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# The (de)motives for using food waste reduction apps among hospitality providers

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## Abstract

Digital technology can aid in redistributing surplus meals in hospitality organisations, but little is known about the (de)motives for its use among industry professionals. Yet, a better understanding of these (de)motives can facilitate a more tailored design of technological solutions for sustainability purposes. This study examines managerial perceptions of Too Good To Go, a world's leading app for surplus food redistribution, according to the number of downloads and reviews in both Google Play and iPhone App Store. By applying qualitative methods, through in-depth, semi-structured interviews among foodservice providers in Barcelona, Spain ($n = 42$), the study showcases economic motives as a prime driver of this technology's adoption while environmental motives play a secondary role. Low awareness of food waste generation, a lack of technological expertise, and limited resources represent the main demotives. To facilitate surplus food redistribution, technological solutions should be simplified and enhanced with other functions, such as delivery. The economic benefits of technology use should be emphasised, while making a conscious effort to enhance food waste awareness among industry professionals.

**KEYWORDS**
digital technology, food waste, hospitality operations, managerial attitudes, sustainability

## 1 | INTRODUCTION

Food waste (FW) as a major societal challenge has been recognised by the United Nations and featured in their Sustainable Development Goals (SDGs) (Lemaire & Limbourg, 2019). According to SDG12.3, entitled 'Ensure sustainable consumption and production patterns', for the world's progress towards sustainability, global FW in retail and consumption should be halved by 2030 (FAO, 2023). Voluntary behavioural changes, policy interventions and technological innovations are key for reducing global FW, thus fulfilling SDG12.3 (Joshi & Visvanathan, 2019).

FW is a relevant issue both in the EU and in Spain. According to Eurostat (2022), almost 60 million tonnes of FW are generated in the EU, with 4.3 million, or more than 7%, occurring in Spain alone. Consequently, as part of the EU recommendations for action on FW reduction, the creation of multistakeholder platforms is encouraged to join up efforts to FW prevention (EU, 2019). Further, several EU countries, including Spain, are starting to put up new regulations aiming to prevent FW (e.g. MAPA, 2023).

In retail and consumption, hotels, restaurants, and cafes (cumulatively known as the sector of HoReCa) generate 26% of global FW (UNEP, 2021). This figure is however likely to be an underestimate as

FW quantification in HoReCa enterprises remains challenging (Filimonau et al., 2023). For example, in a study of FW in school canteens in Spain, only 15% of managers stated that FW was measured regularly (Derqui et al., 2020). Likewise, in a study of FW in commercial foodservice operations of Spain, many managers denied wastage using the principle 'if a customer has paid for it, it is not wasted' to justify the lack of FW measurements applied in-situ (Filimonau et al., 2022). As a result, the contribution of the HoReCa sector to FW may be larger in nations with a well-established culture of eating out, such as Spain (Derqui et al., 2016), the UK and the Netherlands (Filimonau et al., 2020), and China (Wang et al., 2017). This showcases the HoReCa sector as one of the keys to global FW reduction (Wang et al., 2018).

A large proportion of HoReCa's FW occurs due to surplus food i.e., excess meals which remain unsold by the end of a business day (Principato et al., 2018). These meals are edible, but they fail to sell because of such reasons as overcooking and cancelled orders (Filimonau & De Coteau, 2019). Managers of HoReCa enterprises attempt to redistribute surplus food by giving it to staff and charities (Derqui et al., 2016; Sakaguchi et al., 2017). However, these redistribution measures are not always effective, and many excess meals are wasted. For example, McAdams et al. (2019) argue that surplus food accounts for 16%–49% of total FW generated in restaurants in Canada while Cordova-Buiza et al. (2022) pinpoint that at least 10% of FW in Peruvian restaurants occurs because of excess meals. More effective redistribution of surplus food is therefore required for FW management in the HoReCa sector (Buczacki et al., 2021). Remarkably, studies have found relevant differences in per capita FW generated across the different European countries (Bräutigam et al., 2014). Moreover, the practice of taking leftovers home is not universally accepted across Europe (France for example) (European Commission, 2011, p. 11).

