not ready for the challenge, and those who take it at their own cost, aggravated by the lack of market value perception of these actions. He resents the general lack of investment in the sector that

> “is still very little aided or supported by policies, it still has little science, little specific study behind it, and little appreciation for this knowledge. So you end up seeing a lot of people facing failure. It can take the lives of a lot of people out there”.

The interviewed suppliers work with dairy, fruits and vegetables and have held a long-term bond with Slow. They all underscore the difficulties in running small and ethical food-related businesses in Brazil but believe in sustainability based on balance, quality, and direct consumer relationships. They understand the importance and value of their artisanal products, sourced locally and responsibly, resulting in high-quality products representing their terroir and community identity. Besides the transparent relationship with the clientele, they foster fair labor practices, animal and plant stewardship, and care for nature. Structural and legal obstacles are constant, going side by side with logistic difficulties and a lack of structure to compete with industrial-scale production. “It's unfair to even try to compare; they are not the same business”, a participant said. They face growing dilemmas, maintaining ethical and environmental values at their core.

Having solid partners like The Slow Bakery plays a determining role in supporting this type of initiative. They ensure a consistent, predictable weekly order, which sometimes enables the feasibility of a process or product. “If you cease buying from us, we can't continue making this cheese and probably not operating at all”, an artisan said. Restaurants prioritizing quality and ethics over cost efficiency and mass production recognize the efforts behind each delivered product, and by showcasing their work, they also foster market growth, strengthening the short supply chain. These confidence-based relationships benefit the entire system. The more we support good, clean, tasty food producers, the more it becomes available to people, who will increase the support to producers, scaling up and closing this cycle.

Learnings

- Strong relationship with suppliers, staff, and customers, promoting a sense of community and shared responsibility; artisans and food producers are publicized on social media and in-store communication;
- Flexible and planned menu to cater for seasonal and natural dynamics (shortages and bumper crops), trained staff to adapt and communicate;
- Circular practices to maximize energy, time, and ingredient use, reduce waste and resource consumption, like carrot fronds pesto, yogurt whey, and oven schedule;
- A diverse and inclusive workplace, fair wages, and respectful working conditions make the team feel valued and decrease turnover. Staff meals are prepared with the same high-quality ingredients as those offered to customers;
- Invest in the local economy by supporting community-based artisans, farmers, and workforce, developing local, superior quality flour to reduce imported inputs;
- Communication is paramount throughout the food chain to mitigate frustration; direct connection with suppliers
- Simple technological solutions can significantly improve efficiency, facilitating sustainable best practices with handy control systems (sector, color-code, information access, thematic groups). Standard recipes and portions reduce waste and ensure consistent customer experience;
- Planning, flexibility, and creativity are key to overcoming barriers (absorbing crop surplus or substituting products, being aware of seasonal calendar, not compromising values for market demand, continuous technical development).

Struggles

- Balancing financial sustainability with company values;

- Lack of standard procedures for inventory, cost control, recipe, and portion consistency;
- Absence of internal order and expedition system;
- Logistical and creative challenges to keep the ethical commitments, recipe collection, and menu planning around supplier constraints.

5.4 Lano-Alto

Day in the Life and Shadowing

The immersion at Lano-Alto took place in March 2024. It started with a weekend Day in the Life of a Guest, combined with Shadowing sessions to accompany one of the owners' work on the farm, e-commerce, and hosting activities.

Upon arrival, one understands the name: amid a dense sunrise fog, we saw a charming historical house on a hilltop. This traditional construction hosts the in-sight store, offering their dairy products and some neighbors' items, such as coffee and grains (Figure 61).

Figure 61. Lano-Alto farm and inn reception and store. Source: Lano-Alto's repository.

The guests are guided to the allocated cabin through a pathway in the forest. The accommodations have been built with local wood and stones, using low-emission techniques and utilities. For an in-depth experience, guests are encouraged to cook from Lano-Alto products like eggs, honey, cheese, yogurt, fermented butter, raw milk, and *doce de leite*, supplied in a cold box, and other ingredients are complemented by the neighbors' crops of fresh vegetables and cereal (Figure 62). The bungalow has hot water, a power bank, and LED lamps, but no electricity. And nothing is missed. During their stay, guests can explore the property, enjoying trails, waterfalls, and natural pools. They can also swing atop the mountain to watch the sunset and glimpse the surrounding rural area. The

experience provides a connection with self, other people, and nature and a disconnection from urban life.

Figure 62. Lano-Alto bungalow and food items.

The days were filled with intense and nonstop Shadowing of the farm and cabins. They were divided between assisting guests, tending to animals, cheese-making, and producing other items like preserves, yogurt, doce de leite, and paçoca —a sort of peanut and sugar-fine crumble pressed into a solid block. In addition to the rural and production chores, they also tend to the two bungalows and the on-site and online shops. The Lano-Alto team constantly researches and develops products with local crops and dairy products and combines ancestral knowledge and technology to use and preserve everything that grows in the surroundings. Traditional and innovative techniques have been applied to local honey, fruits, and vegetables, resulting in fermented syrups, alcoholic beverages, pickles, and compotes. As a traditional site for milk production, the region is famous for a particular type of soft cheese concoction (Requeijão de Prato), and this tradition has been rescued and promoted after Lano-Alto's team's persistent efforts to regulate the ancestral cheese-making methods granting an AOC, or protected designation of origin (Figures 63 and 64).

Figure 63. Cheese-making and cheese. Source: author's and Lano-Alto's repositories.

Figure 64. Paçoca, koso, and doce de leite. Source: Lano-Alto's repository.

The couple has been raising animals and evolving agroforestry on the site for over ten years. To promote the maintenance of the local economy and agrobiodiversity, they encourage neighbors to cultivate native and heirloom plant species, guaranteeing the purchase of the entire harvest with a value above the market. Along with assured commercial distribution, the couple designs packaging for the local products, selling them online, creating market opportunities these farmers could never consider. Besides fomenting agrobiodiversity and the local economy, this initiative promotes a sense of ownership, valuing their place and territory.

The products processed in the farm, such as cheese, yogurt, and fermented drinks, are sold nationally, providing the farm with its primary source of income and raising the community's visibility. Other initiatives of Lano-Alto, such as online courses and on-site experiences, help spread local knowledge, heritage, and values to a wider audience. Throughout the years, they have disclosed local traditions and festivities, expanding appreciation for local culture even further.

Their knowledge of marketing and storytelling has enabled them to create a scenario for selling products and experiences and training the surrounding rural population in a format that overflows the community, continuously elevating the territory's perceived value.

The creation of sustainable food systems cannot happen in isolated areas but holistically, combining technique, economics, and ecology in the social context in which they are inserted and the relationships arising from them. The practices developed by Lano-Alto express authentic, sustainable development, with its core principle rooted in preserving human habitats and communities. These principles actively contribute to revitalizing their natural surroundings rather than merely tolerating a sustainable yet deteriorative relationship with the environment's resources. The culture of environmental respect transcends the threshold of non-degradation and attempts to restore the ecosystem equilibrium.

Deciding to invest time, money, and a lot of effort in a devastated piece of land surrounded by rich food-producing culture has allowed Lano Alto to work based on the essence of systemic design, orchestrating a comprehensive system transformation that harnesses the collective consciousness of local inhabitants. These global concerns can be contextualized, comprehended, and seamlessly integrated through a place-based approach and rely on an intimate grasp of the locale's norms, ethos, and historical trajectory to inform future conscious decisions. Embracing participatory and holistic projects and committing to ongoing education strengthens the territory through equitable principles.

Contextual Interview

From the contextual interview, we grasped a more reflexive approach and a fair description of their complex routine,

> "What I like is that we deal with the tangible, real, and immediate (...) it's a great privilege to be in a place where we can carry out this type of work in our daily lives. And the other side is that it is very intense, challenging, out of our comfort zone, and demands 100% of our attention and responsibility. So I feel like we get tired of navigating at this speed in some way, too. It's a paradox, right? It's what we want but what makes us tired."

The participant implies the close-to-utopia target of living sustainably in every aspect, from financially to environmentally, ethically, gastronomically, and work-wise, offering good and affordable products to the final consumer. Part of their financial success is due to their structured background and education, which allows the couple to multitask with design, content creation, planning, and more physical labor.

The struggles are constant, fighting outdated or incomprehensive legislation and competition with industrialized products. Quoting the interviewee

> "You can't compete on price with what's being offered on the market, right? One of the things we talk about a lot is how accustomed we are to seeing alienation in the market, which is about comparing product prices. It's small-scale rice from family farming compared to industrial rice from a farm of 10 thousand hectares. They're completely different products. They are impossible to compare, but people still compare them in the supermarket. Look at one, look at the other, and say, this one is 50 cents cheaper, I'm going to buy the cheaper one. And in this dispute, unfortunately, it is impossible to compete".

Cycles are easily closed within the farm regarding organic matter.

> "In farm production and manufacturing, we manage not to have any sign of organic waste; for example, all the organic waste generated by our system is used by the system itself, whether going to animals, going to pasture, or being filtered, worked and returned to nature in a way that is correct,"

affirms the owner. The packaging is also designed to be reusable or compostable, with glass jars, paper cups and wraps, or natural fiber packaging for other items within economic viability. Biodegradable or compostable packaging is still a developing industry in Brazil.

Over the years, their relationship with the territory encompasses their family life routine (they have two children born and raised on the farm), neighborhood connection, local traditions and rituals, and the natural ecosystem.

> “The consequences are that we feel more part of the whole, more responsible for the place we live and work, completely integrated into a natural system that allows us to have a healthy life as a whole in our daily lives” (...) “changing the system is a continuous process, and being inside it, keep fighting, being part of the resistance is how we decided to do it”.

The interview ends with a reflection that all the effort to promote the terroir and its culture, values, and people is nothing without the relationships one builds. Accreditations, awards, and prizes for our cheese or other artisanal products help spread the word about the region and certainly aid in community development and social innovation. But they are nothing without personal bonds.

Learnings

- Systemic approach to farming, animal raising, and community traditions to empower local ecosystem and economy. Promote neighboring products to ensure maintenance of agrobiodiversity, cultural heritage, and strengthen relationships;
- Limiting waste by packaging choice and circular use of organic material, closing loops;
- Diverse income sources (workshops, bungalows, online and on-site sales of dairy, preserves, fermented products) guarantee a more stable microeconomy, allowing for financial comfort while investing in product and service development.
- Promoting local, traditional ingredients and product-making boosts the terroir's identity and value. Combining tradition with updated knowledge allows for growth while preserving.

Struggles

- Legal barriers to non-industrial products and processes;
- Customers tend to compare artisanal with mass-produced item prices, an unfair and impossible balance in terms of ethics and aesthetics;
- Logistics to send perishable products can be expensive. Packaging needs to be well-designed to ensure quality, be environmentally responsible, and be economically feasible.

5.5 Ocyá

The restaurant on an urban island in Rio de Janeiro is the perfect location to discuss and portray sustainable gastronomy. Structured around a tripod of community, consumer, and ecosystem, the restaurant presents itself as a project

willing to foment the local economy through selective and low-impact fishing, connect the consumer with nature through the sea and subsistence fishing, and reduce the environmental impact caused by the traditional fishing industry.

Day in the Life

The Day in the Life of the Kitchen Brigade happened in October 2023 during an event dinner held at Ocyá. The restaurant offered a set menu for the occasion and was fully booked. We were greeted by the chef standing at a chimney, and we found out he was testing a new catch. A few minutes later, it came out of the smoker, and the result was impressive. The flesh spread like a pâté, with a delicate texture and lightly smoked in flavor. More than a perfect welcome and introduction to the work done by Ocyá and its team, this is one of many examples of this kitchen operation.

After settling in and making the protocolary introductions with the kitchen brigade, we toured the preparation and service areas, ending at the cold room. This room has an unexpected glass wall dividing the kitchen and the dining room, from which customers can marvel at the team's remarkable work (Figure 65).

Figure 65. Ocyá dining room, cold chamber, and fish assortment. Source: Ocyá's and author's repository.

A wide variety of fish hanging from hooks to age, an assortment of fish cuts tidily assembled, and sea charcuterie are on display. The chef then explained the *sukibiki* process of removing the fish scales with their moisture pockets, making fish dry much faster and mature appropriately. We went on about the maximum extraction of each animal, using all its parts for dishes (Figure 66 below). Not everything is that simple, as the restaurant relies on the clientele's approval, and a few items are more challenging to sell than others.

Ocyá's team produces and serves fish and seafood in various presentations, from cold cuts, preserves, and pâtés to eye-based emulsions, crunchy scales, and powder. Nothing is wasted. Avoiding well-known fish species, the restaurant invests in smaller animals, either line-caught or by-catch,

and applies fine techniques to extract the most of each fish. With the smoked fish from our arrival, they tested a fish sausage inspired by the classic *boudin blanc* technique, using *ubarana* or bonefish. This species has no market value and often gets thrown back to the sea (usually dead) or eaten by the fishermen because of the tiny bones piercing its flesh. The soft flesh was removed with a spoon for this preparation, and fresh cream and seasoning were incorporated. It was then shaped and cooked, resulting in a lightly flavored and textured sea sausage (Figure 67).

Figure 66. Maturating fish, fillets, and a finalized dish. Source: Ocyá's repository.

Figure 67. Whole fish use preparations and Charcuterie. Source: Ocyá's repository

Contextual Interview

The contextual interview with the chef happened in December 2024 and brought up professional and personal events that led him to this path. He has been in contact with fishermen from an early age, becoming familiar with and learning how to appreciate the fauna and handle the daily catch. In his words

> “Because the fisherman spends the day at sea, what he catches has a lot of value. It's his time away from his family. And one thing I believe in a lot is that every product is a life, right? Every life is noble; thus, every fish is noble.”

His other belief is that cooks have the (super)power to transform. They may change any random ingredient into something unique and tasty. Combining noble ingredients, which they have access to, with this transformation power from the kitchen results in beautiful, interesting dishes, enticing people to taste them and learn more about the food they are eating. It is knowledge through experience.

From his experience in small villages of Central America, the chef has learned to prepare the same produce in multiple forms, making the most of local resources and ingredients, wasting nothing. So, we replicate this simplicity here at Ocyá, using salt, fire, and minimum ingredients to their full extent. The daily catch is the best possible, even when it is not at its best, since fish loses quality from the minute it is taken out of the water. It is the cook's job to extract the most of it.

As they use a lot of fish, there is a considerable amount of leftover carcasses, offal, and heads. The team is always pursuing entirely using it, creating recipes like smoked eye mayonnaise, crunchy skin and scales in cilantro oil, charcuterie with offal, and bits and pieces of meat (Figure 70). Ocyá is privileged to have the time, team, and resources to test and learn from it. He goes on

> “At times, something new comes from affinity. Sometimes, you've been working with the same fish for three years and have an idea out of nowhere. You say, Man, how did I not think of that on the first day? It's so obvious, right? But you needed that time, you needed to mature all of that to reach that conclusion. Your subconscious has been working for a long time. This idea didn't come out of nowhere. Working on the fish is a lot of fun.”

Another particularity about Ocyá is having the chef at sea, which straightens the bond with the fishermen. Over the years, they've built a relationship based on trust and care. On good and bad catch days, the fishermen know they can rely on the restaurant to buy their products at a fair price, so they should take good care of the fish going to the restaurant. The chef has learned to show them that every fish has value, and he pays even for pieces that would typically be thrown back into the water or discarded. One example is the mullet roe. The fishermen sell the fish for R$15/kg, with or without the roe, because they do not see its value. So the chef tells them they can separate the roe, sell it for R$50/kg, and keep selling the mullet at the same price. Another way to show the fishermen what their products are worth is by presenting them with the restaurants’ preparations. They get easily impressed due to their reasonably limited cooking repertoire.

A similar thing happens with customers. They come to the restaurant but are fairly open-minded because they understand this is the place to eat fresh, unexpected, and finely executed fish preparations. Of course, there is

communication and training. The attendants are briefed daily on species, preparations, and sensorial characteristics to pass this on to the clientele.

Learnings

- Commitment to low-impact fishing methods, lesser-known fish species, and whole use of fish demonstrate sustainability values and technical knowledge and attract customers;
- Fair pay to fishermen, education to underutilized parts of fish or quality preservation of produce reinforce an equitable supply chain, strengthening the sense of community;
- Continuous staff training with advanced preparation techniques, attendant tasting and briefing, and stimulus to transmit knowledge to customers;
- Buying cheaper species and using them entirely and creatively helps even out the operation costs.

Struggles

- Customer expectations are high and sometimes unmet, particularly when using offal or less praised species.

5.6 Hotel Arpoador

The Hotel immersion was divided into a Day in the Life of a Guest in December 2023 and a Contextual Interview in April 2024. In this case, the interview was fundamental to understanding the planning and awareness behind visible actions.

Contextual Interview

The participant provided a quick background on sustainability and ethics awareness, built from his experience before joining the hotel management body. Arpoador Hotel celebrated its 50th anniversary in 2024 and is constantly upgrading and implementing its policies.

After telling a bit of the hotel's history and how he has finally started working in the family business, we approached the broader sustainability topic. He recalls hearing little talk about sustainability in Rio de Janeiro in early 2010, when he arrived, and even less action was taken in the HoReCa sector. The bare minimum, like waste management, was still a struggle. Tourism was bursting in town due to the World Cup and the Olympic Games, but he understood that many of the raised concerns resulted in marketing but not practical actions. The Hotel has partnered with BRBio (Brazilian Biodiversity Institute[41]), incentivizing tourism in natural conservation areas and developing educational projects.

[41] https://www.brbio.org.br

Apart from external partnerships, the hotel hired a sustainability consultant in 2020 to kickstart the City&Sea Sustainability project, aligning their impact reduction with the UN SDGs. One of their first action plans was to weigh their waste to make the matter visible. That led to a campaign to separate waste throughout the hotel, from guest rooms to the kitchen operation, certified by the Zero Waste Commitment (the first hotel accredited in the state). The hotel has substituted the amenities' small, single-use packaging for refillable bottles—that initiative alone has prevented 380kg of inorganic residues and over 300 tons of carbon emissions by using biogas from the city's landfill[42]. The hotel offers bicycles for guests to roam around the area, another way to promote sustainability (Figure 68).

Figure 68. City & Sea Sustainability actions. Source: Hotel Arpoador's repository.

All this restructuring required training and infrastructure investment but has generated positive results. Instead of sending all the waste to landfills, a recorded average of 125 tons per year, they divided composting and common waste (around 10% only) into two companies and the recyclables collected by an organization. The fertilized soil provided by the composting company is used in the hotel flower beds and shared amongst employees. “When you take home the soil package, you are showing your family, parents, children, whoever you live with, that the waste we produce generates this fertilizer, a source of life.”

The sustainability consultancy offers metric dashboards for every action, issuing periodical reports to follow the impact of every action plan. During a structural renovation in 2019, they implemented a water-use reduction system for showers and energy savers encompassing the air conditioning system and changed all lamp bulbs to LED. They have also switched to biogas, as mentioned, and are planning to invest in solar farms. All these renovations have decreased their expenditure, with a positive environmental impact.

Regarding human resources, the hotel has a written code of ethics reflecting its values, including management teams, leaders, and sectors in all

[42] Figures from the Hotel Arpoador Sustainability Report, mentioned by the interviewee, and available at /https://irp.cdn-website.com/3b5567b1/files/uploaded/2023_relatorio_sustentabilidade_anual_v3-compactado.pdf.

services provided, including their communication and media. Arpoador Hotel has a broad age gap among the team, including people working with them for over 30 years, and the intergenerational exchange is very positive. Despite not having specific quota hiring policies, they often open affirmative vacancies for target groups. These guidelines help them balance the team. “So you asked if diversity is a value? I say it clearly is”. According to the participant, although they have not yet reached quantitative gender equity, with women making up an average 40% of the workforce, they are equally distributed in management positions. Complementing these practices, the hotel measures employee turnover, which is well below the sector average, and offers a QR code-generated anonymous form through which complaints, appraisals, or criticism can be sent. They have had a few serious issues, which have been addressed accordingly.

> “We want to create an environment that is safe for everyone. It is fundamental, both moral and personal. This is what I said about the importance of employee participation in creating a safe environment for everyone. When we hear about something, it gives us the opportunity to act”.

Other interesting initiatives the hotel supports include partnerships with educational institutions to offer discounted rates for employees, English as a second language classes during working hours, food collection campaigns to assist vulnerable communities, and financing cultural projects.

Day in the Life

During the Day in the Life of a Guest sessions, some tangible aspects reflected what was later learned from the interview. The rooms have a very minimalist, ocean-inspired decor. One remarkable item was the sound amplifier made of natural bamboo. It is a simple piece of wood with an opening on the top to fit the mobile and be used as a speaker. Room fixtures are made of natural fibers, are locally produced, and represent Brazilian beach culture with elegance and comfort (Figure 69).

Figure 69. Hotel Arpoador room, bamboo speakers. Source: Hotel Arpoador's repository.

The restaurant and bar display an impressive array of national ingredients, from local gin to fish and seafood to seasonal fruits and vegetables and spices. With a significant presence of international guests, these choices have an immediate and longer-term impact on the Brazilian economy.

Being presented with a foreign or exotic ingredient and tasting it in well-prepared, beautifully arranged concoctions engraves a pleasant and enduring memory (Figure 70). This experience can unfold by opening the palate to new flavors and the valorization of local products. For example, iconic Brazilian products, beverages, and fine crafts are sold at the hotel.

Figure 70. Brazilian ingredients are featured on the menu. Source: Hotel Arpoador's and author's repository.

Another aspect worth mentioning was the use of glasses made from reused wine bottles (the necks are cut and polished, making them sturdy all-purpose glasses) and mineral water offered in cans rather than plastic bottles. Virtually 100% of aluminum is recycled in Brazil.

Learnings

- Partnering with independent initiatives and accreditations like BRBio and Zero Waste Commitment boosts actions toward sustainable practices;
- Transparency in measuring impact tools is key to continuous resource and waste management and reduction advancement. The same applies to gauging employee satisfaction as a means to retaining and developing the workforce;
- Team training and education help enforce the company's values and their broadcasting to guests and team members;
- Invest in structural renovations, like energy-efficient and water-saving systems, refillable amenities, and biogas;
- Featuring local and seasonal ingredients on the menu and selling artisan products are a way to introduce the terroir's flavors and traditions to tourists, stimulating the community's economy;
- Having a written code of ethics and offering an anonymous feedback system ensure a safe and inclusive workplace for all.

5.7
Pasto Nomade

"Food is a powerful language of union, listening, and care, an element of balance between humankind and the environment. Feeding means existing; it's a primary instinct, and we do it through all our senses." (Pasto Nomade, n.d).

This comprehensive immersion in Bologna provided the first international, hands-on experience in a sustainable restaurant operation, which was much anticipated to help us understand how the matter is dealt with in a more structurally and culturally developed context. From desk research, we already knew about their awareness and had a global idea of their operational principles aligned with the UN SDGs (Figure 71).

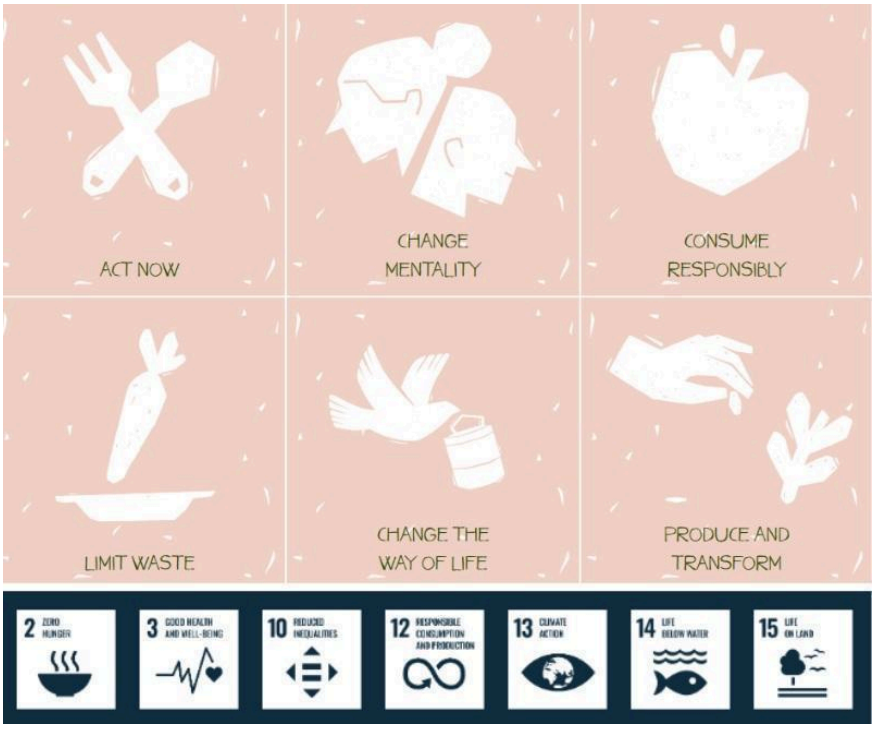


Figure 71. Pasto Nomade's commitment to a better food system. Source: www.pastonomade.it/en/people-and-philosophy.

The restaurant sees itself closer to seven of the SDGs. To reach those goals, it has built Pasto Nomade as a Benefit Company based on sustainability and sharing, creating value and a positive impact on its community's reality. It does this by sourcing local, seasonal ingredients, proposing healthy and ethical meals, minimizing the use of disposable packaging, and being responsible for its takeaway and catering services.

Day in the Life

The first immersion was a Day in the Life of a Diner, in May 2024. In this observation, we perceived a wide assortment of well-thought-out actions reflecting the general approach to sustainability. One is greeted by an outdoor eating area with an herb garden on the side, and the first thing we noticed at the

entrance door was a display of enticing postcards featuring the restaurant's monthly updates, event calendar, or praising seasonal ingredients and products. It is visibly an ideologically positioned business, with posters and objects conveying the message everywhere (Figures 72 to 74).

Figure 72. Pasto Nomade façade and outside dining room. Source: author's repository.

Figure 73. Pasto Nomade façade and dining room. Source: author's repository.

Figure 74. Pasto Nomade's Postcards collection.

Other notable aspects were the waste separation station on the outside eating area and the flat and sparkling filtered water, served by the glass or the bottle. The shelves dividing the kitchen and dining room are filled with housemade preserves, pickles, and fermented jars for sale. The weekly menu features seasonal, organic ingredients and is displayed on a screen. The table paper cover also communicates corporate values, presents the *dabba* concept, and shows the stainless-steel containers used for in-store and delivery service. The menu is succinct, the food is beautiful and tasty, and the preparations reflect their conscious choice and use of ingredients (Figure 75).

Figure 75. Pasto Nomade operation from the customer's point of view. Source: Pasto Nomade's and author's repository.

Work Along

The Work Along with the chef and pastry chef (May and July 2024) sessions showed the internal side of the operation, encompassing lunch, dinner, and catering preparations and service. Pasto Nomade's team produces all its items from scratch and uses them entirely, from fresh pasta to bread to vegan meat or dairy substitutes. The menu is plant-based, except for good cheese and butter, which are used sparingly. Vegetables are local and seasonal, reflecting the territory, and utilized to their maximum. Most of them come from peasant agriculture in the Apennines, and ingredients coming from afar have their ethical sourcing guaranteed by their supply chain of a community emporium and food coop Camilla[43], the Campi Aperti[44] farmers ' markets, and Carla Zanarini[45,] to name a few.

The cooks and chefs habitually save all citrus peel and zest for immediate or further use (freezing, preserving), process limp or excess herbs into oil, and go around crops surplus or shortage by preparing ahead whatever is abundant. These items— jams, kimchi, pickles, oils, etc.—are stored for later use or sold in jars at the restaurant. Menus are planned according to nature's cycles for dine-in and catering (Figures 76 and 77). The chef has a very close relationship with suppliers, who often come to bring the groceries, stopping by to chat over a cup

[43] https://camilla.coop
[44] https://www.campiaperti.org
[45] https://bioortozanarini.com

of espresso. The reverse also happens, with the restaurant staff visiting producers at the farmer's market or their property.

Figure 76. Production in course at Pasto Nomade. Source: Pasto Nomade's repository.

Figure 77. Kimchi, bread, and catering production. Source: Pasto Nomade's repository.

Desserts, cakes, cookies, and gelato make Pasto's sweet side a creative hub. These items rotate according to what is in season. There are always vegan options and a conscious use of chocolate, sugar, and fat.

In addition to fresh produce, Pasto Nomade has a concise dry storage, mostly filled with cereals, nuts, flours, and pasta. During observation sessions, practical, ingrained everyday measures were perceived in the kitchen, like high-quality (thus long life) food-grade containers, the use of vegetable bunches elastic bands to ensure the lids are secured, eliminating the use of plastic wrap, mismatched plate ware, minimizing whole sets substitution; returnable or reusable food packaging, and even washing vegetables in a separate sink, keeping the water from one batch to the other, mindfully saving resources (Figure 78 below).

In conjunction with these measures, they also master food waste and waste management. Squeezed citrus fruit is added to cleaning products, enhancing their degreasing properties; vegetable trims are added to sauces or turned into stock, purée, reduction, or powders; menu changes according to produce availability, predicting substitutions, and by-products are always used in another process. Moreover, they separate waste in different bins, from the dining room to

the kitchen, giving it the proper destination, from recycling inorganic to composting organic matter (Figure 79).

Figure 78. Dry storage, rubber-sealed containers, and mismatched plates.

Figure 79. Waste separation in the dining room and kitchen.

The last sessions of the participant observations were preparing a thematic dinner (Figure 80). The invitation to participate in the *Shared Kitchen* project, planning and organizing a menu inspired by Brazilian cuisine, could not be more appropriate than to use local, seasonal ingredients, giving them a tropical twist. Again, gastronomy plays a fundamental role in (re)presenting one's culture; tasting it can evoke memories and willingness to learn more about a people's tradition or push it away altogether. The dinner was designed around the influence of the strong women met through decades in the kitchen, bringing together affective memories and professional practice and adapting Brazilian food to an Italian-vegetarian territory context.

The menu featured family favorites and emblematic Brazilian foods. It started by listing the seasonal vegetables; from that, reference dishes started coming to memory. Particular ingredients, like manioc, which would seem impossible to get, proved a great surprise. From previous experience, the chef knew a group of North African women who started to plant it for subsistence consumption and evolved to being granted a piece of land on the outskirts of Bologna, where they cultivate manioc, selling it mainly to the immigrant communities. We also tested a pulled non-chicken for the slaw recipe, which

came out surprisingly perfect, with a flavorsome non-chicken stock as a by-product used to cook the couscous dish on the lunch menu of the same week.

Figure 80. Brazilian dinner at Pasto Nomade. Source: author's repository and Instagram story July 10th, 2024

Contextual Interview

To complete the Immersion at Pasto Nomade, we interviewed the three owners in May and July 2024. They manage the restaurant's daily operations, administration, and communication and offer a holistic view.

The restaurant opened in 2021, and only recently did they start having a fixed team to help with the operation. Initially, the idea was to provide executive lunch options in returnable *dabbas*. Still, after some time, they understood more people would be willing to come for lunch at the restaurant, with increasing demand for dinner and catering. The stainless-steel containers are one of many examples of how a story behind an action can enhance engagement: “when we serve the meal in those containers, it is already something that makes a change. Because people, as well as food, need storytelling”.

Although menus are dynamic, changing every few weeks (with substitutions allowed in the interim), and catering budgets are requested weekly, the pricing is guess-estimated from experience, leaving room for miscalculation of costs or prices to be charged. The catering menus are built to suit the occasion and customer's demands and tend to be pretty flexible, with direct communication with the production team, if necessary, to adjust any particular recipe. The menus for the restaurant and catering are somewhat indicative in their wording, basing the dishes' descriptions on more assured dry goods and leaving room for belated alterations with the fresh produce. “Preferring biodiversity in the dish means promoting biodiversity in the field.“

As mentioned, the chef is in close contact with the supplying network and has arranged the restaurant's production schedule around the producer's logistics. This requires planning and flexibility to accommodate last-minute demands from both sides. Their consistent, trustworthy work throughout these

years has built a solid relationship with the clientele, who understand and appreciate Pasto Nomade's functioning. It allows the team to work around nature and taste, meeting customer demand.

Due to their solid, supportive relationship, working with artisanal, organic products is more costly, even when the restaurant can achieve a more beneficial condition from the producers. To make financial ends meet, they are “partially able to cut food cost precisely by using circular economy practices and the whole use of raw materials, absolutely avoiding waste”. It is a constant effort in every step of the process. Buying, receiving, cutting, keeping, and choosing the cooking method. Another seemingly simple circular initiative is planning the vegetable washing and sanitizing so the ones with less dirt are washed first, and the changes of water are saved for their herb garden.

Although the participant emphasized that the HoReCa industry should work this way, their low margins make it mandatory. “In our case, it is really part of it. That is, we embody the idea of the circular economy. We were born because we wanted to do something truly sustainable. That is, it is practically our mission,” the participant concluded.

Despite the many operational obstacles and higher investment in time, labor, and ingredients, at Pasto Nomade, they see themselves as food processors, matching what was found in the cold chamber and dry storage,

> “There is a very characteristic transformation philosophy at Pasto Nomade, in the sense that we don't buy processed food, we simply transform it. The only thing we don't do, for now, is to grow it, but from the moment it leaves the field, we choose that product in order to be able to transform it”.

Their choices are seen across the operations in minimum packaging, compostable whenever possible, returnable, or reusable most of the time. Beverages offered accompany the overall food mindset from artisanal, ethical producers. The staff mirrors the ethical values permeating Pasto Nomade. While composed mostly of women—a casual but not-so-casual event—since women tend to be more aware of the sustainability agenda, the restaurant has built rapport with the immigrant community, offering them job opportunities that are often a bridge to integrating the local community. As for the choice of services, the same orientation applied to ingredients goes to the ethics of their choice of bank, energy supplier, and all providers or distributors—and even customers—as ethically as possible. One of the partners affirms

> “It's something that we do every day, at least once or twice a day, eating. And so, if there's a place and an environment where change can start, and things can really change and give a contribution, it is within the food. (...) And I think the food industry being responsible for a lot of the waste and a lot of the pollution that we have is key.”

The three partners agree that their work is exhaustive but worth it. They see themselves as somehow pioneers in doing business more sustainably,

> “I have some fellow restaurateurs who do traditional restoration/catering who certainly think what we do is interesting, who also asked me for advice, we exchanged ideas, opinions, so there is communication, We are not separated from other restaurateurs (...), in this sense, we are in a community, we are part of the Food Service industry.”

They have seen changes in food consumption patterns and consciousness throughout their careers. In small steps, communication can educate and eventually change culture. According to the interviewee, “Our communication and marketing work so well because we don't need to be too imaginative about what to communicate. We just communicate what we really think and how we act”, and adds

> “The other thing is the fact that we know that this activism is not only in production, but also in the final consumer, so we know that we are doing good and that this will have an impact, that is, it can have a long-term impact even on bigger issues, such as people's health and well-being.”

This thought is complemented by

> “I think that the influence of Pasto Nomade really makes sense when we talk about the content, because others can be inspired regarding communication, regarding the ideas we have, the things we propose, for how we communicate them, etc., but if the meaning is not understood, that is, what is really behind, it's simply short-lived enthusiasm. I think Pasto Nomade can be that model for a lot of people from other restaurants to other people. Through our experience, see how we address what sustainability means.”

Learnings

- Strong community relationships with farmers, cooperatives and markets, and immigrants, supporting integration. Shared Kitchen project, hiring policies, suppliers network;
- Visually attractive media and storytelling to communicate values and engage customers with postcards, dabba containers, and table covers;
- Investing in high-quality food-grade containers reduces inorganic waste, using mismatched plateware to maximize resource use and avoid costly substitutions;
- Circular use of resources, like vegetable-washing water, and ingredients, such as the resulting stock of a preparation to flavor another or using citrus to enhance cleaning products;
- Bulk seasonal ingredients used for preserves and pickles, extending seasonal produce shelf-life and generating extra income sources with house made jar sales;
- Alignment with SDG principles provides credible guidance to sustainability practices.

Struggles

- Recipes and food costs are not standard, and selling prices are estimated based on experience;
- Higher ingredient and ecological packaging costs;
- Dynamic menus require constant adjustments and mindful planning; sometimes, one lacks ideas.

5.8 Forno Brisa

The second bakery in the study, Forno Brisa, shares many similarities with The Slow Bakery and represents the importance of wheat in Western culture. Founded in 2015, Brisa was chosen for its values and product quality, which are backed up by great communication strategies. We start by disclaiming their manifesto, which was published (and pinned) on the Instagram account.

They stand for: planet and people nutrition; product and service represent their worldview; work as an expression of personal fulfillment and freedom; constant responsibility over the company, building and modifying identity through behavior; we are part of an ecosystem on which we want to cause positive impact, there is nothing here that does not concern us; profit is key, and we aim to share it with all involved stakeholders; we are an artisanal model based on people's knowledge, terroir, products, and the relationship between them; we learn from mistakes and are continuously improving; the corporation is a living network thriving on trust, transparency, diversity, and communication; disseminate means making us known, and transmit in a fun and inclusive way what we do; we collaborate with our peers without secrets to improve and expand the shared market.

Figure 81. Forno Brisa Manifesto. Source: Instagram post, December 1st, 2022.

Their manifesto (Figure 81 above) alone would be a reason to research Forno Brisa. They have held a B Corp accreditation since 2022 and have been certified by Great Place to Work Italy since 2021. In addition to bread, they produce their chocolate bean-to-bar, roast their coffee, and sell wine, preserves, and olive oil, among other items from selected partners, in all four stores, B2B, and catering services (Figure 82).

Figure 82. Bread and partner's products on the shelf. Source: www.fornobrisa.it.

Day in the Life

With that in mind, we started the immersion with a Day in the Life of a Diner, more precisely, a coffee experience. The event, held in May 2024, was open to the general public and intended to present the work done by Brisa's roasters and talk about coffee beans, processes, and extraction methods. The two baristas presented some of their coffee suppliers, emphasizing the ethical choices behind each jute sack. They briefly commented on the difference between commodity grains and specialty coffee, highlighting sensorial and sustainable aspects. As the tasting continued, explicit communication of the company's values was noticed. The coffee bags (compostable, carbon neutral) have a descriptive label portraying source and certification pieces of information, and on the back, it says

> “Our mission is to feed people and the planet through coffee. We roast beans from virtuous supply chains for the environment, those who grow coffee, and those who drink it, thus realizing our political vision of the world, one cup at a time. And you, which side are you on?”

On the coffee cups is printed “Live fast, drink coffee” on one side, and on the other, “You're drinking coffee from a high positive impact supply chain”, keeping the customers informed and aware of their consuming habits. Informative and ideological messages are everywhere in the shop, from the delivery bicycle outside, with a big “pasta madre is not a crime” sticker, referring

to many struggles the sourdough faces with legislation to wheat variety painted on the walls.

Beside the espresso machine, the card boxes state how the three sustainability pillars are taken through Brisa's products and compare the impact caused by eating their products. In this case, it states how many square meters of cultivated land of wheat, coffee, and cocoa are necessary to produce 1kg of bread, coffee beans, and chocolate. Finally, on the coffee thermo, one of their many stickers: peace, love, and pasta madre (Figures 83 and 84).

Figure 83. Forno Brisa coffee statements.

Figure 84. Forno Brisa's meaningful messages.

Contextual Interview

After this first contact, we scheduled contextual interviews with two management team members in B2B, Logistics & Quality, and External Relations & Sustainability. They have been working at the bakery for quite some time and have a broad view of the operation.

During the interviews, they were explicit about how dynamic and involving the work is, feeling true ambassadors of the company's values and commitments. “We always say the important thing is: tasty, healthy, and sustainable food. We are always trying to improve and do our best for people and the planet, following these three words.” “We want to change things.”

The management team is based in a co-working space, a few blocks from the production hub and Bolognina store, making it easy for them to hover around and be close to the operation. They tend to have busy but flexible schedules, slowly implementing 2 days off per week, including external events, and a very horizontal hierarchy. Ideas and new projects are always welcome, and they feel

their network is expanding, with more and more companies thinking and acting like Forno Brisa. One downside mentioned was the number of insights they have versus the time available, which requires organization, focus, and prioritizing; otherwise, one gets lost.

Being awarded a Great Place to Work[46] is an everyday commitment the entire team shares. “There is no discrimination about sex, about ethnicity, there is no racism, all sorts of people work with us, and that makes you feel yourself. So, you can be yourself, and that's not what you will find in some places.” Regarding the accreditation standards of credibility, respect, equity, pride, and cohesion, the bakery's average grade is 86%, with *cohesion* being the highest score and *respect* the lowest. Other human resources emotional aspects are measured, such as how welcome one feels when one starts working in the company, management trust in the teamwork, fun while working, interpersonal care, and fair, equal treatment regardless of role, and the scores range from 93% to 100%.