Digital technology can aid managers of HoReCa enterprises in surplus food redistribution (Cane & Parra, 2020). Smartphone applications (apps), such as Too Good To Go, Olio and Karma (Fuentes et al., 2021) have been developed to provide the HoReCa sector with alternative markets for surplus food redistribution and enable HoReCa customers to rescue excess meals (Moltene & Orsato, 2021). Although these food waste reduction apps (FWRAs) are growing in popularity, there is limited empirical research on how they can contribute to FW management (Harvey et al., 2020), especially within the HoReCa sector (Secondi et al., 2020). Little is known about why managers of HoReCa enterprises and their customers choose to (not) engage with FWRAs and how this engagement can be facilitated (Fragapane & Mortara, 2022).

As stated by Secondi et al. (2020), very rarely do studies on cooked or processed food consider how digital solutions can help in the fight against FW. Further, Harvey et al. (2020) in particular, highlights the need of an exploratory, qualitative understanding of the motivations to use food sharing applications.

This study will partially plug this knowledge gap by exploring the reasons behind the (non-)use of FWRAs by managers of HoReCa enterprises through 42 semi-structured interviews with managers in a major metropolitan region of Spain, Barcelona. By using the Unified Theory of Acceptance and Use of Technology (UTAUT) as a theoretical guide, the study reveals the determinants of managerial (non-) usage of Too Good To Go, a popular FWRA in Europe and North America (Vo-Thanh et al., 2021). Specific goals of the research include explaining the key drivers and barriers for the use of FWRAs, describing potential users, and prescribing measures to encourage adoption. The next section provides further background to this study.

## 2 | LITERATURE REVIEW

### 2.1 | Technology for environmental sustainability in the HoReCa sector

Technology can transit the world's society towards the circular economy (Demestichas & Daskalakis, 2020), and, in the HoReCa sector, it represents a major driver of pro-sustainable innovations (Sharma et al., 2020). For example, restaurants and cafeterias can set composters for on-site FW recycling and recovery (Filimonau & Sulyok, 2021). Technology can make the HoReCa sector more environmentally sustainable when its solutions are coupled with evidence-based policies and voluntary behavioural changes (Bajželj et al., 2020).

Within technological solutions, digitisation in particular can facilitate progress of the HoReCa sector towards environmental sustainability (Narayan et al., 2022). Restaurants can use digital technology for better demand forecasting, thus minimising FW (Martin-Rios et al., 2021) and FW composition analysis, thereby identifying the operational areas for FW interventions (Chawla et al., 2020). Digital technology can also aid managers of HoReCa enterprises to redistribute surplus food (Papargyropoulou et al., 2022).

### 2.2 | Digital technology for FW reduction in the HoReCa sector: A providers' perspective

HoReCa managers can redistribute surplus meals via Food Waste Reduction Apps (FWRAs) which are often viewed as a logical product of the sharing economy (Michelini et al., 2018). The sharing economy advocates (better) utilisation of spare capacity for the purpose of market diversification, new sale channels, value maximisation, reinforced social cohesion, and environmental conservation (Morone et al., 2018). In the HoReCa sector, surplus meals represent such spare capacity and FWRAs offer a low cost alternative to FW disposal (Cane & Parra, 2020). By engaging with FWRAs, managers of HoReCa enterprises can pay less for municipal solid waste collection (Secondi et al., 2020) and mitigate such operational problems of FW as unpleasant odour (Filimonau & Sulyok, 2021).

FWRAs connect managers of HoReCa enterprises where surplus meals are available with potential consumers who can purchase these meals at a discounted price. FWRAs establish a new market to upsell excess food which would have otherwise been wasted (de Almeida Oroski & da Silva, 2023). This enables HoReCa managers to optimise

their revenues and reduce costs (Secondi et al., 2020). Concurrently, FWRAs aid in conserving the environment, thus depicting HoReCa enterprises as 'good corporate citizens' (Apostolidis et al., 2021).

The benefits of FWRAs are effectively summarised by Too Good To Go, a popular FWRA in Europe and North America, which outlines its ethos as to: '*find new customers, showcase your food, turn losses into income, and help the planet*' (Too Good to Go, 2024). The above features are presented by Too Good To Go in no particular order; however, FWRAs are usually portrayed in media and scholarly literature as the '*food rescue apps*', see, for example, The Independent (2021) and Principato et al. (2021). This suggests that the pro-social and pro-environmental features of FWRAs dominate over the financial benefits of their use by providers of surplus food (Apostolidis et al., 2021). Empirical research on the determinants of adoption of FWRAs by HoReCa managers is however scarce (Secondi et al., 2020), and the exact motives to use FWRAs in the HoReCa sector remain unexplored.

Another knowledge gap is attributed to the demotives of FWRAs's adoption by HoReCa managers. As of January 2024, circa 28900 HoReCa businesses in the UK have signed up for Too Good To Go (2024). However, this figure constitutes only 8% of the total number of UK foodservice providers that is, 362679 (FWD, 2023). The reasons why the remaining 92% of the sector do not engage with Too Good To Go are unknown which calls for a nuanced study.

De Almeida Oroski and da Silva (2023) have reviewed the literature on the use of digital technology by consumers rescuing surplus food from other consumers (C2C) or by businesses rescuing excess food from other businesses (B2B). The review showcases the following barriers in the digital technology adoption. First, poor performance of digital solutions represents a major challenge (Fuentes et al., 2021). Second, limited trust between technology developers and technology adopters hinders proliferation of digital solutions (Mazzucchelli et al., 2021). Third, the challenge of balancing multiple interests of different stakeholders, such as profit maximisation, corporate citizenship, and environmental conservation, implies that businesses may eventually decide against digital technology (Mattila et al., 2020). Fourth, immature legislation on perceived safety of rescued surplus food hampers engagement with digital solutions (Filimonau & De Coteau, 2019). Fifth, the lack of visibility of prospective food rescue collaborators prevents businesses from digital technology's adoption (Schanes & Stagl, 2019). Lastly, the socio-cultural stigma attributed to the idea that surplus food represented a leftover, a food rejected for various reasons, or even a waste, demotivates prospective digital technology users (de Almeida Oroski & da Silva, 2023).

While offering valuable insights, the review by de Almeida Oroski and da Silva (2023) does not differentiate between FWRAs and other digital solutions for FW reduction, such as online platforms. Further, this review is only concerned with C2C and B2B food rescue while the perspective of customers rescuing food from foodservice businesses (B2C), such as in the case of FWRAs, is not addressed. This suggests that the barriers outlined by de Almeida Oroski and da Silva (2023) should be re-tested and validated in the HoReCa context. Better understanding of the (de)motives of HoReCa managers for using FWRAs, such as Too Good To Go, can aid in the design of measures to facilitate the industry's adoption of digital technology with environmental sustainability purposes.

## 2.3 | Digital technology for FW reduction in the HoReCa sector: A consumers' perspective

From the perspective of surplus food consumers, FWRAs enable HoReCa customers to purchase meals at a discounted price (Secondi et al., 2020). The social element of use i.e., when friends and relatives sign up for FWRAs, can also drive adoption (Haas et al., 2022). The sustainability value of food rescue represents another motivation to use FWRAs i.e., the opportunity to save food from being wasted, thus conserving the environment (Mu et al., 2019). Lastly, by rescuing surplus food, consumers can develop a feeling of self-esteem, self-efficacy and/or self-construal (Huang et al., 2021). The latter two features may represent what Too Good To Go defines as the main motives for HoReCa customers to use its app. Too Good To Go appeals to public FW awareness by describing its platform as an '*anti-food waste app*' and positioning its users as '*food waste warriors*' (Too Good To Go, 2024).