Although Forno Brisa does not offer staff meals per se, employees can eat from the stores (mainly unsold or below-standard items) and drink coffee during their breaks. Clocking in and out is not enforced, nor are half-hour breaks, which can be extended or shortened according to individual needs or workload. Employees are responsible for their chores and responsibilities and work their daily schedules within them.

From the beginning, Forno Brisa has worked with artisan producers and small farmers and uses 95% organic ingredients. They believe small businesses, like themselves, need to support each other and foster common growth. Brisa has recently reduced its meat use to around 30% of the menu, which is an achievement, particularly considering the relevance of cold cuts in Italian gastronomy. Nevertheless, the meat is all organic or free-range, as are eggs and dairy products.

The choice of ingredients dramatically impacts the overall budget and final product cost, which is always a concern, balancing fair payment for suppliers and consumer prices. “When you pay something less than it's worth, it means someone is being exploited”. Finding the best match of product quality and availability is not easy; they constantly seek producers to expand the options and meet their needs.

Regarding waste management and natural resources, they try to avoid single-use plastic as much as possible and use compostable alternatives inside production, expedition, and final sales. Bulk items, like bread, are transported loose in plastic crates and remain unpacked on the store shelves until bought. Then, they are packed in kraft paper bags with low-polluting printing. All stores

[46] www.greatplacetowork.it/scheda_azienda/forno-brisa

are fitted with filtered water fountains for customers, banning bottled water sales. The company seeks green energy sources for the production lab and stores and plans to measure and compensate for their carbon footprint in the upcoming months. “And I hope all the companies will move that way because it's the only solution to save this beautiful world.”

Forno Brisa is becoming a benchmark in the sector, and they feel recognized by customers and peers alike. Like the team members, they feel they have become more sensible about food (and coffee) choices. “If I have to eat some cheese, I'm going to buy the cheese from the farmer with the free-ranging and grazing cow, so I'm sensible about it.”

Work Along and Contextual Interview

The Work Along sessions with the bakery and pastry sectors were followed by contextual interviews with the respective team leaders and were carried out in June 2024. As with Pasto Nomade, expectations were high to see how all the values are reflected in the daily practice. The announcement and task boards were the first to notice when leaving the changing room. One is a general communication space, including pictures of the staff members and messages from and to one another, showing room for individual expression. The second displays the changing room cleaning and organizing schedule, for the lab has no steward (similar to The Slow Bakery).

The production schedule board is where the team organizes when to produce items based on ordinary and special events orders, inventory, and staff roster. It was a massive *croissant, pain au chocolat,* and other fermented, flaky pastry production day. Sectioning the production allows items to be made in bulk, thus optimizing temperature, staff, and space; some products require quick and cold manipulation, while others need a higher temperature and paced workflow. When calculating the product's final cost, Forno Brisa calculates how much human resources were employed to complete the task, so there is a reason for reducing some steps to gain efficiency. In that case, processed ingredients, like jams or egg parts, may be used to speed labor or minimize waste, and they are all organic (Figures 85 and 86 below).

Product orders are done by each sector or group of products responsible, as many team members are in charge of bureaucratic roles. The weekly procurement is done according to an inventory or guesstimate. More perishable produce is ordered more often and regularly needs to be complemented with more than one supplier to suit their demand. Recipes are accessed on a laptop based on each production area and printed on demand. Regulating recipe quantities to fit orders is very common, as is calculating bread recipes according to weather conditions, so they are constantly reprinting (Figure 87).

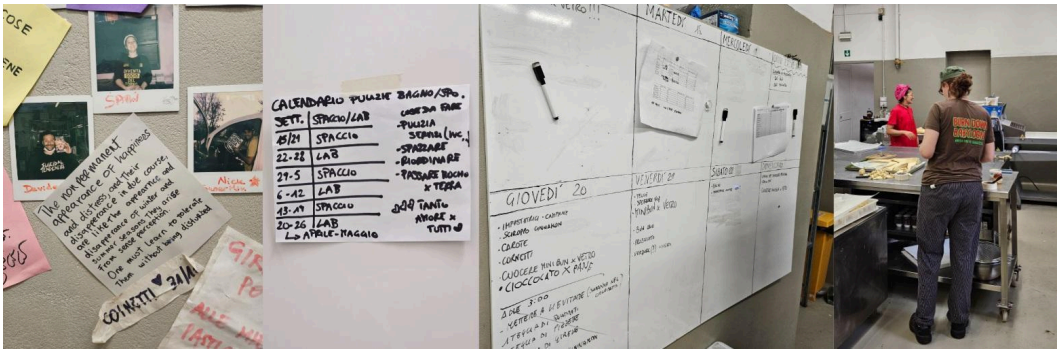


Figure 85. Wallboards and production.

Figure 86. Finalized product stock and organic ingredients

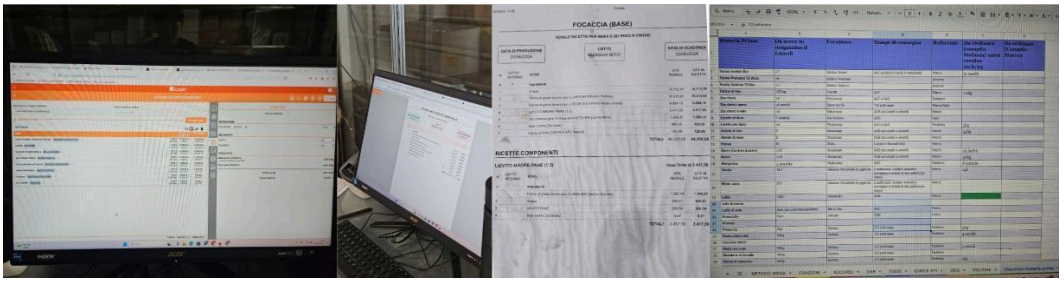


Figure 87 Recipe app with portion adjustment and printed version, food order sheet.

Forno Brisa has not yet found one program, app, or integrated system to accommodate all the operation steps, including food costs, recipes, internal and external food orders (finished or manufactured products), and ingredient procurement. Everything is done on a separate platform and in a different format. Information arrives at production via e-mail or printed orders and must be received within a specified time frame (24 or 48 hours) (Figure 88).

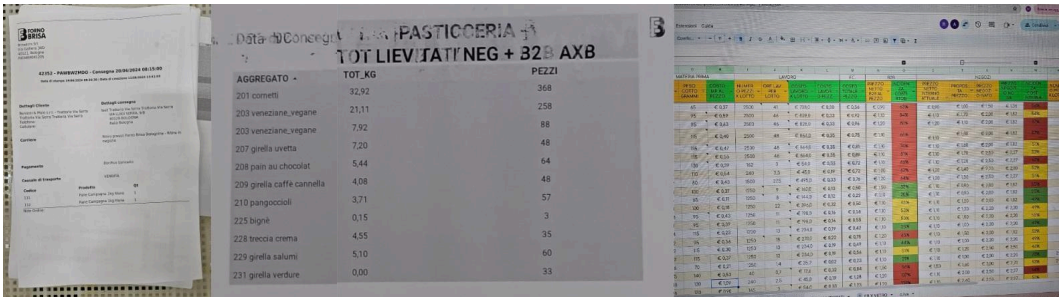


Figure 88. Printed orders to B2B and stores, Food Cost sheet.

While at the bakery lab, we could inquire about the seasonality of fresh produce since pizza, focaccias, and panini are more susceptible to vegetable availability fluctuation. The team goes around shortages recurring to other suppliers and, if necessary, changing the toppings. As seasons are still fairly well-defined in this part of Italy, and they source locally, they can rely on nature's cycles most of the time to suit the planned menus. Brisa has a farm up north where a few wheat varieties and chickpeas are cultivated. These organic crops supply part of the flour used in their products while increasing agrobiodiversity and recuperating ancient species.

Trash is separated into designated containers, and service rags are washed and dried on-site daily, eliminating the use of disposable cloths. Dedicated machines for service laundry assure hygiene and ensure there are enough towels for both labs.

As for food waste and circularity, Brisa's team does an amazing job. There is an overall consciousness on the team about the cost and value of ingredients, and, as mentioned, they see the immediate connection between their incomes and how much they can save in operation. With this in mind, many initiatives come from the production team, like the *retagli dolci* and *retagli salati* (sweet and savory scraps), which are made from leftovers from other processes. The sweet version uses offcuts of the *pain au chocolat* that would otherwise be discarded. It is a high-labor, butter-rich dough filled with bean-to-bar organic chocolate batons, which is fitted into a circular mold and baked.

The pastry team has developed other recipes, such as the *brownie cookie,* that use trimmings and unsolved brownie bits, adding value to one product while recycling another. These non-standard products—*brutti ma buoni*, ugly but good—are only sold at the Bolognina store, making them even more special (Figure 89).

Figure 89. *Ritagli dolci* made of *pain au chocolat* trimmings.

The day-old bread is collected from all stores (reverse logistics with the morning delivery when the car returns empty to the lab), selected, and sold at a discounted price at the Bolognina store. At the end of the day, it goes back into the production kitchen to be transformed into toast or breadcrumbs, packed and

sold across stores. Forno Brisa has partnered with Biova Project[47] to design a beer made of stale bread, extending a product's shelf life and value instead of discarding it.

The bakery's actions and beliefs are broadly publicized on Instagram posts and stories, packaging, and in-store. Irreverent printing on the back of the beer cans says: We drink the waste and Beer from recovered bread; messages on social media like *This bread deserves a second chance, The bread from yesterday is good until tomorrow*, or printed on the bread bag *Every day you can find discounted day-old bread and the ugly but good products, but good good good! Only at our Spaccio in Bolognina in via Nicolò Dall'Arca 16*"[48]—Figures 90 to 92).

Figure 90. Bread life cycle. Selling at a discounted price. Source: Forno Brisa Instagram (February 8, 2023) and author's repository.

Figure 91. Bread life cycle. Becoming toast and breadcrumbs.

Figure 92. Bread life cycle. Turning into beer.

[47] www.biovaproject.com/en/post/biova-project-extends-the-life-of-forno-brisa-s-bread-and-turns-it-into-beer

[48] https://www.instagram.com/p/CoZgEa8NX6A/?api=1&img_index=2

Another engaging way to sell all products that would not be at their best to sell on the following day are apps purposely designed to reduce food waste, like *TooGoodToGo*[49]. Postcards and stickers are always available at the store counters, markets, and fairs Brisa participates in, lightly heartedly increasing customers' sustainability awareness (Figure 93).

Figure 93. Postcards conveying sustainability messages.

Figure 94. Forno Brisa book cover and core message. Source: author's repository.

Last but not least important is Forno Brisa's book, *Ricete Rubatte,* or *Stolen Recipes: for artisans, dreamers, and startuppers*. The book presents their conception and "5 main ingredients" (FORNO BRISA, 2020, p.10) of the artisanal model, namely: knowing the supply chain entirely, continuous improvement, joining hands and minds, satisfaction to do well, and exchange with the cultural community. It also brings an initial impact report, which discusses the importance of hybrid knowledge building through practice and theory, having an inspiration

[49] https://www.toogoodtogo.com/en-us

and location, and building a solid identity, structure, and team within diversity and community. Through the history of the bakery and partners' reflections on the company's values, the book shows the theory behind their continuous action plans for a more sustainable operation (Figure 94 above). *Sbagliare è giusto*[50].

Learnings

- Being a certified Great Place to Work and B Corp shows the connection and applicability of theory and practice;
- Strong customer engagement with irreverent in-store (cups, boxes, packaging, product tags) and online communication and merchandising (postcards, t-shirts, stickers);
- Recurring events participation, spreading sustainable food chain knowledge and values;
- Decreasing animal products and using 95% of organic, ethically sourced ingredients has a high impact on social, economic, and environmental balance;
- Appetizing upcycling like the *retagli* and beer.

Struggles

- Managing multiple platforms for food cost, recipes, and internal and external orders;
- Attention to production and workforce to balance higher ingredient cost;
- More ideas and initiatives than time and resources to put them in practice.

5.9 Scovami and Il Fungo Eclettico

Contextual Interview

These two venues were selected because they connect with the other Bolognese participants and represent complementary segments of the Food Service supply chain aligned with sustainability values. We met at the participant observations at Pasto Nomade and Forno Brisa. The interviews were conducted in September 2024 during a visit to Scovami, the downtown market/deli, and Il Fungo Eclettico's mushroom stall at Mercato Ritrovato's farmers' market.

The mushrooms from Fungo Eclettico (Figure 95) are grown inside the urban area of Bologna, using the local varieties adapted to the weather conditions of the warehouse. To reduce the environmental impact, the project foresees using humidity control but no air conditioning. So, mushrooms thrive on seasonality, reflecting on the dynamic products offered to customers. Communication is paramount to align expectations and delivery as they cater to B2B and final consumers. The businesses they partner with tend to be aware of

[50] *Making mistakes is right*, implying mistakes are a necessary part of the learning process.

their cultivating choices and praise the products for their freshness and overall quality. The fact that they are grown so close to the production kitchens ensures that maximum aesthetics and sensorial aspects are preserved. Besides physical proximity, relational closeness to consumers is also key, as it provides knowledge exchange about mushrooms, reduces logistic issues, and achieves a more balanced economic rapport.

Figure 95. Il Fungo Eclettico warehouse, delivery box, and in use at Pasto Nomade's Brazilian dinner. Source: Sophie @sophieeaaaats and author's repository.

At Scovami (Figure 96), the fruit and vegetable supply from a periurban farm on the outskirts of Bologna also reaches HoReCa and individual customers alike. The owner has a family business of seasonal, organic produce, which is often harvested and delivered by bicycle within hours. The clientele is informed of the available items the day before and chooses accordingly. Food Service relying on Scovami's crops understands that last-minute changes can happen due to drastic weather conditions or natural cycles. Still, they prefer to work their menus around the freshest, healthiest possible ingredients.

Figure 96. Scovami store and produce. Source: Scovami's and author's repository.

In addition to garden items, the market sells local cheese and cold cuts, always made by artisans who raise and manipulate animals. In addition to animal products, Scovami carries an assortment of wines, jams, preserves, and dry goods from reliable, well-known sources.

Learnings

- Logistic barriers are overcome with proximity to urban areas;
- Seasonality and nature's cycles are respected and praised, and close relations and communication with customers are paramount;
- Supply B2B and individual customers with relational proximity, high ethics and aesthetics quality, hyper-local products.

5.10 Manu

The immersive process at Manu has taken almost a year from beginning to end. After desk research, we proceeded with a Day in the Life of a Guest in December 2023, returning for the Shadowing and Contextual Interviews in December 2024. Manu, open since 2011, is the only fine dining restaurant observed and has been conferred the World's 50 Best Restaurant Award and Best Female Chef, and The SRA Flor de Caña Sustainable Award. It is the only Brazilian venue to have received this prize. According to the chef,

> “Receiving an award for sustainability – particularly one that acknowledges both the restaurant’s environmental and social commitment, and that is independently assessed by The 50 Best's audit partner, the renowned Sustainable Restaurant Association – is a profoundly significant recognition. In an era where the term "sustainability" has been overused to the point of losing its true meaning, this concept extends beyond basic actions like waste management, plastic avoidance, and composting. Of course, all these steps are crucial, but for me, sustainability fundamentally involves caring for people, the environment, and the social fabric of our lives.” (TONON, 2023).

The chef and owner runs a tasting-menu-only kitchen, serving contemporary recipes focused on local (within 300km), farm-to-table, and mostly plant-based ingredients. Relying on long-term work with local fishermen and urban gardens and in a pioneering joint project with the municipality, the chef is recognized by peers and customers for her excellence and connection to sustainability values, expressed mainly with social engagement, sourcing and responsible procurement, and fostering ecosystems biodiversity (SRA, 2023).

Day in the Life

The tiny houses hanging from the façade outside the restaurant make one wonder. They are small colonies of native Brazilian bees known for producing distinctive honey varieties (Figure 100). After being greeted and allocated, an overly polite attendant presented a paper copy of the menu and offered the wine pairing. The menu is not disclosed in advance, but food restrictions or allergies are previously informed, so the kitchen team has time to make the necessary adjustments (Figure 97).

Figure 97. Manu's entrance, locally sourced dishes and beverages.

The kitchen is separated from the dining room by a large glass window, from which we can see a wood fire and the coordinated movement of the brigade. Dishes are prepared with distinguished culinary techniques to extract the most from each ingredient, and they are beautifully presented. On rare occasions, meat is featured on the menu; in this case, fish, seafood, and free-range lamb were in small portions and generally not as the central item. The most surprising dish, though, was carrot fronds tempura, light and crisp, resembling a snowflake, showing even the humblest of ingredients can have an impact through taste and presentation.

Contextual Interview and Shadowing

The sous chef and cook interviews were performed after a shadowing session and complemented the observed behavior in the kitchen. A second cook was interviewed, followed by the sommelière, and the impressions and collected data are presented together.

The majority of staff is female, and although not intentionally, they believe this is due to the type of food presented. Women are more connected to manipulating ingredients' why, what, and how than to the final outcome.

Manu hosts an average of 10 to 15 guests per night from Tuesday to Saturday. That gives the team two days off per week and the possibility to plan orders, preparations, and their entire routine based on this schedule. They also participate in national and international events, adding specificities to their daily agendas. Ingredients are bought in small quantities weekly and adjusted with extra orders or by changing the menu item if necessary. That can be easily done due to their close relationship with suppliers, mutual support, and menu flexibility. Surplus items are repurposed within the menu or for staff meals and recipe testing. The brigade is trained to use every part of the produce, from skin to bones, roots to leaves, trimmings, and offcuts. The appropriate technique transforms them into stock, crispy finalizing elements, flavor bases, etc. (Figure 98).

Figure 98. Kitchen brigade Shadowing.

As a mostly plant and seafood operation, lamb from the chef's family farm or a small producer's Moura pig are the only exception to red meat. Pork meat is occasionally featured on the menu, resulting from a sustainable farming project and species recovery in partnership with UFPR University. Fish and seafood come from well-known fishermen on the state coast, less than 150 km from the restaurant. Besides line-caught fish, the chef creates dishes based on bycatch and less commercial species, adding value to the local biome.

The menus change entirely every few months, following seasonal and thematic inspirations. At the time of the observation, it revolved around *immigration*, and the chef used the background stories of cultural heritage and traditions to design contemporary dishes. The sous chef well-planned food orders based on reservation numbers (made by the clientele well in advance), and the team's careful storage and stock rotation ensures minimum food waste. Composting, as a last resort, is directed to the partner urban farms, closing the cycle. The staff has access to the produce from the farm as well, being a source of fresh, healthy vegetables.

As with food, beverages are selected from ethical producers, preferably small-scale artisans, with minimal intervention. The restaurant offers many non-alcoholic options, including fermented drinks made in-house. It also showcases Brazilian wines, vermouths, and other libations, stimulating the local economy.

Other community projects coordinated with the team's participation include public school meals and to-go meals for vulnerable populations. These collective efforts ingrain social values among the staff members and aid in emergent matters.

Learnings

- Managing hyper-local seasonal ingredients requires constant attention to procurement, menu planning, inventory, diner bookings (and restrictions), and supplier relationships;
- Offset the high operational costs of a fine-dining restaurant with well-trained staff and circular, whole use of ingredients, imparting flavor and presentation though technique and communication;

- Community engagement and commitment beyond the restaurant's interest, investing in educational and quality food for the most vulnerable programs, like the Moura pig and the school meals projects;
- Awards bring visibility and the power to present a more sustainable approach to gastronomy, changing eating habits.

5.11
Learnings from Field Studies

"What we eat is directly connected to poverty, inequity, racism, social class, immigration, social and political conflicts, environmental degradation, climate change, and more. Food is a lens through which we can examine all these worries" (Marion Nestlé, 2024).

A consistent map with insights was produced after all field immersions and analyses were completed, as referred to in Chapter 2.6 (Field Thematic Analysis Map, Figure 14). It became clear that sustainability is a core value for the participating companies, and all team members are involved in various practices, from ethical ingredient origin to waste reduction and resource management. Although they meant the same, attitudes and actions, in conjunction with struggles, were distinct in the venues. Recurring themes addressed or to be addressed were divided into broader scopes. These topics served as insights for the proposed service system concept and artifact, and the main clusters will be presented and reflected upon.

Strong company values held by participant owners intently involved in the operation are determinant in building the groundwork for more sustainable Food Service. When watched closely and carefully, companies are more likely to thrive and evolve without abandoning their core principles.

Everyday practices that reflect true values spread to team members and customers, modifying consumption standards, increasing interest in the theme, and improving professional skills. They also attract like-minded professionals and clientele and influence peers, causing a positive ripple effect.

There is undoubtedly a cost to being a pioneer in the sector, and exchanging acquired knowledge is the best way to mitigate this problem. When working in ways not regulated by the market, a company incurs the innovation costs of trial and error, and sometimes, the learning curve can be too slow or too costly, particularly for small businesses.

Territory and Food Systems

Waters (2021, p.121) presents seasonality by stating

> "When we eat foods that are in season, we are connected with the local cycles of germination, growth, fruiting, death, decay, dormancy, and regeneration. Understanding the seasons teaches us patience and discernment and helps us

> determine where we are in time and space and how we can live in harmony with nature."

This respect for the nature cycle is what buying seasonal and local food is about, and to a broader extent, what low impact farming like Lano-Alto, small peri urban areas like Enoteca's and Forno Brisa's farms, or partnering community urban gardens, such as the one sponsored by Manu, can offer. These initiatives combine attainable polyculture cultivation, often combining animal and plant breeding in a biodynamic process. The local models have little to no room for monocultures, as they precisely benefit from diversity for nutritional balance, pest control, and crop rotation. In addition to cultivating vegetables in balanced systems, the intercropping of animals brings numerous benefits. Animals and plants mutually contribute to their development, and using their by-products is extensive, such as in areas where animals feed on the undergrowth and weeds, aerate the soil with their movement, and leave their waste in it.

The raising method of preference on plants or animals chosen by the selected venues has brought up the reflection upon numerous ethical and environmental implications: free range or caged animals, animal feed or grazing, mono or polyculture, genetically modified and chemically dependent versus organic, biodynamic, agroforest, and other consortium models. All choices result in more or less balanced systems, with distinct footprints for the territory regarding nature conservation or degradation, as pointed out by SDG 11 Sustainable Cities and Communities, SDG 13 Climate Action, SDG 14 Life Below Water, and SDG 15 Life On Land (UN, 2023a).

Animal welfare is another critical aspect of food production chain choices. Traditional factory farming practices often prioritize high yields and cost-efficiency over animal well-being, leading to unhealthy conditions in general. Sustainable procurement prioritizes ethically raised and humanely treated animals, with free-range, pasture, or natural feeding practices. This shift toward righteous sourcing promotes higher animal welfare standards and reduces the suffering associated with conventional farming practices.

The local system includes small animals and microorganisms that transform waste into nutrients for the soil. When combined with crop rotation and other regenerative techniques, this soil remains healthy and provides greater yields in quantity and quality in the long term. In addition to benefiting the environment, integrated and local systems foster the development of the community and its immediate surroundings.

Shorter food chains, in general, enhance local culture, support the community, and promote environmentally friendly attitudes. Seasonal menus featuring local ingredients celebrate the diversity of the region's culinary heritage while reducing the carbon footprint associated with long-distance transportation.

Value and pride are commonly linked to recognizing and respecting the territory, its traditions, biodiversity, and people. When balanced, these interconnected forces produce a more prosperous culture built on stewardship and care.

Governance and Finance

Aligning a positive company culture and personal values can maximize effectiveness in every project. People tend to work more consistently with practices they believe in and tend to propagate their thinking. Companies offering career or individual development opportunities, investing in training, and other efforts to ground engagement can more easily reflect their values into actions.

Likewise, building a sense of value and trust can consolidate team satisfaction. A more balanced work-life relationship, a humane working roster, healthy and tasty staff meals, team diversity and equity, autonomy, and a flatter hierarchy are among the top attitudes toward sustainable social impact, which can create a more collaborative environment.

Setting clear goals so we can work toward a common objective. Tackling a few at a time; trying to achieve multiple targets can be overwhelming, possibly incurring frustration and discontinuity of a project. Tools with a propositive, educational purpose can help accomplish more abstract concepts of HR and governance. Not knowing where one stands in practical terms can be misleading. A primary step can be tracking down significant issues like food waste, waste generation, and resource usage. From tangible quantitative and qualitative information, trace an improvement plan. Defining responsibilities and setting a roadmap, with intermediary checkpoints within time frames, ensured feasibility, measurable progress, and perceived improvement.

All studied cases share the goal of balancing economic viability and ethical commitments. Investments must be measured long-term, accounting for customer appreciation, reduced operational inefficiencies, and a stronger network comprising the entire food chain. Some answers to this essential challenge are managing resources, not wasting, and thinking circularly.

Technology, techniques, tools

When prepared and given the right tools, people can perform better and overcome unexpected situations with products, colleagues, and customers. Including suggestions, technology, and sustainability innovation in daily routines and being attentive to systemic flaws or points of improvement is valuable and can lead to a more innovative environment.

The technology involved in food processing and distribution since agricultural production implies particular choices (clean or renewable energy, materials, tools, and machinery), also tackled by SDG 7, Affordable and Clean Energy, and SDG 9, Industry, Innovation, and Infrastructure (UN, 2023a). The

food industry increasingly offers a range of cheaper, processed, and overprocessed alternatives. When complying with these choices, restaurants can avoid or promote taste standardization, loss of nutritional value, and food deserts. Ethical choices on how food items are grown and processed profoundly affect people's health, food security, availability, and dietary characteristics. Moreover, technology contributes much to communication (logistics, consumer information, and outreach) and how this can add value to the choices made by restaurants and chefs.

Companies can invest in appliances, rely on technology to reduce resource use, and choose the available and affordable green energy sources. Simple inventory and control tools can be a strong ally when managing resource use and waste. While not a widespread reality worldwide, HoReCa composting and other organic material recycling are becoming more available. Research and development in environmentally friendly packaging, disposable service utensils, and cling film alternatives, to name a few everyday essentials in the Food Service sector, are emerging. However, the costs of these items are still a barrier. Creative thinking is fundamental to, literally, thinking outside the box and having food displayed or delivered differently.

Culinary techniques play a strategic role in extending the shelf life of innumerable ingredients. These ingredients can be bought in peak season, when flavor and nutrition are at their best and prices are lower. These preparations can be sold individually, guarantee menu composition, and spread the word about new gastronomic culture in food and beverage items. Cooks and chefs have the power to transform simple produce into delicious preparations, conveying meaning and culture in a spoonful.

Education and Communication

Team members must be trained and encouraged to be agents of sustainability policies and efforts. People have different backgrounds, understandings, and knowledge, so it is always good to level those up. When confidence is built, team members tend to bring in insights and external references and are more enthusiastic about implementation. Pilot projects, receive feedback, and then implement on a broader scale. Actions may become lost if not monitored, reported, or appraised. Dedicated tools can help you track in-course actions, assess progress and targets regularly, and reframe if necessary. Based on results and feedback, refining practices and celebrating engagement and progress. All actions must be communicated internally and externally. One cannot value what one is not aware of.

Trust and knowledge are fundamental for any true bonding. Strong values must be spread within the team so that their actions reflect their understanding

and meanings. Besides, the significance of community support in building these systems cannot be overstated. HoReCa enterprises can actively engage with their patrons, informing them about ingredients' origins and the positive impact of their food choices. By involving the community, restaurants build a solid support base for resilient food systems. Community members become more conscious of their food choices and actively support businesses that align with their values. Moreover, educating customers about the sustainability efforts of the enterprise is the first step in making them comprehend and value what is being done by the business (Jégou & Joore, 2004).

As a consequence, this may trigger them to require the same from other venues. Informative signage in social media, websites, packaging, wall painting, or t-shirts is very effective as the message gets ingrained. Educated team members and clients become community ambassadors of a brand, spreading the word and outreaching the circle of directly established connections.

In a more balanced food system, we can manage to feed people and the planet to keep feeding ourselves. When we consciously put the entire system in sight, we constantly interact with it. This balance is precisely the opposite of what the industrial food system does. No restaurant will tell the whole story nor achieve all goals, but a few examples can help inspire similar efforts.

Society (Team, Customers, and Community)

Engaging with the local community can be done in multiple ways, from hiring staff within the territory and through work placement for minoritized[51] groups to connecting with charity organizations for food donations are all paths to a more equitable modern society, as per SDG 11 Sustainable Cities and Communities and SDG 12 Responsible Consumption and Production (UN, 2023a).

These three social stakeholders relate to business commitment and social and economic impacts within the community. Within the team topic, we can perceive how a company complies with health, financial, and general well-being and overall satisfaction.

Shortening the food supply chain is a shared practice, though an effort that cannot be underestimated. Fostering small and artisanal production has undeniable benefits regarding ethics and aesthetics, quality, resource use, and carbon footprint. Disclosing suppliers' names and products helps develop the small, local economies comprised of a company's ecosystem. More partnerships mean business growth, better market penetration, infrastructure improvement, and logistics improvement, culminating in broader access for all.

[51] referring to the historically excluded populations and systemically disadvantaged communities, who make up for the majority of the world's population, including women, colored people, and other groups subject to socio-economic-cultural racism, facing employment barriers.

Relying on more balanced supply chains and networks demands willpower, knowledge, and flexibility. From finding those producing food sustainably to dealing with all the constraints this chain offers, it requires dedicated, attentive teamwork and the ability to creatively and promptly surpass all barriers. Being in the counter flux of the Food Service industrial system means supporting and building genuine relationships with suppliers, making them real partners, and dealing with delays, product shortages, and consumer expectations. True certification or accreditation is the bond between producer and consumer.

The impact of food choices on the extended workforce behind food systems is substantial, especially in industries such as agriculture and food processing. Conventional farming practices may rely on exploitative labor conditions, with workers facing long hours, low wages, and inadequate safety measures. Similarly, laborers in the food processing sector may be exposed to harsh working conditions, limited benefits, and job insecurity. Such practices can perpetuate social inequality and jeopardize the well-being of vulnerable communities that form the backbone of the food system (Rodrigues & De Melo, 2017).

Local business initiatives also collaborate with regional initiatives to reduce food waste and address food insecurity, ensuring surplus food reaches those in need. Community awareness in the restaurant industry can catalyze positive change, nurturing resilient food systems and prioritizing community health, cultural heritage, and environmental responsibility. When working with actions toward the extended community, such as donations or charity projects, it is crucial to establish clear guidelines and protocols to ensure continuous application and long-term results.

We noticed the influence of salary agreements, training, monitoring, education incentives, and other benefits on employee well-being and commitment. Customers are a relevant loop in the food chain, and informing them of the core values, besides products and services, is paramount for awareness and engagement.

Sustainable Food Service operations support community resilience when establishing direct relationships with local farmers and artisans, sourcing ingredients from nearby producers. These connections foster trust and collaboration, enabling a more transparent and accountable food supply chain. Additionally, investing in local businesses and suppliers helps to circulate wealth within the community, contributing to superior economic stability and social cohesion (Manzini; Vezzoli, 2003). As anchors within their neighborhoods, local restaurants can serve as gathering spaces that foster a sense of belonging and cultural exchange, making significant contributions to the community's social fabric.

Sustainable Best Practices

HoReCa services operations are exhaustive and demanding, and keeping them functioning is a defiance in itself. When approaching the sustainability challenge, an enterprise must be willing to contribute to change, invest in training, and set standard protocols. Ethics and aesthetics are equally important in this business, as customers buy and eat good, tasty food and are not inclined to invest only in an ideology. They must see value in the products or experiences provided. Menu description and overall communication are essential allies in these strategies. Adequate planning, procurement, processing, and consistent service stages involve knowledge, training, and tools to facilitate the many steps of these processes.

Conversely, building a solid relationship with those who grow or produce ingredients ensures consistency, reliability, and knowledge exchange. Involving or at least considering all stakeholders in menu planning, understanding their context, and presenting them with yours are decisive when constructing relationships beyond commercial ones. Food procurement starts with mapping, verifying producers, and prioritizing seasonal, local suppliers.

The circular economy applied to food systems is a fundamental pillar for constructing a new scenario, contemplating materials (food) as goods that cannot be discarded, making waste and by-products become inputs for the next stage of the cycle, regarded as raw material. Approaches such as the total or integral use of food are fundamental for this to occur in a way that minimizes negative impacts. It is possible to transform organic food waste into animal substrates, such as fertilizer and biofuel. Still, one must remember that they are and should first be food for people. One more key element in this equation is that food is not only for feeding; it has to be tasty and culturally appropriate.

To optimize menu conception and execution, one has to be familiar with seasonal and local produce, designing dishes that benefit from natural cycles and not pressure them. Reducing animal components on offer decreases food costs and its environmental impact but requires study, technique, and creativity. The HoReCa food system is still heavily based on animal proteins and derivatives as a dish centerpiece, and customers might feel uneasy without them. Other simple but thoughtful actions to reduce general waste can be widely enforced, such as avoiding single-use utensils and packaging whenever possible; opting for recyclable, compostable, or returnable containers; and buying items in bulk, such as loose grains, flour, or oil. Encouraging suppliers to adapt to more sustainable logistics and packaging is a way to replicate individual efforts. Some small producers may initially see this as an impossible expense, but sharing the costs can be a feasible alternative, bringing multiple benefits.

The analysis also resulted in four personas, a synthesis of the characteristics perceived by the participants observed and interviewed. During immersions, the participant's behaviors and interactions were a relevant component, as were their struggles, aspirations, and needs. The personas depicted in Figures 99 to 102 helped direct the conception of the artifact, understanding user journeys, visual language, wording, tools, and available curated information. They are:

- the typical operation-management-involved owner;

Persona	Backoffice team
Anne & Douglas	36 years old
	*Bologna, Italy* *Procurement, HR, Product Control, finance manager* *5+ years in the food industry, with a background in sustainability, logistics, finance or business operations.* *Over the years, has developed a deep understanding of the supply chain, from artisanal producers to restaurant logistics* *Photo by **Jason Goodman** on **Unsplash***
Goals & Motivations:	*Advocate for sustainability in food production, sourcing, and distribution.* *Facilitate collaboration between producers, restaurants, and customers to strengthen ethical supply chains.* *Ensure product quality and food safety*
Challenges & Pain Points:	*Balancing sustainability with financial viability: Higher costs associated with ethical sourcing and artisanal products.* *Supplier coordination: Small producers offer flexibility but may struggle with consistent delivery and communication.* *Operational focus: Managing multiple tasks across logistics, supplier relationships, and education without losing strategic direction.* *Growing but young organization: Scaling impact while maintaining ethical integrity and improving internal processes.* *Education: Helping all stakeholders understand the value behind ethically sourced products, beyond just taste and price.*
Behaviors & Attitudes:	*Highly adaptable and thrives in dynamic environments.* *Sees herself as a bridge between different stakeholders in the food system.* *Values community-driven initiatives and collaborative decision-making.* *Enjoys solving logistical challenges and finding creative solutions to issues.* *Believes that ethical gastronomy is not just about food but also about people's well-being.*
Representative Quote:	*"We don't just sell food; we create relationships, build awareness, and shape a better future for gastronomy. The challenge is keeping all the moving parts aligned while staying true to our mission."*

Figure 99. Personas: Food Service Office team members.

- “office” staff, comprising those administering financial, communication, human resources, and procurement tasks—often interchangeable jobs, depending on the size of the business;

Persona	Owner . "CEO"
Camila Oliveira	47 years old
	*São Paulo, Brazil* *Chef-owner of a mid-sized restaurant focused on sustainable cuisine* *Trained in gastronomy, with experience working in high-end restaurants before starting her own business* *Photo by Ronan Kruithof on Unsplash*
Goals & Motivations:	*Wants to create a business that aligns with her values of sustainability, food justice, and community engagement.* *Strives to balance financial sustainability with ethical sourcing and waste reduction.* *Interested in learning from other restaurateurs and experts in sustainable food systems.* *Seeks practical tools to apply sustainability principles without compromising food quality or profitability.* *Seeks practical tools to apply sustainability principles without compromising food quality or profitability.*
Challenges & Pain Points:	*Struggles with the cost and availability of sustainable ingredients from small-scale farmers.* *Faces operational difficulties in implementing circular economy practices in her restaurant.* *Needs more customer education to justify higher prices for sustainably sourced food.* *Lacks access to clear, structured information on best practices tailored to small restaurants.*
Behaviors & Attitudes:	*Values direct relationships with farmers and producers but finds logistics challenging.* *Keeps up with food trends and sustainability research but lacks time for deep study.* *Open to innovation and collaboration, but skeptical of greenwashing in the industry.* *Uses social media to communicate her restaurant's sustainability efforts but finds it time-consuming*
Representative Quote:	*I know sustainability is the future, but making it work daily in a restaurant is tough. I want practical solutions that help me balance my ideals with running a profitable business."*

Figure 100. Personas: Food Service Owner / CEO.

- food production team (cook, pastry, bakery teams)

Persona	Cook
Mariana Duro	29 years old
	*Rio de Janeiro, Brazil* *sous-chef in a contemporary restaurant* *She has been in the food industry for nearly a decade, originally pursuing journalism before realizing her passion for cooking. From childhood, she was fascinated by food, watching her grandmother and mother cook. Her journey into professional kitchens began with selling homemade sweets in college, eventually leading her to culinary school and hands-on experience in gastronomy. She has worked in several restaurants but was drawn to her current workplace because of its ethical values, flat leadership structure, and connection to local farmers.* *Photo by John Fornander on Unsplash*
Goals & Motivations:	*Creating food that conveys emotion and comfort to people.* *Working in an environment that values sustainability, ethics, and fair labor practices.* *Developing her skills in artisanal baking and seasonal menu creation.* *Contributing to a workplace culture that promotes inclusivity and diversity.* *Advocating for better working conditions and pay in the gastronomy industry.*
Challenges & Pain Points:	*Managing the perishability and seasonality of organic ingredients, requiring constant adaptation and creativity.* *Balancing efficiency with sustainability, especially regarding food waste and plastic use.* *The broader food industry's lack of fair pay, humane working hours, and inclusive workplaces.* *A sense of discouragement when comparing her current job's ethical practices to the rest of the sector, fearing she might not find another place with similar values.* *Navigating the inherent sexism in professional kitchens and advocating for a more equitable work environment.*
Behaviors & Attitudes:	*Highly adaptable, embracing a dynamic menu and improvising with available ingredients.* *Committed to sustainability, both at work and in her personal life, making conscious food choices.* *Values teamwork, preferring a collaborative and respectful work environment.* *Open-minded and appreciative of diverse perspectives, believing in learning from colleagues with different backgrounds.* *Passionate about food's power to bring people together and communicate emotion.*
Representative Quote:	*"This job and my chef have shown me that yes, it is possible. It's not easy, it's not cheap, there's no incentive, but it can be done. The point is to have the flexibility to deal with the consequences. The issue of costs, professionals who think the same way, finding your niche within the market, the public that buys this idea. So it's super possible—with organization and determination."*

Figure 101. Personas: Food Service cook, sous-chef or chef.

- service team:

Persona	Service
Andre Valle	**30 years old** *Rio de Janeiro, Brazil* *Service leader* *4+ years in the food and beverage industry, now at a restaurant & wine bar* *Andre started his career in the food industry out of curiosity and necessity, initially drawn to coffee culture and customer service. Over time, his interest deepened, and he transitioned into wine studies and restaurant service leadership. His journey reflects a natural evolution within the hospitality sector, where continuous learning and hands-on experience have shaped his expertise.* *Photo by Brent Gorwin on Unsplash*
Goals & Motivations:	*Ensuring quality service while respecting sustainable and ethical business practices.* *Working in a place where artisanal processes and small producers are valued.* *Developing deeper knowledge about beverages and food systems to educate both customers and peers.* *Maintaining a balanced work-life routine, allowing time for personal development.*
Challenges & Pain Points:	*The high cost and inconsistency of artisanal, seasonal ingredients.* *Managing logistics and minimizing waste, particularly with perishable items like wine and fresh food.* *Adapting to sustainability-driven operational changes that may initially seem inefficient.* *Racial diversity challenges within his sector, especially in customer-facing roles.* *The need for clearer communication within teams to ensure smooth operations.*
Behaviors & Attitudes:	*Strong advocate for sustainable and ethical gastronomy but acknowledges the difficulties in execution.* *Appreciates structure and fair working conditions, particularly when schedules allow time for rest and personal pursuits.* *Enjoys educating customers about food origins, sustainability, and proper wine pairings, seeing it as a form of social re-education.* *Finds motivation in learning and evolving within the sector, embracing challenges as opportunities for creativity.*
Representative Quote:	*"Taking care of someone—feeding, listening, and understanding their needs—is a form of social work. Sustainability isn't just about food; it's about people too."*

Figure 102. Personas: Food Service staff/attendant.

6
Circular Food System Principles

The ultimate stewardship we can practice in the restaurant is feeding people delicious food that's good for them, and that has been grown in a way that considers the environment. I couldn't imagine running a restaurant where you're not thinking about that as your primary motivation, especially in the face of climate change.“ (Waters, 2021, p.141).

This study section demonstrates where knowledge built from practice and theory intersects and how they answer the research question. It fills the knowledge gap with a proposed artifact and presented thesis.

How can Food Design serve the commercial Food Service system, establishing better gastronomic practices, reducing adverse environmental effects, and positively impacting people's health, culture, and economy?

With participatory meaning construction and knowledge building, we could understand stakeholder's needs, relying on theoretical foundation and professional practice to develop a Food Design project capable of addressing market needs. This provides HoReCa professionals with hands on tools and curated knowledge base access, serving as a first step toward a more balanced, ethical, sustainable gastronomy. This chapter presents the evolution of methodology application toward the proposed Circular Food System concept, the artifact, and the reasons behind its design.

Food is good when it extends beyond the harvest, the cook, and the farmer to the entirety of the territory. Good food results from the expression of its surroundings, and responsibly and ethically conducted agriculture is inseparable from delicious food.

We start back on the research Food System Map (Figure 17, Chapter 2.6.1), identifying its stakeholders and their interconnections, and crossing them with the outcomes from Chapters 3, 4, and 5. As a synthesis of these insights, the principles and stakeholders behind the HoReCa Circular Food System emerged, structuring a framework with a direct impact on this study (Figure 21, Chapter 2.7):

- Society: encompassing the people and culture interlinked in the food system, like team members, suppliers, customers, and community;
- Education: provides the mechanisms to increase consciousness through knowledge, training, and continuous development. It is tied to communication skills and strategies, reaching all stakeholders;
- Sustainable Best Practices: everyday policies, protocols, and informed actions toward more sustainable gastronomy;

- Governance and Finance: virtuous, transparent, and congruous conducts of financial and human resources management reflected in measures in accordance with sustainable company values;
- Technology: techniques and tools to enable a more proportional, efficient, and adequate use of natural resources, time, people, and food items throughout the food chain;
- Territory: perception and value of the local ecosystems, its history, traditions, biodiversity, people and land, supportably coexisting. The possible balanced development of nature and poli-cultures.

The Circular Food System (Figure 103) is a straightforward, tangible approach to environmental, social, and economic sustainability pillars, linked with the stakeholders and means to achieve it in HoReCa operations. It is an intertwined ecosystem of food producers, manufacturers, restaurateurs, managers, experts, and the broad society, committed to collectively constructing a healthier and more balanced food system. Through shared values like local actions, ethical practices, and responsible consumption, the system supports local economies, respects the planet, and cherishes people for positively impactful growth.

Figure 103. Circular Food System Principles.

6.1
Seeds.

Seeds. is a F&B-specific service system designed to provide instruments to embed sustainability in the gastronomy business. It was designed to support management and operational teams, granting a comprehensive toolkit and a complementary knowledge base to stimulate change through HoReCa sustainable best practices. Seeds. symbolize evolution, innovation, and development in accordance with nature.

The service system offers practical guidance on setting up and maintaining an environmentally responsible Food Service operation. From a comprehensive toolkit to operation F&B stakeholders seeking to integrate sustainability into their operations to curated lists of responsible suppliers and sustainable businesses, along with strategies for governance and finance. Seeds. supports business owners and managers with branding, pricing models, and operational strategies tailored for sustainability. Based on sustainable gastronomy principles and a strong network, this system empowers businesses to adopt ethical, efficient, and financially viable sustainability practices.

Business Model

Although a resulting artifact of an academic research project, a simple business model was conceived to better understand the capacity of the proposed system. The targeted customer segment is all Food Service businesses willing to adopt sustainable best practices, regardless of their motivations, level of awareness, or knowledge. It could be an expanding or starting enterprise or a business aiming at certification and recognition. It may be an individual or a group of venues, expanding or seeking improvement in their commitment to ethical excellence. It can also be a support system to adapt to law enforcement even before they are officially imposed, being ahead of the implementation. Empowered by the content presented on the website, companies can leverage operational practices for reduced environmental impact, improvement on human resources and community relations, and positive contributions (Figure 104).

The content is divided into practical (tools) and theory, with view-only or downloadable data, general knowledge, or location customization. This data is thought to be assembled in a participatory fashion (community forums), partnering with trade unions, field specialists, certification bodies, and the joining community of peers.

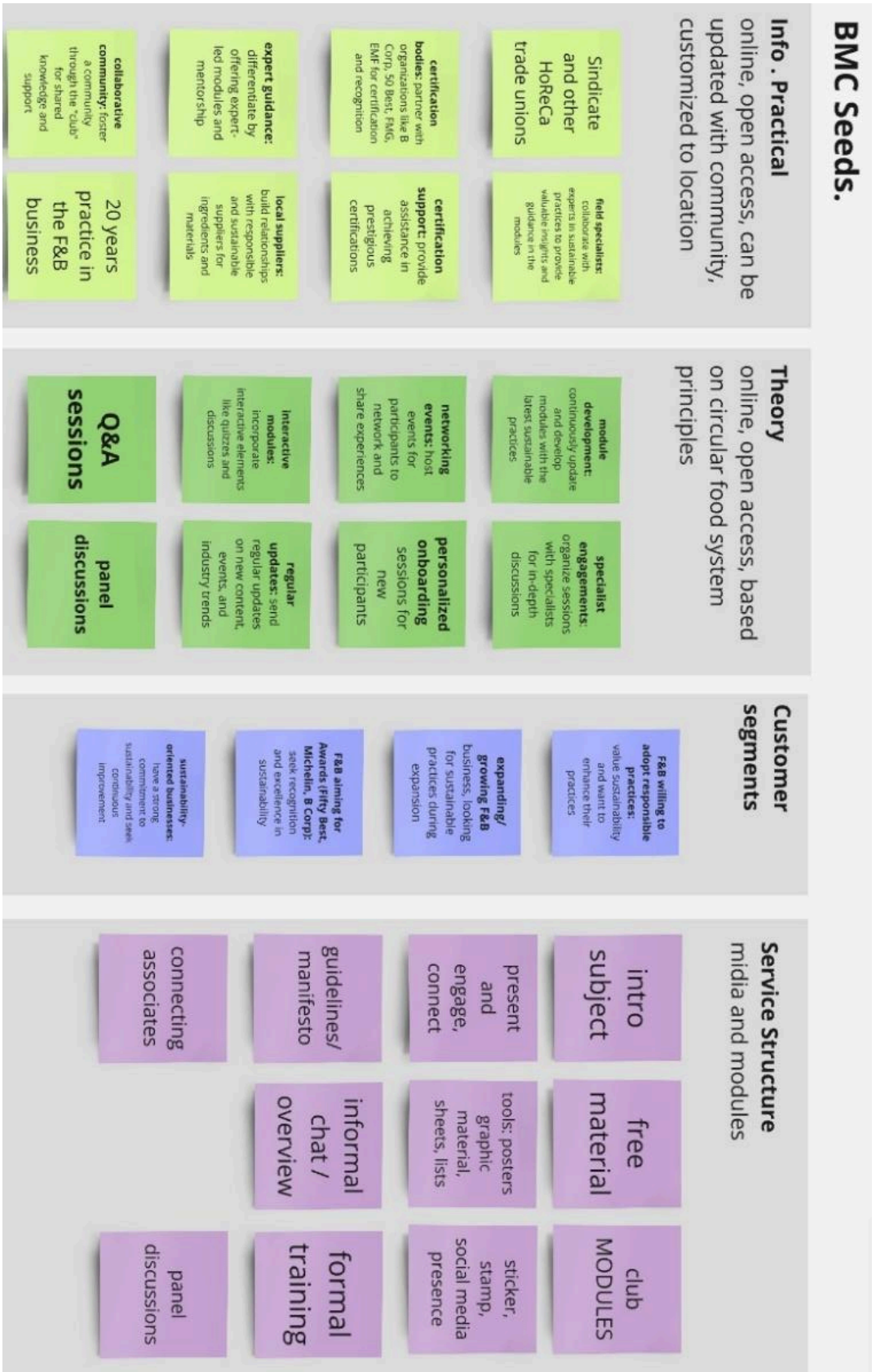


Figure 104. System Customer segments and Service structure.

The service can be further complemented by expert guidance to achieve particular goals or accreditation and relies on field-experienced professionals (Figure 105). For the time being, this is the proposed system's primary source of potential revenue. As an academic proposal, this aspect is speculative only. The branding cost was assessed with a specialized firm, and the general structure

cost associated with developing, implementing, and maintaining Seeds. has not been further estimated.

Seeds. can be advertised online, through social media, targeted online ads, and the launching of the website. It can partner with sector influencers and credible organizations to expand its reach. Networking can also happen by participating in and hosting industry events and through a referral program. All touchpoints shall allow newcomers to join or subscribe to the newsletter updates.

The key resources are shared knowledge and an expanding network. Seeds. is grounded in strategic partnerships with professionals and sector organizations, delivering quality content and engaging the community. The subjects take a holistic, comprehensive approach, covering the entire business operation. They can be further addressed via workshops, training sessions, or one-to-one mentorship (paid consultancy) (Figure 105).

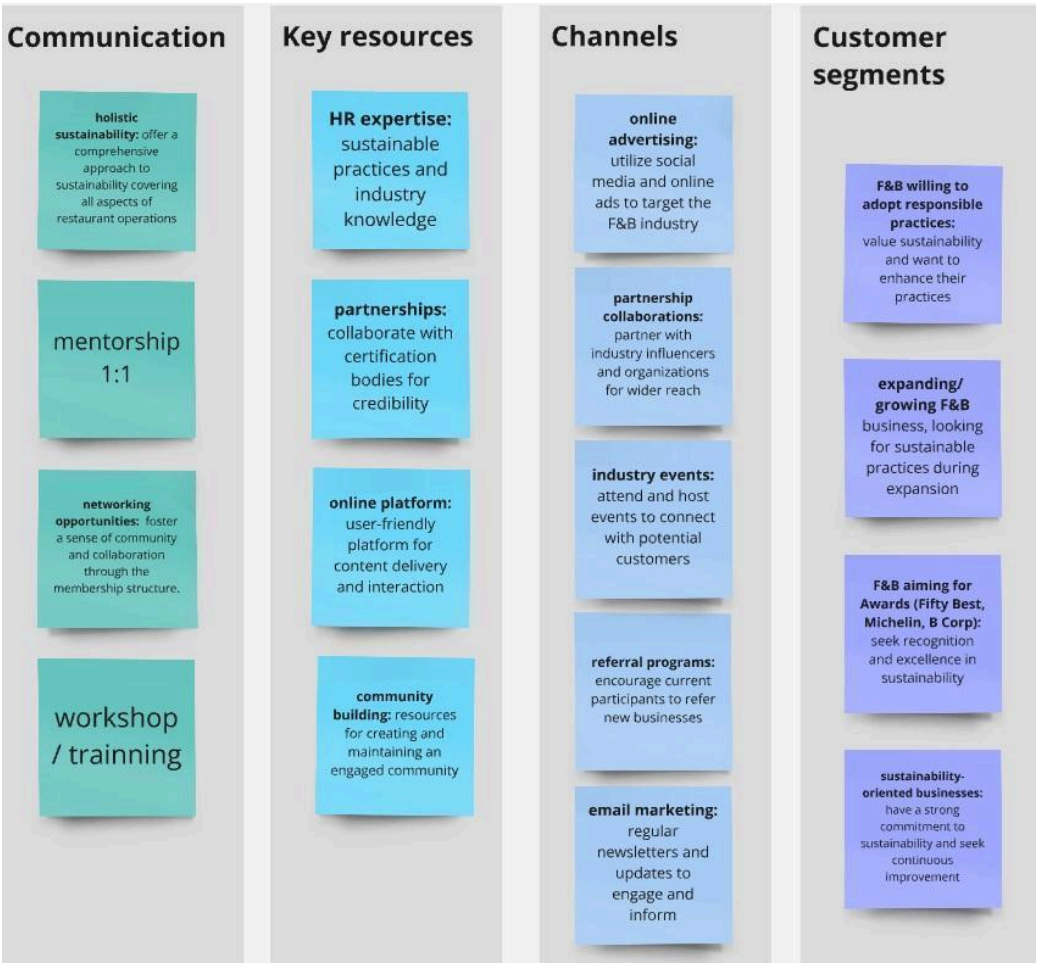


Figure 105. System communication, key resources, customer reaching channels, and customer segments.

Seeds. Structure

Seeds. was conceived as a free-source system and interested companies or individuals can visit the website and read the information available on the database, Instagram account, or selected content on video broadcasting platforms. Signing up for Seeds. grants access to tools and materials that can be

downloaded. Combined, these items become functional, tangible guidelines for the HoReCa sector. The membership is intended to foster a sense of community and shared commitment to the values. Updated information on HoReCa sustainability is periodically sent via newsletters, offering continuous learning, industry trends, and innovative projects (Figure 106).

Members have entry to all platform contents (view-only or downloadables), while access to non-members is more restricted (Figure 107). Collaborative tools are customized by location, and information can be transmitted to the Seeds. team via the local community's WhatsApp/Telegram group of dedicated forms.

Those can be references to human resources, suppliers, and service providers (Figure 108). Tools like cooking ideas and techniques databases can be constantly updated with community-sent recipes. A mobile-based communication, with groups sectored by location and only administered by the Seeds. team, will welcome all interested individuals. Participants engage at their will, and organic interactions happen, with contacts, references, and general information exchanged. As for the forms, this can be a rich source of data to be compiled and shared using the appropriate tools on the website.

For enterprises seeking more in-depth guidance, there is the option of hiring a one-to-one mentorship with Seeds. team and partner specialists, customized action plans consisting of tailored strategies to achieve sustainability criteria, knowledge amplification, or recognition pursuit. This service also proposes an initial evaluation of the company's scenario, with a secondary appraisal within an established time frame to measure progress and signal any required points of attention (Figure 109).

The service journey can start from multiple touchpoints, from social media, directly via the website, or with direct reference (in-person or e-mail). From this first contact, system users may become members, exit, or hire a consultancy at any time. When prompted to subscribe, they unlock access to events and material available on the platform (Figure 110). The website's general structure presents the project, welcomes participants, and introduces the theme. Links to subscription, newsletter, and social media are constantly at sight. Direct contact can be always established via corporate email.

Figure 106. System platform structure.

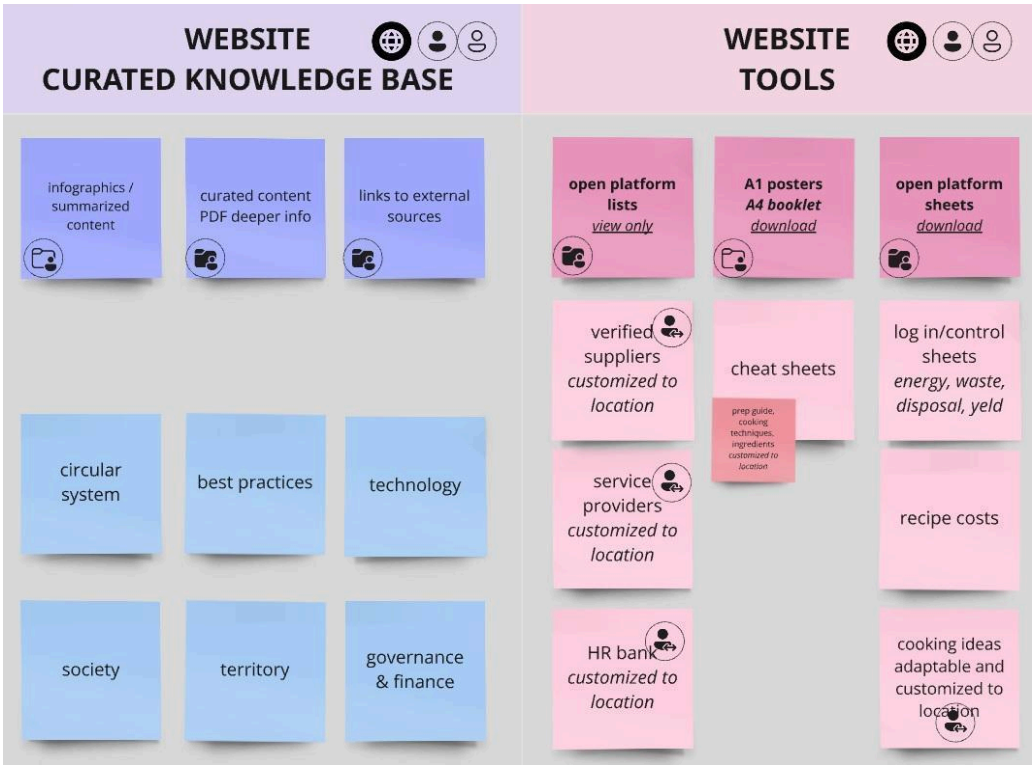


Figure 107. Curated knowledge base and tools.

Figure 108. Communication channels and media.

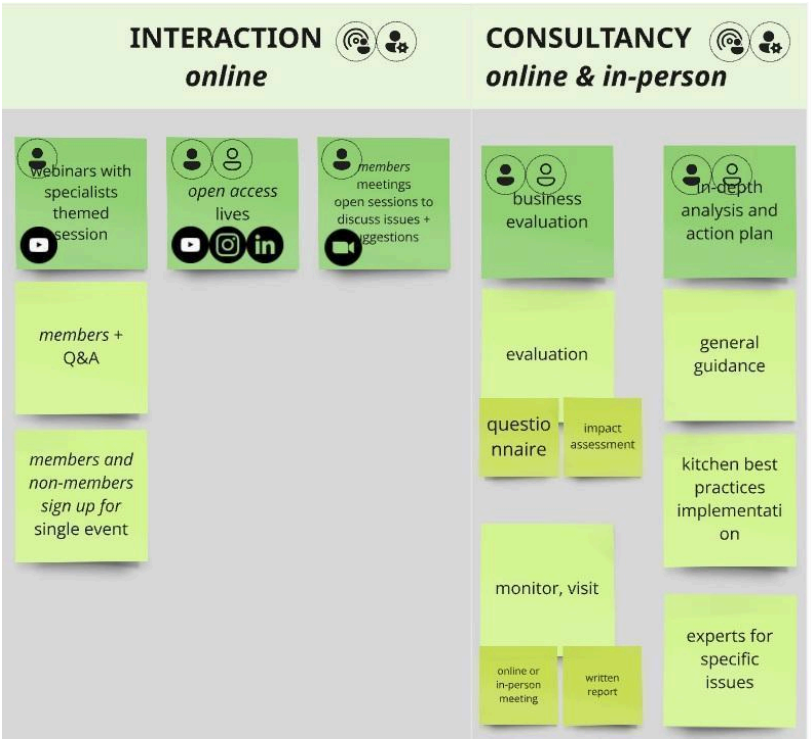


Figure 109. Synchronous or recorded contents, Consultancy formats.

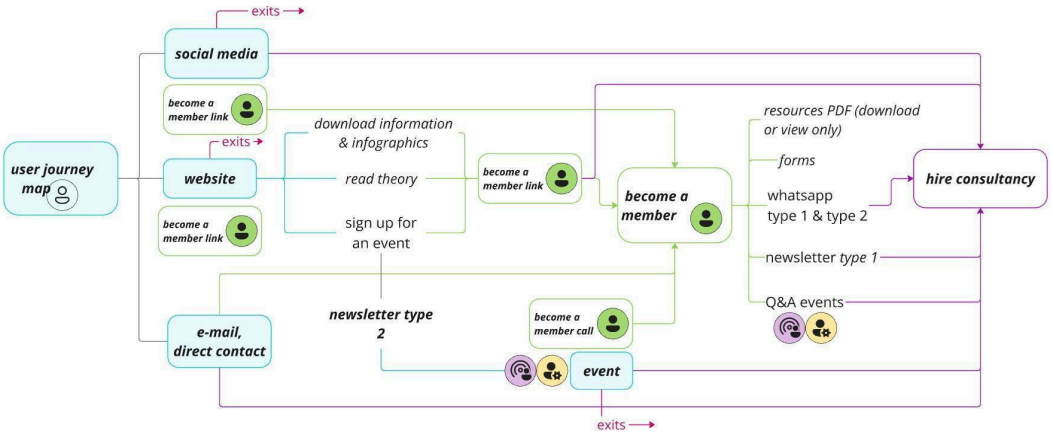


Figure 110. User Journeys.

Brand Concept and Naming

We looked for a name that would encompass keywords representing the system. When it was almost arranged, a reference came across: a chapter named *Seeds* in the book *The Creative Act: A Way of Being* (Rubin, 2023), which reflected on the starting insights that grow into a bigger idea or project. For a business, “it could be a common inconvenience, a societal need, a technical advancement, or a personal interest” (IDEM, p. 144). In the case of this project, it is a combination of all these factors. There was no doubt this would be the name.

Besides all the mental Figures immediately associated with the name *Seeds*, such as nature, nourishment, origin, growth, and cycles. It contains the elemental principles, the source. The plural form was a deliberate choice because seeds are multiple, they can be sown, they adapt, and they spread. The name intentionally encompasses the words *Sustainability, System, Stewardship,*

*Environment, Education, Design, and Developmen*t, with their meanings directly related to the purpose of this project.

Imagetically, a dandelion represents many of these implied meanings, plus it is edible and medicinal. It also carries the aspects of innovation and resilience, being naturally designed to fly and spread its seeds across borders. It thrives in a variety of environments, including disturbed soils, worldwide. We chose a simplified graphic depiction of the flower, keeping its essence and enabling reproduction in all sizes and formats. The graphic concept of interconnected circles can also be seen tridimensionally as spheres, referencing intertwined, global systems.

The vocabulary related to seeds is embedded in connotations beyond semantics and alludes to subjective, introspective messages. Expressions such as *one seed at a time, sowing seeds, planting the seeds of,* and *cultivating* are naturally attached to meanings and can reinforce the ideals behind Seeds.

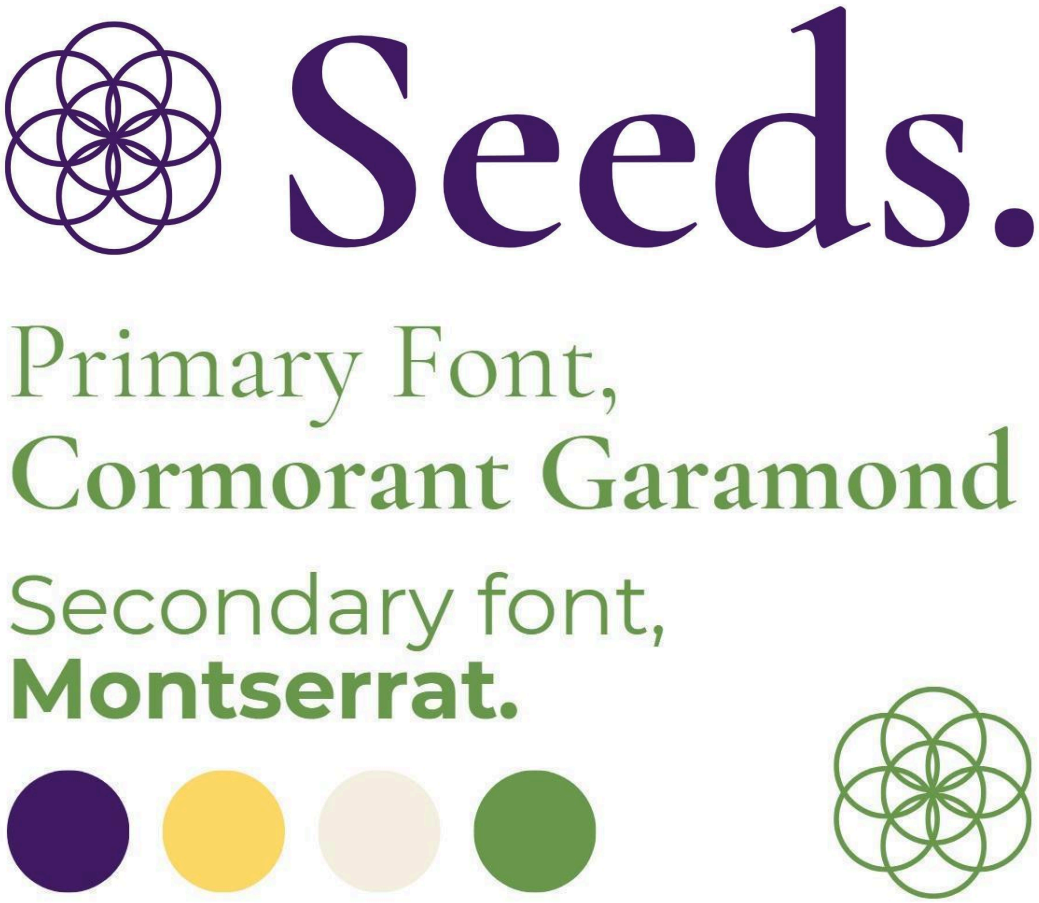


Figure 111. Seeds. Visual Identity.

The choice of colors directs to nature, with cream (#f5f0e1) being the neutral tone, supported by a light, warm yellow (#ffd966) for brightness, and an earthy green (#6a994e), representing sustainability. The accent color, a deep purple (#411b63), brings contrast without disrupting, and is associated with wisdom. The typography selections were open-source, clean fonts. Cormorant Garamond, with a classic and light serif shape as the primary font, and

Montserrat, sans-serif as the secondary, conveys contemporality and provides ergonomic reading over various media (Figure 111 above).

Seeds. takes a forward-thinking approach to rooted Food Service industry challenges and provides tools to empower business owners and operators to take ownership of the change they want to promote. It is grounded in the sector's responsibilities, putting the HoReCa ecosystem at the center of conscious, informed decision-making that will positively affect the entire food chain.

Offering open access to knowledge and tools, with two-way communication with the HoReCa community, Seeds. aims to be a gastronomy sustainability epicenter, where knowledge is shared and multiplied, and those seeking a more ethical, balanced food system can join their efforts based on solid, collectively built knowledge.

One crucial aspect perceived during observations is how many initiatives happen in isolation; information does not cross borders, and projects take longer to develop because so many minds are continuously starting from scratch rather than complementing each other's ideas and progressing. Disseminating successful cases and spreading the achievements is as important as enlarging the network of sustainable food system. Seeds. was thought to orient growth, development, and transformation based on robust scientific and expert knowledge through information, training, and sharing.

Seeds. intends to be more than a service system. It is a collaborative movement toward a good, healthy, ethical HoReCa industry that benefits all stakeholders involved in this food system directly and indirectly.

The website is a hub for the products and services furnished and was thought to captivate users' attention with simple navigation. For the prototyping purposes in this research, Canva was the hosting and designing tool of choice. The learning curve was quick with its user-friendly interface, and the app automatically converts the website to a mobile version. Furthermore, Canva offers an array of structuring templates, facilitating the construction of the webpage, newsletter, and social media sample pages. Google and Instagram accounts were created to host Seeds. system components. The active links to forms, content, and tools provide seamless navigation, going around the main technical constraints encountered.

The homepage briefly describes Seeds. and its functionalities. It also presents the mission, project, team, and network behind the system (Figure 112). After the system concept and value usability tests, a few modifications were made, and they will be presented further down the document, with a link to the final web page version.

Figure 112. Seeds. home page, mission, team and network.

Browsing further, one encounters the presentation of Circular Food System principles for sustainable gastronomy. This presentation encourages industry business owners, managers, and decision makers to embark on a changing journey, starting with a theoretical background and presenting the tools and specific curated content access (Figure 113).

The next section offers links to sheets, lists, and graphic material in view-only or downloadable versions and links to the downloadable resources hosted in Seeds. Google Drive (access to members only). According to the World Sustainable Hospitality Alliance (WSHA, n.d.), the pathway to positively impacting the HoReCa sector starts with identifying, measuring, and minimizing negative impact and subsequently initiating positive actions. The following step is to neutralize the negative pressure and encourage more solid positive results (Figure 115).

Figure 113. Seeds. Circular Food System.

Figure 114. Seeds. principles and lists.

The tools were designed to conduct HoReCa operations along a similar path, using sustainable best practices and more detailed guidance, including ingredient sourcing and preparation, strategies to reuse, reduce, and recycle, and waste management. This set of sheets features *Human Rights & Labor Practices*,

as well as *Equity, Diversity, and Inclusion*. It also comprises *Emissions & Energy*, and *Resource Use & Waste*. Within the Governance and Finance umbrella of tools, Seeds. offers updated lists of service providers and a human resources bank specific to each location. These are sourced through the community's recommendations (via mobile groups or dedicated form). The Governance and Finance set of tables was not ready for prototyping, and the final versions will be presented in Chapter 6.3.

A second group of tools is formed by inspiring recipe sheets with basic preparation guidelines to help with the daily shortage of ideas, last-minute changes, or lack/surplus of ingredients. The intention is to constantly update this file, including community recipes, inspirations, and trends. In the same group, we can find a detailed, downloadable for members, food cost sheet/recipe, similar to the one developed during the immersion, and presented in Chapter 5.3. The following section presents this content in more detail, with the adjustments made after the System Concept and Value Usability Tests.

Still within the second set of tools, view-only infographics with cooking and conserving guidance per food group to be displayed on the screen or mobile version (Figure 115). Pictorial instructions represent inclusive resources, focusing on those less capable of reading the language, which is common in the HoReCa workforce.

Figure 115. Seeds. Infographics.

This kit is complemented by an updated, location-based list of verified suppliers, facilitating access to purchasing from a sustainable food chain.

Farmers and artisans are verified based on a Participatory Guarantee System[52], a peer-accreditation consisting of “locally focused quality assurance systems. They certify producers based on active participation of stakeholders and are built on a foundation of trust, social networks and knowledge exchange”—with visits to production whenever possible” (IFOAM, 2019).

A team of partner specialists will address more specific issues in depth and can be invited to open talks, live events, or in-person events. Members will have access to recordings of these contents and periodical Q&A sessions with experts to address aspects of their particular interest. Alliances with certification bodies and international awards are desirable, condensing efforts rather than pulverizing them.

Partnerships are indicated with an introductory page, as are partner specialists and businesses. The newsletter, *Sprouting,* is a one-way informational tool, periodically diffusing gastronomy and sustainability-related subjects (Figure 116). It may include industry cases, relevant events, new or promising partners, Seeds. activities like gatherings and seminars (online and in-person), general sector news, and curated material. Informational content focused on marketing and communication strategies, which creates a solid bond with patrons, is illustrated with industry cases and posted on Sprouting and social media. Another benefit of associating with Seeds. is networking with the broad community, from farmers to restaurant owners to industry specialists.

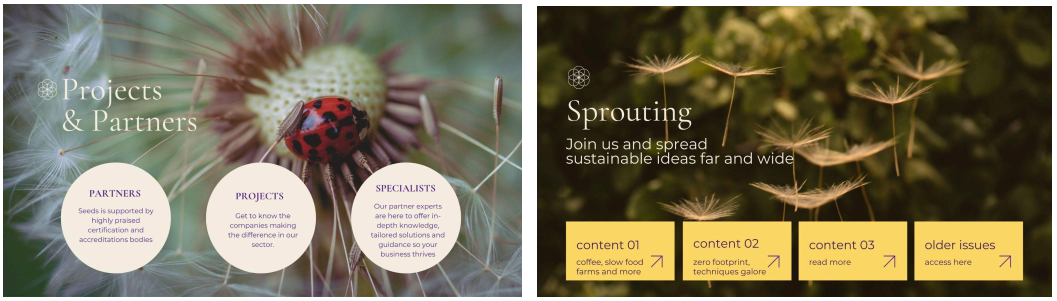


Figure 116. Seeds. Projects & Partners and Sprouting landing page.

Although the design does not differ, Sprouting Type 01 is meant to be a quarterly publication directed to members and may include benefits such as invitations to online and onsite events, discounts, and exclusive Q&A sessions. Upon signing up, members provide their email addresses as a databank and communication channel. Newsletter Type 02 releases single events and sporadic informational content with no set frequency. They are sent to users via email (Figure 117), and upon clicking, the link directs to the complete Sprouting content and can also be accessed directly through Seeds. website. The material

[52] The terminology and conceptual framework for describing Participatory Guarantee Systems (PGS) was first developed from the International Alternative Certification Workshop held in Brazil in 2004 and sponsored by IFOAM - Organics International and the MAELA.

researched for the newsletters becomes part of the platform's knowledge database.

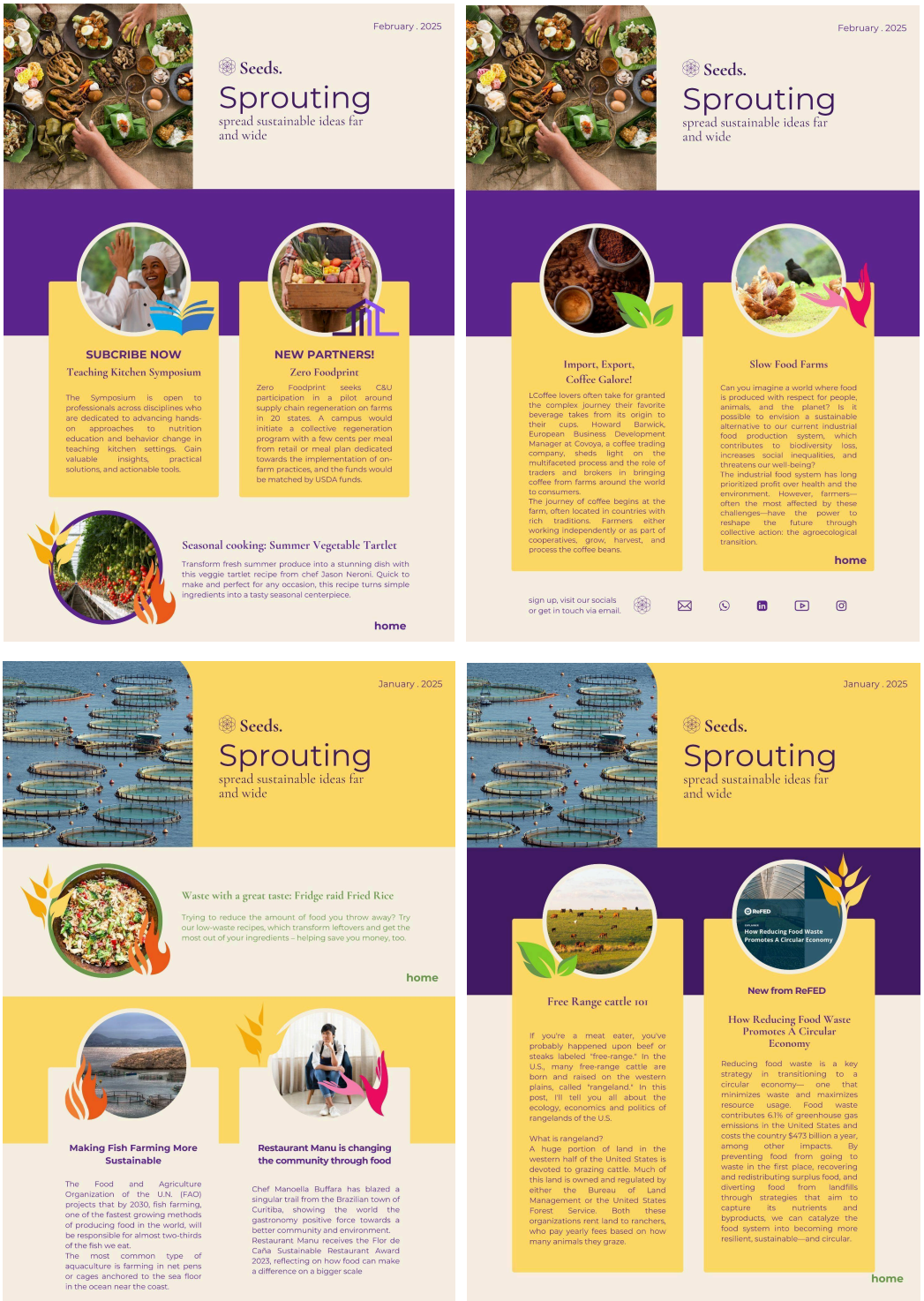


Figure 117. Sprouting email samples, content identified with the Circular Food System icons.

A secondary Imagery set was thought to accompany educational material, toolkits, and social media communication referencing the 6 Circular Food System Pillars (colored circles and pictograms, also previously seen. The curated content featured in the newsletters, social media, and website is always linked to the Circular Food System Principles, with identifying icons. This pictorial set fosters quick theme recognition, reinforces the theory, and assists knowledge

consolidation. The content approaches general concepts of sustainable operations, considering physical structure, equipment and technology, and human resources. It circumscribes resource use efficiency, waste management, sustainable best practices, communication, and administrative and governance guidelines (Figure 118).

Figure 118. Seeds. Instagram post samples, content identified with the Circular Food System icons.

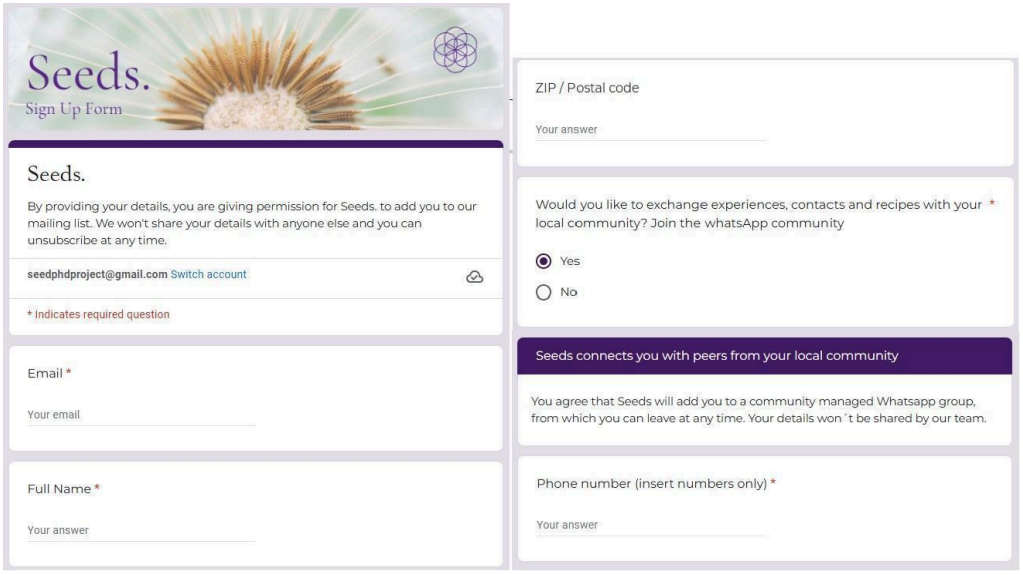


Figure 119. Seeds. sign-up form.

Sign-up is prompted throughout the website, newsletter, social media, and informational emails. The link directs to a form requiring personal and professional information and a contact email address (Figure 119 above). Those willing to join the mobile interaction group are directed to section 2, where they must fill out a specific field. For those who are already members, there is a dedicated form through which information (contacts, recipes, etc.), suggestions,

or critiques can be sent, plus a simple satisfaction survey available at the end of the form (Figure 120).

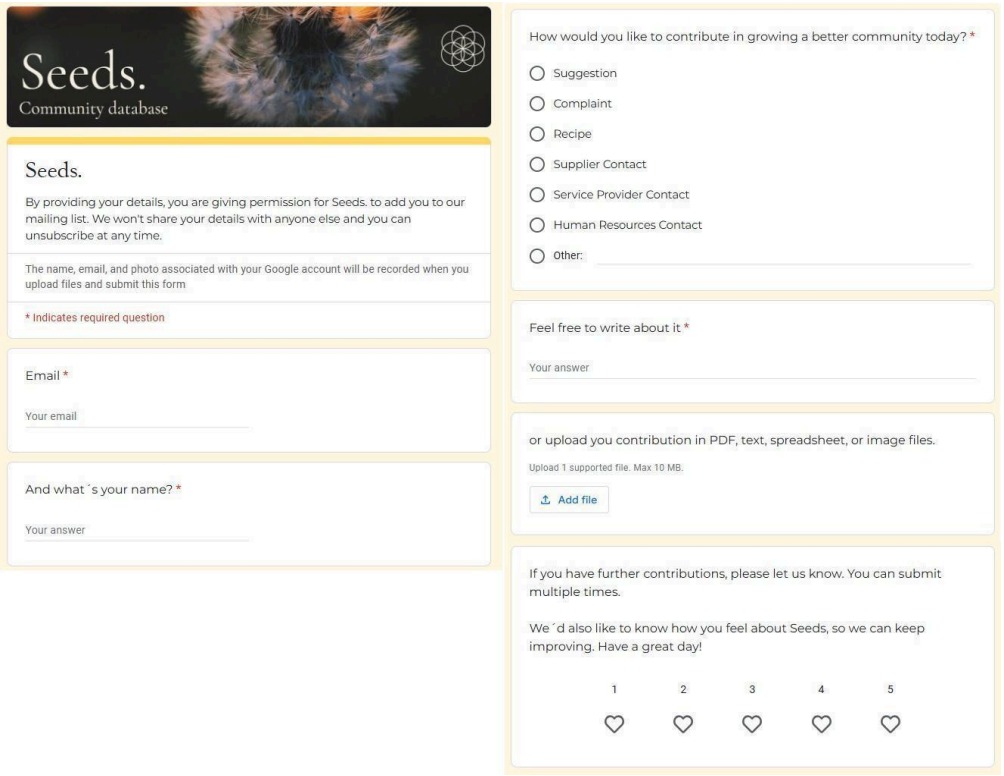


Figure 120. Seeds. relational and feedback form.