The main demotivators of using FWRAs by HoReCa customers are unfriendly app design and/or user interface, limited functionality, and technical bugs (Fuentes et al., 2021) Haga clic o pulse aquí para escribir texto. Technical incompetence provides another demotivator, especially for 'older' generations of users (Mu et al., 2019). Lastly, de Almeida Oroski and da Silva (2023) suggest that public denial of surplus food as being valuable and/or suitable for consumption may prevent HoReCa customers from using FWRAs.

## 2.4 | Technology adoption framework

Scholars have extensively examined the processes and motivations behind individuals adopting new information technologies. The UTAUT (Venkatesh et al., 2003) is used in this paper as a theoretical basis to study the main drivers for the adoption of FWRAs By HoReCa enterprises. UTAUT represents a synthesis of various theories and models analysing the determinants of intention and usage of information technology, including the Theory of Reasoned Action, Technology Acceptance Model, Innovation Diffusion Theory, among others. UTAUT aims to elucidate the adoption of new technologies through four predictors: performance expectancy, effort expectancy, social influence, and facilitating conditions. These constructs are defined as follows: performance expectancy is articulated as the extent to which an individual perceives that utilising a technology will augment performance and, therefore, is related to its usefulness. Effort expectancy is characterised as the level of (un)ease associated with the utilisation of the system. Social influence pertains to an individual's perception that others believe (s)he should adopt the new system. Finally, facilitating conditions involve an individual's conviction that there exists an organisational and technical infrastructure to support the use of the system. UTAUT, and its extended derivatives

known as UTAUT2, have been extensively used in studies concerned with the determinants of technology adoption in services organisations, including the HoReCa sector (see Tamilmani et al., 2021 for a review). This includes studies concerned with the factors influencing decisions of HoReCa industry professionals to use 'green technology' for sustainability purposes (Mejia, 2019). This justifies the appropriateness of UTAUT as a theoretical lens to explore the (de)motives of FWRAs' adoption by HoReCa managers. Importantly, UTAUT was preferred in the current study to Technology Acceptance Model (TAM), another popular theoretical foundation aiming to explain technology adoption (Lew et al., 2020), because the major analytical constructs of both theories largely overlap (Palau-Saumell et al., 2019). Given that this study is exploratory by nature and makes use of qualitative research methods, as explained in Methods, the decision was made to inform the design and analysis by UTAUT rather than TAM.

### 2.5 | Summary of the literature review and a research gap outline

Research on surplus food redistribution facilitated by digital technology is growing. However, the focus of studies has been on C2C and B2B surplus food redistribution, thus excluding the B2C perspective from analysis. Further, existing studies have not considered FWRAs but examined surplus food redistribution facilitated by other platforms, such as web-based solutions. Research on B2C surplus food redistribution is rare, especially in the HoReCa sector. Little is known about the (de)motives of HoReCa managers and customers to engage with FWRAs alongside the determinants of this engagement. As argued by Filimonau and De Coteau (2019), digital solutions, such as FWRAs, can supplement other key approaches to FW reduction at the consumer level, such as policy interventions. This highlights the need to better understand how the potential of digital solutions can be effectively harnessed to enable societal progress towards sustainable development goals in the sector of foodservice provision (Principato et al., 2023). This paper will partially plug this knowledge gap with a case study of Too Good To Go, a popular FWRA, the (de) motives for which use will be explored through the lens of UTAUT, a popular theoretical approach to study the determinants of technology adoption by services organisations. To answer our research question, the following objectives (Os) have been defined:

**O1.** To identify and explain the key drivers and barriers for the use of FWRAs among HoReCa providers.

**O2.** To describe the profile of a potential HoReCa user of FWRAs as well as that of the potential end-user.

**O3.** To prescribe measures that could be applied by the FWRAs' developers to encourage their adoption by prospective users.

Section 3 outlines the research methodology.