6.2
Seeds. System Concept and Value Usability Test

The Seeds. platform was tested to validate the proposed system's concept and value perception. Although not the main objective, the participants also evaluated aesthetics, site structure, and navigation. Two pilot tests were run to present the hypothetical scenarios, identify possible technical errors, and collect global feedback. All tests followed the protocol, and participants' assessments, questions, or comments were registered in printed notecards, mobile photographs, and recordings, as mentioned in Chapter 2.9.

Analyzing the collected data from all 19 participants, including the two pilots, has provided rich insights, compiled in a Thematic Map (Figure 25, Chapter 2.9.2). The reactions to concept understanding and value in using Seeds. were predominantly positive, as were the general comments on the visual aspect, colors, and font choice. Participants pointed out they would change the order and reduce introductory sections on the structural content presented on the website. They would rather have a more straightforward path to tools, leaving deeper exploring for a second moment. Some debate was raised regarding the use of WhatsApp or Telegram groups to promote connection with work outside working hours, the exposure of individuals' phone numbers (in the case of WhatsApp), and other privacy issues. Despite these considerations, most

participants would be willing to join, considering the benefits in terms of experience and knowledge exchange.

Other contributions were specific to the content and usability of sheets, including various Google Sheets resources to facilitate finding the searched piece of information, like drop lists, filters, categories, and embedded links. Many suggestions were made regarding types of preparation to be included, a possible toolkit specific to farmers, and videos explaining how to use the sheets, were seen as desirable. To the Brazilian participants, this system felt like an opportunity for them to have quality material in Portuguese.

6.3
Seeds. Service System

After considering the feasibility of the prompted alterations regarding technical knowledge and execution time, efforts were concentrated on restructuring the Seeds. website and reformulating or expanding the toolkit. The final version of the Seeds. platform is publicly available at https://seedsphdproject.my.canva.site/seeds.

The material with most increments was the toolkit, and the final versions are presented below, indicating the alterations. The *Inspiring Recipes*, previously a mixed compilation, was separated and increased to four sample sheets—salads, sides, pastas, and the inclusion of *Waste with a great taste* set of circular-based recipes. This collection was renamed, received an indication of food restrictions and allergies, a season column, and indexed (Figure 121 and Table 32).

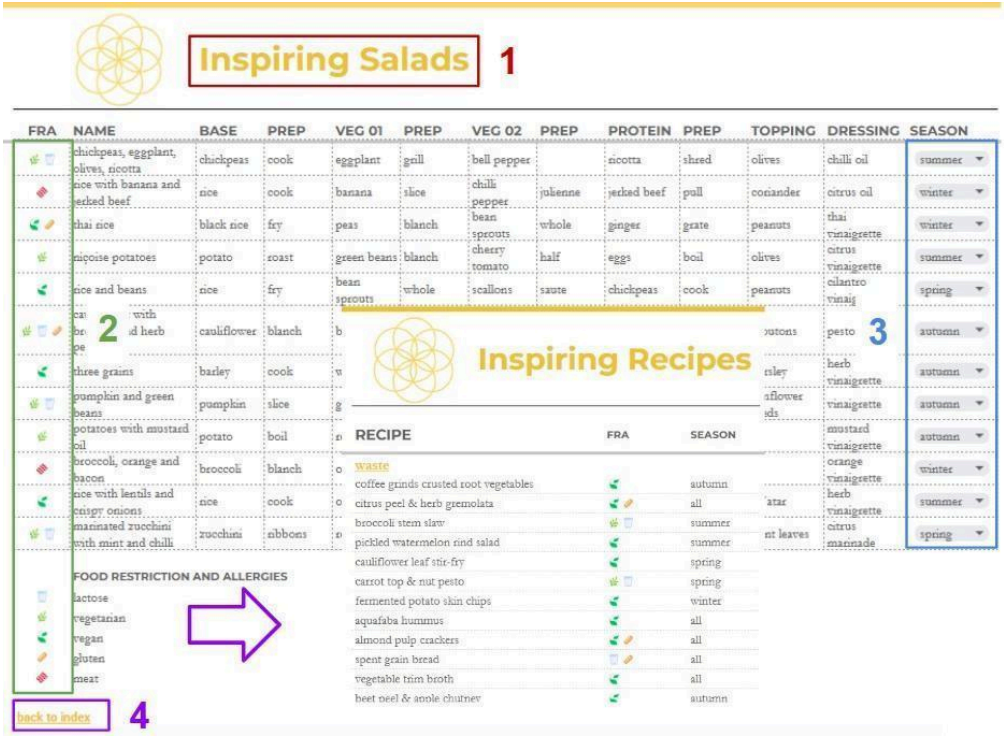


Figure 121. Seeds. Inspiring Recipes sheets modifications.

Waste with a great taste

FRA	NAME	BASE	PREP	VEG 01	PREP	VEG 02	PREP	PROTEIN	PREP	TOPPING	FLAVOR	SEASON
	Coffee Grinds Crusted Root Vegetables	Root Vegetables	Roast							Coffee Groinds & Seeds	Miso Dressing	autumn
	Citrus Peel & Herb Gremolata	Stale Bread	Toast	Citrus Peels	Zest	Herbs	Chop			Garlic & Nuts	Olive Oil	winter
	Broccoli Stem Slaw	Broccoli Stems	Shave	Carrot Tops	Chop	Cabbage	Shred			Sunflower Seeds	Yogurt Dressing	summer
	Pickled Watermelon Rind Salad	Watermelon Rind	Pickle	Radish	Slice	Green Onion	Chop			Sesame Seeds	Ginger Vinaigrette	summer
	Cauliflower Leaf Stir-Fry	Cauliflower Leaves	Sauté	Garlic	Mince	Chili	Slice			Peanuts	Soy Sauce	spring
	Carrot Top & Nut Pesto	Carrot Tops	Blend	Almonds	Toast	Garlic	Roast			Parmesan	Olive Oil	spring
	Fermented Potato Skin Chips	Potato Skins	Ferment							Smoked Paprika	Vinegar	winter
		Chickpea									Lemon	

Table 32. Seeds. Inspiring Recipes sheets.

The lists of *Verified Suppliers* and *Service Providers* were provided with a link to Google Maps, identifying the location of professionals and a possible direct link to their website or other communication channels (uploaded individually by each business, directly on Google). The *Human Resources* bank was formatted similarly (Tables 33 to 35). A *Notes* column identifies specific aspects of each contact, from days of operations to cost/benefit, or even a des-recommending note. The Seeds. community can feed all three sheets, plus provide recipe ideas, through the dedicated form, and the compiled information can be updated frequently.

The *Food Cost* set was enhanced with a recipe multiplication factor, operational costs (labor, utilities, and rent), loss and error margins with adjusted cost, and suggested selling price. It also features preparation instructions and pictures to maintain standards. The ingredients are now available from a drop-down list, preventing misspellings and consequent formula errors, and the recipes were indexed (Figure 122 and Table 36 below).

Verified Suppliers per location

map link

SUPPLIER	CONTACT	PRODUCT	PHONE	LOCATION	EMAIL	NOTES
Terra Orgânica	*Maria Souza*	Organic Vegetabl	(21) 867124359	*Rio de Janeiro*	*info@terraorganica.com*	*Delivers twice a week, bulk discounts available*
Sítio Verde	*João Almeida*	Free-range Eggs	(21) 879561324	*Niterói*	*contact@sitioverde.com*	*Weekly delivery, reusable packaging option*
Agroecológica Rio	*Fernanda Lima*	Seasonal Fruits	(21) 854761239	*Nova Iguaçu*	*sales@agroecorio.com*	*Harvest-to-order, high quality*
Pão Nosso	*Ricardo Mendes*	Artisanal Sourdou	(21) 817236945	*Rio de Janeiro*	*orders@paonosso.com*	*Requires 48h pre-order for large batches*
Fazenda Sustentável	*Rafael Costa*	Grass-fed Beef	(21) 813472695	*Petrópolis*	*info@fazendasustentavel.com*	*Certified humane and pasture-raised beef*
Maré Azul	*Camila Duarte*	Sustainable Seafo	(21) 832971564	*Cabo Frio*	*orders@mareazul.com*	*Works with small fishing communities*
Serra do Café	*Eduardo Rocha*	Specialty Coffee	(21) 895314672	*Teresópolis*	*info@serradocafe.com*	*Direct trade with family-owned farms*
Mel da Mata	*Patrícia Nunes*	Organic Honey	(21) 869134275	*Angra dos Reis*	*contact@meldamata.com*	*No additives, certified organic*
Legume Vivo	*Bruno Ferreira*	Organic Beans &	(21) 829743156	*Rio de Janeiro*	*info@legumevivo.com*	*Ships in bulk, zero-waste packaging*
Sabor da Roça	*Ana Oliveira*	Handmade Jams &	(21) 827495361	*Nova Friburgo*	*sales@sabordaroca.com*	*Uses only local and organic fruit*
Queijaria Serrana	*Lucas Martins*	Artisanal Cheese	(21) 834512796	*Minas Gerais*	*contact@queijariaserrana.com*	*Aged and fresh varieties, raw milk available*

Table 33. Seeds. compilation of Verified Suppliers per location, with map link.

Service Providers per location

map link

COMPANY	CONTACT	SERVICE	PHONE	EMAIL	NOTES
CoolAir Solutions	*John Doe*	Air Conditioning Maintenance	(21) 876543219	*info@coolair.com*	*Available Mon-Fri; efficient service*
FreshFlow Exhausts	*Jane Smith*	Exhaust System Installation	(21) 865432198	*support@freshflow.com*	*24/7 emergency service*
IcePro Refrigeration	*Mark Johnson*	Refrigerator Repairs & Sales	(21) 874365291	*service@icepro.com*	*Affordable, reliable parts supply*
QuickFix Plumbing	*Sarah Lee*	Plumbing Services	(21) 867124359	*contact@quickfix.com*	*Specializes in grease trap cleaning*
PowerSafe Electrics	*Mike Brown*	Electrical Maintenance	(21) 812365947	*info@powersafe.com*	*Fast response for power failures*
EcoHygiene	*Ana Costa*	Pest Control	(21) 892317465	*help@ecohygiene.com*	*Uses eco-friendly treatments*
DeepClean Pro	*Carlos Mendes*	Kitchen Deep Cleaning	(21) 843912756	*info@deepclean.com*	*Monthly contracts available*
GreenWaste Solutions	*Emily Tran*	Waste Management & Recycling	(21) 829743156	*support@greenwaste.com*	*Works with composting initiatives*
AquaTech Filters	*Lucas Pereira*	Water Filtration Maintenance	(21) 854761239	*info@aquatech.com*	*Specializes in HoReCa water needs*

Table 34. Seeds. compilation of Service Providers per location, with map link.

Human Resources per location

NAME	RECOMMENDED BY	POSITION	PHONE	EMAIL	PREVIOUS EXPERIENCES
Amanda Ribeiro	*Pedro Nunes*	Head Chef	(21) 865432198	*amanda.r@email.com*	*Slow Bakery, Gastromotiva, Farm-to-Table Bistro*
Bruno Almeida	*Sofia Martinez*	Sous Chef	(21) 874365291	*bruno.a@email.com*	*Italian Fine Dining, Sustainable Eatery*
Camila Duarte	*John Doe*	Pastry Chef	(21) 812365947	*camila.d@email.com*	*Artisanal Bakery, Michelin-starred Hotel*
Daniel Ferreira	*Laura Kim*	Kitchen Manager	(21) 892317465	*daniel.f@email.com*	*Vegan Restaurant, Large-scale Catering*
Elisa Mendes	*Mark Johnson*	Line Cook	(21) 843912756	*elisa.m@email.com*	*Casual Dining, Farm-to-Table Café*
Felipe Moreira	*Carlos Mendes*	Grill Cook	(21) 829743156	*felipe.m@email.com*	*BBQ Smokehouse, Hotel Steakhouse*
Gabriela Santos	*Emily Tran*	Restaurant Manager	(21) 854761239	*gabriela.s@email.com*	*High-End Bistro, International Franchise*
Henrique Costa	*Marco Rossi*	Bartender	(21) 871932546	*henrique.c@email.com*	*Craft Cocktail Bar, Beach Resort*
Isabela Rocha	*Olivia Silva*	Waitstaff Supervisor	(21) 869134275	*isabela.r@email.com*	*Fine Dining, Hotel Events*

Table 35. Seeds. compilation of Human Resources list, per location.

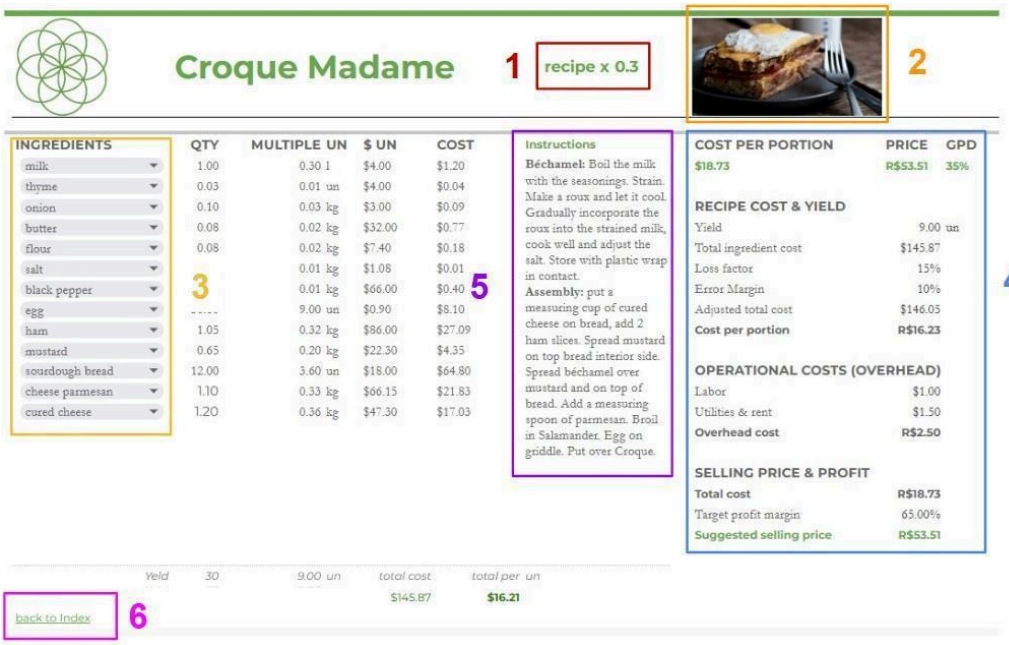
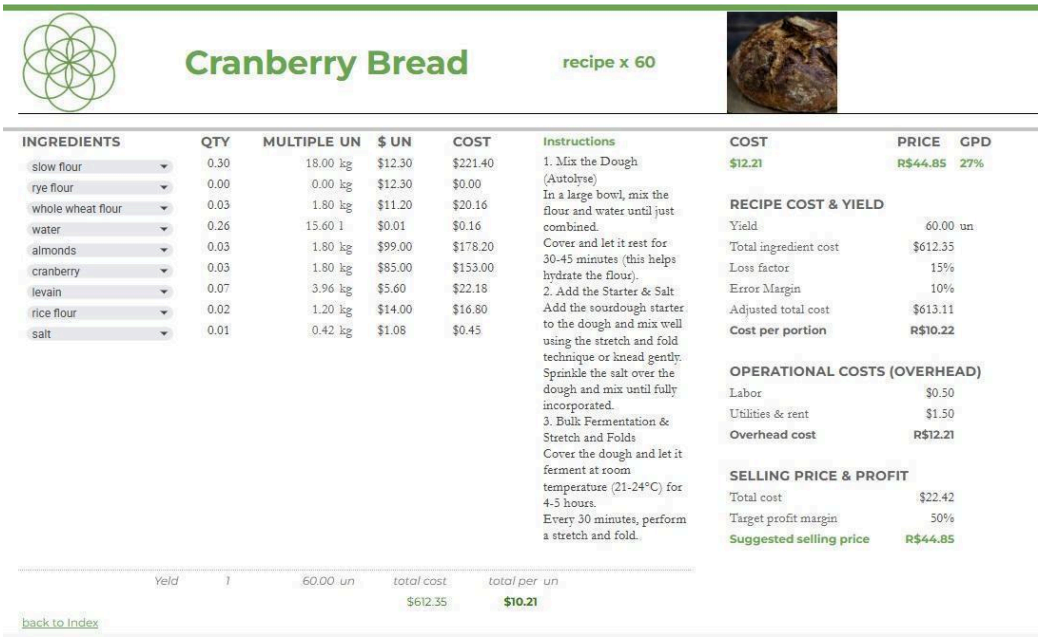


Figure 122. Seeds. Food Cost sheets modifications.



Cranberry Bread

recipe x 60

INGREDIENTS	QTY	MULTIPLE UN	$ UN	COST
slow flour	0.30	18.00 kg	$12.30	$221.40
rye flour	0.00	0.00 kg	$12.30	$0.00
whole wheat flour	0.03	1.80 kg	$11.20	$20.16
water	0.26	15.60 l	$0.01	$0.16
almonds	0.03	1.80 kg	$99.00	$178.20
cranberry	0.03	1.80 kg	$85.00	$153.00
levain	0.07	3.96 kg	$5.60	$22.18
rice flour	0.02	1.20 kg	$14.00	$16.80
salt	0.01	0.42 kg	$1.08	$0.45

Instructions

1. Mix the Dough (Autolyse)
In a large bowl, mix the flour and water until just combined.
Cover and let it rest for 30-45 minutes (this helps hydrate the flour).
2. Add the Starter & Salt
Add the sourdough starter to the dough and mix well using the stretch and fold technique or knead gently.
Sprinkle the salt over the dough and mix until fully incorporated.
3. Bulk Fermentation & Stretch and Folds
Cover the dough and let it ferment at room temperature (21-24°C) for 4-5 hours.
Every 30 minutes, perform a stretch and fold.

COST	PRICE	GPD
$12.21	R$44.85	27%

RECIPE COST & YIELD

Yield	60.00 un
Total ingredient cost	$612.35
Loss factor	15%
Error Margin	10%
Adjusted total cost	$613.11
Cost per portion	**R$10.22**

OPERATIONAL COSTS (OVERHEAD)

Labor	$0.50
Utilities & rent	$1.50
Overhead cost	**R$12.21**

SELLING PRICE & PROFIT

Total cost	$22.42
Target profit margin	50%
Suggested selling price	**R$44.85**

Yield	1	60.00 un	total cost	total per un
			$612.35	$10.21

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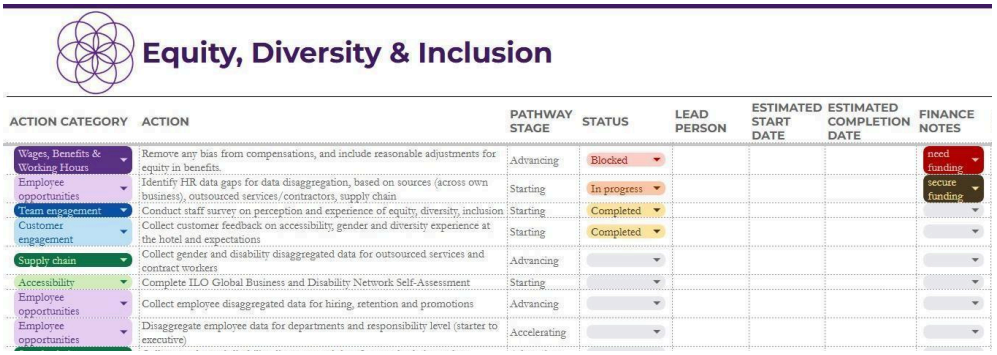
Table 36. Seeds. Cost sheets.

The Governance and Finance specific tools were adapted from the World Sustainable Hospitality Alliance and include an instructions tab, inviting users to add their personalized action plans, plus a solid compilation of procedures to help identify operational issues, prompt action, neutralize, and then reduce negative impact (WSHA, n.d). They indicate a combination of ease of doing, more or less costly, short to long-term actions, applied in structural, technical, personal, or managerial scopes, such as installing solar panels or contracting green energy suppliers, conducting surveys, or educational actions, and including stakeholders from suppliers to customers. The tables have drop-down and color-coded chips, improving usability. They are divided into four sheets, as presented by Tables 37 to 40. This set is also downloadable for members and view-only for non-members.

Human Rights & Labor Practices

ACTION CATEGORY	ACTION	PATHWAY STAGE	STATUS	LEAD PERSON	ESTIMATED START DATE	ESTIMATED COMPLETION DATE	FINANCE NOTES
Wages, Benefits & Working Hours	Ensure all employees have a written contract	Starting	In progress				secure funding
Freely Chosen Employment	Policies and processes are in place that expressly permit freedom of association and employees can freely choose if they want to be represented by a union or not.	Starting	Completed				need funding
Team engagement	Analyse data and information to identify material issues and impact on staff and priorities.	Starting	Blocked				
Customer engagement	Communicate human rights and labour practice commitments and targets to customers.	Accelerating					
Transparency with employees	Ensure all policies and information materials are available in the first language of all workers in the business, simple to understand and accessible to people with sight or reading difficulties	Advancing					
Commitment & Accountability	A person has been designated to manage labour and human rights	Starting					
Supply chain	Communicate company expectations on labour standards, including support you are willing to provide, such as training and guidance on labour policies.	Accelerating					
Fair Treatment	Policies and processes are in place to ensure that the rights and dignity of every worker are respected at all times	Starting					

Table 37. Seeds. Human Rights & Labor Practices. Source: WSHA , adapted by author.



Equity, Diversity & Inclusion

ACTION CATEGORY	ACTION	PATHWAY STAGE	STATUS	LEAD PERSON	ESTIMATED START DATE	ESTIMATED COMPLETION DATE	FINANCE NOTES
Wages, Benefits & Working Hours	Remove any bias from compensations, and include reasonable adjustments for equity in benefits.	Advancing	Blocked				need funding
Employee opportunities	Identify HR data gaps for data disaggregation, based on sources (across own business), outsourced services/contractors, supply chain	Starting	In progress				secure funding
Team engagement	Conduct staff survey on perception and experience of equity, diversity, inclusion	Starting	Completed				
Customer engagement	Collect customer feedback on accessibility, gender and diversity experience at the hotel and expectations	Starting	Completed				
Supply chain	Collect gender and disability disaggregated data for outsourced services and contract workers	Advancing					
Accessibility	Complete ILO Global Business and Disability Network Self-Assessment	Starting					
Employee opportunities	Collect employee disaggregated data for hiring, retention and promotions	Advancing					
Employee opportunities	Disaggregate employee data for departments and responsibility level (starter to executive)	Accelerating					

Table 38. Seeds. Equity, Diversity & Inclusion. Source: WSHA , adapted by author.

Resource Use & Waste

ACTION CATEGORY	ACTION	OPERATOR	TYPE OF SOLUTION	COST	EASE OF DOING	POTENTIAL IMPACT	DEPARTMENT	STATUS	LEAD PERSON	ESTIMATED START DATE	ESTIMATED COMPLETION DATE	FINANCE NOTES
Water	Monitor water consumption for indications of leaks		Technical	High cost	More difficult	High	maintenance	Blocked				need funding
Water	Use drought-resistant or native planting		Operational	Low/no cost	Easy	High	production	In progress				secure funding
Water	Use smart irrigation where necessary		Operational	Medium cost	Medium	High	procuement	Completed				
Protection and regeneration of nature	Use building materials certified to a reputable standard		Technical	Medium cost	Easy	Medium	management					
Protection and regeneration of nature	Purchase items of high animal welfare standards		Operational	Medium cost	Medium	Low	sales & marketing					
Protection and regeneration of nature	Ban the purchase of products created from endangered/ non-sustainable species		Operational	Low/no cost	Easy	Low	service					
Waste and use of materials	Eliminate single-use plastic straws and stirrers. Offer disposables only on request		Operational	Low/no cost	Medium	Medium	HR					
Waste and use of materials	Use refillable containers for sauces		Operational	Low/no cost	Easy	Low						
Waste and use of materials	Replace single-use plastic toiletry bottles with bulk dispensers or solid alternatives		Technical	Medium cost	Medium	High						

Table 39. Seeds. Resource Use & Waste. Source: WSHA, adapted by author.

Emissions & Energy

ACTION CATEGORY	ACTION	OPERATOR	TYPE OF SOLUTION	COST	EASE OF DOING	POTENTIAL IMPACT	DEPARTMENTS	STATUS	LEAD PERSON	ESTIMATED START DATE	ESTIMATED COMPLETION DATE	FINANCE NOTES
Carbon sequestration	Invest in carbon sequestration projects		Operational	Medium cost	Medium	Medium	maintenance	Blocked				secure funding
Company travel	Provide electric vehicle options for company cars		Operational	Low/no cost	Easy	Medium	production	In progress				need funding
Renewable energy	Install renewable energy sources on-site e.g. wind turbines, solar panels, ground-source heat pump		Technical	High cost	More difficult	High	procuement	Completed				
Team engagement	Educate employees about climate change and any energy-saving initiatives in place		Operational	Low/no cost	Easy	Medium	management					
Energy efficiency	Install smart ventilation in kitchens		Technical	High cost	Medium	Medium	sales & marketing					
Guest engagement	Offer guests access to EV charging points		Technical	Medium cost	Medium	Medium	service					
Renewable energy	Purchase renewable electricity via Power Purchase Agreement (PPA)		Operational	Low/no cost	Medium	High	HR					
Energy efficiency	Install LED lighting		Technical	Low/no cost	Easy	Low						
Energy efficiency	Install solar film on windows		Technical	Medium cost	Easy	Medium						
Renewable energy	Purchase renewable electricity and/or gas from the grid		Operational	Low/no cost	Easy	High						
Energy efficiency	Install double or triple glazed windows		Technical	High cost	More	Medium						

Table 40. Seeds. Emissions & Energy. Source: WSHA, adapted by author.

The role of the posters was reevaluated, and it was understood that the access granted would be view-only for all users. At the same time, members can purchase printed copies in various sizes, from postcards to A1 formats. It was signaled as a desirable object during the validation phase and learned from experience they can be an excellent connection with internal and external customers, spreading the message. The collection was also broadened, as depicted by Figure 123.

On the navigation menu, users have direct links to About, Seeds. System, Toolkit, Sprouting, Circular Food System, Projects & Partners, and Contact. The About section encompasses Seeds.' mission and values, team, network, and contact links (forms, email, social media, and connected platforms). Figure 124 shows the updated Seeds. web page (desktop and mobile).

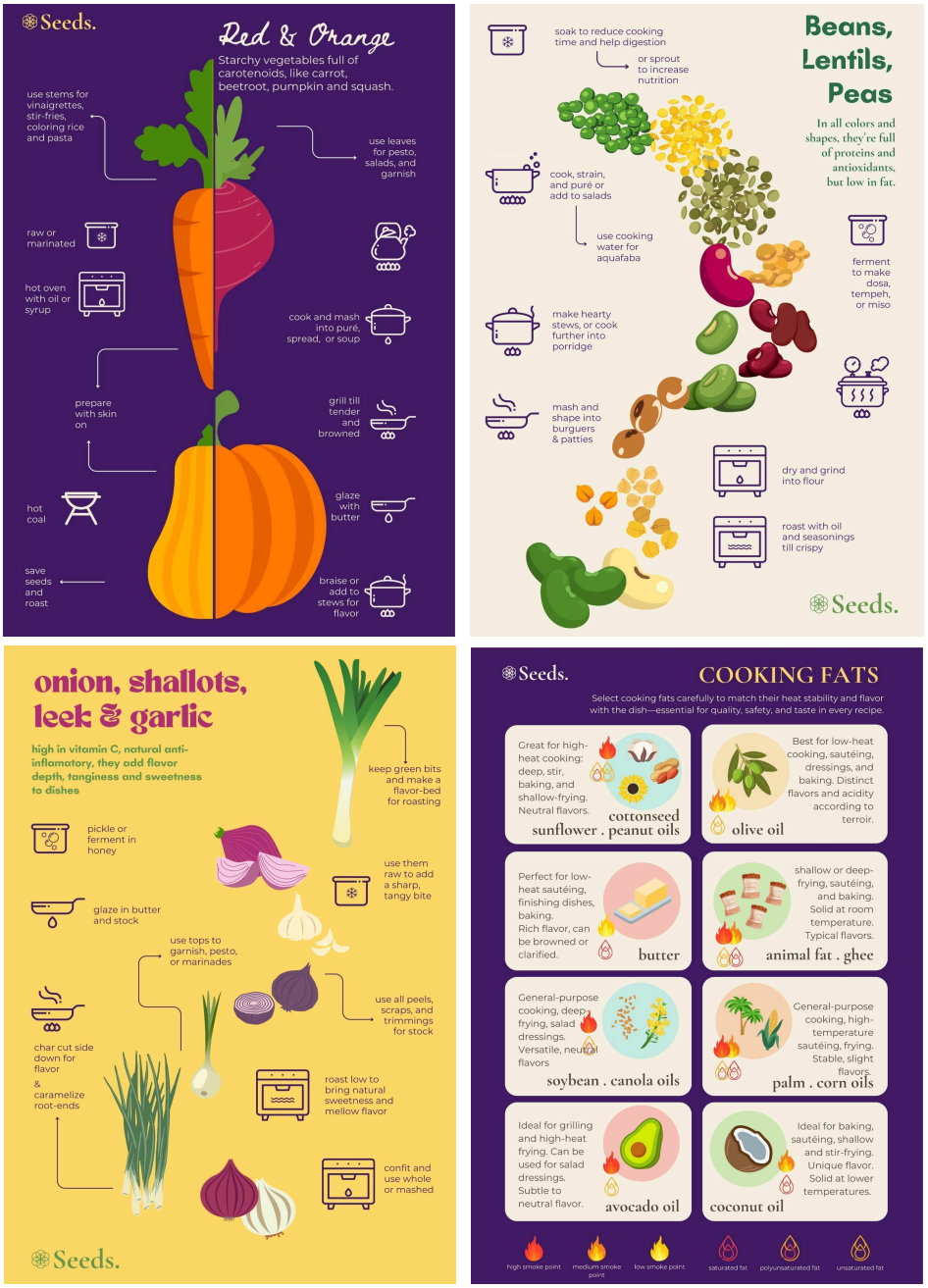


Figure 123. Seeds. posters.

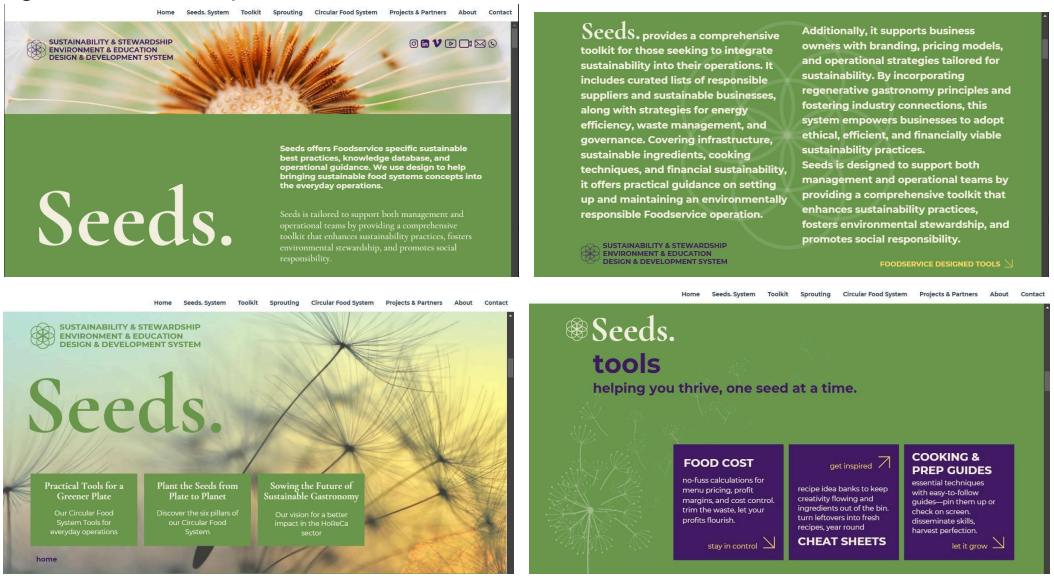


Figure 124a. Seeds. website.

Figure 124b. Seeds. website.

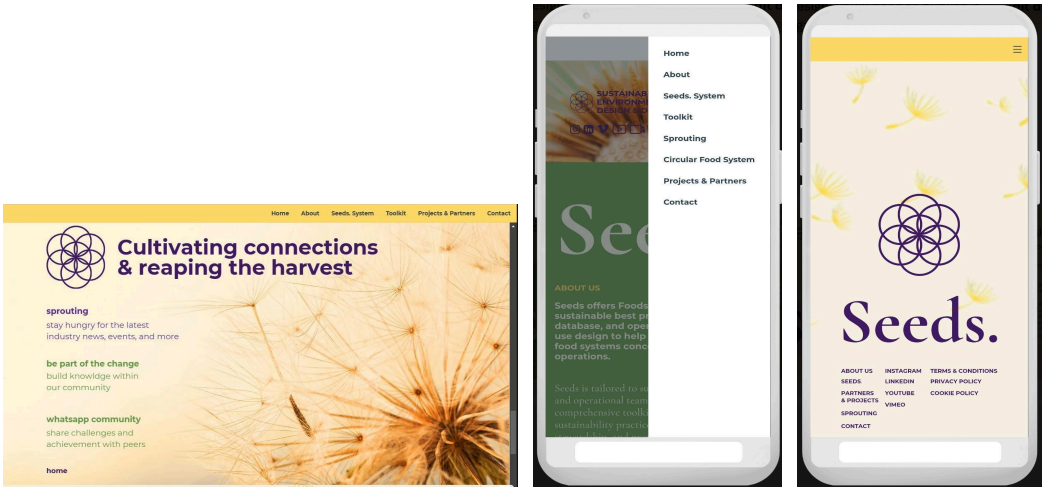


Figure 124c. Seeds. website and two samples of the mobile version.

The Sprouting content for two sample editions was also developed. They depict the colored circles referring to the Circular Food System, according to the pillars most related to the published subject (Figure 125).

Figure 125. Sprouting February and January 2025 editions, content identified with the Circular Food System icons.

The Seeds. platform offers Food Service professionals from many segments and hierarchies a substantial knowledge database of sustainability and HoReCa subjects. It also provides everyday tools that even the most experienced professionals do not have access to, nor the ability or time to construct. Implementing sustainable best practices is an effort, and the lack of resources should not be the first barrier these professionals face.

The collaborative experience in ideating, designing, prototyping, and validating Seeds. has shown that the sector has a long journey ahead but is filled with motivated, well-intentioned, and like-minded people willing to promote change. Collective knowledge and willpower shall be gathered and shared so that more people can access it, learn from previous peers' experiences, and move forward.

7
Conclusion

This study started many years before this Doctoral research timeframe. It is the result of a longer learning journey connecting academic theory, field knowledge, and professional practice. It is the result of a growing network and collaborative effort of like-minded people engaged in transforming the F&B sector into a more humane, ethical, and sustainable one along the entire food chain. In practical terms, the document is structured following PLR general guidelines, with an introduction, methodology, critical presentation of the literature review and field studies, the thesis core— resulting in two outcomes, an artifact and this thesis document, with reflections and conclusions.

This study introduces the food systems in the HoReCa sector, in the context of the current climate crisis caused by, amongst other players, the processes and actions behind the food chain. It was developed to answer a fundamental question, of how Food Design can help F&B sector achieve a sustainable operation, reducing negative environmental impacts and having positive effects on planetary wealth, people's health, culture, and economy. The study converged to the development of strategies to increase access to a sustainable food system for the broad HoReCa ecosystem. It has combined Practice-Led Research and participatory Design methods in a systemic view to encourage Food Service actors to reduce the adverse impacts of this industry and move toward a positively affecting sector across environmental, economic, and social spheres.

The methodological choice reinforces the bottom up, contextual groundings for meaning and knowledge building. Through literature review and desk research the primary research goals were identified, and with deeper investigation, resulted in a context of interest map, comprising entities and promising actors. Then the results of this extended research on the direct impact of Food service on food systems and overall planetary impact, supported by industry-specific references, publications, and accreditations. Plus international bodies, particularly FAO and UN SDGs, stressing the influence food chains have in the current environmental and resource crisis. It also depicted reference Food Service professionals, and other meaningful and rather pioneering industry initiatives to mitigate the degrading global effects of the HoReCa businesses.

The critical analysis of the state of the art revealed some consistent theory highlighting the importance of food professionals in dealing with the food system crisis, but little palpable guidance in how to put these concepts into practice. While the F&B industry tries to take ownership of the sustainability issues— mainly environmental impact— creating awards and writing manifestos about the

theme, not many organizations offer a clear pathway to achieve these goals. The research has identified the lack of tangible, applicable tools and framework to help gastronomy professionals to be more knowledgeable and assertive in performing sustainable-oriented practices,

The field learnings demonstrated how experiencing in context proves a rich source of apprenticeship, where theory meets practice, tradition and embedded knowledge play their role allied with technology advancements, promoting a culture-rich, tangible source of wisdom. The field immersions have shown how ideals become practical actions, and although they might seem small if compared to the industry damage, or even simple, they can be broadly replicated, creating a ripple effect of sustainable practices. Practice-constructed knowledge acquired from these experiences demonstrate HoReCa's sustainability feasibility, though not effortless. At the same time, we have noted the importance of educating all stakeholders about the worthiness of these actions, so they understand and value the establishments compromised with a better future.

After reflecting on desk and field research, we perceived the power held by the F&B sector to promote change, and how little this subject is directly addressed. It has become evident how intentional, informed design-led strategies and tools grounded in real-world contexts can aid systemic change. It has also become clear how we lack public policies and incentives, law enforcement, and solid information (in the form of reports and impact assessments) to press the industry to change.

We identified a rather fragmented approach to sustainability in the HoReCa sector, with a number of disarticulated projects happening at the same time, with little to no connection or communication. This results in energy, effort, and knowledge concentrated in specific actions and places, but hardly spreading among colleagues. When developing Seeds., we envisioned the service system as a hub, a platform where information and tools meet to bridge gastronomic sustainability theory and daily operations, where like-minded professionals congregate. It was thought of as an ecosystem to support the network behind sustainable change, giving visibility to relevant efforts, allowing small and medium-sized F&B businesses partners to connect and exchange knowledge. Learning from the industry peers reduces the time and energy spent in efforts to find solutions that can be already out there. HoReCa professionals, although motivated, can feel overwhelmed with the lack of guidance to implement sustainability efforts, and service systems like Seeds. respond to those needs, translating far fetching sustainability concepts and values into applicable tools.

The research fills the literature review gap bridging the academic approach with critical analysis of the field studies performed. This knowledge combination has shown how Systemic, Sustainable Food Design can foster a business-

oriented framework to achieve sustainability goals in Food Service, blending theory, accreditation systems and standards, and independent commercial operations.

The proposed artifact, based on participatory design methodology, can be used to deepen understanding, innovate, and facilitate the application of sustainable best practices in the HoReCa industry. The Seeds. platform is a tangible response on how Food Design (field and professional practice) can contribute to a sustainability forward movement in F&B sector, increasing awareness and supporting businesses to reduce environmental harm, promote positive social and economic impacts, and enhance cultural value, with an industry expert's validated prototype.

What was presented on Seeds. platform reflects how much the Food Service industry lacks in terms of ethics, organization, and structure. When Governance measurement topics encompass enforced labor, questioning the legal working conditions the staff is under, the provenance or banalized waste of food items, is a sign we are far behind. An entire sector functioning based on exploitation of all sorts of resources, including, and maybe most of all, humane. Information needs to be shared. When stakeholders are aware of the problems, they tend to be more sensitive to them. Tracking the negative impact is possibly a second step on this journey. Putting the trouble in the spotlight incites a reaction. Then having the means and tools to address these issues, in an economically viable manner.

It is critical to act collectively, strengthening the network to reach further, and accomplish better results, in a short period of time. It is also important to recognize the amount of effort invested into the process. Being in a privileged position to be part of the HoReCa industry and dedicating time to research it, theoretically and on site, has brought peer recognition to Seeds. It has also made us wonder how it could be turned into an actual open access platform, to share the outcomes of this study with as many people as possible. How many modest tools were praised, for professionals in the sector are short in time, knowledge, recognition, while overloaded with tasks, demands, and desire to do it better.

Success in the Food sector needs to be redefined. It needs more professionals prepared to lead the change. The background as a food professional combined with the researcher-in-Design position has shaped the methodological choices, granted deep immersion sessions, and enriched insights. As much as it has directed focus to particular initiatives, context perception, and influenced the interpretation of findings. Despite these constraints, the variety of participant observation sessions/venues, participatory process, and constant expert validation have mitigated potential biases.

In all, the project of Seeds. service system has a lot of room for improvement, expansion, and bold partnerships are on sight. Designing an entire system from a situated position within the HoReCa sector strengthens the validity and relevance, but has also brought limitations. The scope and scale of the selected venues are representative of a range of commercial gastronomic operations, and scaling its values, tools, and application to larger contexts, like corporate Food Service systems, can be limited. Although build through participatory design and validated by industry experts, Seeds. is still a beta stage artifact. The platform requires broader usage, iterative feedback to be validated in assorted operational contexts.

Technologically, the overall digital sophistication and interface possibilities were tied to the chosen tools. Developing Seeds. single-handed was ambitious, particularly regarding the amount of information to be dealt with. Everything was designed and prototyped in open-source applications, to grant user access, but it could definitely become an app on its own, improving user experience and ease of access. At the same time, keeping tools simple to use in any mobile or computer, such as the proposed sheets, ensures more professionals will be able to handle them. In terms of the global graphic design (including branding and website), the tools and personal knowledge available were enough to produce a product to convey its concept, value, function, and meanings, but professional development is indispensable. Canva, for example, was chosen to design the website and all digital media, although we were aware of its limitations. Some of them, like having the entire site as a sequence of slides, were solved by making a few different hosting pages and linking them (i.e. Home, About, Sprouting). Another example are the links to sheets and forms, that do not provide a back button to return to the site. Although not an ideal scenario, these choices were an informed decision, making it possible to envision and validate what Seeds. can possibly become.

This thesis and the resulting design project represent a call to action, made tangible by a digital artifact resulting from academic research, combined with professional practice, and collaborative ideation. Its significance lies in its content, certainly, but also in its knowledge-construction approach, building sustainability practices bottom up, with peer recognition, showing innovation is feasible even when done in small but important stages. Seeds. was not intended to be an ultimate, perfect solution, but, as its name states, a starting point. It is a practical framework for the community movement, gathering stakeholders from inside the F&B industry system to become more aware and active in finding collective response to the sustainability challenge we face.

Escalating and replicating action plans to change such a robust business requires joint efforts from private and public sectors alike, from schools to NGOs, to hospitality associations and accreditation programs. We chose to tackle the F&B sector from the inside, considering the privileged position to do so. Staying out of the debate because it seems too broad or too complicated will only push its consequences further, worsening what already seems to be inevitable.

It is controversial for an industry that depends on the food system's prosperity (including its people) to degrade it like we have been doing. Collective action must be taken now, for the consequences of mishandling the food chain go much further than the industry wants to see (and be seen). We are jeopardizing our ingredients, our human resources, but more than that, our most basic life resources.

It was reassuring to notice, while conducting this study, how prominent organizations have followed a similar path as the one this thesis has. There is value in being a pioneer, but there is more value in acting together, evolving together. Recognized HoReCa entities can give visibility to the sustainability theme, but also lead the way. Systems like Seeds. can join these market chiefs and their massive structure to publicize valuable initiatives, share collectively constructed knowledge and tools, and offer individual guidance for those willing to go further, or deeper. Seeds. is a call to action. It is one of a few initiatives to promote change, acting locally and thinking globally. But it can sprout.

8
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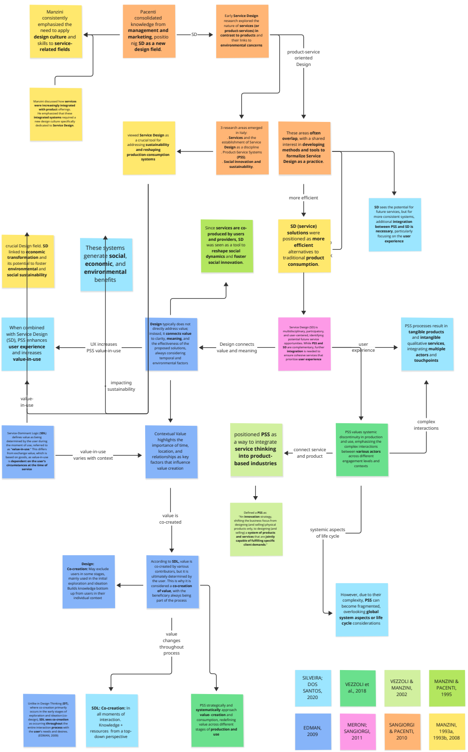
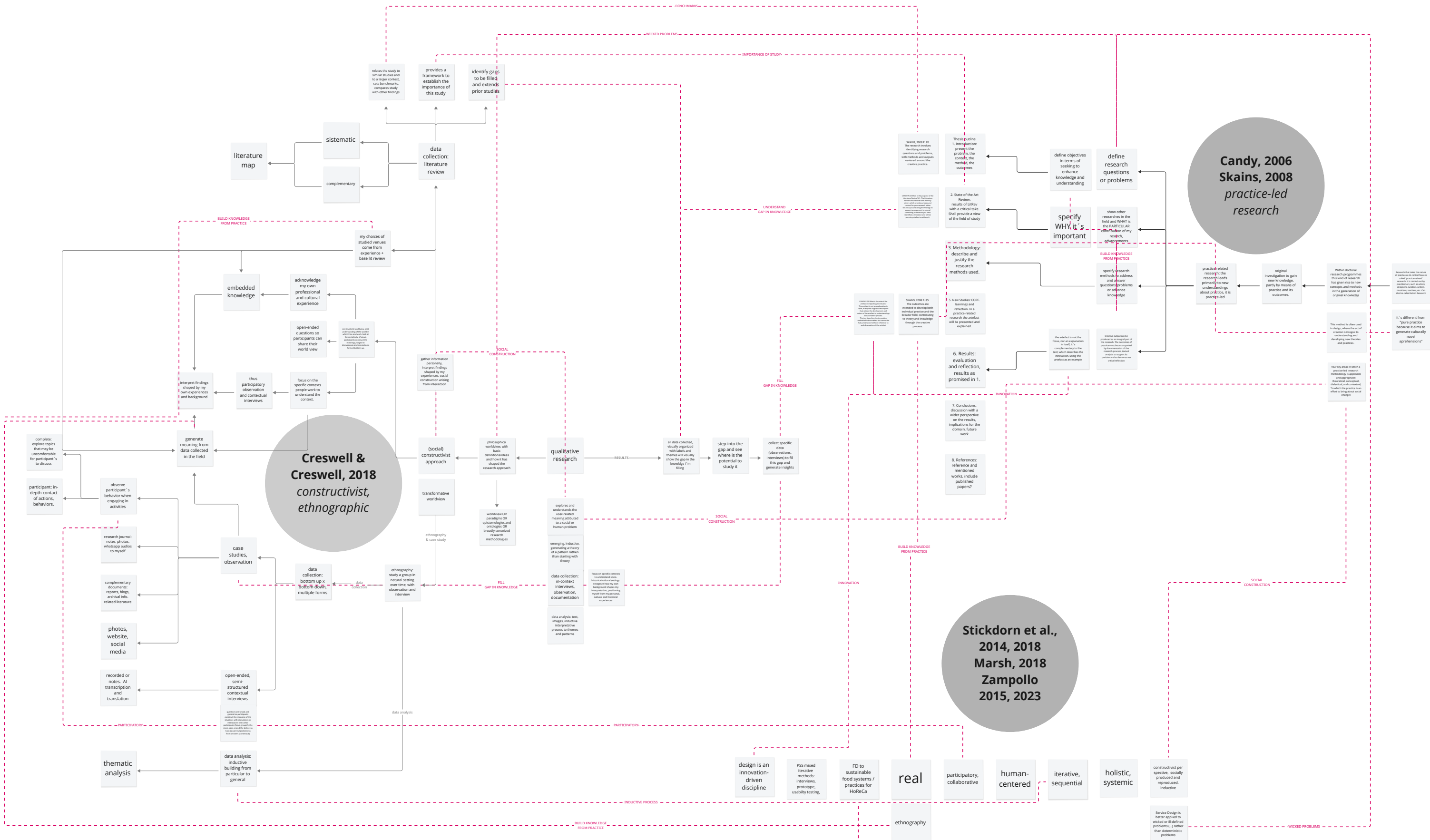
Thesis Structure

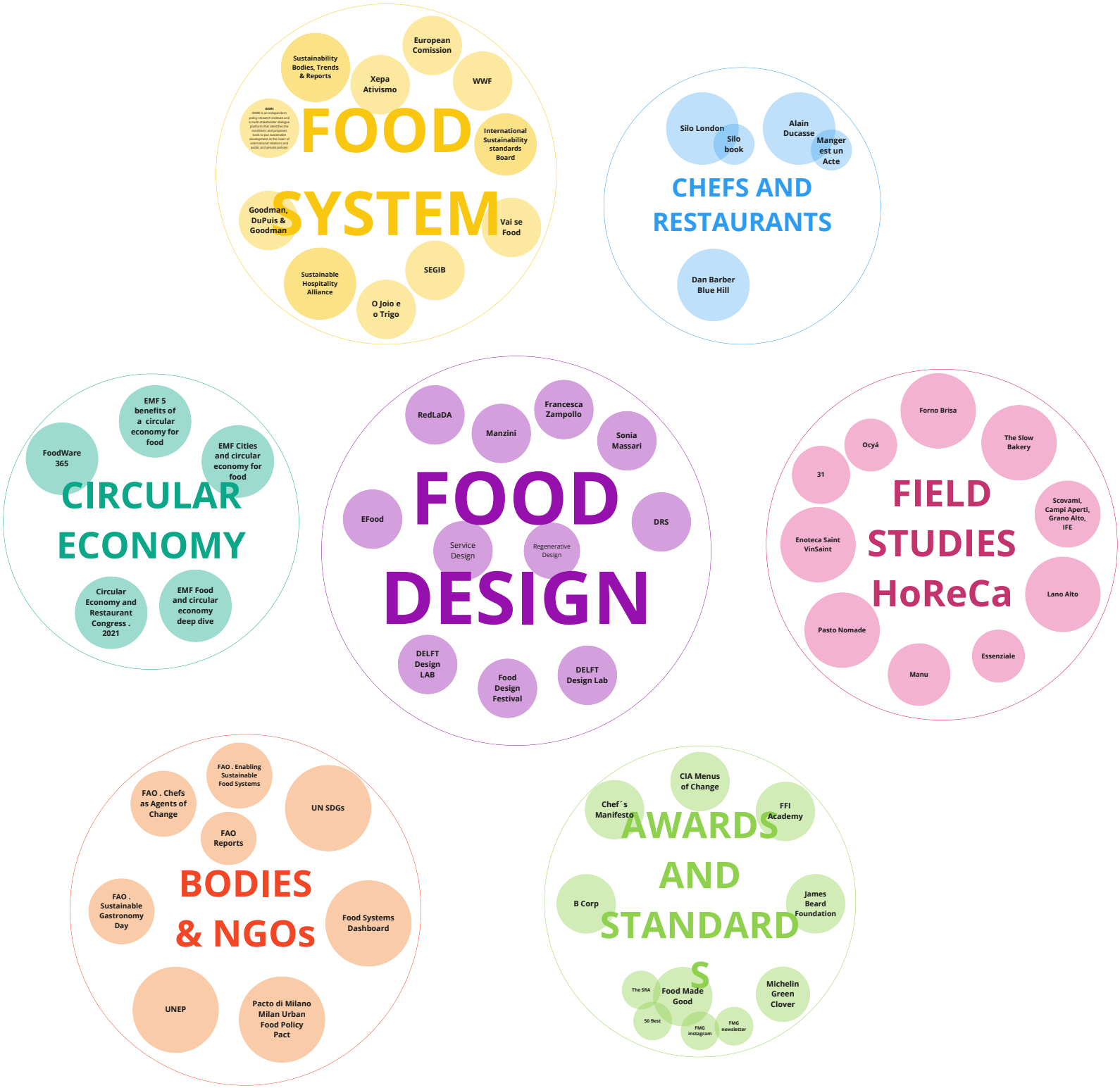
chapters	objectives	content
01 Introduction	Circumscribe the research theme and objectives	Theme, relevance, research question, and objectives.
02. Methodology	Use PLR and Service Design Thinking research methods to collect and analyse qualitative data, enabling deeper understanding of context operation and needs	Critical analysis of collected data, context of interest map, system personas, knowledge gap identification. Idea clusters, product-services to be developed.
03. HoReCa Sustainability Manifestos, Initiatives, Certifications and Awards	Present updated F&B sector initiatives	Introduction and critical reflection on recognized chefs and restaurants work, manifestos, and accreditation bodies. Examining accreditation processes and considerations on HoReCa sustainability Initiatives, manifestos, certifications and awards.
04. Definition of the current scenario: Sustainable Food Design and Sustainable Food Systems	Disclose the current scenario and intersection of Sustainable Food Design and Food Systems	Delineating sustainable Food Design principles, the global impact of and circularity principles. Reflections on the crossings of these topics.
05. Field Studies: Sustainable Food Systems Into Practice	Contextual learning and critical analysis	Presentation of the field immersion data collection, contextual prototyping, and learnings. Critical analysis of Sustainable Food Systems within the F&B sector (context of interest).
06. Circular Food System Principles	A product-service system grounded in sustainable best practices and constructed knowledge designed for and wihtin the HoReCa sector	Circular Food System concept and application in the proposed artifact. Tools, service concept and outline, service map, user journey. Fully operational prototype and validation of product-service system,
07. Conclusion	Synthesize and critically reflect upon study outcomes.	Summary of investigation learnings, critical positioning, and results from the research process.
08. References		

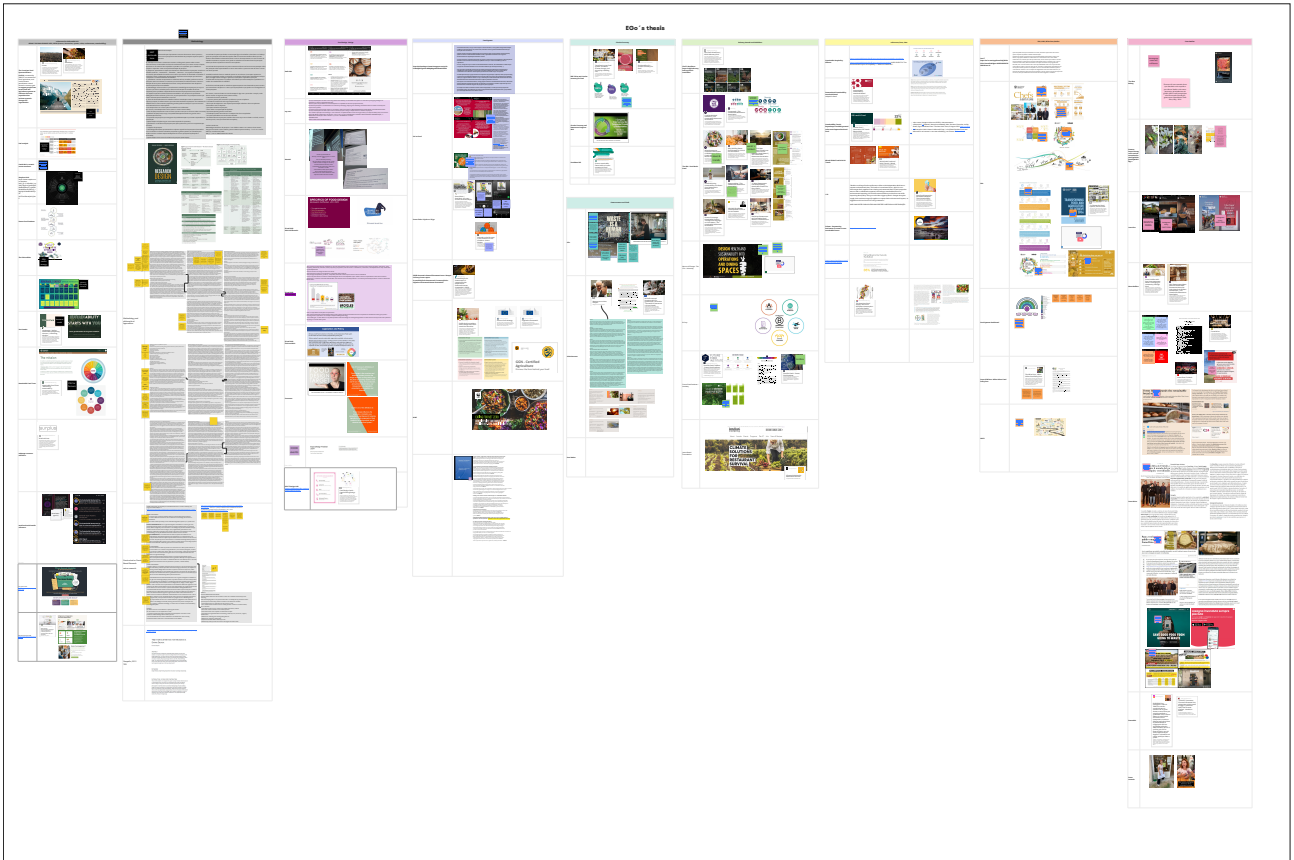
Service Design thinking and PSS

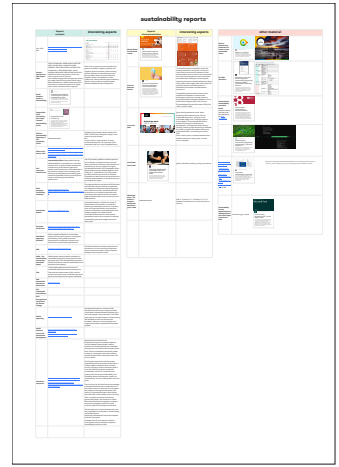




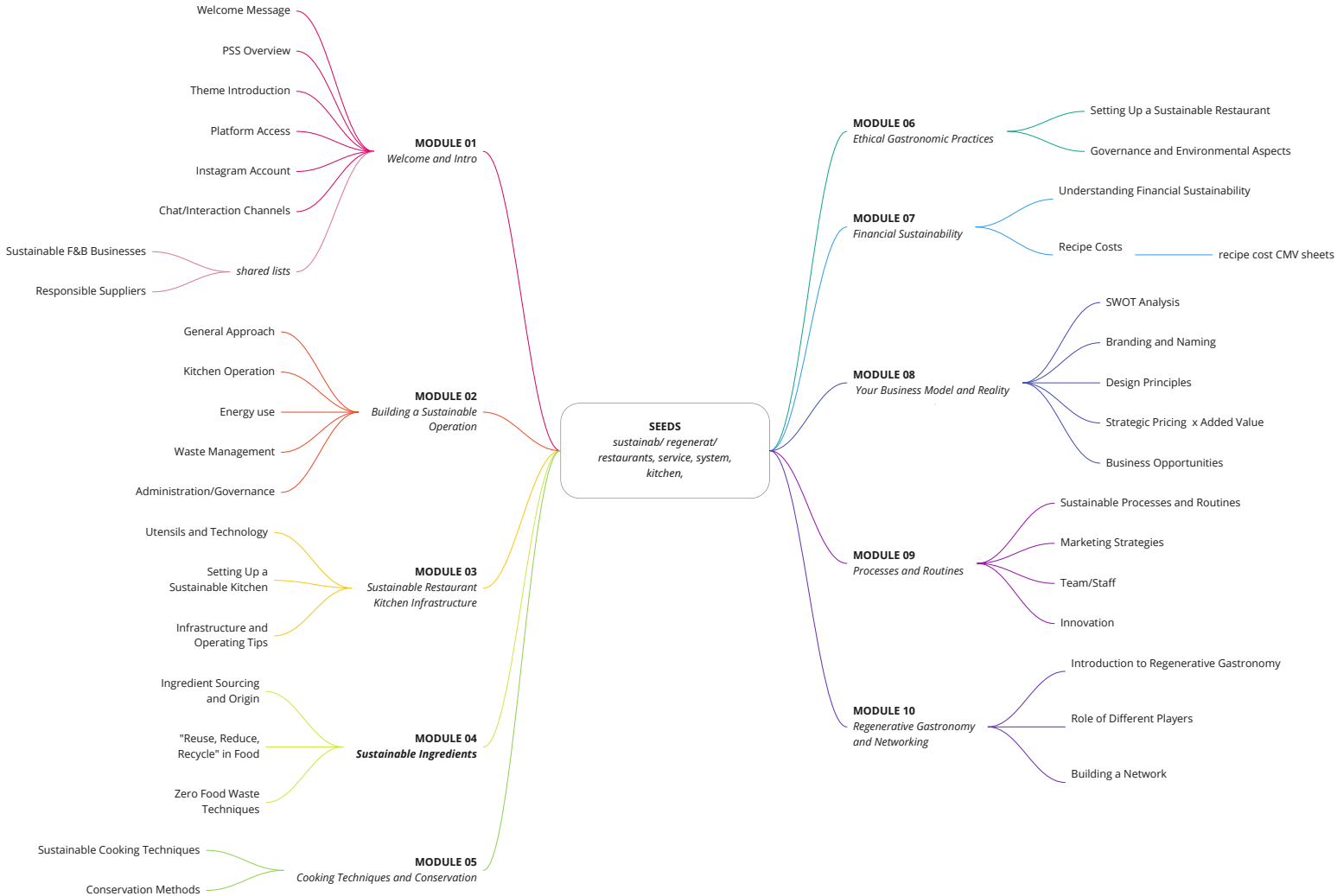
Candy, 2006
Skains, 2008
practice-led research
Creswell & Creswell, 2018
constructivist, ethnographic
Stickdorn et al., 2014, 2018
Marsh, 2018
Zampollo 2015, 2023
literature map
sistematic
complementary
data collection: literature review
relates the study to similar studies and to a larger context, sets benchmarks, compares study with other findings
provides a framework to establish the importance of this study
identify gaps to be filled and extends prior studies
my choices of studied venues come from experience + base lit review
embedded knowledge
acknowledge my own professional and cultural experience
open-ended questions so participants can share their world view
focus on the specific contexts people work to understand the context.
thus participatory observation and contextual interviews
interpret findings shaped by my own experiences and background
generate meaning from data collected in the field
complete: explore topics that may be uncomfortable for participant´s to discuss
participant: in-depth contact of actions, behaviors.
observe participant´s behavior when engaging in activities
research journal: notes, photos, whatsapp audios to myself
complementary documents: reports, blogs, archival info, related literature
photos, website, social media
recorded or notes. AI transcription and translation
case studies, observation
data collection: bottom up x bottom down, multiple forms
open-ended, semi-structured contextual interviews
thematic analysis
data analysis: inductive building from particular to general
ethnography: study a group in natural setting over time, with observation and interview
gather information personally, interpret findings shaped by my experiences, social construction arising from interaction
(social) constructivist approach
transformative worldview
philosophical worldview, with basic definitions/ideas and how it has shaped the research approach
worldview OR paradigms OR epistemologies and ontologies OR broadly conceived research methodologies
qualitative research
explores and understands the user-related meaning attributed to a social or human problem
emerging, inductive, generating a theory of a pattern rather than starting with theory
data collection: in-context interviews, observation, documentation
data analysis: text, images, inductive interpretative process to themes and patterns
all data collected, visually organized with labels and themes will visually show the gap in the knowledge I´m filling
step into the gap and see where is the potential to study it
collect specific data (observations, interviews) to fill this gap and generate insights
define research questions or problems
define objectives in terms of seeking to enhance knowledge and understanding
specify WHY it´s important
specify research methods to address and answer questions/problems or advance knowledge
2. State of the Art Review: results of LitRev with a critical take. Shall provide a view of the field of study
3. Methodology: describe and justify the research methods used.
6. Results: evaluation and reflection, results as promised in 1.
7. Conclusions: discussion with a wider perspective on the results, implications for the domain, future work
8. References: reference and mentioned works, include published papers?
design is an innovation-driven discipline
PSS mixed iterative methods: interviews, prototype, usability testing,
FD to sustainable food systems / practices for HoReCa
real
ethnography
participatory, collaborative
human-centered
iterative, sequential
holistic, systemic
constructivist perspective, socially produced and reproduced. inductive
BENCHMARKS
WICKED PROBLEMS
IMPORTANCE OF STUDY
UNDERSTAND GAP IN KNOWLEDGE
BUILD KNOWLEDGE FROM PRACTICE
SOCIAL CONSTRUCTION
RESULTS
FILL GAP IN KNOWLEDGE
INNOVATION
PARTICIPATORY
INDUCTIVE PROCESS
data collection
data analysis
ethnography & case study


FOOD SYSTEM
Sustainability Bodies, Trends & Reports
European Comission
Xepa Ativismo
WWF
International Sustainability standards Board
Goodman, DuPuis & Goodman
Vai se Food
Sustainable Hospitality Alliance
SEGIB
O Joio e o Trigo
CHEFS AND RESTAURANTS
Silo London
Silo book
Alain Ducasse
Manger est un Acte
Dan Barber Blue Hill
CIRCULAR ECONOMY
FoodWare 365
EMF 5 benefits of a circular economy for food
EMF Cities and circular economy for food
Circular Economy and Restaurant Congress . 2021
EMF Food and circular economy deep dive
FOOD DESIGN
RedLaDA
Manzini
Francesca Zampollo
Sonia Massari
EFood
DRS
Service Design
Regenerative Design
DELFT Design LAB
Food Design Festival
DELFT Design Lab
FIELD STUDIES HoReCa
Forno Brisa
Ocyá
The Slow Bakery
31
Scovami, Campi Aperti, Grano Alto, IFE
Enoteca Saint VinSaint
Lano Alto
Pasto Nomade
Manu
Essenziale
BODIES & NGOs
FAO . Enabling Sustainable Food Systems
FAO . Chefs as Agents of Change
UN SDGs
FAO Reports
FAO . Sustainable Gastronomy Day
Food Systems Dashboard
UNEP
Pacto di Milano Milan Urban Food Policy Pact
AWARDS AND STANDARDS
CIA Menus of Change
Chef´s Manifesto
FFI Academy
B Corp
James Beard Foundation
The SRA
Food Made Good
Michelin Green Clover
50 Best
FMG instagram
FMG newsletter


EQo´s thesis


sustainability reports


partners
owner
finance dpt
office
service
HoReCa business
server
stock
operational manager
procure ment
HR
produc tion
delivery
commu nication
community
scaled context
site
social media
whats app
chef
food supplier
custo mer
wine maker
service supplier
farmer
artisan


SEEDS
sustainab/ regenerat/ restaurants, service, system, kitchen,
MODULE 01
Welcome and Intro
Welcome Message
PSS Overview
Theme Introduction
Platform Access
Instagram Account
Chat/Interaction Channels
shared lists
Sustainable F&B Businesses
Responsible Suppliers
MODULE 02
Building a Sustainable Operation
General Approach
Kitchen Operation
Energy use
Waste Management
Administration/Governance
MODULE 03
Sustainable Restaurant Kitchen Infrastructure
Utensils and Technology
Setting Up a Sustainable Kitchen
Infrastructure and Operating Tips
MODULE 04
Sustainable Ingredients
Ingredient Sourcing and Origin
"Reuse, Reduce, Recycle" in Food
Zero Food Waste Techniques
MODULE 05
Cooking Techniques and Conservation
Sustainable Cooking Techniques
Conservation Methods
MODULE 06
Ethical Gastronomic Practices
Setting Up a Sustainable Restaurant
Governance and Environmental Aspects
MODULE 07
Financial Sustainability
Understanding Financial Sustainability
Recipe Costs
recipe cost CMV sheets
MODULE 08
Your Business Model and Reality
SWOT Analysis
Branding and Naming
Design Principles
Strategic Pricing x Added Value
Business Opportunities
MODULE 09
Processes and Routines
Sustainable Processes and Routines
Marketing Strategies
Team/Staff
Innovation
MODULE 10
Regenerative Gastronomy and Networking
Introduction to Regenerative Gastronomy
Role of Different Players
Building a Network

BMC System

Info . Practical
online, open access, can be updated with community, customized to location

- Sindicate and other HoReCa trade unions
- **field specialists:** collaborate with experts in sustainable practices to provide valuable insights and guidance in the modules
- **certification bodies:** partner with organizations like B Corp, 50 Best, FMG, EMF for certification and recognition
- **certification support:** provide assistance in achieving prestigious certifications
- **expert guidance:** differentiate by offering expert-led modules and mentorship
- **local suppliers:** build relationships with responsible and sustainable suppliers for ingredients and materials
- **collaborative community:** foster a community through the "club" for shared knowledge and support
- 20 years practice in the F&B business

Theory
online, open access, based on circular food system principles

- **module development:** continuously update and develop modules with the latest sustainable practices
- **specialist engagements:** organize sessions with specialists for in-depth discussions
- **networking events:** host events for participants to network and share experiences
- **personalized onboarding** sessions for new participants
- **interactive modules:** incorporate interactive elements like quizzes and discussions
- **regular updates:** send regular updates on new content, events, and industry trends
- **Q&A sessions**
- **panel discussions**

Communication

- **holistic sustainability:** offer a comprehensive approach to sustainability covering all aspects of restaurant operations
- mentorship 1:1
- **networking opportunities:** foster a sense of community and collaboration through the membership structure.
- workshop / trainning

Key resources

- **HR expertise:** sustainable practices and industry knowledge
- **partnerships:** collaborate with certification bodies for credibility
- **online platform:** user-friendly platform for content delivery and interaction
- **community building:** resources for creating and maintaining an engaged community

Channels

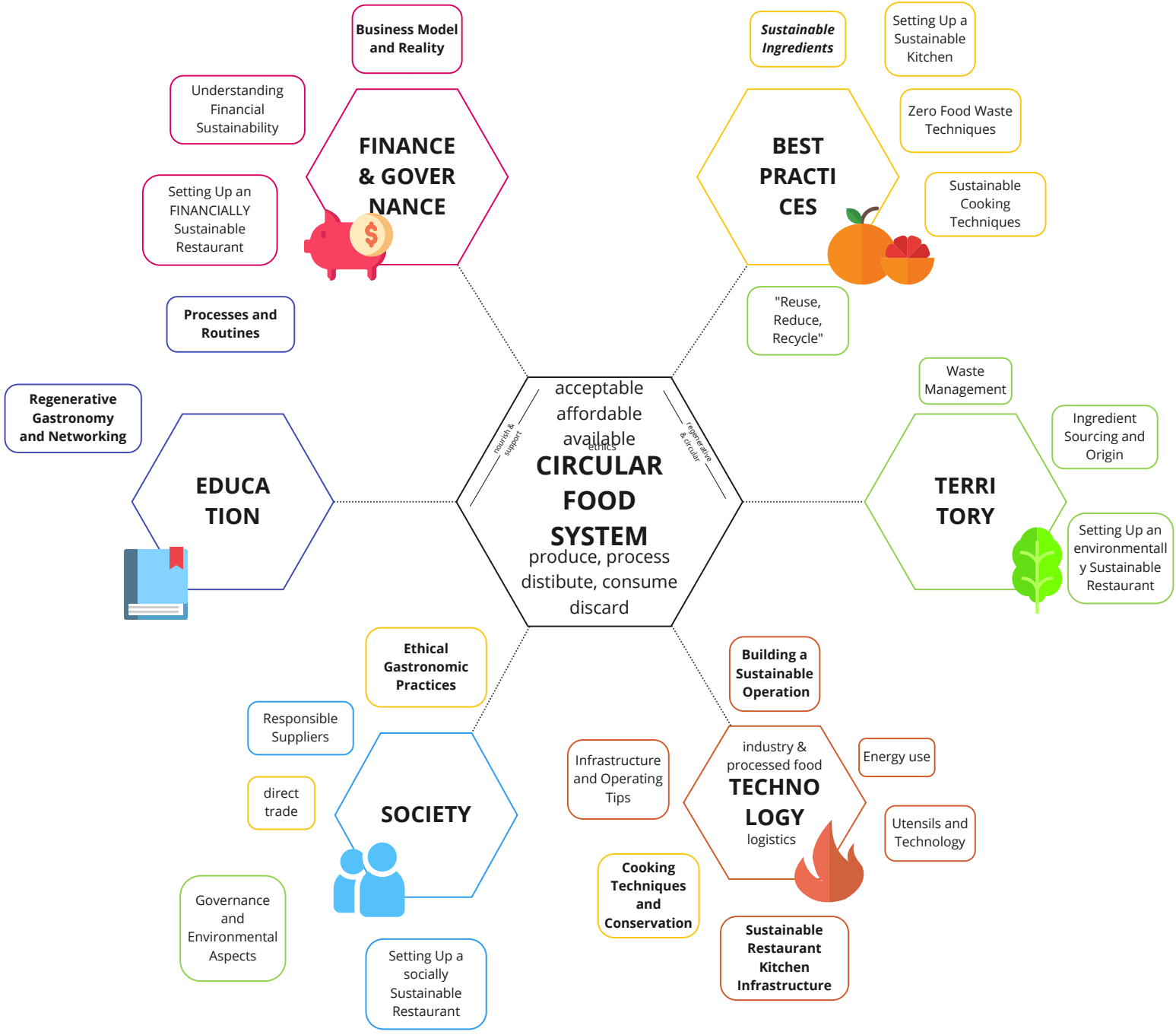
- **online advertising:** utilize social media and online ads to target the F&B industry
- **partnership collaborations:** partner with industry influencers and organizations for wider reach
- **industry events:** attend and host events to connect with potential customers
- **referral programs:** encourage current participants to refer new businesses
- **email marketing:** regular newsletters and updates to engage and inform

Customer segments

- **F&B willing to adopt responsible practices:** value sustainability and want to enhance their practices
- **expanding/ growing F&B** business, looking for sustainable practices during expansion
- **F&B aiming for Awards (Fifty Best, Michelin, B Corp):** seek recognition and excellence in sustainability
- **sustainability-oriented businesses:** have a strong commitment to sustainability and seek continuous improvement

Service Structure
midia and modules

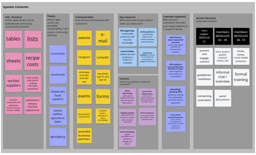
- intro subject
- free material
- club MODULES
- present and engage, connect
- tools: posters graphic material, sheets, lists
- sticker, stamp, social media presence
- guidelines/ manifesto
- informal chat / overview
- formal training
- connecting associates
- panel discussions

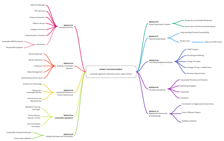

Business Model and Reality
Understanding Financial Sustainability
FINANCE & GOVERNANCE
Setting Up an FINANCIALLY Sustainable Restaurant
Processes and Routines
Sustainable Ingredients
Setting Up a Sustainable Kitchen
BEST PRACTICES
Zero Food Waste Techniques
Sustainable Cooking Techniques
"Reuse, Reduce, Recycle"
Regenerative Gastronomy and Networking
EDUCATION
acceptable
affordable
available
ethics
nourish & support
CIRCULAR FOOD SYSTEM
produce, process
distibute, consume
discard
regenerative & circular
Waste Management
Ingredient Sourcing and Origin
TERRITORY
Setting Up an environmentally Sustainable Restaurant
Ethical Gastronomic Practices
Responsible Suppliers
direct trade
SOCIETY
Governance and Environmental Aspects
Setting Up a socially Sustainable Restaurant
Building a Sustainable Operation
industry & processed food
TECHNOLOGY
logistics
Infrastructure and Operating Tips
Energy use
Utensils and Technology
Cooking Techniques and Conservation
Sustainable Restaurant Kitchen Infrastructure

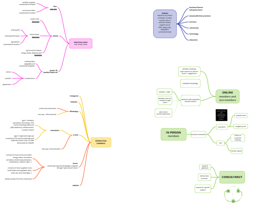

HoReCa business
community
scaled context
office
service
production
commu nication
food supplier
service supplier
custo mer
chef


BMC Seeds

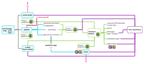

my principles
instagram posts per principle
posters, sheets, lists


System Contents
tables
lists
sheets
recipe costs
verified suppliers
website
e-mail
instagram
LinkedIn
events
forms
community
restaurant food systems
territory

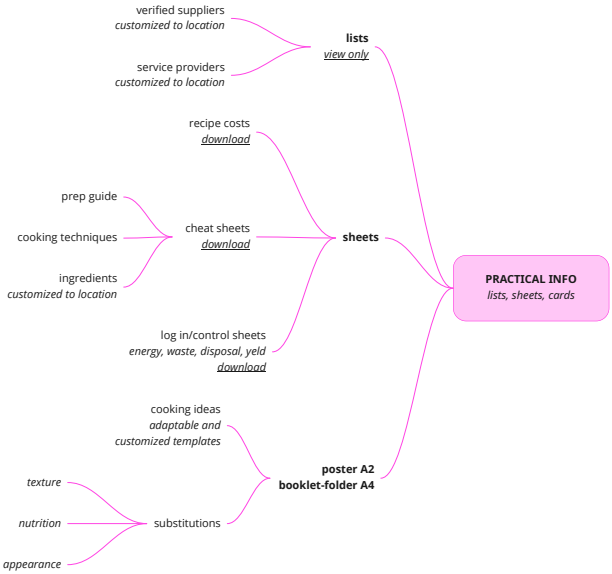


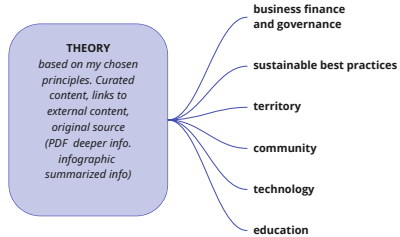

ONLINE
members and non-members
IN PERSON
members
CONSULTANCY

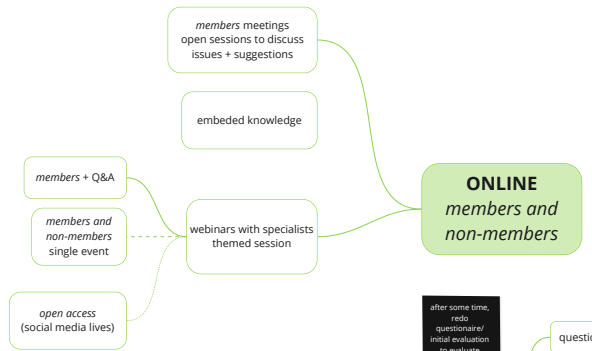

FINANCE & GOVER NANCE
BEST PRACTI CES
EDUCA TION
acceptable affordable available
CIRCULAR FOOD SYSTEM
produce, process distribute, consume discard
TERRI TORY
SOCIETY
TECHNO LOGY

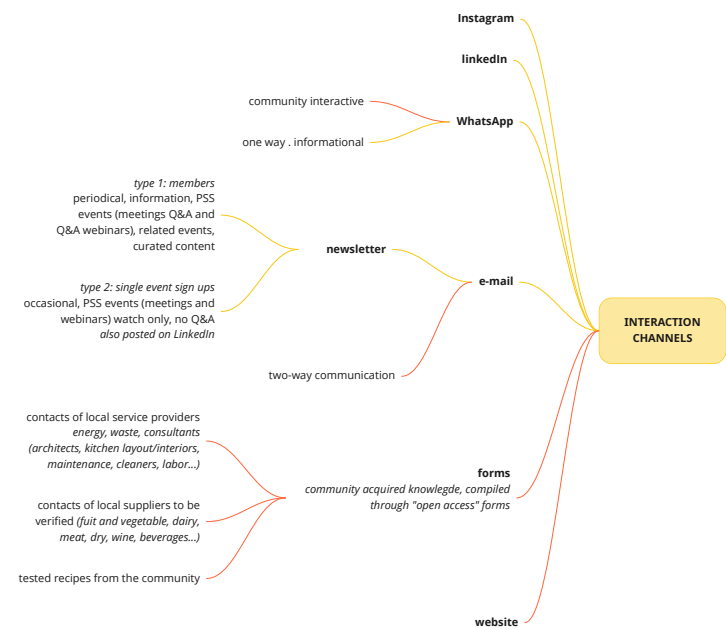


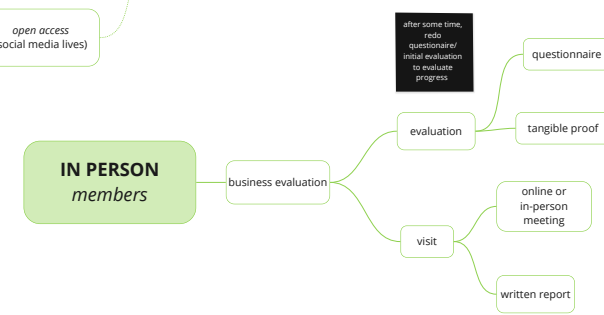

WEBSITE CONTENT FORMAT
WEBSITE AVAILABLE CONTENT
COMMUNICATION TOOLS
INTERACTION online
INTERACTION in-person

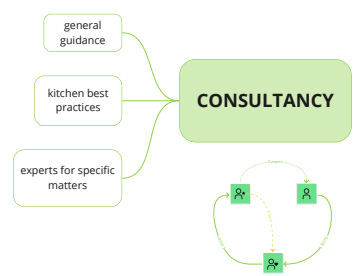

PRACTICAL INFO
lists, sheets, cards
lists
view only
verified suppliers
customized to location
service providers
customized to location
sheets
recipe costs
download
cheat sheets
download
prep guide
cooking techniques
ingredients
customized to location
log in/control sheets
energy, waste, disposal, yeld
download
poster A2
booklet-folder A4
cooking ideas
adaptable and
customized templates
substitutions
texture
nutrition
appearance


THEORY
based on my chosen principles. Curated content, links to external content, original source (PDF deeper info, infographic summarized info)
business finance and governance
sustainable best practices
territory
community
technology
education


ONLINE
members and non-members
members meetings
open sessions to discuss issues + suggestions
embeded knowledge
webinars with specialists themed session
members + Q&A
members and non-members
single event
open access
(social media lives)


INTERACTION CHANNELS
Instagram
linkedIn
WhatsApp
community interactive
one way . informational
e-mail
newsletter
type 1: members
periodical, information, PSS events (meetings Q&A and Q&A webinars), related events, curated content
type 2: single event sign ups
occasional, PSS events (meetings and webinars) watch only, no Q&A
also posted on LinkedIn
two-way communication
forms
community acquired knowlegde, compiled through "open access" forms
contacts of local service providers
energy, waste, consultants (architects, kitchen layout/interiors, maintenance, cleaners, labor...)
contacts of local suppliers to be verified (fuit and vegetable, dairy, meat, dry, wine, beverages...)
tested recipes from the community
website


IN PERSON
members
business evaluation
evaluation
after some time, redo questionaire/ initial evaluation to evaluate progress
questionnaire
tangible proof
visit
online or in-person meeting
written report


CONSULTANCY
general guidance
kitchen best practices
experts for specific matters

Seeds.