## 3 | METHODS

Since FWRAs are under-researched in general and, specifically, from the viewpoint of B2C users' (de)motives, qualitative research was undertaken to understand HoReCa managers' attitudes towards FW and their (de) motives towards the use of FWRAs. Indeed, because quantitative research does not provide a thorough understanding of the underlying reasons behind the data, we deemed it essential to conduct an exploratory study. This study was undertaken seeking to understand comprehensively the reasons and mechanisms driving the adoption of FWRAs in the Spanish HoReCa industry (Corley, 2015). As highlighted by Gummesson (2006), employing the qualitative multi-case method, involving interviews with decision-makers, enables the handling of complexity and context. Additionally, as stated by Rowley (2002), case studies can provide insights that may not be attainable through other methods. This is achieved by directing attention towards mechanisms (the actions taken, their reasons, and methods), rather than mere numerical data. (how many, much and often).

Our study is, thus, exploratory in nature, as there has been a lack of prior research on the topic. In this regard, 42 in-depth, semi-structured interviews were conducted with owners or managers of HoReCa enterprises in Barcelona (Spain). Interview protocol adopted an open-question approach within a semi-structured framework without imposing time constraints, with the intention of potentially capturing unexpected results. Subsequently, we could adjust the direction of the discussion based on the responses from the interviewees. This interview protocol was developed based on the literature review and we categorised the questions into three distinct sections. Sample questions included features of an environmentally sustainable restaurant, FW management practices, and motivations and barriers towards using FWRAs.

Interview protocol was designed in English and back translated in Spanish. To ensure face and content validity, interview protocol was piloted prior to deployment with two academics majoring in hospitality management and pro-social marketing and then with four volunteers representing HoReCa enterprises in Spain. Concerns regarding comfort and privacy prompted us to allow interviewees to suggest their preferred interview locations. This approach allowed for the recording of interviews (audio-only) and the notation of interviewee reactions during responses (e.g., non-verbal communication).

Study participants were recruited purposefully for the identification and selection of information-rich cases which could yield useful insights and in-depth understandings rather than empirical generalisations (Palinkas et al., 2015). To capture opinions of users and non-users of FWRAs, both categories of HoReCa businesses were recruited. Iterative analysis of the data was carried out (Thomson, 2011) and, following perceived data saturation, the final sample was formed by 17 current users and 25 non-users of the most popular FWRA in Spain, Too Good To Go, according to the number of downloads and reviews both in Google Play and iPhone App Store. Too Good To Go was also chosen for its relevant penetration in the HoReCa sector in Spain as, according to its website, over 20,000 businesses collaborate with Too Good To Go in this country (Too Good to

Go, 2024). Participants were selected with the aim of capturing diversity within the Spanish HoReCa universe. The sample encompassed a wide range of businesses, including traditional tapas restaurants, bakeries, coffee shops, takeaways, hotel restaurants, caterers, and ethnic restaurants. We also ensured a balanced participation in terms of outlet size, from small stores without tables to those with up to 40 tables (see Table A1 for a detailed sample description). Interviews were performed face to face in February–March 2022 lasting between 35 and 75 min. Interviews were digitally recorded, transcribed verbatim and professionally translated in English. No financial incentives were offered for participation.

Thematic analysis was applied to interview transcripts. A combination of both inductive and deductive methodologies was employed, integrating theoretical concepts with the analysis of the transcripts. The examination of the first 10 interviews led to a preliminary codebook. Subsequent interviews were coded using this codebook, with particular attention given to identifying new (de)motives related to FWRAs. Adjustments to the codebook were made whenever a new influencing factor was observed. Saturation was attained following approximately 30 interviews. The transcripts underwent at least two review sessions. Subsequently, the interviews were coded using the method proposed by Bogdan and Biklen (1997), utilising NVivo software for qualitative data analysis. Initially, our code list consisted of seven categories (Concepts, Causes of FW, Initiatives, Drivers, Barriers, HoReCa user characterisation, Final User characterisation). The paragraphs were then coded using an inductive approach (in vivo encoding), with some interviews being re-coded when new categories emerged. By the conclusion of the research, there were 38 categories for classifying data. Reliability and validity of the findings was also enhanced through the application of a rigorous sampling technique and a standardised data collection procedure.