SUSTAINABILITY . STEWARDSHIP . SYSTEM
ENVIRONMENT . EDUCATION
DESIGN . DEVELOPMENT

Debriefing and post-test Questions

Thank you for participating in this System Concept test. I have a few questions for you, just to wrap up our session.

plantagastronomia@gmail.com Switch account

Not shared

* Indicates required question

Please check the profile you most identify with *

- [ ] chef
- [ ] experienced cook
- [ ] junior cook
- [ ] Other:

1. How would you rate your overall interaction with the website? Explain *

	1	2	3	4	5	
Dissatisfied	○	○	○	○	○	Very satisfied

2. Considering the proposed scenarios, how helpful in are tools offered? Explain *

	1	2	3	4	5	
Unhelpful	○	○	○	○	○	Very helpful

3. How long do you think you´d take to feel confortable incorporating the tools in your routine? *

- [ ] a couple of days
- [ ] over a week
- [ ] more like a month

5. In terms of visual experience, how do you rate the available material? *

	1	2	3	4	5	
Bad	○	○	○	○	○	Very good

6. Do you think you would subscribe to receive a newsletter containing updated industry news, events, and online panels?

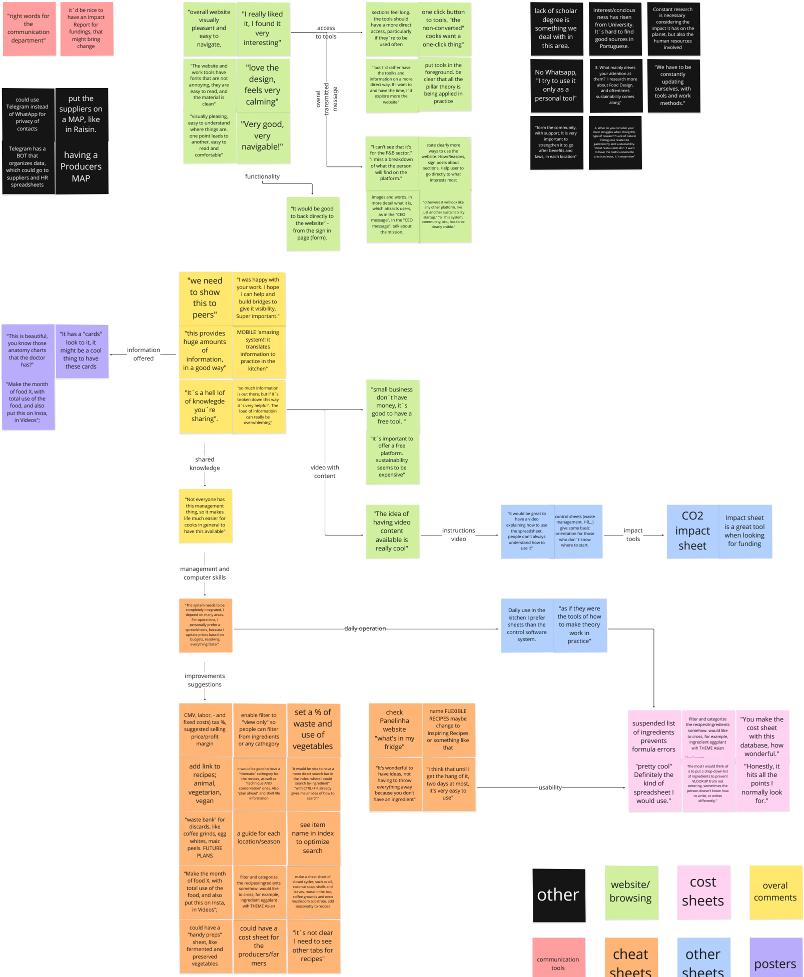
- [ ] Yes
- [ ] No

7. Do you think you would be interested in being part of a Whatsapp or Telegram community to exchange experiences, recipes, and contacts?

- [ ] Yes
- [ ] No

Submit

Clear form



"right words for the communication department"
it´d be nice to have an Impact Report for fundings, that might bring change
could use Telegram instead of WhatApp for privacy of contacts
put the suppliers on a MAP, like in Raisin.
Telegram has a BOT that organizes data, which could go to suppliers and HR spreadsheets
having a Producers MAP
"overall website visually pleasant and easy to navigate,
"I really liked it, I found it very interesting"
"love the design, feels very calming"
"Very good, very navigable!"
access to tools
overal transmitted message
functionality
"It would be good to back directly to the website" - from the sign in page (form).
sections feel long. the tools should have a more direct access, particularly if they´re to be used often
one click button to tools, "the non-converted" cooks want a one-click thing"
put tools in the foreground. be clear that all the pillar theory is being applied in practice
"I can't see that it's for the F&B sector." "I miss a breakdown of what the person will find on the platform."
lack of scholar degree is something we deal with in this area.
Interest/concious ness has risen from University. It´s hard to find good sources in Portuguese.
Constant research is necessary considering the impact it has on the planet, but also the human resources involved
No Whatsapp, "I try to use it only as a personal tool"
"We have to be constantly updating ourselves, with tools and work methods."
"form the community, with support. It is very important to strengthen it to go after benefits and laws, in each location"
"we need to show this to peers"
"I was happy with your work. I hope I can help and build bridges to give it visibility. Super important."
"this provides huge amounts of information, in a good way"
MOBILE 'amazing system!! it translates information to practice in the kitchen"
"It´s a hell lof of knowlegde you´re sharing".
information offered
"This is beautiful, you know those anatomy charts that the doctor has?"
"It has a "cards" look to it, it might be a cool thing to have these cards
"Make the month of food X, with total use of the food, and also put this on Insta, in Videos";
"small business don´t have money, it´s good to have a free tool. "
"it´s important to offer a free platform. sustainability seems to be expensive"
shared knowledge
video with content
"Not everyone has this management thing, so it makes life much easier for cooks in general to have this available"
"The idea of having video content available is really cool"
instructions video
impact tools
CO2 impact sheet
Impact sheet is a great tool when looking for funding
management and computer skills
daily operation
Daily use in the kitchen I prefer sheets than the control software system.
"as if they were the tools of how to make theory work in practice"
improvements suggestions
CMV, labor, - and fixed costs) tax %, suggested selling price/profit margin
enable filter to "view only" so people can filter from ingredients or any cathegory
set a % of waste and use of vegetables
add link to recipes; animal, vegetarian, vegan
"waste bank" for discards, like coffee grinds, egg whites, maiz peels. FUTURE PLANS
a guide for each location/season
see item name in index to optimize search
"Make the month of food X, with total use of the food, and also put this on Insta, in Videos";
could have a "handy preps" sheet, like fermented and preserved vegetables
could have a cost sheet for the producers/far mers
"it´s not clear I need to see other tabs for recipes"
check Panelinha website "what's in my fridge"
name FLEXIBLE RECIPES maybe change to Inspiring Recipes or something like that
"It's wonderful to have ideas, not having to throw everything away because you don't have an ingredient"
"I think that until I get the hang of it, two days at most, it's very easy to use"
usability
suspended list of ingredients prevents formula errors
"You make the cost sheet with this database, how wonderful."
"pretty cool" Definitely the kind of spreadsheet I would use."
"Honestly, it hits all the points I normally look for."
other
website/ browsing
cost sheets
overal comments
communication tools
cheat sheets
other sheets
posters

System Contents

Info . Practical
online, open access, can be updated with community, customized to location

- tables
- lists
- sheets
- recipe costs
- verified suppliers
- cheat sheets: prep guide, cooking technique, ingredients
- template recipes (silo ref) adaptable, directs the type of food needed
- substitution: texture, nutrition, appearance

Theory
online, open access, my principles (sustainability, food source, community, territory)

- sustainability
- community
- restaurant food systems
- animal welfare, agriculture types
- territorry

Communication
How will you communicate with customers?

- website
- e-mail
- instagram
- LinkedIn
- whatsapp one-way and two-way
- newsletter *type 01* and *type 02*
- events
- forms
- ENGAGEMENT KNOWLEDGE
- CONVERT LEADS + PROSPECTS INTO CUSTOMERS
- awarded business partners

Key resources
What resources do you need to make your idea work?

- **HR expertise:** sustainable practices and industry knowledge
- **online platform:** user-friendly platform for content delivery and interaction
- **partnerships:** collaborate with certification bodies for credibility
- **community building:** resources for creating and maintaining an engaged community

Channels
How are you going to reach your customers?

- **online advertising:** utilize social media and online ads to target the F&B industry
- **partnership collaborations:** partner with industry influencers and organizations for wider reach
- **industry events:** attend and host events to connect with potential customers
- **referral programs:** encourage current participants to refer new businesses
- **email marketing:** regular newsletters and updates to engage and inform

Customer segments
Who are your customers? Describe your target audience in a couple of words.

- **F&B willing to adopt responsible practices:** value sustainability and want to enhance their practices
- **F&B aiming for Awards (Fifty Best, Michelin, B Corp):** seek recognition and excellence in sustainability
- **expanding/ growing F&B** business, looking for sustainable practices during expansion
- **sustainability-oriented businesses:** have a strong commitment to sustainability and seek continuous improvement

Service Structure
midia and modules

intro subject MODULE 01	members MODULES 02 - 05	members MODULES 06 -10
present and engage, connect	tools: posters graphic material, sheets, lists	sticker, stamp, social media presence
guidelines/ manifesto	informal chat / overview	formal training
connecting associates	panel discussions	

Service Design Thinking & PSS

Aspect	PSS	SDT	Intersection
Definition	innovatively combine products and services to fulfill user needs	user-centered, participatory, multidisciplinary approach	*create holistic service-like solutions, going beyond product-only*
Value Creation	considers systemic efficiency, sustainability, and multi actors networks, it´s based and affected by use	preconizes co-creation of value, or value-in-use during service	*PSS focuses on macro-level system efficiency, while SDT works towards micro-level user experience*
Co-creation	different stakeholders act at different stages (particularly production and consumption), the process can be fragmented due to its size and complexity	happens mainly in the stages of ideation, building insights with experts, while further project stages can happen without user	*both emphasize participatory methods. PSS generally has collaboration throughout the process, whereas SDT focuses on front-end engagement*
User Role	users co-design during the conception and operational phases	users are central but co-design at particular stages	*SDT is user-centered while PSS considers a broader group of stakeholders and their engagement*
Sustainability	goes from owning a product to using a service, ideally reducing environmental impact	sustainability and social innovation are desired consequences	*both share sustainability potential*
Design Scope	rethinks production-consumption cycles	foresees service opportunities, not always grasping the full lifecycle of the system	*PSS envisions systemic change at long-term while SDT addresses more immediate spectrum of touchpoints*
System thinking	more complex in range of stakeholders, engagement and environments	iterative, human-centered, thus more adaptable	*SDT can be combined with PSS for more user-centered frameworks*

Methodology Synthesis

PLR & Service Design	Design as an artifact	Problem Relevance
Application of Service Design thinking and methods as a research process to conduct PLR in Design, proposing an artifact, and incrementing field knowledge, iteratively	Following Practice-led research advice, an artifact will be proposed for sustainable HoReCa business, following Design methods	Food Design as a transversal, multidisciplinary axis of social, economic, and environmental impact, tackling commercial F&B food systems in a sustainable manner

Design Evaluations	Research Contributions	Communication of the Research
Participant and collaborative processes to ideate, prototype, and validate stages of the Design Challenge with specialists	Present a validated and replicable artifact grounded in Sustainable Food Design and Service Design theory	Results shall be obtained with and presented to multi-disciplinary teams, with the researcher in a privileged position to contribute to Food Design practice as a professional in the HoReCa sector and academically, building knowledge

Methodology Application

	method	objectives	results	chapters
Research Methodology	PLR: Fundamenting theory, field and professional practice to build knowledge. Participant and collaborative processes. Desk research: **SLR + CLR.** Field Data Collection: **Participant Observation, Contextual Interview.** Data analysis: **Thematic Analysis**	Apprehend qualitative data, enabling deeper understanding of context and of sustainability-oriented F&B operations and needs	Critical analysis of the literature review, field notes, identify stakeholders, understand research context and knowledge gap	02. Methodology 03. HoReCa Sustainability Manifestos, Initiatives, Certifications and Awards 04. Definition of the current scenario: Sustainable FD & SFS 05. Field Studies: SFS Into Practice
Ideate	Insights collected from Desk and Field research phases + professional experience	Build understanding and meaning from real life, co-design sessions, cluster and synthesize insights	Idea clusters, product-services to be prototyped	05. Field Studies: Sustainable Food Systems Into Practice
Prototype	**Contextual Prototyping** with HoreCa specialists, providing agile development of proposals and increments	Prototype in-context, and collaboratively build parts of the system, iteratively	Tools, service concept and outline, service map, user journey	05. Field Studies: Sustainable Food Systems Into Practice 06. Circular Food Systems Principles
Validate	**Concept and Value** test with immersion professionals and industry specialists	validate value perception of the proposed system, evaluate usability	Fully operational prototype of product-service system,	06. Circular Food Systems Principles
Communicate	Reporting methods applied and results, critical analysis of theory, thesis	A product-service system grounded in sustainable best practices and knowledge designed for HoReCa services by a F&B and Sustainable Food Design specialist	Written document, discussion, conclusion	

Criteria

RQ1: How has design approached food?	RQ2: How has food design approached food systems?	RQ3: How have food and design approached sustainability?

Systematic Literature Review

Search Field	Website	Initial Results / Read and used as Reference
DRS digital Library	https://dl.designresearchsociety.org/	319 / 32
International Journal of	https://www.intellectbooks.com/international-journal-of-food-des	81 / 38
Web of Science	https://www.webofscience.com	214 / 12
Scopus	https://www.scopus.com/search	37 / 7
Academia	https://www.academia.edu/	1550 / 358 / 46

Procedure

apply search string to search engines		
I/E criteria for titles and abstracts		
abstract screening		keywords: food design, eating design, community, sustainability, participatory design, food service, collaborative design, food systems, food consumption, food experience, network, codesign, social innovation, networked economy, short food supply chains, food future, territory, regenerative design, collaborative network, product-service, innovation, regenerative economy.
record accepted publications on a table containing:	Title, Author, Year, Published at, DOI, Link, Keywords, Abstract, Literature Type	
screening full publications		
in depth reading chosen publications		

string include / exclude

eating design OR food design	AND NOT 3D	AND NOT medic*
AND sustainab*	AND NOT pack*	AND NOT biology
	AND NOT nutrition*	AND NOT insect
2003 to 2024		

Other I/E criteria

publications should encompass systemic, service or collaborative design solutions for everyday / wicked problems
publications should discuss food systems (or related/specific aspects) as the main subject
publications should address matters in a local scale, but replicable
official publications include FAO, UN, Governmental bodies
publications should not address religious or traditional foods
publications should not discuss functional food and food substitutes nor labels
publications should not present packaging, food shape or processing of food. no fd as industrial product
publications should not present fd though art only
publications should not comprehend microbiology, sensorial analysis of food texture/flavor
publications should not present isolated, singled out cases
publications should not depict governance, public policies

Complementary literature review

Search Field	Website
Research Gate	https://www.researchgate.net/
Blucher Design Proc	https://www.proceedings.blucher.com.br/
OSFD	https://www.fooddesignthinking.org
EFood experiencing I	http://efood.fa.ulisboa.pt/index.php/previous-editions/efood-2017
RedLaFD	https://www.lafooddesign.org/
Food Design Day	https://theforkorganization.com/event/world-food-design-day/
Diálogos de Cocina	https://dialogosdecocina.com
Food Studies / FS Jo	https://food-studies.com
Ellen MacArthur Four	https://ellenmacarthurfoundation.org/
TheSRA	https://thesra.org/
The World´s Fifty Bes	https://www.theworlds50best.com/awards/sustainable-restaurant-award
MAD	https://madfeed.co

Criteria	RQ1: How has design approached food?	RQ2: How has food design approached food systems?	RQ3: How have food and design approached sustainability?
Guide Michelin	https://guide.michelin.com/		
The Slow Food	Thousands mobilize to call for food systems that empower people, not companies - Slow Food		

Keywords

food design	future	community	collaborative design
sustainability	participatory design	food service	network
food systems	food consumption	food experience	food future
social innovation	networked economy	sfsc	product service
regenerative design	food environment	colaborative network	regenerative design
co-design	territory	innovation through design	regenerative economy

Timeframe

2003	Guixé term Food Design, Food design. Barcelona: Galeria H2O, S.L., 2003. ISBN 9788493255404
2024	December

References

Extraction of information (Godin, D., and Zahedi, M. (2014) Aspects of Research through Design: A Literature Review, in Lim, Y., Niedderer, K., Redström, J., Stolterman, E. and Valtonen, A. (eds.), Design's Big Debates - DRS International Conference 2014, 16-19 June, Umeå, Sweden. https://dl.designresearchsociety.org/drs-conferencepapers/drs2014/researchpapers/85)

Webster, J., & Watson, R. T. (2002). Analyzing the past to prepare for the future: Writing a literature review. Management Information Systems Quarterly, 26, 3.

Systematic Literature Review

	Title	Author	Year	Published at	DOI	Link	Keywords	Abstract	Literature Type	Notes
SCO	The experience of the natural world in a moment of fine dining-interwoven approaches to sustainability Experiencing food, designing sustainable and social practices	Bonacho R., Gerardo A., Pires M.J.	*2020*	Proceedings of the 2nd international conference on food design and Food studies (EFOOD 2019). November 28-30, 2019			design for sustainability	*[No abstract available]*	Conference Proceedings	
SCO	Food design methods to inspire the new decade. Agency-centered design towards 2030	Massari S.	*2020*	Experiencing food: Designing sustainable and social pratices. Proceedings of the 2nd international conference on food design and food studies (EFOOD 2019), Lisbon, Portugal, 28-30 November 2019			engagement, scale	*[No abstract available]*	Conference Proceedings	
SCO	Where interaction design meets gastronomy: Crafting increasingly playful and interactive eating experiences	Altarriba B. F., Lutz R., Isbister K.	*2020*	Second International Conference on Food Design and Food Studies, Experiencing Food, Designing Sustainable and Social Practices			territorial development and planning	*[No abstract available]*	Conference Proceedings	
scopus	Where Interaction Design Meets Gastronomy: Crafting Increasingly Playful and Interactive Eating Experiences	Altarriba Bertran F., Lutz R., Isbister K.	*2019*	Proceedings of the 2nd International Conference on Food Design and Food Studies, Experiencing Food, Designing Sustainable and Social Practices (EFOOD19					Conference Proceedings	
scopus	'Sustainable natives, youth manifesto and design approaches. Designing a world for "sustainable natives	Massari S.	*2016*	2nd international Conference on food design, Conference Proceedings. pp 151-162					Conference Proceedings	
scopus	Design for Sustainability: Addressing Food Waste Behaviour Through Social Practice Approaches	Niimi M., Wakes S.J., McGuire M.H.	*2014*	Food Design on the Edge					Conference Proceedings	
scopus	Beyond food design to a sustainable sensoriality	Mojoli G.	*2007*	Gastronomic Sciences						
scopus	Enabling sustainable food transitions in schools: a systemic approach	Graça J., Roque L., Guedes D., Campos L., Truninger M., Godinho C., Vinnari M.	*2022*	British Food Journal, volume 14, issue 13, pp 322-339	10.1108/BFJ-11-2021-1188		Meat consumption; Planetary health diet; Plant-based diets; School meals; Sustainable consumption	*Purpose: Recent reviews and reports have highlighted the need for integrated, context-specific efforts to enable sustainable food transitions. This study aimed to identify pathways to promote healthier and more environmentally friendly food practices in school contexts, with a focus on increased plant-based eating. Design/methodology/approach: The study used a systemic approach with data collected from relevant stakeholders in an EU country (Portugal) at diverse levels of influence in the school meals system (i.e. proximal, intermediate, distal; from end-consumers to food providers, market actors, civil society organizations, and policy and decision-makers). Data from individual interviews (N = 33) were subjected to thematic analysis. Findings: Meat-centric cultural perceptions of a 'proper meal' can be a socio-emotional barrier for sustainable food transitions in schools. Main pathways identified to unlock these transitions included: (1) Levering orientations toward ethical and environmentally beneficial consumption; (2) Improving and increasing the offer of plant-based meals; and (3) Mobilizing local communities and society. Originality/value: The current findings suggest that promoting healthier and more environmentally friendly food practices in schools requires systemic, integrated approaches which focus on food consumption, food provision, and the broader political and sociocultural environment. © 2022, João Graça, Lisa Roque, David Guedes, Lúcia Campos, Monica Truninger, Cristina Godinho and Markus Vinnari.*	Article	
scopus	Consumer Perception as a Criterion for Process Design	Laguna L., Tárrega A., Fiszman S.	*2022*	Food Engineering Series	10.1007/978-3-030-83570-5_7	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85122476877&doi=10.1007%2f978-3-030-83570-5_7&partnerID=40&md5=3f2f2d7ee6dd16259d5506283221a37e	Consumer; Food design; Food oral processing; Ingredients replacement; Perception	*The design of new food needs to be consumer centric. To tackle this approach, this chapter starts by understanding human food perception, a process that starts with sensation detection and information process, where individual's characteristics like knowledge, previous experiences, or attitudes, among others, play a crucial role. To characterise food sensory properties, newly available rapid consumer methods for obtaining sensory profiles of food products could be used. In addition, it is important to study how the sensory properties of food evolve along the whole mastication process, providing information about the food structural changes from the first bite to the swallowing; this will help optimise the design of food properties and structure. Food structure refers to the three-dimensional arrangement of food molecules, which is vital in perception, especially when designing new food products with complex sensations like creaminess, mouth-coating, texture, and sound properties. Therefore, current new food designs based on fat and sugar reduction, and gluten-free formulation are also approached from this structural aspect. Furthermore, food design needs to incorporate the consumers' current concerns like functional properties or sustainable foods. © 2022, Springer Nature Switzerland AG.*	Book Chapter	
scopus	Transdisciplinary Case Studies on Design for Food and Sustainability	Massari S.	*2021*	Transdisciplinary Case Studies on Design for Food and Sustainability	10.1016/B978-0-12-817821-8.09990-2	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85126426535&doi=10.1016%2fB978-0-12-817821-8.09990-2&partnerID=40&md5=ee6adbd5456dafef785bb34148a3d3bd		*Transdisciplinary Case Studies on Design for Food and Sustainability, a volume in the Consumer Science and Strategic Marketing series, analyzes the interconnectivity of sustainability, food, and design, demonstrating the presence of food design in various food-related fields of study. Broken into six parts, the book begins with the theory behind food and design. The following five sections include several case studies highlighting the different forms and applications of food design, including the use of food design in production and distribution, in food and restaurant businesses, in territory-identity, in social food design, and with regard to post-consumption. Using a case study approach to meet the needs of both academics and practitioners, Transdisciplinary Case Studies on Design for Food and Sustainability includes practical examples to illustrate food system challenges, to explain phenomena, and to build theory. © 2021 Elsevier Inc. All rights reserved.*	Book	

Systematic Literature Review

	Title	Author	Year	Published at	DOI	Link	Keywords	Abstract	Literature Type	Notes
scopus	The challenge of transdisciplinarity: Design methods for agri-food innovation and sustainability	Massari S.	*2021*	Transdisciplinary Case Studies on Design for Food and Sustainability	10.1016/B978-0-12-817821-8.00020-5	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85126416872&doi=10.1016%2fB978-0-12-817821-8.00020-5&partnerID=40&md5=3d89a280a589f341f84c2686f3e4cc40	Agri-food; Change makers; Design; Empathy; Food industry; Food innovation; SDGS; Sustainability; Sustainable development; Transdisciplinary skills	*This is not a book about food design. Instead, it focuses on the transdisciplinarity of design and its application in the agri-food sector. This book presents design as a combination of methods for teaching, learning, experimenting, and implementing to fulfill the requirements of the transformation and innovation we see in the fields of food systems and sustainability. By exploring a collection of different cases, this book explains the concept of design in a way that is accessible even to scholars and practitioners who are not designers, as an approach that forces to set aside technology and helps to process and problem-solve in a transdisciplinary and creative way. This selection of cases will be helpful for educators and students of any subject seeking to broaden their perspective and improve their professional careers. It will also be useful for professors and instructors who require inspirational tools and concepts to introduce complex subjects, such as transdisciplinarity and food sustainability, in their classrooms. © 2021 Elsevier Inc. All rights reserved.*	Book Chapter	
scopus	Transitioning from food systems toward food ecosystems	Reissig P., Lebendiker A.	*2021*	Transdisciplinary Case Studies on Design for Food and Sustainability	10.1016/B978-0-12-817821-8.00017-5	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85126413776&doi=10.1016%2fB978-0-12-817821-8.00017-5&partnerID=40&md5=58ae6ae718ab8bde3832ee09a27f76e9	Food cycle; Food Design; Food ecosystem; Food health; Food subjects	*This chapter argues for shifting the framework away from food "systems" and moving toward food "ecosystems." This change is long overdue given the increasing challenges the foodscape has been facing in terms of human, environmental, economic, and cultural health. Herein, we identify and propose six basic aspects that constitute a food ecosystem: instances, actors, connections between them, elements that they exchange, environment, and scale. A careful examination of these aspects, and how they all interact within a given context, can shed light on the full scope of food's impact and implications. This framework can also serve as a set of guidelines for making more systemic food-related, synchronous and asynchronous case studies, which in turn could have greater impact in generating sustainable improvements. © 2021 Elsevier Inc. All rights reserved.*	Book Chapter	
scopus	Sustainable food design required for Global Food Systems Reform	Buckley M.	*2021*	Transdisciplinary Case Studies on Design for Food and Sustainability	10.1016/B978-0-12-817821-8.09987-2	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85126400284&doi=10.1016%2fB978-0-12-817821-8.09987-2&partnerID=40&md5=761c1abb2358c2a4e0c52fd4f8149ba0		*[No abstract available]*	Editorial	
scopus	Tool to Support Citizen Participation and Multidisciplinarity in Food Innovation: Circular Food Design	Sijtsema S.J., Fogliano V., Hageman M.	*2020*	Frontiers in Sustainable Food Systems	10.3389/fsufs.2020.582193	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85097528005&doi=10.3389%2ffsufs.2020.582193&partnerID=40&md5=1df21a47d688606610594e9b37b2c2a2	circular food design; co-creation; creativity; design thinking; food product development; food system; multi disciplinary; visualization	*Innovations are urgently required to transform toward a more circular food system in which the food production and processing is more sustainable and the dietary patterns of consumers are more healthy and sustainable. It is needed to be more innovative in a multidisciplinary and consumer oriented way. Therefore, this paper introduces circular food design model and presents some applications. This paper presents background information regarding relevant models of product development and combines approaches and insights from different disciplines, such as consumer and food science, all present in the food system. In addition, the linkage with design thinking is addressed. Moreover, research questions are presented focused on the identification, development and optimization phase with regard to agricultural production, food storage, processing, retail and consumption. This circular food design model can support a way of thinking that will lead to multidisciplinary and citizen participating in food product development. The added value of circular food design model is; first, the model stimulates a citizen participation approach in a creative way; second, the model supports communication and collaboration among all involved disciplines. The newly developed circular food design model visualizes an iterative approach meant to be a flexible and creative tool to structure the new food development in the different phases to support value creation in the food system in order to support its transition. © Copyright © 2020 Sijtsema, Fogliano and Hageman.*	Article	
scopus	Meaning of food in eating patterns	Chinea C., Suárez E., Hernández B.	*2020*	British Food Journal	10.1108/BFJ-02-2020-0144	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85087930406&doi=10.1108%2fBFJ-02-2020-0144&partnerID=40&md5=b3230e9f0edb82705cc6847837a7bc50	Consume; Food; Meaning; Pattern; Vegans	*Purpose: The purpose of this study is to conceptually and empirically verify the meaning of the food construct, while adapting and validating the Meaning of Food in Life Questionnaire proposed by Arbit et al. (2017) into Spanish and comparing groups with specific and non-specific eating patterns in relation to the meaning of food. Design/methodology/approach: Confirmatory factor analysis and multivariate analysis involving groups with specific and non-specific eating patterns. Findings: Results show that the adapted version of the scale retained the five food meaning factors, although four items from the original version had to be removed. Multivariate analyses of variance show that there are significant differences in the moral and sacred factors of food meaning when comparing people with specific and non-specific eating patterns. Significant differences in the moral, sacred and social factors were found when comparing between people with a specific diet, vegans/vegetarians and people who do not consume gluten/lactose or are on a diet. Research limitations/implications: Differences in the meanings attributed to food can be observed among the different ways people eat. This could have implications on ethics, sustainability and well-being by considering the characteristics of the five factors of food meaning. Originality/value: This study suggests that food meaning is a complex and rational process, where eating patterns play a key role in the attribution of meaning. © 2020, Cristina Chinea, Ernesto Suárez and Bernardo Hernández.*	Article	
scopus	Designing with More-than-Human Food Practices for Climate-Resilience	Dolejšová M., Van Gaalen S., Wilde D., Raven P.G., Heitlinger S., Light A.	*2020*	DIS 2020 Companion - Companion Publication of the 2020 ACM Designing Interactive Systems Conference	10.1145/3393914.3395909	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85090118574&doi=10.1145%2f3393914.3395909&partnerID=40&md5=a48ed18553f5b791a0147e28ef9737cc	Climate imaginaries; Climate resilience; Experimental food design; Food sustainability; More-than-human	*Climate change is an increasingly urgent, complex problem, with consequences threatening human and non-human lives across the globe. Legislative and citizen-driven responses are valuable but insufficient, and their practical feasibility is unclear. Emerging design research suggests embracing imaginative, creative approaches to support engagement with climate-change issues and inspire collective reflection. This workshop investigates how such approaches can be applied through co-creative design experimentation in the context of human-food practices, which are now recognized as a key driver of climate change. We will reflect on existing climate-change mitigation proposals by imagining their plausible implementations as climate-resilient food practices, emphasizing more-than-human concerns. The workshop is organized as part of a two-day program titled Experimental Food Design for Sustainable Futures inviting diverse participants interested in contributing toward sustainable socio-ecological transformations. © 2020 Owner/Author.*	Conference Paper	

Systematic Literature Review

	Title	Author	Year	Published at	DOI	Link	Keywords	Abstract	Literature Type	Notes
scopus	Disrupting (More-than-) human-food interaction: Experimental design, tangibles and food-tech futures	Dolejšová M., Wilde D., Altarriba Bertran F., Davis H.	2020	DIS 2020 - Proceedings of the 2020 ACM Designing Interactive Systems Conference	10.1145/3357236.3395437	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85090496330&doi=10.1145%2f3357236.3395437&partnerID=40&md5=253bd8f1d181259e8db358ca2ae1e62a	Compostables; Embodied design; Experimental food design; Food futures; Hfi; Human-food interaction; Tangibles	*Digital technology has become a frequent companion of daily food practices, shaping the ways we produce, consume, and interact with food. Smart kitchenware, diet tracking apps, and other techno-solutions carry promise for healthy and sustainable food futures but are often problematic in their impact on food cultures. We conducted four Human-Food Interaction (HFI) workshops to reflect on and anticipate food-tech issues, using experimental food design co-creation as our primary method. At the workshops, food and food practices served as the central research theme and accessible starting point to engage stakeholders and explore values, desires, and imaginaries associated with food-tech. Drawing on these explorations, we discuss diverse roles that experimental design co-creation, performed with and around food, can play in supporting critical, interdisciplinary HFI inquiries. Our findings will appeal to design researchers interested in food as a research theme or as a tangible (and compostable!) design material affording diverse co-creative engagements. © 2020 ACM.*	Conference Paper	
scopus	Ethics, moral and moralization: Sustainability in food education	Wistoft K.	2020	International Journal of Food Design	10.1386/IJFD_00018_3	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85099874087&doi=10.1386%2fIJFD_00018_3&partnerID=40&md5=559eaac860f206f0bf151fb62860698e	Critical food choice; Ethics; Moralization; sustainability; Taste competence; The moral taste	*How do you teach sustainability in food education? By preaching and giving lectures? Or by supporting the reflexive capacities of students? It is the opinion of this article that teaching taste and food design with regard to sustainability must be ethically reflexive. We should not moralize. Focusing on sustainability as a reflexive concept, students should not only learn to eat what is deemed to be the right things to eat; they must also learn to relate to food and meals in a critical and informed way. The article points out what 'damage' moralization can do if food and sustainability are designed or communicated without ethical reflections. © 2020 Intellect Ltd Essays. English language.*	Article	
scopus	Designing sustainable food experiences: Rethinking sustainable food tourism	Leer J.	2020	International Journal of Food Design	10.1386/IJFD_00010_1	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85099824340&doi=10.1386%2fIJFD_00010_1&partnerID=40&md5=ac3e0e248c5443cdd460dc07462d65f2	Faroe Islands; food experience; New Nordic Cuisine; participation; Sustainability; tourism	*In this article, the position that there is a good case for sustainable food tourism despite the negative impact on the climate caused by tourism and travelling practices is argued. This requires, however, that we develop well-designed sustainable food experiences. We need to redesign and rethink the very idea of the food experience with particular focus on participation, the role of the consumer, the accessibility of the food design, and the potential of local contexts, to give some universal examples. This does not mean that sustainable food tourism is or can become carbon neutral. It means that the job of the food designer is to offer climate-friendly solutions and, maybe more importantly, that sustainable food experience designers should focus on how to inspire more sustainable food consumption and anticonsumerist lifestyles beyond the context of the experience. These arguments arepresented via a case study of a sustainable food experience from the Faroe Islands. © 2020 Intellect Ltd Article. English language.*	Article	
scopus	Rethinking food well-being as reconciliation between pleasure and sustainability	Hedegaard L., Hémar-Nicolas V.	2020	International Journal of Food Design	10.1386/IJFD_00019_3	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85099772990&doi=10.1386%2fIJFD_00019_3&partnerID=40&md5=a89d5b6f58cd5bd979388d383d81d01e	Consumer research; Design; Epicurean ethics; Food well-being; Pleasure; Sustainability	*Food well-being has been addressed in consumer research over the past decade as a means to provide a more holistic perspective on consumers' relationship to food. However, the interest has mainly been directed at individual choice and experience, meaning that the ethical foundations of well-being have received less attention. This foundation is important in the context of food as it provides an opportunity for outlining a new agenda for food well-being. Using food design as an overall framework, this article introduces Epicurean ethics as an underlying conceptual design that positions pleasure at the core of food well-being. Not in the sense of trivial hedonism, but as judicious consideration of what is pleasurable when individual and collective interest is weighed and short-and long-term consequences taken into account. © 2020 Intellect Ltd Essay. English language.*	Article	
scopus	Fighting food waste towards a new social food chain: The EGG of columbus workshop	Campagnaro C., Ceraolo S.	2017	International Journal of Food Design	10.1386/ijfd.2.1.103_1	https://www.scopus.com/inward/record.uri?eid=2-s2.0-85090260457&doi=10.1386%2fijfd.2.1.103_1&partnerID=40&md5=7b975fd2050ed716c4652e04af697cc9	Collaborative workshop; Food waste; Participatory approach; Social inclusion; Socially responsible design; Strategies against homelessness	*From 29 February to 4 March 2016, seventeen students of Design and one student of Educational Studies designed and tested recipes for fruit and vegetables with the aim of recycling unsold food. The goal of the experimentation was to verify the strategies aimed at improving homeless people's access to a certain and healthy daily meal. The workshop was named 'The Egg of Columbus' and it was led by two designers and one chef. It took place in a non-professional kitchen, inside a municipal building, which is a location for social inclusion and interdisciplinary education projects. Some homeless adults with prior kitchen experiences actively participated in the workshop, offering their knowledge and collaborating with the students at every stage of the project. The group successfully produced and tested nineteen food transformation strategies. These were recipes that promoted transformation of the surplus produce, preserving its nutritional values and making it available to the deferred consumption. The food design experience offered new perspectives about the food chain for night shelters focusing on the issues of right to food, sustainability and circular economy. © 2017 Intellect Ltd Article. English language.*	Article	
WOS	Supporting Food Design Processes: Development of Food Design Cards	Lee, Y; Breuer, C; Schifferstein, HNJ	2020	INTERNATIONAL JOURNAL OF DESIGN			Card Set; Creativity; Design Tools; Food Design; Multidisciplinary	*Food design is a relatively new discipline that requires designers to become familiar with several areas that are not currently covered in many design curricula, such as agriculture, the food industry, culinary processes and the hospitality industry. To inspire, enrich and facilitate food design processes, we developed and tested a card set reflecting the richness of the food design field. After literature review, we clustered findings into seven main categories: agriculture, industrial processing, distribution & marketing, kitchen management, eater, consumption situation, and policy & legislation. Each category is represented by five topic cards and one overview card. The card set is accompanied by instructions for six exercises. Testing the card set among individual designers and student groups showed that it was considered useful in multiple stages of the design process. In the beginning of the design process, it was used to gain overview and to inspire. Along the process, it enhanced brainstorming, facilitated discussions, and was used to create scenarios and refine ideas. In later stages, the variety of topics was helpful in evaluating whether all important design aspects had been considered.*	Article	
WOS	Food Design Thinking: A Branch of Design Thinking Specific to Food Design	Zampollo, F; Peacock, M	2016	JOURNAL OF CREATIVE BEHAVIOR	10.1002/jocb.148	http://dx.doi.org/10.1002/jocb.148	food design thinking; design thinking; creativity	*Is there a need for a set of methods within Design Thinking tailored specifically for the Food Design process? Is there a need for a branch of Design Thinking dedicated to Food Design alone? Chefs are not generally trained in Design or Design Thinking, and we are only just beginning to understand how they ideate and what recourses are available to them. Given the sheer variety of eating situations, and the complexity of the factors influencing them, a design method that specifically stimulates thinking about Food Design would be very useful. I introduce TED (Themes for Eating Design, a design method developed to generate themes on the ideal eating situation, which summarizes the themes it has generated in previous research, and how these themes have been transformed into a tool for the idea generation phase called Thoughts For Food). I present an initial test of TED and Thoughts For Food in practice, with groups using them to design an eating experience. Initial results suggest both have promise for designing food or any other aspect of the eating experience and that these methods can form part of a new branch of design theory that I call Food Design Thinking.*	Article	