As recommended by Lune and Berg (2017), to increase trustworthiness of analysis, interview transcripts were independently coded by two members of the research team. The results of data codification were then compared to ensure common meanings. As advocated by qualitative researchers (Crick, 2020; Yin, 2014), to reduce subjectivity, exact quotes from the interviews were used to write up the main findings (Note: U stands for FWRA user and NU stands for non-users in the quotes below).

The constraints of qualitative research design stem from its exploratory approach and the restricted number of companies examined, albeit within the appropriate scope for a multiple case study (Rowley, 2002). Future avenues for research are proposed in section 7, advocating for the incorporation of both qualitative and quantitative methodologies.

# 4 | FINDINGS

## 4.1 | Attributes of a sustainable restaurant

Participants defined sustainability in a HoReCa business exclusively as environmental sustainability. A sustainable restaurant was described as the one sourcing locally, buying seasonal products, using as little plastic, water and energy as possible, and recycling. There was a consensus on the need to reduce water and energy use, and minimise consumption of plastics, in the pathway of the HoReCa sector towards sustainability. Reducing waste was also mentioned as a sustainable practice; however, only FWRAs users referred to FW minimization as a sustainable restaurant's feature. In the context of FW, surplus meals were mentioned as a problem, but mainly from the perspective of lost profits. Diverse marketing techniques were used to promote sales of excess meals, such as offering them as a "dish of the day" or a chef's recommendations.

## 4.2 | The problem of FW

When asked about FW in general, both user and non-user participants related it to such ideas as hunger, poverty, greed, and sadness, thus viewing it as an ethical rather than environmental issue. Interestingly, there was a polarised view on FW generation in the HoReCa sector. Users of FWRAs argued that most restaurants in Spain, including theirs, generated FW and did nothing or little to minimise it. In contrast, most non-users admitted generating none or very little FW, blaming customers for its occurrence.

Two very specific sources of FW were acknowledged. These were products in displays and buffet leftovers in catering/event services. Product displays were related in certain business models to customer satisfaction and loyalty and were prioritised over sustainability goals, alleging they had an immediate impact on business performance and profitability. A similar rationale was applied to buffets although, in this case, customers were blamed for uneaten food.

> **NU23.** "Most FW is generated on displays or produced by customers not finishing their dishes. We cannot avoid it. However, more and more often they ask for a doggy bag. Further, catering services can generate waste as quite often people do not show up in events".

Thus, it was accepted that certain types of HoReCa businesses, mainly bakeries and cafés or even prepared meals shops and hotels with buffets, had to overproduce so that even before closing customers have a choice. In these cases, FW generation was considered natural as part of their business model (i.e., tempting customers through visual displays) and a marketing tool to enhance customer satisfaction. In this type of business, users stated that FWRAs helped them to reduce leftovers and recover part of their cost. Reducing prices in the last hour before closing, to get rid of cooked or prepared food from the displays, was a regular practice in some cases. This is where FWRAs were seen useful.

To reduce FW, most study participants provided surplus meals to employees. Other initiatives included demand planning, ingredient reuse, and portion size control. Plate waste, when mentioned, was referred to as non-manageable. Several participants donated surplus meals to charities. However, this practice was often discouraged for

hygienic reasons. It was done less frequently compared to some years ago as a result of increased public awareness of health risks, also amplified by COVID-19.

Leadership was underlined as a relevant driver for FW management. The more conscious about sustainability the manager or owner was, the more open they were to change their HoReCa business to reduce FW. Diverse factors prompted the HoReCa sector to use resources more rationally. These included lost revenues due to COVID-19, the economic downturn, the food crisis, or even the current consumer trend towards sustainability. External factors were, thus, provoking a change in the industry. Even the luxury HoReCa segment was moving towards a different mindset, with a more conscious use of resources.