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WOS	FOOD DESIGN AS THE ACTUAL DIRECTION OF THE INTERDISCIPLINARY RESEARCHES	Tetiana, B; Artem, A	*2018*	NATIONAL ACADEMY OF MANAGERIAL STAFF OF CULTURE AND ARTS HERALD			food; food design; culture; interdisciplinary methodology; scientific researches; publications	*Purpose of Research. The purposes of the article are to substantiate the understanding of food design as the new direction of scientific-theoretical researches and to analyse the perspectives of its researching within the interdisciplinary methodology. Methodology. The research is based on the general scientific interdisciplinary methodology, which includes the fundamentals of art criticism, cultural studies and design. In addition, the author uses general scientific methods such as analysis, synthesis, generalization, empirical method, etc. Scientific Novelty. The article is the first publication in the Ukrainian cultural studies and art criticism deals with the determination of the fundamentals of the researching of the food design as the actual direction of the modern theoretical and practical searches. Conclusions. The food design is connected with the socio-cultural and historical aspects of the functioning of people. Therefore, it is projected into the plane of the research, dealt with culinary art, hospitality, gastronomic culture and other disciplines, which is connected with food, its design and its theory. Therefore, the research in the field of food design offers wide range and opportunities for scientist in various fields of knowledge. First of all, it concerns such promising areas as the history of food design and its development. Foreign and Ukrainian scientists are interested in it and its embodiment of the art of food design, in Ukrainian and foreign practice.*	Article	
WOS	Master in Food Design, the Creation of a New Brand Identity	Barradas, V; Rijo, C; Galegos, C	*2021*	ADVANCES IN DESIGN AND DIGITAL COMMUNICATION, DIGICOM 2020	10.1007/978-3-030-61671-7_52	http://dx.doi.org/10.1007/978-3-030-61671-7_52	Master; Food design; Identity design; Brand mark	*This article aims to address the issue of the importance of the creation of a new brand identity for a new master course. It's intend understand the complexity of the creation of a new identity and what topics are needed to evaluate before the creation of his graphic representation. As a case study we bring the creation of a new brand identity for the master's in food design, a new master's of the Estoril School. The presented work was developed in the first year of the Digital Identity Design masters of Portalegre Polytechnic.*	Proceedings Paper	
wos	Tool to Support Citizen Participation and Multidisciplinarity in Food Innovation: Circular Food Design	Sijtsema, SJ; Fogliano, V; Hageman, M	*2020*	FRONTIERS IN SUSTAINABLE FOOD SYSTEMS	10.3389/fsufs.2020.582193	http://dx.doi.org/10.3389/fsufs.2020.582193	co-creation; food product development; design thinking; circular food design; food system; multi disciplinary; visualization; creativity	*Innovations are urgently required to transform toward a more circular food system in which the food production and processing is more sustainable and the dietary patterns of consumers are more healthy and sustainable. It is needed to be more innovative in a multidisciplinary and consumer oriented way. Therefore, this paper introduces circular food design model and presents some applications. This paper presents background information regarding relevant models of product development and combines approaches and insights from different disciplines, such as consumer and food science, all present in the food system. In addition, the linkage with design thinking is addressed. Moreover, research questions are presented focused on the identification, development and optimization phase with regard to agricultural production, food storage, processing, retail and consumption. This circular food design model can support a way of thinking that will lead to multidisciplinary and citizen participating in food product development. The added value of circular food design model is; first, the model stimulates a citizen participation approach in a creative way; second, the model supports communication and collaboration among all involved disciplines. The newly developed circular food design model visualizes an iterative approach meant to be a flexible and creative tool to structure the new food development in the different phases to support value creation in the food system in order to support its transition.*	Article	
wos	Heritage promotion through food design	Panariello, M	*2016*	World Heritage and Degradation: Smart Design, Planning and Technologies			Tradition; Communication ; Culture	*What is design? There are many visions and experience more than one century. Design is different from styling. The product is a product system and design isn't give an appearance but it is innovation, that. s to say new meanings, new needs, new values: cultural, symbolic... new contexts of use. A design driven innovation is a product system, that. s to say the object and the immaterial elements, togheter: services and comunication. Design identify new codes (morphology, icon, mark) linked to product and act on taste - functional side and symbolic-cultural side by visioning, like perspective of new scenary and sensemaking that become a translator of cultural values. The concept is not a lifestyle but life moments. What. s food design? There are just some of the most important keywords and parameters analysed during a Food Design process, and which also form the basis for research; It. s activity of integration through technical productive and social-cultural dimension that. s to say it. s a wealthy element for cultural renewal and promotion. There are new way to connect with food for example Marti Guixe, Fulvio Bonavia with it's A matter of taste, Italian food collection, I also think about the Petersham Nursery, good, clean and fair, the historic experience of wine-making factory Mastroberardino for the archeological area of Pompeii. We can image food design like a cultural business model, which a new claim connected to the product that established a technologic change syde by syde cultural factor.*	Proceedings Paper	
wos	FOOD DESIGN XL	Levy, P	*2010*	TLS-THE TIMES LITERARY SUPPLEMENT					Book Review	
wos	A case study of sustainable hospitality education relating to food waste from the perspective of transformative learning theory	Chen, YS; Wu, ST	*2022*	JOURNAL OF HOSPITALITY LEISURE SPORT & TOURISM EDUCATION	10.1016/j.jhlste.2022.100372	http://dx.doi.org/10.1016/j.jhlste.2022.100372	Food waste; Transformative learning theory; Sustainable hospitality education; Critical tourism pedagogy; Food design	*This study applies a critical tourism approach and transformative learning theory to examine the factors influencing students to take a food design course and the relationships among students' learning intentions and the processes and outcomes of transformative learning. The results show that performance and effort expectancy have significant influences on students' learning in-tentions and that there are partially mediating effects among students' learning intentions, transformative learning processes, and transformative learning outcomes. After completing the investigated course, most students clearly expressed that, through the transformative learning approach of the course, they learned critical/liberal-thinking skills regarding global sustainable issues of food waste.*	Article	
wos	Designing with More-than-Human Food Practices for Climate-Resilience	Dolejsova, M; van Gaalen, S; Wilde, D; Raven, PG; Heitlinger, S; Light, A	*2020*	COMPANION PUBLICATION OF THE 2020 ACM DESIGNING INTERACTIVE SYSTEMS CONFERENCE (DIS' 20 COMPANION)	10.1145/3393914.3395909	http://dx.doi.org/10.1145/3393914.3395909	climate resilience; climate imaginaries; more-than-human; food sustainability; experimental food design	*Climate change is an increasingly urgent, complex problem, with consequences threatening human and non-human lives across the globe. Legislative and citizen-driven responses are valuable but insufficient, and their practical feasibility is unclear. Emerging design research suggests embracing imaginative, creative approaches to support engagement with climate-change issues and inspire collective reflection. This workshop investigates how such approaches can be applied through co-creative design experimentation in the context of human-food practices, which are now recognized as a key driver of climate change. We will reflect on existing climate-change mitigation proposals by imagining their plausible implementations as climate-resilient food practices, emphasizing more-than-human concerns. The workshop is organized as part of a two-day program titled Experimental Food Design for Sustainable Futures inviting diverse participants interested in contributing toward sustainable socio-ecological transformations.*	Proceedings Paper	

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WOS	Fantastic(e)ating Food Futures: Reimagining Human Food Interactions	Davis, H; Wilde, D; Bertran, FA; Dolejsova, M	2020	COMPANION PUBLICATION OF THE 2020 ACM DESIGNING INTERACTIVE SYSTEMS CONFERENCE (DIS' 20 COMPANION)	10.1145/3393914.3395906	http://dx.doi.org/10.1145/3393914.3395906	Human-food interaction; HFI; digital food cultures; food design; food futures; mystery boxes; fantastic	*According to EAT-Lancet: Food is the single strongest lever to optimize human health and environmental sustainability on Earth. However, current food practices are threatening both people and planet. Digital food technologies offer potential for efficient food lifestyles but they present limited opportunity for imagining 'fantastic' food futures. In a bid to extend Human-Food Interaction (HFI) research, this workshop will investigate how to fantasticate nourishing ways to technologically support food practices. Through scenario building, mystery food-tech boxes, Food Tarot cards, and walk-shop, we will feed our senses, fuel imaginations, seek HFI design possibilities and reflect on their potential to nurture healthy, sustainable human-food relationships. The workshop is organized as part of a two-day program titled Experimental Food Design for Sustainable Futures inviting diverse participants interested in contributing toward sustainable socio-ecological transformations.*	Proceedings Paper	
WOS	Food Experience Design to Prevent Unintended Consequences and Improve Well-being	Addis, M; Batat, W; Atakan, SS; Austin, CG; Manika, D; Peter, PC; Peterson, L	2022	JOURNAL OF SERVICE RESEARCH	10.1177/10946705211057593	http://dx.doi.org/10.1177/10946705211057593	ethical principles; food experience; food design; food well-being; ethical food experience design; unintended consequences; services	*This article introduces a novel and comprehensive conceptual framework for designing innovative food experiences that enhance food well-being. We call this framework the novel food experience design. It supports managers in cocreating customer-centric food experiences to limit unintended detrimental consequences and enhance individual and societal food well-being. The novel food experience design (1) employs a systemic (vs. endemic) approach to the innovation process and (2) promotes prioritizing ethical decision-making alongside economic decision-making. Building on insights derived from ecosystem theory and the ethical principles literature, we develop four fundamental propositions to innovate food experiences: do no harm, do good, ensure autonomy, and ensure fairness. Our framework promotes higher levels of individual and societal food well-being than restricted food design innovations, preventing unintended consequences. Finally, we illuminate the implications for service research and practice.*	Article	
WOS	How to create a frame for collaboration between chefs and scientists - Business as unusual at Nordic Food Lab	Frost, MB	2019	INTERNATIONAL JOURNAL OF GASTRONOMY AND FOOD SCIENCE	10.1016/j.ijgfs.2018.12.002	http://dx.doi.org/10.1016/j.ijgfs.2018.12.002	Interdisciplinarity; Culinary innovation; Food Design Thinking	*A frame for successful interdisciplinary collaboration between chefs and scientists is suggested based on the author's experience and background. The author is former director of the now closed Nordic Food Lab. The learning potentials for both parties in these types of collaborations are elaborated.*	Article	
WOS	Enabling sustainable food transitions in schools: a systemic approach	Graca, J; Roque, L; Guedes, D; Campos, L; Truninger, M; Godinho, C; Vinnari, M	2022	BRITISH FOOD JOURNAL	10.1108/BFJ-11-2021-1188	http://dx.doi.org/10.1108/BFJ-11-2021-1188	Planetary health diet; School meals; Meat consumption; Plant-based diets; Sustainable consumption	*Purpose Recent reviews and reports have highlighted the need for integrated, context-specific efforts to enable sustainable food transitions. This study aimed to identify pathways to promote healthier and more environmentally friendly food practices in school contexts, with a focus on increased plant-based eating. Design/methodology/approach The study used a systemic approach with data collected from relevant stakeholders in an EU country (Portugal) at diverse levels of influence in the school meals system (i.e. proximal, intermediate, distal; from end-consumers to food providers, market actors, civil society organizations, and policy and decision-makers). Data from individual interviews (N = 33) were subjected to thematic analysis. Findings Meat-centric cultural perceptions of a 'proper meal' can be a socio-emotional barrier for sustainable food transitions in schools. Main pathways identified to unlock these transitions included: (1) Levering orientations toward ethical and environmentally beneficial consumption; (2) Improving and increasing the offer of plant-based meals; and (3) Mobilizing local communities and society. Originality/value The current findings suggest that promoting healthier and more environmentally friendly food practices in schools requires systemic, integrated approaches which focus on food consumption, food provision, and the broader political and sociocultural environment.*	Article	
WOS	Edible speculations: designing everyday oracles for food futures	Dolejsova, M	2021	GLOBAL DISCOURSE	10.1332/204378920X16069559218265	http://dx.doi.org/10.1332/204378920X16069559218265	human-food interaction; speculative food design; speculative design; food-technology innovation; public engagement	*Digital food technologies carry promise for better food futures but they are often problematic in their impact on food cultures. While proponents suggest that food-tech products such as smart kitchenware or diet personalisation services can support efficient food practices, critics highlight various risks. This paper presents our findings from Edible Speculations, a long-term design research project exploring the contested space of food-tech innovation through a series of speculative design (SD) events situated in everyday public contexts. We illustrate the opportunities and limits of eventful SD in supporting critical engagements with food-tech issues through an Edible Speculations case study called the Parlour of Food Futures. Our discussion of selected Parlour events can inform readers interested in food-tech themes as well as those keen on experimenting with eventful approaches to SD research.*	Article	
WOS	All You Can Eat. Prototyping Speculative Food Futures	Tsekleves, E; Pollastri, S	2019	DESIGN JOURNAL	10.1080/14606925.2019.1595012	http://dx.doi.org/10.1080/14606925.2019.1595012	Food; Health; Speculative design; Sustainable Development Goals	*This workshop is concerned with the relationship between food and global health, and in particular with the role that design can play as a futuring practice (Fry, 2008). Industrial food and food practices have contributed to both human and planetary ill-being. This has been captured well in UN's 17 Sustainable Development Goals, which are linked directly or indirectly to food. The proposed workshop will employ speculative design, to engage participants in developing a menu of provocative solutions that would help the design community identify and map possible direction for design research in the areas of food, design and global health. The workshop outcomes will include a visual workshop report to be published on the EAD website, an illustrated menu of provocative speculative design solutions that map future food/ design directions and a Little Book of 'Speculative Design Food Futures'.*	Article; Proceedings Paper	
WOS	Potential of conceptual design methodology for food process innovation	Hadiyanto, H; van Straten, G; Boom, R; van Boxtel, AJB; Esveld, DC	2008	FOOD SCIENCE AND TECHNOLOGY INTERNATIONAL	10.1177/1082013208092557	http://dx.doi.org/10.1177/1082013208092557	conceptual; process design; Delft design matrix; bakery	*The available time span for food product and process innovation is steadily decreasing, and to increase the efficacy of the development cycles, systematic design procedures can be used to develop new and to redesign existing processes. The Conceptual Process Design (CPD) methodologies used in chemical industry might also be applied in the food industry to rethink their systems and to break down the complexity of problems into several hierarchical levels. The Delft design matrix, a combination of the iterative design procedure, hierarchical decomposition and task driven methods, is a promising tool which can cover the different objectives and criteria of food design. This article analyzes the potential applicability of Delft Design Matrix as a CPD methodology for food process design and illustrates its functionality with the design of a bakery production system.*	Article	

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WOS	Magic on the Menu: Where Are All the Magical Food and Beverage Experiences?	Spence, C; Youssef, J; Kuhn, G	*2020*	FOODS	10.3390/foods9030257	http://dx.doi.org/10.3390/foods9030257	magic; theatrical dining; gastronomy; play; molecular; modernist cuisine; entertainment	*Magic and dining have long been popular forms of entertainment. What is more, both involve some kind of transformation, and yet while the more theatrical aspects of dining have grown in popularity in recent decades, there is a surprising paucity of magical food and beverage experiences out there. In this article, we trace the historical appearance of food and drink and culinary items in the performance of magic. We also review some of the more magical elements of food design that have appeared on menus in bars and restaurants in recent years. We introduce the edible lightbulb dish from the menu at Kitchen Theory Chef's Table and link it to the stage magic of Derren Brown. We also discuss some of the reasons as to why magical food experiences might be rare in the context of dining. In so doing, our hope is to highlight an intriguing area for future research and innovation. Along the way, we identify some possible candidate approaches for the introduction of edible magic onto the menu in the context of modernist cuisine.*	Review	
WOS	How does perceived severity of COVID-19 influence purchase intention of organic food?	Wang, H; Ma, BL; Cudjoe, D; Bai, RB; Farrukh, M		BRITISH FOOD JOURNAL	10.1108/BFJ-06-2021-0701	http://dx.doi.org/10.1108/BFJ-06-2021-0701	COVID-19; Organic food; Purchase intention; Perceived severity; Health consciousness	*Purpose The COVID-19 outbreak has been rapidly spreading around the world for more than a year. However, few studies have explored the connection between the perceived severity of COVID-19 and purchase intention of the health-related products, for example, organic food. Based on the stimulus-organism-response (S-O-R) framework, this study examines the influencing mechanism of perceived severity of COVID-19 on purchase intention of organic food. Design/methodology/approach To evaluate the proposed model, an online survey was utilized to collect 1,104 valid questionnaires from China. Findings The findings suggest that (1) the perceived severity of COVID-19 has a significant positive impact on purchasing intention; (2) health consciousness acts as a mediating role between perceived severity of COVID-19 and purchasing intention and (3) perceived inconvenience negatively moderates the connection between perceived severity and purchase intention. Originality/value The findings of this paper provide new insights into the positive effects of COVID-19 and pave the way for governments and enterprises to promote the purchase behaviour of organic food.*	Article; Early Access	
WOS	Is local the new organic? Empirical evidence from German regions	Winterstein, J; Habisch, A	*2021*	BRITISH FOOD JOURNAL	10.1108/BFJ-06-2020-0517	http://dx.doi.org/10.1108/BFJ-06-2020-0517	Local foods; Organic foods; Intention-behavior gap; Customer preferences; Willingness to pay; Conjoint analysis	*Purpose This paper measures German customers' label-depending preference and willingness to pay for organic and local food. Design/methodology/approach The sample covers 325 survey respondents from 12 out of the 16 German federal states. Data was collected through convenience sampling in December 2019. A choice-based conjoint analysis was operated. Findings Customers value local food from their federal state most, thereby accepting a price premium of no less than 200%. The label moderates the influence of organic production conditions on price acceptance significantly. Research limitations/implications Based on self-reported data from a convenience sample, the demographic distribution of the sample differs from that of the German population. Moreover, the willingness to pay was found to be product-specific, limiting general applicability. Practical implications Marketers should focus on local and local organic food in the assortment. Marketing strategies should include information campaigns. Producers may sell their products regionally or cooperate with local retailers. Introducing a separate official local organic label is suggested. Originality/value The study provides detailed evidence on the preference of German costumers and suggests a significantly higher willingness to pay for organic and local food than previous literatures.*	Article	
WOS	Meaning of food in eating patterns	Chinea, C; Suarez, E; Hernandez, B	*2020*	BRITISH FOOD JOURNAL	10.1108/BFJ-02-2020-0144	http://dx.doi.org/10.1108/BFJ-02-2020-0144	Meaning; Food; Pattern; Consume; Vegans	*Purpose The purpose of this study is to conceptually and empirically verify the meaning of the food construct, while adapting and validating the Meaning of Food in Life Questionnaire proposed by Arbitet al.(2017) into Spanish and comparing groups with specific and non-specific eating patterns in relation to the meaning of food. Design/methodology/approach Confirmatory factor analysis and multivariate analysis involving groups with specific and non-specific eating patterns. Findings Results show that the adapted version of the scale retained the five food meaning factors, although four items from the original version had to be removed. Multivariate analyses of variance show that there are significant differences in the moral and sacred factors of food meaning when comparing people with specific and non-specific eating patterns. Significant differences in the moral, sacred and social factors were found when comparing between people with a specific diet, vegans/vegetarians and people who do not consume gluten/lactose or are on a diet. Research limitations/implications Differences in the meanings attributed to food can be observed among the different ways people eat. This could have implications on ethics, sustainability and well-being by considering the characteristics of the five factors of food meaning. Originality/value This study suggests that food meaning is a complex and rational process, where eating patterns play a key role in the attribution of meaning.*	Article	
WOS	From the chef's mind to the dish: How scientific approaches facilitate the creative process	Arboleya, JC; Olabarrieta, I; Luis-Aduriz, A; Lasa, D; Vergara, J; Sanmartin, E; Iturriaga, L; Duch, A; de Maranon, IM	*2008*	FOOD BIOPHYSICS	10.1007/s11483-008-9078-3	http://dx.doi.org/10.1007/s11483-008-9078-3	molecular gastronomy; egg white protein; cod protein; foam stability; rheological properties; edible film	*This work describes a practical way to optimize the high level of the chef creativity to produce rational approaches to food design. It is particularly focused on the preparation of two dishes: bubbly juice and false skin. For the first dish, three samples were prepared with egg white protein (EWP) and xanthan gum at pH 4.6 and pH 7.0. At pH 4.6 (isoelectric point), there were substantial differences of the interfacial dilational modulus of EWP when xanthan gum was added. At 1 mg/ml xanthan, the system showed a very strong interface (high viscoelasticity) compared to the other samples. Measuring half drainage time revealed which samples were the most stable. The properties discussed were related to stability. For the false skin dish, edible films were made by gelatin extracted from cod skins (A solution) and a mixture of cod skin gelatin and commercial gelatin (AG solution). The results showed that tensile strength (TS) of gelatin films increases almost by 25%, elongation at break (EAB) by 14%, and the Young modulus (E) by almost 100% when increasing protein concentration. To confirm water plasticizer effect, the results were compared to a gelatin film made with 30% glycerol (plasticizer). Water content affects to a great extent the mechanical properties of the films. Finally, images of the dishes are presented in order to have a full view of the purpose and the results obtained.*	Article; Proceedings Paper	

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	Title	Author	Year	Published at	DOI	Link	Keywords	Abstract	Literature Type	Notes
WOS	Visualizing food: photography as a design thinking tool to generate innovative food experiences that improve food well-being	Machin, JE; Moscato, E; Dadzie, C	*2021*	EUROPEAN JOURNAL OF MARKETING	10.1108/EJM-02-2020-0141	http://dx.doi.org/10.1108/EJM-02-2020-0141	Design thinking; Photography; Food well-being; Experiential pleasure of food; Visual research	*Purpose - This paper examines the potential of photography as a design thinking method to develop innovative food experiences that improve food well-being. Design/methodology/approach - This paper is a critical review of research using photography to examine the complex physical, emotional, psychological and social relationships individuals have with food at personal and societal levels. Findings - The conceptual legitimacy of photography is well-established in the social sciences but has been missing from design thinking practices. Photography is particularly well suited to understand the highly visual practice of food and to design innovative food experiences. Research limitations/implications - Practical and ethical issues in the use of photography are considered as a research tool. Future research should examine photography as an integrated tool in the entire design thinking process. Practical implications - A table of photographic research methods for all stages of design thinking, from empathy to prototyping, is presented. Best practices for the successful implementation and interpretation of photography in food design thinking are discussed. Social implications - Photography is a uniquely inclusive and accessible research method for understanding the social problem of food well-being and designing innovative food experiences. Originality/value - To the best of the authors knowledge, this paper provides the first conceptual foundation for the use of photography in design thinking. The paper identifies novel photographic methods that can be used to understand problems and generate solutions. It provides guidelines to successfully integrate photography in the design of innovative food experiences that improve food well-being.*	Review	
WOS	Food-related lifestyles across generations	Arenas-Gaitan, J; Peral-Peral, B; Reina-Arroyo, J	*2022*	BRITISH FOOD JOURNAL	10.1108/BFJ-04-2021-0393	http://dx.doi.org/10.1108/BFJ-04-2021-0393	Consumer behaviour; Market segmentation; Generations; Food-related lifestyles	*Purpose There is a strong relationship between the changes that society faces and food. The aim of this work is to analyse the differences between generations related to their behaviour towards food. Design/methodology/approach To characterise people's behaviour towards their food, the authors will use a tool, food-related lifestyles (FRL), which has been widely employed in the literature. To achieve this general objective, the authors are going to break this down into two operational goals. Firstly, the authors will analyse if there exist differences in generations regarding the characteristics which make up their FRL. Secondly, the authors will determine if there is an association between generations and specific FRL. The authors have developed a study of 1,200 consumers. Findings The results have enabled is to achieve the proposed aims and to describe the behaviour of each generation towards its FRL. There are significant differences in 15 of the 22 dimensions of the LRF analysed according to generations. The authors noted six consumer segments with regard to the FRL and the authors have found a relation between the characteristics which define the generations and their FRL. The findings enable offering implications for the food sector and for society. Originality/value Firstly, this research spans the five generations present in the current society. Secondly, most works are centred on how FRL correspond with the consumption of specific products. This paper is dedicated to going thoroughly into the intergenerational similarities and differences regarding their FRL. Thirdly, the FRL tool has been especially applied in the context of Central European and Nordic countries, the USA and South-East Asia. In this work, the authors apply the FRL to a Mediterranean cultural context, Spain, characterised by a Mediterranean diet and by a significant family and social component in the diet.*	Article	
WOS	How do pastry and culinary chefs design sensory complexity?	Palczak, J; Giboreau, A; Rogeaux, M; Delarue, J	*2020*	INTERNATIONAL JOURNAL OF GASTRONOMY AND FOOD SCIENCE	10.1016/j.ijgfs.2019.100182	http://dx.doi.org/10.1016/j.ijgfs.2019.100182		*New products offer a benchmark showing how complexity is often a driver of food innovation. For example, in the dairy category, innovation processes have upgraded yogurts to gourmet desserts. These innovations are often characterized by different multi-textured and/or multi-flavored layers. However, there are still unanswered questions: How far should innovation go in terms of complexity? How can food complexity be designed? How is structural complexity perceived by consumers? Here we set out to answer these questions following a four-step approach. First, ten pastry and culinary chefs from the Institut Paul Bocuse were asked to design three variants of a recipe of their choice varying in complexity: low, medium and high complexity. The recipe was to be sweet or savory but consumed cold and served in an opaque verrine (thick-walled cup usually used for small portion dish or amuse-bouche). Second, each chef was invited to an individual 1-h interview to understand how he/she intended to deliver complexity. Third, a technical testing session was set up with five tasters to perform sensory characterization of each sample. Fourth, fifteen naive participants (150 in total) evaluated the complexity of each sample within a triad (balanced order). The results showed that the chefs used different design strategies to attain complexity. They combined different flavors and tastes, they contrasted textures, they worked on the temporal evolution of sensations, and they aimed to surprise the consumer. The sensory results attest the effect of the strategies used, and results from naive participants confirm that the products exhibited the expected complexity levels intended by chefs. This study identifies several ways to drive food design through mastery of sensory complexity. It also highlights the benefits for the science of working with chefs.*	Article	
WOS	Designing food experiences for well-being: a framework advancing design thinking research from a customer experience perspective	Batat, W; Addis, M	*2021*	EUROPEAN JOURNAL OF MARKETING	10.1108/EJM-12-2020-0893	http://dx.doi.org/10.1108/EJM-12-2020-0893	Design thinking; Customer experience; Experiential pleasure of food; Food experience design (FED); Food well-being	*Purpose Literature from across design studies and innovation management, as well as food marketing research evidence, is examined to highlight the interdisciplinary and experiential research approaches to food consumption and well-being. This conceptual paper aims to address the need to expand the food industry's goals by considering its contributions to the consumer's overall food well-being. Food experience design (FED) seeks to understand how food professionals can design healthy and pleasurable food experiences aimed at enhancing people's food well-being. FED does so by proposing a holistic and integrative framework. Design/methodology/approach This approach examines design thinking by conducting an analysis of the multidisciplinary literature. This paper addresses the gap in the literature by advancing the theoretical and empirical understanding of food design thinking through the lenses of experiential theory and consumer well-being. Findings This review paper clarifies the scope of FED scholarship and offers a call for collective efforts to establish a focused body of knowledge that leads food marketing professionals and scholars to adopt an experiential perspective to food consumption and production focused on experiential pleasure of food as a driving force for consumer's well-being. Research limitations/implications The review paper addresses the need to expand the food industry's goals by considering its contributions to the consumer's overall food well-being. FED seeks to understand how food professionals can design healthy and pleasurable food experiences aimed at enhancing people's food well-being. FED does so by proposing a holistic and integrative framework. Practical implications This research provides designers with the operative tools to create innovative food experiences and increase the food well-being of consumers. Toward that end, designers need to extend their skills and evolve their language and competencies to create valuable dialogues with other stakeholders involved. Collaboration requires many other premises. This paper contributes to the discussion by identifying and clarifying them. Originality/value This research highlights the imperative to take multidisciplinary, transformative and experiential approaches to researching food innovation strategies from a consumer's well-being perspective.*	Review	

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wos	Behavioural intention to purchase organic food: Bangladeshi consumers' perspective	Kabir, MR; Islam, S	2022	BRITISH FOOD JOURNAL	10.1108/BFJ-05-2021-0472	http://dx.doi.org/10.1108/BFJ-05-2021-0472	Awareness; Bangladesh; Extended TPB; Organic foods; Sustainable development	*Purpose This research aims to assess the consumers' intention to purchase organic foods for balanced physical and mental growth. It examines the decision-making process in buying organic products built on the extended Theory of Planned Behaviour (TPB). This study designed a model to show how Bangladeshi consumers wish to purchase organic food. Design/methodology/approach Data were collected by means of a formal questionnaire from shoppers in different markets who buy organic and non-organic foods. Statistical analysis is done by applying partial least square-structural equation modelling (PLS-SEM). Findings Findings refer that among the four antecedents called social norms (SN), personal attitude (ATT), perceived behaviour control (PBC) and health consciousness (HC), three (ATT, PBC and HC) have a significant influence on the intention to consume organic food in Bangladesh. The only cognitive variable called social norm (SN) has no statistically significant impact though it positively relates to the behavioural intention to purchase organic food. Research limitations/implications The fitted model did not consider any moderating or mediating variable though there might be such effects regarding organic food purchase and consumption. The study includes a major portion of the respondents from less than Tk. 20,000 monthly income group, which is a price-sensitive group from Bangladesh perspective. Hence, this price sensitivity might have a slight influence on the results of the study. Practical implications This study includes four variables as the predictors to describe consumers' intention to purchase organic food products in Bangladesh. Among the predictors, health consciousness or awareness is found to be most powerful. Though consciousness is the key, the awareness of Bangladeshi citizen regarding organic food is lower than in other parts of the world. Hence, the research model directs the policymakers to increase awareness through different social campaigns. Social implications Under Vision 2040 of promoting sustainable development, the government of Bangladesh is trying to increase organic food consumption. Production and consumption of organic food will positively impact society since organic fertilizers are environmentally friendly and do not harm society. This research promotes a strategy formulation to ensure the consumption of organic foods for a positive social impact. Originality/value This study is a unique research to concentrate on the importance and factors influencing the consumption of organic foods in Bangladesh, a recently graduated developing country. Furthermore, it extended the Theory of Planned Behaviour (TPB) and proposed a new conceptual framework.*	Article	
wos	Consumers with high education levels belonging to the millennial generation from Denmark, Greece, Indonesia and Taiwan differ in the level of knowledge on food waste	Fox, D; Ioannidi, E; Sun, YT; Jape, VW; Bawono, WR; Zhang, S; Perez-Cueto, FJA	2018	INTERNATIONAL JOURNAL OF GASTRONOMY AND FOOD SCIENCE	10.1016/j.ijgfs.2017.11.005	http://dx.doi.org/10.1016/j.ijgfs.2017.11.005	Food waste; Awareness; Knowledge; Sustainability; Consumers; Denmark; Greece; Indonesia; Taiwan	*The objective of the study was to identify how consumers' level of knowledge and awareness on food waste differed among four countries: Denmark (DK), Greece (GR), Indonesia (IDN) and Taiwan (TWN). The study was conducted online through SurveyXact and, in total, 610 respondents were used for the data analysis. The majority of respondents from all four countries were young (18-35), had medium to high education and we consider at the present study that our respondents belong to the millennial generation. The results of our study showed significant differences in the level of knowledge and awareness on food waste among the four different countries. Respondents from all four countries appeared to be concerned about food waste and related issues, but did not know the level of their own contribution in generating food waste. TWN was the country that showed the highest level of knowledge on consumer-generated food waste.*	Article	
wos	Food Democracy: Critical Lessons in Food, Communication, Design and Art	Vokoun, JA	2018	DESIGN AND CULTURE	10.1080/17547075.2018.1469964	http://dx.doi.org/10.1080/17547075.2018.1469964			Book Review	
DRS	Food+Design - transformations via transversal and transdisciplinary approaches	Juri, Silvana; Massari, Sonia; Reissig, Pedro	2022	DRS Biennial Conference Series. The chairs' introductory editorial for the theme track 'Food+Design - transformations via transversal and transdisciplinary approaches		https://dl.designresearchsociety.org/drs-conference-papers/drs2022/editorials/9	gastronomy	*The role of design and designers is changing. As users get involved with designers in thecreation of products and services, new territories for the discipline are opened. It ispossible that from now on design will be a co-participatory activity in which users become part of the entire project, not only as references or recipients but as realresources that shape the all project (Leadbeater, 2006).In order to do so it is necessary to actively promote a dialogue that will enable theconvergence of groups of people and organizations, optimising and potentiating theirresources, skills and ideas. The idea is to create the tools which will facilitate/supportstakeholders in the process of promoting radical innovation and providing a platformfor collaboration, co-creation, and participation.In this paper a draft of a possible system will be presented, which was designed to assistin the convergence and sharing of ideas between citizens and urban authorities, so as tocreate a collectively imagined scenario responding to specific needs and proposingalternative solutions to existing problems.This system is the result of Creative Places research findings', and was designed to trialtheir implementation in a real case scenario*		
DRS	Designing with Empathy: Implications for Food Design	Hermannsdóttir, Hafdís Sunna; Dawes, Cecilie; Gideonsen, Hanne De Moor, Eva;	2016	DRS Biennial Conference Series		https://dl.designresearchsociety.org/drs-conference-papers/drs2016/researchpapers/237	Identity design; Brand mark	*A broken food system has resulted in a wide disparity between food producers and consumers, undermining the perceived link between food and nature. It is therefore important to re-create the relationship with food when co-designing future solutions. This requires new tools and a new set of skills among food designers. Designing with empathy is well known from design processes as a way to respect human experiences. We therefore question if empathy for food can be used when co-designing the food system of tomorrow? The purpose of this paper is to explore what empathy means in food design, and how empathy for food can be created among users and stakeholders involved in the design process. The aim is to contribute to strengthening food design as a field that can contribute to tackle future food-related challenges in a responsible way.*		
DRS	Troubling the impact of food future imaginaries	Wilde, Danielle; Dolejsova, Marketa; van Gaalen, Sjef; Altarriba Bertran, Ferran; Davis, Hilary; Raven, Paul Graham	2021	Nordes Conference Series		https://dl.designresearchsociety.org/nordes/nordes2021/researchpapers/25	perishability; sensory; sustainability	*Global scale transformation is urgently required if we hope to stabilise socio-ecological systems. While design contributes to social and ecological un-sustainability, it can also play a pivotal role in bringing us towards more positive, inclusive ways of living and being within the planetary ecosystem. Experimental, co-creative design provides powerful tools for prompting critical thinking and inspiring new imaginaries. We engage with these possibilities, and explore their role in societal transition. We present an experimental food design workshop that aims to engender fantastical and plausible possibilities for regenerative (more-than-human) future food practices. We reflect on how to move from such imaginaries to 'implementable nows' that is, transformative innovations that might be enacted today. We provide inspiration and methodological guidance for designers interested in the social imaginaries brought forth through world-making efforts; leapfrogging the adjacent possible and reorienting situated practices towards better – socio-ecologically just – futures.*		

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	Title	Author	Year	Published at	DOI	Link	Keywords	Abstract	Literature Type	Notes
DRS food design	Introduction: Food and Eating Design252016	Schifferstein, Hendrik N.J.	*2016*	DRS Biennial Conference Series		https://dl.designresearchsociety.org/drs-conference-papers/drs2016/editorials/10				
DRS food design	Designing New Meanings: A Design Method for Eating Design	Zampollo, Francesca	*2012*	DRS Biennial Conference Series		https://dl.designresearchsociety.org/drs-conference-papers/drs2012/researchpapers/156		*This paper proposes and tests a design method for Eating Design, a sub-discipline of Food Design. The proposed design method focuses on the fact-finding phase of the design process and aims at generating data that can then be used by designers to create design ideas and final design solutions for eating events. The method aims at producing new meanings on aspects of the eating events, in order to be subsequently used to generate design solutions that present a radical change in meaning. The proposed method employs the use of a visual tool called Visual Explorer used mainly as a leadership tool, and therefore new in design research. In order to make the proposed method specific for generating data for the design of eating events, the Five Aspect Meal Model has been adopted as its structure. The method has been tested using two different samples: a users sample and an interpreters (experts) sample in order to compare the results. The method has produced dialogues which have been transcribed and analysed using thematic analysis. This allowed generating two different sets of themes representing the characteristics of people's ideal eating events. The two sets of themes have subsequently been tested in a workshop where designers used the given themes as the bases to create design ideas and design scenarios for an eating event. Results show that the themes were easy to use and understand and were indeed adequate for the generation of ideas and design scenarios for eating events. Some of the final design scenarios also seem promising in potentially being developed into design solutions presenting a radical change in meaning.*		
DRS food design	Rethinking food: Co-creating citizen science for sustainability transitions	Wilde, Danielle; Hupe, Anna Lena; Trahan, Sarah; Abel, Caroline Guinita; Kjærsgaard Longueval, Solvejg; McLaughlin, Corey	*2021*	Nordes Conference Series		https://dl.designresearchsociety.org/nordes/nordes2021/researchpapers/18		*Transforming human food practices to be more sustainable is not straightforward. The human food system and international sustainability advice are both global in scope. Whereas food practices are locally situated and personal. ReThinking Food grapples with this challenge, using co-creative citizen science and the Future 50 Foods Report. The research involves cooking with; sharing food, recipes and stories; surveys, interviews, online and in-person activities. Through these actions, participants exchange knowledges with the food, their families and each other; become agents of change in their social groups and workplaces. They enact agency, shifting scales from human to nonhuman; near to far; from one-to-few-to-many. Building on this insight, we propose a hybrid engagement strategy for fostering connections across scales, from the personal to the planetary. The strategy strengthens the effectiveness of bottom-up societal transformation efforts.*		
DRS food design	Proceedings of DRS2018 International Conference									
DRS food design	Proceedings of DRS2016 International Conference VOL 09 session 22									
ACAD	The Circular Food Economy	ZAMPOLLO, Francesca	*2018*	Academia.edu			food industry	*This article examines local food system (LFS) development pathways inthe context of recent regulatory reforms in Hungary implemented to promote lo-cal product sales and short food supply chains (SFSCs). Taking a SFSC approach,two case studies demonstrate how new types of local food systems initiated bynon-farmers attempt to shorten the distance between consumers and producers. The ındings are based on qualitative key informant interviews and aconsumer attitude survey data that seek to identify how LFSs promote or enact sustainablefood supply and how consumers perceive the nature of the relationships between consumers and producers. The results from the 'Gödöllő Local Food Council' andthe 'Szekszárd local food system' show various speci ıcities and challenges of new types of emerging urban civic food networks. The article concludes by pointing to critical factors and tools for developing LFSs, as well as re ılecting on the role of original research to facilitate change for a more sustainable food system.*	Article	*Circular economy model for the food industry*
ACAD	Design-Driven Innovation VS User-Centred Design. Not Really…	ZAMPOLLO, Francesca		https://www.academia.edu/12638395/Design_Driven_Innovation_VS_User_Centred_Design_Not_Really_?email_work_card=view-paper			design practice; food design;	*What are the differences and similarities between Design-Driven Innovation and User-Centred design? In this article I first give an overview of these two design approaches, identifying the main differences. One of the most defining characteristics of Design-Driven Innovation is that this approach aims ad designing for meanings. Employing this approach means being interested in understanding sociocultural contexts in order to define new languages. User-centred design on the other hand does not share this particular goal. Even if both approaches have a participatory approach, a major difference is identified in the type of people involved in the design collaboration. User-centred design is of course centred on users, whereas Design-Driven Innovation is centred on interpreters, a figure whose relevance in the design process is explored and explained. After presenting the debate between these two approaches, this article emphasises that they are not on the same level, as Design-Driven Innovation is proposed as an additional phase of the design process, the very first research phase adopted before including users. Finally the article highlights these approaches' similarity in the type of design methods employed.*	Paper	
ACAD	Short Food Supply Chainsas drivers of sustainabledevelopment	BRUNORI, Gianluca		https://www.academia.edu/32860037/Project_acronym_FOODLINKS_Knowledge_brokerage_to_promote_sustainable_food_consumption_and_production_linking_scientists_policymakers_and_civil_society_organizations			engagement, scale	*new territories for the discipline are opened. It ispossible that from now on design will be a co-participatory activity in which users become part of the*		