## 4.3 | Motivations and barriers for the use of FWRAs

### 4.3.1 | Drivers for the use of FWRAs

a. *Economic*: Making extra money as the key motivator

Economic drivers were the main motivator for current or prospective use of FWRAs. There was a consensus among current FWRA users that making money out of food that was no longer apt for selling was a key reason why they signed for Too Good To Go. As for prospective users, these considered the income from FWRAs as an extra revenue that was relevant and welcomed, especially in the post-pandemic reality. Coffee shops and bakeries, in particular, where a wide food offering needs to be displayed so that customers can choose from, or even be tempted for impulse buying, generate surplus meals on a daily basis. This makes FWRAs a good opportunity to recover part of the value of finished products that otherwise would need to be disposed of or given to the staff.

> **U6.** "Too Good To Go allows us to not waste our leftovers while we make additional income. Honestly, the latter was the main motivator for us".

> **U8.** "We definitively think more about making profit rather than, you know, thinking about the environment and stuff…"

b. *Business Promotion*: FWRAs can attract new customers and enhance brand image

FWRAs were seen as a key for attracting new prospects. The application itself becomes a communication tool for the HoReCa business, not only aiming to promote it i.e., by creating awareness among potential customers, but also sampling the diverse products in the offering. This is because, in Spain, Too Good To Go customers cannot choose the products included in a Too Good To Go bag and, thus, they are able to try products in the business portfolio that they may not have tried otherwise.

> **U8.** "It [Too Good To Go] is also somehow a bit of advertising; they [customers] can find out about your restaurant in the [Too Good To Go] app".

Further, current users of the app stated that being present in FWRAs had a positive impact on their corporate image, as it helped positioning themselves as a sustainable business. Thus, the perceived image of a FWRA user can be enhanced, as it will be seen by current and prospective customers as a more sustainable business.

> **U14.** "You can use it for promotional purposes: this is marketing! It is a way to show that your business fights against food waste".

Moreover, as customers rate the HoReCa organisations in the app once they have acquired the product, this becomes an additional incentive for businesses to join FWRAs. Positive reviews aid in business promotion, thus enabling cross-marketing between HoReCa businesses and FWRAs.

> **U16.** "I am delighted as we have a 5/5 rating on Too Good To Go and that clearly enhances our reputation!"

Interestingly, some of the current users of the app criticised FWRAs. This was the case when the advertising/promotional driver for joining had been the strongest one. Such users complained about the margin that the app made, showing that when the manager compared the margin obtained from a product sold through the app with its real cost, it was described as a very unprofitable sale. However, it was still perceived as a good deal by those study participants who viewed FWRAs as a way to extract value from products that would otherwise become wasted.

> **U7.** "We joined Too Good To Go for advertising purposes, aiming to attract new customers, this was the one and only reason. However, it turned out not to be profitable at all. It is the app making all the profit; they take advantage in the name of reducing food waste".

c. *Responsibility and altruism*: The 'doing well by doing good' mindset

Although not as frequently mentioned as the economic drivers, the ethical benefits of minimising FW were also underlined. Reducing FW was everyone's task for sustainability-concerned people. From this perspective, some study participants were driven by their sense of good citizenship, personal responsibility, and trying to partake in solving sustainability challenges. The altruistic aspect of rescuing food was also mentioned. In this sense, FWRAs were perceived as an opportunity to do good.

> **U11.** "It is a question of [personal] responsibility. If, being capable of helping people in need, we did not do it, we would be wasting our capabilities".

d. *Education*: FWRAs as a tool to build awareness of the FW problem

It was highlighted that, by participating in FWRAs, HoReCa organisations could increase FW awareness among managers, employees, and customers, which was beneficial. As a consequence, the adoption of FWRAs was described as an investment for the future as increasing awareness of the problem would encourage consumers to reduce FW, thus contributing to a better future and improving the positioning of the firm, following the current consumer trends towards digitalisation and sustainability, especially among Generation Y and Z.

e. *Management*: Managerial Efficiency and Leadership

Some of the current FWRA users recognised the support provided by FWRAs in managing FW. Besides tips on how to reduce FW in business operations, the opportunity to make extra money through Too Good To Go and build more customer oriented business models was appreciated. However, it was stated that, for these models to work, a target consumer of a HoReCa organisation would need to resemble a typical FWRA consumer that is, an 18–30 years old, which was not always the case for the HoReCa market in Spain. As improvement, the possibility of adding a delivery service provided by FWRAs as opposed to the current practice of customer collection was mentioned, as well as asking consumers to bring packaging containers from home to reduce plastic use.