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academia	Role of certification bodies in the organic production system	SPADONI, Roberta		https://www.academia.edu/2984193/Role_of_certification_bodies_in_the_organic_production_system				In this paper the activity of certification bodies in the organic supply chain is analysed in a broad perspective. A general description of organic certification in different regions is provided, with a brief discussion of the harmonization and mutual recognition issues stressing how differences in regulations and laws enforcement generate transaction costs. We investigate the performance of third-party certification bodies in Italy and provide preliminary findings about their objectiveness and independence		
academia	Short Food Supply Chains and Local Food Systems in the EU. A State of Play of their Socio-Economic Characteristics			https://www.academia.edu/7810305/Short_Food_Supply_Chains_and_Local_Food_Systems_in_the_EU_A_State_of_Play_of_their_Socio_Economic_Characteristics						
IJFD	What design can bring to the food industry	Schifferstein, Hendrik N.J.	2016	International Journal of food Design. Volume 1: Issue 2	https://doi.org/10.1386/ijfd.1.2.103_1	https://www.ingentaconnect.com/content/intellect/ijfd/2016/00000001/00000002/art00003;jsessionid=7fkjp22g2d67l.x-ic-live-01	chef; designer; facilitation; food industry; holistic approach; innovation; sustainability; tools	Even though designers are specifically trained to create and build new products, their contribution to innovation in the food industry is relatively small. The industry seems unfamiliar with the ways in which designers operate and may be unaware of the added value they may provide. Therefore, this article identifies the potential roles that designers could fulfil within large food companies. The development of new consumer products requires knowledge of target consumers, production technology and the business environment. These three types of expertise are often concentrated in different departments. Although highly experienced product experts such as culinary chefs may be able to integrate this knowledge, involving designers may be a more fruitful strategy. First of all, designers tend to approach design challenges holistically, which broadens the scope of the project. As a consequence, designers will provide more innovative solutions, which can guide multiple project aspects simultaneously (production, packaging, marketing). Second, designers shape their own tools, which will engage the others involved. Third, designers are equipped to manage the product development process and can facilitate cooperation between the disciplinary experts. Fourth, designers can play a role in bringing together and integrating the knowledge from the different disciplines. By strengthening these roles, large food companies can deliver innovations that address actual consumer needs, provide a positive contribution to society and consolidate long-term profitability and growth.For designers, foods represent interesting prototyping materials, which are firmly rooted in daily, cultural practices and can be enjoyed through all the senses. Their regional, seasonal and perishable character challenges designers to connect consumers with agriculture, trading and processing methods.	Article	
IJFD	The specifics of food design: Insights from professional design practice	Bordewijk, Marielle; Schifferstein, Hendrik N.J.	2020	International Journal of Food Design, Volume 4, Number 2, 1 August 2020.	https://doi.org/10.1386/ijfd_00001_1	https://www.ingentaconnect.com/content/intellect/ijfd/2020/00000004/00000002/art00001	design practice; food design; health; packaging; perishability; sensory; sustainability	What makes food design different from other types of industrial product design? Based on over twenty years of professional design practice and food experience research, the authors present a variety of insights – clustered in five overarching themes – that provide an invaluable view on the specifics of the food realm for practicing designers in this field. First of all, foods are based on materials that used to be alive, which makes them highly perishable. Before the widespread introduction of mass transportations systems, foods were usually produced and consumed in the same region. But food technologists continuously try to improve the ways to preserve foods and invest in packaging that protects them in order to increase shelf life and to make them more widely available, while consumers seem to demand more and more freshness. The second challenge is presented by the need to make the food system more sustainable, addressing agricultural production and its impact on biological diversity and the quality of the living environment and also focusing on the amount of waste generated in terms of food or its packaging material. Third, the food people eat is absorbed and transformed into the building blocks of their bodies. Food fulfils a basic human need, and thus, there is a challenge to provide people access to the right amount of safe and nutritious food, in order to keep them healthy. Fourth, food is a source of sensory stimulation that enriches people's lives. This provides a new sensory spectrum to design for – including flavour and mouthfeel – and it challenges designers to trigger appetite, rather than aesthetics. The fifth challenge addresses preparation practices and the associated cultural differences. Because food stuffs can be prepared in multiple ways, many different products can be created, varying from raw to highly processed, and addressing multiple consumer needs, eating occasions and market segments. These five themes provide interesting challenges for designers that should be tackled in order to provide a healthy and sustainable future for the next generations on this planet.	Article	
IJFD	Food Futures: How Design and Technology Can Reshape Our Food System, Chloé Rutzerveld (2018)	Fuster, Albert	2020	International Journal of Food Design, Volume 4, Number 2, 1 August 2020, pp. 173-175(3)	https://doi.org/10.1386/ijfd_00004_5	https://www.ingentaconnect.com/content/intellect/ijfd/2020/00000004/00000002/art00004#Refs	Food Design; Multidisciplinary	The industry seems unfamiliar with the ways in which designers operate and may be unaware of the added value they may provide. Therefore, this article	Book Review	
IJFD	Experiencing Food, Designing Dialogues: Proceedings of the 1st International Conference on Food Design and Food Studies (EFOOD 2017)	Ilieva, Rositsa T.	2020	International Journal of Food Design, Volume 4, Number 2, 1 August 2020, pp. 181-187(7)	https://doi.org/10.1386/ijfd_00006_5	https://www.ingentaconnect.com/content/intellect/ijfd/2020/00000004/00000002/art00006			Book Review	
IJFD	Dealing with excess consumption: Moving beyond redeem, replace and reduce	Christensen, Lotte Dalgaard; Averbuch, Bonnie	2020	International Journal of Food Design, Volume 5, Numbers 1-2, 1 December 2020, pp. 93-102(10)	https://doi.org/10.1386/ijfd_00012_3	https://www.ingentaconnect.com/content/intellect/ijfd/2020/00000005/f0020001/art00006#	built environment; cognitive bias; moral hazard; opportunity costs; rebound effects; sustainable consumption	Our current consumption patterns cause high levels of CO2 emissions. Encouraging sustainable lifestyle changes is one tool among many to reduce emissions. Looking towards the public health literature, we identify three strategies for dealing with excess consumption: redeem, replace and reduce. We highlight the benefits and challenges that individuals face when employing these strategies. Finally, we present a promising approach to moving beyond individual-level strategies and their challenges.	Article	
IJFD	Food Design education	Reissig, Pedro	2017	International Journal of Food Design, Volume 2, Number 1, 1 April 2017, pp. 3-13(11)	https://doi.org/10.1386/ijfd.2.1.3_2	https://www.ingentaconnect.com/content/intellect/ijfd/2017/00000002/00000001/art00001			Article	

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	Title	Author	Year	Published at	DOI	Link	Keywords	Abstract	Literature Type	Notes
IJFD	Food, research, design: What can food studies bring to food design education?	Fabio Parasecoli	*2017*	International Journal of Food Design, Volume 2, Number 1, 1 April 2017, pp. 15-25(11)	https://doi.org/10.1386/ijfd.2.1.15_1	https://www.ingentaconnect.com/content/intellect/ijfd/2017/00000002/00000001/art00002	food culture; food studies; food systems; methodology	*As the presence and visibility of food design grows in academia, synergies are particularly promising with food studies, which promotes and practises the analysis of cultural, social and political issues concerning the production, distribution and consumption of food in its material and cultural aspects, as well as in its social and political implications. The analytical tools developed in food studies have the potential to inform and integrate the practical applications that food design focuses on, while food design methods can help food studies scholars to include applied approaches in their work. The article presents three cases in which food studies analysis and methods were introduced in educational formats otherwise focussed – explicitly or not explicitly – on design.*	Article	*paid*
IJFD	Embracing complexity in Food, Design and Food Design	Biderman, Jonathan LeRoy	*2017*	International Journal of Food Design, Volume 2, Number 1, 1 April 2017, pp. 27-44(18)	https://doi.org/10.1386/ijfd.2.1.27_1	https://www.ingentaconnect.com/content/intellect/ijfd/2017/00000002/00000001/art00003	communication; complexity; context; disciplines; ethics; food system; inclusive; scale	*Food Design depends on development of a comprehensive, shared understanding of both Design and Food. This article argues that this emerging, multidisciplinary field must wrestle with several contentious and nuanced issues on the way to establishing itself as a field of inquiry and a community of practice. First, before we can talk about Food Design, we must understand what we mean by 'design' and by 'food', the latter being a particularly broad, complex and context-variable landscape. Second, the many fields that come to the design table have different sets of values, vocabulary and premises that present a challenge to interdisciplinary collaboration. And third, the universality, diversity and importance of food require that Food Design takes the broadest possible perspective on the food system and be deliberate about seeking out and including every voice and stakeholder in the conversation. There are all sorts of ways that design decisions may affect food and eating behaviour no matter how far removed from food the decisions may seem, and it is the responsibility of a discipline calling itself Food Design to be explicit in its awareness of that. This article concludes with several illustrative examples of the complexity of Food Design.*	Article	*paid*
IJFD	Differentiating consumption contexts as a basis for diversity in food design education: Eating in or eating out?	Schifferstein, Hendrik N.J.	*2017*	International Journal of Food Design, Volume 2, Number 1, 1 April 2017, pp. 83-101(19)	https://doi.org/10.1386/ijfd.2.1.83_1	https://www.ingentaconnect.com/content/intellect/ijfd/2017/00000002/00000001/art00006	context; culinary; curriculum; design skills; education; food design; food industry; food service	*Designers can play a significant role in providing the world population with food that is produced in a sustainable way, is tasty and healthy and can form the centrepiece in culinary experiences. However, design students will need to acquire more knowledge specific for the food domain if they want to qualify as cooperation partners for other food professionals. In addition, because the food domain is vast and diverse, food design education could focus on various application domains, resulting in design students with different profiles.* *In this article, I make a distinction between designing for a person who consumes food at home or is eating out. The first case emphasizes the food itself in the home situation, including food production, packaging, food buying, shelf life, preparation, serving, handling leftovers and waste disposal. In the second case, the consumer's meal experience depends on the atmosphere in the restaurant, interactions with serving staff, the offerings on the menu and quality of the dish. In addition, several processes take place outside the consumer's view, such as food preparation, storage, personnel management and business administration.* *Based on these topics and comparison with adjoining educational curricula, a list of training topics is derived. For all food designers, this consists of general design capabilities, food science, cooking skills, consumer insights and sustainability issues. In addition, the 'eating at home' designer should gather knowledge on agricultural production, food technology and food industry business, whereas the 'eating out' designer will need to focus mainly on food product knowledge, culinary technology, equipment engineering, restaurant design, consumer dining behaviour and hospitality business.*	Article	*paid*
IJFD	Food design and food studies: Discussing creative and critical thinking in food system education and research	Massari, Sonia		International Journal of Food Design, Volume 2, Number 1, 1 April 2017, pp. 117-133(17)	https://doi.org/10.1386/ijfd.2.1.117_1	https://www.ingentaconnect.com/content/intellect/ijfd/2017/00000002/00000001/art00008	creative thinking; critical thinking; design thinking; food design; food pedagogy; food studies; food systems education; transdisciplinarity	*In the past 20 years, two new disciplines have been created and have evolved, first as two separate subjects, and now more and more interconnected: food studies and food design studies. The motive behind the recent success and popularity of education in the agri-food sector lies in the fact that everywhere in the world, the boundaries around the world of food and nutrition have widened. More attention is dedicated to communication, proximity, connections, social and cultural values, and the construction of new food systems. There is a growing need to find new ways to defeat food paradoxes (malnutrition, non-sustainable production systems and the battle against food waste, to name a few). In the past 10 years, the design method has been consolidating into the field of food. Participatory design and co-creation in food experience design became popular along with the discipline of food design. However, the interest in emerging and innovative forms of teaching models in academic and non-academic scenarios in agri-food education is increasing and becoming a challenging issue in food studies pedagogy. The learning objectives of food system education are continuously redefined with the aim of providing food experts with the necessary skills to change food systems and support more sustainable and healthier food value chains. In this article four case studies are presented in which a design approach was applied into different food system education programmes. The author of this article has personally been involved in each of the four scenarios, as a teacher and as a designer. Complex questions concerning the intersection of food system educational contexts, collaboration skills, critical knowledge production and creative approaches are considered in this article. The author presents the dimensions of critical/creative thinking in the scenarios and concludes with a discussion of the challenges and resources for food studies and design educators. The lessons learned in this article provide a starting point for discussing creativity in food system learning and education. On the basis of the analysis carried out in this article, design appears to be an interesting research method to apply to food system education, capable of creating innovative interactions between disciplines and new critical and creative mindsets for food experts. Increasing creativity and critical thinking as learning objectives in food system education will generate more sustainable food cultures and communities.*	Article	*paid*
IJFD	A recipe development process model designed to support a crop's sensory qualities		*2021*	International Journal of Food Design, Volume 6, Number 1, 1 April 2021, pp. 3-26(24)	https://doi.org/10.1386/ijfd_00022_1	https://www.ingentaconnect.com/content/intellect/ijfd/2021/00000006/00000001/art00001	agricultural biodiversity; culinary funnel; grey peas; novel food; plant-based; product development	*The aim of this study is to apply a recipe development process designed to unfold how to start from a crop – especially less known landraces and varieties – and maximize its culinary utility. How can such a recipe development process be modelled? What more than the recipe itself can be obtained from the recipe development process? In this study, the objective is to create a basic recipe for grey peas that supports the crop's sensory qualities, and test it in different food products. Using the recipe development process model, our results suggest that minced grey peas, which have authentic nutty flavours, pronounced chewing resistance and a combination of soft and hard textures, can be used to create appealing plant-based patties. When minced grey peas are fried in oil, greater taste intensity, spiciness, umami and complexity are achieved. Additional applications of minced grey peas were also identified, suggesting that the recipe development process can yield information on how to develop another food product with the same basic recipe. The recipe development process we suggest – the culinary funnel – can thus be used to explore the culinary possibilities of lesser known landraces and varieties.*		

Systematic Literature Review

Title	Author	Year	Published at	DOI	Link	Keywords	Abstract	Literature Type	Notes
Food Design for Business	ZAMPOLLO, Francesca	*2015*				meal model		Conference Proceedings	*You can add or remove 'Progress' options under the 'Data > Validation...' menu on the web.*
The Future of Food	Future Brand		futurebrand.com						
Designing Sustainable Energy for All	VEZZOLI, Carlo	*2018*						Book	
Situation Consumption, space and Place	GOODMAN, Michael; GOODMAN, David; REDCLIF, Michael	*2106*						Book Section	
Design fos Sustainability: An Evolutionary Review	CESCHIN, Fabrizio; GAZIULUSOY, Idil		DSR2016			design for sustainability		Conference Proceedings	
Co-designing tools to empower further, independent co-design: collaborating with diverse individuals with lived experience of food poverty						engagement-scale			
Service-Oriented Perspectives in Design Science Research								Book	
Território + gastronomia + design: uma introdução	BRITTO, Ágata; FRANZATO, Carlo					gastronomy		Book	*Existe uma estreita conexão entre gastronomia e design: ambos são processos de criação. Pode-se explorar esta conexão combinando esses processos. Nesse sentido, podem-se usar métodos cocriativos, tendo como referência o território, para aproximar produtores, consumidores, designers, cozinheiros, outros profissionais, gourmets e degustadores. Até porque são ações compartilhadas, dentro de um espaço singular, que geram a gastronomia local.*
Territórios criativos: Design para a valorização da cultura gastronômica e artesanal	KRUCKEN, Lia et al					territorial development and planning		Book Section	*omo potencializar, de forma sustentável, a economia criativa de um território? □ Quais ferramentas e estratégias de design podem contribuir para o desenvolvimento de projetos no território, e em especial para o mapeamento, o registro e a difusão dos recursos e saberes locais? Essa publicação nasceu a partir de questões que designers e pesquisadores identificaram durante projetos de pesquisa em design que têm como foco o território*
Design Science Research_ A Method for Science and Technology Advancement									
Designing an enabling system, Scenarios for a Collaborative City and its Creative Places	FRANQUEIRA, Teresa						*The role of design and designers is changing. As users get involved with designers in thecreation of products and services, new territories for the discipline are opened. It ispossible that from now on design will be a co-participatory activity in which users become part of the entire project, not only as references or recipients but as realresources that shape the all project (Leadbeater, 2006).In order to do so it is necessary to actively promote a dialogue that will enable theconvergence of groups of people and organizations, optimising and potentiating theirresources, skills and ideas. The idea is to create the tools which will facilitate/supportstakeholders in the process of promoting radical innovation and providing a platformfor collaboration, co-creation, and participation.In this paper a draft of a possible system will be presented, which was designed to assistin the convergence and sharing of ideas between citizens and urban authorities, so as tocreate a collectively imagined scenario responding to specific needs and proposingalternative solutions to existing problems.This system is the result of Creative Places research findings', and was designed to trialtheir implementation in a real case scenario*		
Local Food System Development in Hungary	BALÁZS, Bálint	*2012*					*This article examines local food system (LFS) development pathways inthe context of recent regulatory reforms in Hungary implemented to promote lo-cal product sales and short food supply chains (SFSCs). Taking a SFSC approach,two case studies demonstrate how new types of local food systems initiated bynon-farmers attempt to shorten the distance between consumers and producers.* *The □ndings are based on qualitative key informant interviews and aconsumer attitude survey data that seek to identify how LFSs promote or enact sustainablefood supply and how consumers perceive the nature of the relationships between consumers and producers. The results from the 'Gödöllő Local Food Council' andthe 'Szekszárd local food system' show various speci□cities and challenges of new types of emerging urban civic food networks. The article concludes by pointing to critical factors and tools for developing LFSs, as well as re□ecting on the role of original research to facilitate change for a more sustainable food system.*	Paper	

Systematic Literature Review

Title	Author	Year	Published at	DOI	Link	Keywords	Abstract	Literature Type	Notes
Designing with Empathy: Implications for Food Design	Hermannsdóttir, H., Dawes, C., Gideonsen, H., and De Moor, E. (2016) Designing with Empathy: Implications for Food Design, in Lloyd, P. and Bohemia, E. (eds.), Future Focused Thinking - DRS International Conference 2016, 27 - 30 June, Brighton, United Kingdom. https://doi.org/10.21606/drs.2016.520	*2016*	https://dl.designresearchsociety.org/cgi/viewcontent.cgi?article=1488&context=drs-conference-papers					Research Conference	
PUBLIC AND COLLABORATIVE: EXPLORING THE INTERSECTION OF DESIGN, SOCIAL INNOVATION AND PUBLIC POLICY	Manzini, Ezio; Staszowski, Eduardo. DESIS	*2013*	https://www.desisnetwork.org/wp-content/uploads/2017/04/DESIS_PUBLIC_lab-Book.pdf						
A Socio-technical Framework for Collaborative Services	Manzini, Ezio; BAEK,Joon Sang	*2012*	https://www.researchgate.net/publication/262804658_A_Socio-technical_Framework_for_Collaborative_Services					DRS 2012	
revisar tudo da Anna Meroni, EBBrodie, Sangiorgi			https://www.researchgate.net/profile/Anna-Meroni-2						
Design for Social Innovators	Meroni, Anna; Selloni, Daniela	*2018*	https://www.researchgate.net/publication/332577872_Design_for_Social_Innovators						
Catalysing social resources for sustainable changes	Manzini, Ezio; Meroni, Anna		DOI:10.4324/9781351278003-16						
The Virtuous Circle Design Culture and Experimentation			https://www.researchgate.net/publication/327250835_The_Virtuous_Circle_Design_Culture_and_Experimentation						
A socio-technical approach to design for community resilience: A framework for analysis and design goal forming			DOI:10.1016/j.destud.2015.06.004						
Design led innovation to rejuvenate local food systems and healthy communities: An emerging research agenda		*2013*	DOI:10.1109/TIDMS.2013.6981254						
https://gastronomica.org/2012/06/18/bourdieus-food-space/						taste		food, bourdieu ,taste	
The stakeholder map: A conversation tool for designing people-led public services	Fanny Giordano, Nicola Morelli, Amalia De Götzen, Judith Hunziker fgi@create.aau.dk Aalborg University Copenhagen		ServDes2018 - Service Design Proof of Concept Politecnico di Milano 18th-19th-20th, June 2018. https://servdes.org/wp/wp-content/uploads/2018/07/48.pdf						

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https://d335luupugsy2.cloudfront.net/cms%2Ffiles%2F10183%2F1629325182entrevista.pdf	pesquisa qualitativa ECHOS
https://mitpress.mit.edu/books/speculative-everything	speculative everything
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https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2r	RtD
research in Art and Design	Frayling, RtD
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https://www.google.com/imgres?imgurl=https%3A%2F%2Ffiverr-res.cloudinary.com%2Fvideos%2Ft_	Questionarios sobre food
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Theoretical support	Notes
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https://www.youtube.com/channel/UCIMMr8pSgOdBdVZYIyZX3Yg	Donella Meadows system thinking
Consumer Culture Theory CCT	FGV Rio, COPEAD
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Immersion Protocol

	Data collection formats	Risks and Benefits	Actions to Mitigate
General Guidelines	□ participants who are being observed know that researchers are present and that they are currently being observed in situations that are relevant to the research question □ activities conducted in person, held individually or in small groups, in Portuguese or English according to each venue □ data collected recorded through written and audio notes to self, photos of the participants, and processes of the daily routine at the establishment □ audio notes-to-self transcribed with WhatsApp AI □ audio recordings from interviews transcribed with Turbo Scribe □ transcriptions or notes translated with AI whenever necessary □ necessary stationery items for each session (sticky notes, paper, pen, etc.) are provided by the researcher □ login and access to digital tools, when necessary, will also be provided □ term of consent for observations, interviews, and contextual prototyping	□ collaboration in the research exposes the participant to the risks inherent to the professional activity of a restaurant, including the handling of sharp equipment and utensils, heat sources, and the usual interactions between professionals and customers	□ these risks can be minimized using the correct personal protective equipment (PPE), professional posture, and attention in the work areas, where the participants will be observed without interference □ all participants involved, including the researcher, are trained and experienced, which mitigates the risk of accidents □ in the unlikely event of a physical injury during this immersion, the first aid protocols provided for in the establishment will be followed
		□ being observed or interviewed may cause discomfort or embarrassment	□ to soothe this feeling, we emphasize that there is no evaluation or judgment during the immersion process and that this process is solely intended to collect information to develop the research □ to alleviate possible negative feelings caused, part of the time spent during the immersion is for the researcher to familiarize herself with the macro structures of the teams and only then inquire about a sector or individual participant □ empathy is paramount, as openness to questions or interruptions, whether momentary or permanent, throughout the interaction
		□ regarding the benefits, participation in this research will not bring any direct individual gain. However, the results of this study may benefit the restaurant industry collectively	□ we emphasize that participation is voluntary and that all participants are free to decide about their participation, including withdraw their consent at any stage without penalty

Method	Specific Objectives	Duration	Purpose and Expected Outputs
Participant Observation Work Along	□ act as a team member, mixing participant observation with contextual interviews, monitoring, and collecting internal data (documents, recipes, processes, etc.) □ collect and analyze data in-depth □ attention to how the researcher's presence can influence behavior	□ the expected duration of this phase is 1 to 4 months □ the sessions will be held during the establishment's opening hours □ the sessions will be held during the participant's working shift, with a maximum duration of 2 hours per session	□ purpose: identify deficiencies and potentialities in the establishment's ecosystem, learn from practice □ expected outputs: insights into internal processes, corporate culture, informal networks, and specific tools or workarounds participants may use
Participant Observation Shadowing	□ follow participants through their physical spaces to observe behaviors and experiences. It can range from a few minutes to several hours □ researchers may conduct contextual interviews during critical moments and clarify boundaries beforehand	□ the expected duration of this phase is one sessioon □ the sessions will be held during the establishment's opening hours □ the sessions will be held during the participant's working shift, with a maximum duration of 2 hours per session	□ purpose: identify deficiencies and potentialities in the establishment's ecosystem, acquire tacit knowledge □ expected outputs: an in-depth understanding of participant behavior, including overlooked or unconscious actions, revealed through detailed observations
Participant Observation Day in the Life	□ combine participant observation with contextual or retrospective interviews to uncover motivations and attitudes □ observe participants' daily lives in context, over a certain period of time	□ the expected duration of this activity is 2 to 3 hours □ the sessions will be held during the establishment's opening hours	□ purpose: understand routines, behaviors, environments, and interactions, often to map stakeholders/develop or validate personas, and explore the broader context of needs. □ expected outputs: insights, possible draft of journey maps (timeline of actions) or system maps (stakeholder interactions)
Contextual Interview (in-depth, semi-structured)	□ interviewees tend to be more open, relate to the environment, remember more specific details □ expert participants bringing valuable perspectives □ observe the environment and peers, as interviewees can relate to surrounding elements □ document the situational context in which the interview takes place	□ the expected duration of this phase is 45 minutes to 2 hours □ the sessions will be held during the establishment's opening hours □ the sessions will be held during the participant's working shift	□ purpose: collect in-depth and secondary information to better comprehend the context □ integrate what participant reports with context, element of the environment, bringing up underlying motivaitons for specific actions □ expect: in-depth, more detailed information to build knowldge and meaning
Contextual Prototyping	□ prototype a version of the product/service in the actual business □ conduct fertile sessions to build applicable and appropriate solutions for identified struggles □ validate efficiency and effectiveness of co-produced solutions, generating insights to increment the product/service further □ as any contextual research, it´s an effective way to grasp nuances that are needed to implement a working solution	□ the expected duration of this phase is one to four sessions per proposal □ the sessions will be held during the establishment's opening hours □ the sessions will be held during the participant's working shift, with a maximum duration of 2 hours per session	□ purpose: efficiently assess whether or not a prototyped solution is a fit for that context or not □ expected outputs: evaluate and/or validate digital and physical artifacts resulting from the generative sessions

https://www.thisisservicedesigndoing.com/methods . Chapter 5

Immersion Synthesis

Venue	Participant	Method	Period	Duration
Enoteca SaintVinSaint	Owner	Contextual Interview	October 2023	2 hours
	Chef	Work Along + CP . Contextual Interview	October 2023	1 month
	Cook	Work Along . Contextual Interview	October 2023	1 month
	Pastry/Baker	Work Along + CP . Contextual Interview	October 2023	1 month
	Server	Shadowing . Contextual Interview	October 2023	4 hours . 1 hour
	self	Day in the Life (diner)	August 2023	3 hours
31 Restaurante	Chef/Owner	Contextual Interview . Shadowing	November 2023	3 hours
	self	Day in the Life (diner)	November 2023	2 hours
The Slow Bakery	Owner/GM/Baker	Work Along . Contextual Interview	July 2023 . Feb 2024	6 months . 3 hours
	self	Work Along (chef) + Contextual Prototyping	July 2023 . Feb 2024	6 months
	Cook 01	Work Along + CP . Contextual Interview	July 2023 . Feb 2024	6 months . 1 hour
	Cook 02	Work Along + CP . Contextual Interview	July 2023 . Feb 2024	6 months . 1 hour
	Cook 03	Work Along + CP . Contextual Interview	July 2023 . Feb 2024	6 months . 45 minutes
	Procurement	Work Along + CP . Contextual Interview	July 2023 . Feb 2024	4 months . 1 hour
	Stockist	Work Along + CP . Contextual Interview	July 2023 . Feb 2024	4 months . 1 hour
	Consultant	Contextual Interview	February 2024	45 minutes
	Server	Shadowing . Contextual Interview	Sep. 2023 . Feb 2024	4 hours . 1 hour
	Server	Shadowing . Contextual Interview	Sep. 2023 . Feb 2024	4 hours . 45 minutes
	Supplier	Contextual Interview	February 2024	45 minutes
	Supplier	Contextual Interview	February 2024	1 hour
	Supplier	Contextual Interview	February 2024	1 hour
Lano-Alto	Owner	Shadowing . Contextual Interview	March 2024	1 weekend . 2 hours
	self	Day in the Life (guest)	March 2024	2 days
Ocyá	Owner/Chef	Contextual Interview	December 2024	2 hours
	self	Work Along	October 2023	6 hours
Hotel Arpoador	Owner/Chef	Contextual Interview	April 2024	2 hours
	self	Day in the Life (guest)	December 2023	2 days
Pasto Nomade	Chef/Owner	Work Along . Contextual Interview	May 2024	1 week . 3 hours
	Admin/Owner	Contextual Interview	July 2024	1 hour
	Pastry Chef/Owner	Work Along . Contextual Interview	July 2024	1 week . 2 hours
	self	Work Along (cook)	July 2024	1 week
	self	Day in the Life (diner)	May 2024	3 hours
Forno Brisa	B2B, Logistics, Quality Manager	Contextual Interview	June 2024	45 minutes
	External Relations & Sustainability Manager	Contextual Interview	June 2024	1 hour
	pastry	Contextual Interview	June 2024	1 hour
	baker	Contextual Interview	June 2024	1 hour
	self	Work Along (pastry and bakery)	June 2024	12 hours
	self	Day in the Life (coffee event, diner)	May 2024	3 hours
Il Fungo Eclettico	Owner	Contextual Interview	September 2024	45 minutes
Scovami	Owner	Contextual Interview	September 2024	1 hour
Manu Buffara	Sous Chef	Shadowing . Contextual Interview	December 2024	4 hours . 1 hour
	Cook 01	Shadowing . Contextual Interview	December 2024	4 hours . 1 hour
	Cook 02	Contextual Interview	December 2024	45 minutes
	Sommelière	Contextual Interview	December 2024	1 hour
	self	Day in the Life (diner)	December 2023	4 hours
Total participants	**30**		**Oct 2023 . Dec 2024**	**14 months**

Concept and Value Usability Test

Venue	Participant Role	Tasks	Period
Enoteca SaintVinSaint	*owner*	concept and value overall analysis	November 2024
	chef	sign up, scenario chef	November 2024
	experienced cook	sign up, scenario experienced cook	November 2024
	junior cook	sign up, scenario junior cook	December 2024
The Slow Bakery	*owner*	concept and value overall analysis	October 2024
	head of operations	sign up, scenario chef, concept and value overall analysis	October 2024
	chef	sign up, scenario chef	October 2024
	experienced cook	sign up, scenario experienced cook	November 2024
	experienced cook	sign up, scenario experienced cook	November 2024
	junior cook	sign up, scenario junior cook	November 2024
Ocyá	*owner*	concept and value overall analysis	October 2024
Pasto Nomade	*chef/owner*	sign up, scenario chef, concept and value overall analysis	September 2024
	experienced cook	sign up, scenario experienced cook	September 2024
	junior cook	sign up, scenario junior cook	September 2024
	junior cook	sign up, scenario junior cook	September 2024
CB	*industry expert*	concept and value overall analysis	October 2024
ML	*chef Instructor*	sign up, scenario chef, concept and value overall analysis	December 2024
JN	*chef/owner*	Pilot: sign up, all scenarios, concept and overall analysis	August 2024
RD	*executive chef*	Pilot: sign up, all scenarios, concept and overall analysis	August 2024
	Total participants	**19**	

industry expert: business owner, consultant, instructor, head of operations, etc.

chef: full decision-making power, management position

experienced cook: over 2 years experience, senior position at job

junior cook: over 1 year experience, middle position at job

System Concept & Value Usability Test

Introduction

Present the projetc;

Present the Cconcept and Value Usability Test;

Explain the moderator´s role - unscripted follow-up questions could emerge to clarify participants' behavior and expectations;

Clarify any questions regarding computer and mobile use;

Inform of the Protocol for the session (Table 13) - read and conducted similarly to avoid bias or interfere minimally with the results;

Thinking aloud - explain what it is and the importance of this practice.

Background interview

Participant´s experience and knowledge in kitchen operation

Participant´s experience and knowledge of Google Suite, navigation

Participant´s interest or understanding of similar databases/tools

Specific Questions

1. As a cook interested in sustainability, do you do online research?
2. What reference websites or projects do you have?
3. What mainly drives your attention at them?
4. What do you consider your main struggles when doing this type of research?

Scenarios . Tasks

Cooks

1. BROWSE: After a busy morning service, you're in the kitchen during a brief break when you overhear a colleague talking about a new platform offering sustainable cotent and practical tips for kitchen operations. They're mentioning how it helps chefs deal with some of the daily challenges like menu planning, ingredient substitution, techniques. Curious, you decide to check it out for yourself.
2. SIGN UP: You grab your phone, search for the platform, and find it easily. The sign-up page pops up, offering the chance to create an account. You enter your details, feeling optimistic about potentially improving your kitchen's sustainability practices.

Junior Cooks

3. RUINED PRODUCE: It's a hectic day in the prep kitchen, and you're feeling the weight of the clock. The kitchen is buzzing with activity, and there's barely a moment to think. The chef had planned an Asian-inspired salad featuring eggplants, but when the delivery arrived in the morning, you found most of the eggplants ruined by worms. "It´s nature, she says". The plan has gone out the window, and now you need to think quickly. With time running out, you remember the new platform the chef mentioned—it's been a bit of a lifesaver lately. You quickly log into the website and try to find recipe ideas or ingredient substitutions
4. INGREDIENT OVERLOAD: It's the afternoon, and you've just finished prepping for the dinner rush when you realize that there's been a huge delivery of pumpkins. The chef ordered them as a secondary ingredient, but now there are so many that you can't possibly let them go to waste. You know it's going to be a challenge to use all these pumpkins, and there's a risk your regular customers might start noticing the abundance of pumpkin in everything if you're not careful. You browse the tools section for a quick guide on how to cook pumpkin in multiple ways and not waste any bit —roasting, steaming, and pureeing—and decide to use these techniques to create a variety of preparations: roasted pumpkin wedges, pumpkin puree to replace the original eggplant in one dish, and pumpkin added to a stir-fry for a twist on the original menu.

Experienced Coooks

After signing up, you find yourself on the platform's homepage. The content is neatly organized into two main sections: one dedicated to in-depth theoretical resources on sustainability in the HoReCa industry, and another offering practical tools to help you implement these practices in your daily work.

3. RUINED PRODUCE: You´ve just received a delivery with a batch of bananas that were meant for the day's dessert. As a produce-based menu, receiving items in short advance is just part of your routine. However, when you open the crate, you see that the bananas are already over-ripe—too mushy for the intended dish of banana fritters. The chef had planned to use them, but now you need to make a decision quickly to ensure they don't go to waste. You take a moment to think it through. You've got a solid grasp on ingredients, and you know that ripe bananas must be perfect for some recipe. You can´t make drastic changes to the menu without the chef, and you still need to meet the expectations of the customers. You quickly check the platform for ideas on how to use overripe bananas without taking a big risk.

4. LAST MINUTE SUBSTITUTION: During the lunch service, a customer reported an allergy to tomatoes but insisted on having the dish. The server has tried to explain this, but it is no use. Now you have to adjust quickly. It´s a nice, recurring customer with this newly found dietary restriction. This request comes in during the busiest part of the service. You take a deep breath, assess the situation, and consider your options. You know the newly discovered platform will help you.

Chefs

1. BROWSE: You're in the middle of your workday, handling a not-so-busy lunch service, when a colleague mentions a new platform designed to help improve sustainability in kitchen operations. They mention it's free and offers resources like case studies, checklists, and tools to make it easier to address challenges like food waste and energy management. Intrigued, you decide to take a moment to check it out.
2. SIGN UP: After quickly navigating to the website, you're prompted to sign up for free access. As you sign up, you learn that while all the content seems to be is free, you need to create an account to access or download specific tools and receive updates via a newsletter. You decide to sign up using your details, eager to explore more about how sustainability can be integrated into your kitchen."
3. NOT ENOUGH: You're preparing for a big weekend event, and one of the key dishes—sweet potato gnocchi—is essential for the menu. However, your usual supplier calls to inform you that they don't have enough sweet potatoes to fulfill your order, and they can't provide a timely substitute. You can't alter the dish, as it's a signature item, and the event's reputation is on the line. You know all too well that some last-minute changes could affect both quality and costs. You decide to log into the platform for help.
4. PRICING: You've just finished designing the weekly menu for your restaurant, and now it's time to ensure the prices reflect your costs while maintaining profitability. Each dish has been carefully crafted, but you need to do the math to make sure your pricing is in line with the food cost percentages you've set for your business. However, you don't have a cost sheet. You've been so busy with other tasks that it's always been pushed to the back burner. You've tried setting one up in the past, but the formulas and design were too much to handle, and it ended up being more trouble than it was worth. Now, you're facing the challenge of pricing everything without the organized structure you need. You remember seeing something in that new platform, they must have something to help you get started.
5. HIRING: Your restaurant is expanding, and you need to hire a new member for the team. However, finding the right person for the job can be time-consuming, and you want to ensure you're choosing someone who aligns with the values of your restaurant. You heard your HR manager saying something about an up-to-date list of potential candidates, each with professional information, previous experiences, and detailed recommendations. You find the one candidate that stands out to you, and upon scheduling the interview, she mentions a few embarrassing situations from her previous job. You don´t risk being this kind of company, and want to get more knowledgeable of standards on workplace culture, sustainability, and ethical practices. You decide to interview the candidate and look for guidelines to ensure your company is ethical and aligned with your values.
6. RESOURCES: As the chef/manager, you are constantly aware of the impact of energy, water, and food waste on your restaurant's costs and sustainability efforts. You want to improve the management of these resources, but tracking them manually has always been challenging. You turn to the platform to see if it can help.

Debriefing and post-test Questions

https://docs.google.com/forms/d/1JPe249S4Qsh14DFBlL7ScDe6ljpLk_6KTwhCJxV9H48/edit

Observe

How easy or difficult was the general website navigation?

How well does the website respond to the needs and goals of the user?

Can users successfully fulfill the proposed task using the available resources? (is it effective?)

Was their experience was satisfying or enjoyable (engaging)?

Quotes

The appropriate use of wording and terminology

Steps or paths taken to reach the desired content

Common path errors and inconsistencies, and recovery.

B Corp and FMGS

B Corp	Governance	Workers	Community	Customers
	Mission & Engagement	Financial Security	Environmental Management	Customer Stewardship, Health & Wellness
	Ethics & Transparency	Health, Welness & Safety	Air & Climate	Education & Impact Improvement
		Career Development	Water, Land & Life Conservation	
		Engagement & Satisfaction	Renewable Energy	Arts, Media & Culture
		Workforce Ownership & Development	Toxin Reduction	Economic Empowerment
			Resource Conservation	
			Environmental Education	Support for Purpose-Driven Enterprises
			Environmental Innovation Practices	Serving those in Need

FMGS	Governance	Workers	Community & Customers	Environment
Policies and Commitments		Staff Wellbeing	Community Engagement & Social Impact	Ingredient Sourcing
	Commitment to reduce environmental impact on : food waste, non-organic waste, carbon emissions, energy or water use			Environmental Impact, Energy, Waste Management;
Actions	Partner with suppliers who pay fair wages, empower workers, and use sustainable practices	Pay the lowest wage equivalent to - or higher than - the living wage for the area;	Consider the amount of salt, sugar and fat when developing recipes;	Do not serve endangered seafood species or seafood with significant sustainability concern
	Ingredients certification or high social-environmental standards;		Support our community through staff volunteering, donations and collaboration with local charities and organizations;	Work to increase seasonal, local, heritage ingredients
	At least a portion of energy coming from green source			Significant reduction of waste production in the last 12 months;
				Actions to reduce our carbon footprint;
Marketing and Communication	Communicate about our efforts to source ingredients sustainably;	Front-of-house team is trained to communicate about sustainability efforts to diners.	Communicate about our efforts to treat our staff fairly and support the community;	Communicate about our efforts to improve our environmental impact;

Awards and Certifications

	Michelin	FMGS	MoC	B Corp
Approach	Recognition-based	Certification-based	Research-driven, primarly advisory	A broad, cross-industry certification
Scope	fine-dining restaurants in the Michelin Guide	All HoReCa business	Restaurants, institutional food service, policy-makers	A broad, cross-industry certification
Strenghts	High visibility and esteem due to Michelin's prestigious brand Influences fine dining and mainstream gastronomy	Objective evaluation Transparent and comprehensive framework with structured guidance Third-party verification provides credibility	Strong academic and research foundation Integrates public health, nutrition, and sustainability.	Broad, cross-sector impact; trusted certification with rigorous assessment; enhances brand credibility and consumer trust.
Weaknesses	Subjective evaluation, lacking transparency in the process No documentary proof required Criticized for potential greenwashing	Lengthy and detailed assessment may be a barrier for smaller businesses Primarily UK-based, with limited global reach	Focused on institutional and academic collaborations rather than direct restaurant certifications Implementation depends on voluntary adoption	Not specifically tailored to the F&B sector Does not account for industry-specific challenges such as food sourcing or waste reduction in detail
Opportunities	Could improve credibility by introducing clear sustainability criteria and third-party verification	Expansion to more countries and adaptation to different cultural contexts Simplification of certification for easier adoption	Strong potential for integration into restaurant training programs Influence on large-scale food service operations.	Opportunity to develop an F&B-specific track; potential for stronger partnerships with hospitality sustainability programs
Threats	Could face declining trust and be seen as a marketing gimmick rather than a legitimate sustainability certification	Competition from other sustainability certifications may dilute its potential Can be expensive, limiting access to smaller businesses	Slow adoption in commercial restaurants May struggle to compete with more marketing-driven certifications.	Risk of being perceived as too broad or corporate-oriented for small, independent F&B businesses Can be expensive, limiting access to smaller businesses