### 4.3.2 | Barriers towards the use of FWRAs

a. Lack of FW awareness, time and resources (perceived complexity), corporate digitisation

Most non-users of the app explained why they did not adopt FWRAs by affirming that they wasted none or very little food. The current FWRA users complained about a lack of time and resources required to manage food rescue. This was also a relevant obstacle among non-users which, together with the required level of corporate digitalization, added to the most relevant barrier i.e., not recognising FW as a business issue. Specific IT equipment requirements were also mentioned as a barrier. Most restaurants in Spain are small, independent, family businesses, having limited resources to invest in digitisation.

> **NU1.** "We are aware that we should do something about food waste, but our bar is too traditional, the owner is not into applications overall".

Despite agreeing that FW management could aid in cost minimization, the cost benefit ratio of joining FWRAs was not always obvious to the study participants. Non-users of the app, in particular small, independent businesses considered the costs in management time would outweigh the economic benefit. Environmental or social benefits alone were not recognised if there was no economic gain. In fact, non-users, as they did not see the economic benefit from the use of FWRAs, considered that HoReCa organisations using Too Good To Go were either doing it for environmental motives or as a way of greenwashing, aiming to be perceived as sustainable. This was mentioned to be the case in particular for some fast food chains.

> **NU1.** "This will probably be used by franchise chains, as they need to work on their brand image".

Further, the fact that most participants (excluding the above mentioned cases in which product displays were relevant) did not acknowledge FW as an issue in their businesses implied that little benefit was expected as a result of minimising it. Thus, in many cases, the cost – benefit equation was considered poor.

> **NU3.** "Implementation costs would overcome the benefits, whether economic, social or ecological".

b. Required (plastic) packaging

The study participants mentioned as a downside an issue related to the required packaging or take away containers for food. Consistently, the fact that the type of food produced should be easily packed was considered a facilitator. Also, certain types of surplus food, such as soups, were perceived as not suitable for take away.

> **NU2.** "Carton packaging is no good for hot meals, and plastic is not sustainable at all"

c. Marketing (perceived image) issues

The non-users of the app argued that joining FWRAs could damage their business image as their customers could think that they were doing it because they were struggling financially. In fact, many non-users referred to the perception of FWRAs by their current and prospective customers as one of the reasons for not joining Too Good To Go. Further, the projected profile of a consumer using FWRAs prevented managers from adoption, as they pictured young consumers with very little purchasing power. Finally, the opportunity of differentiation offered by joining FWRAs was highlighted suggesting that certain types of HoReCa organisations, such as buffet restaurants and bakeries, had more affinity for FWRAs than others.

**NU10.** "My customers would see it as a desperate move to make more money and the image of the restaurant would be damaged".

**NU21.** "This is definitely not for a high-end restaurant at all".

**NU3.** "At the end, it turns out to be a customer in search for low cost food and who does not value your products. It really does not fit with our brand image".

Lastly, the study participants donating surplus argued there was a trade-off because the use of FWRAs would stop them from giving food to charities for free.

**NU 21.** "We could benefit from using these applications, but then we would not be able to collaborate with Caritas [a charity]. We give away leftovers; we do not sell them. I believe it is more important to feed people who really need it".

d. Fear of a negative impact on sales

A fear of losing business because of discounted prices was mentioned, particularly by those HoReCa establishments catering to young customers. Adoption of FWRAs was seen as potentially damaging, by reducing sales and brand image. Hygiene and quality reasons were also discussed with reference to how customers could perceive surplus meals as being substandard:

**NU6.** "This is no good for my business; my customers will not be willing to buy food at the standard price anymore. People would just wait until they could buy the pizza half price".

Finally, one participant was an interesting case as they were a former user of Too Good To Go. They stated that they expected a boost to sale when joining this FWRA due to enhanced visibility of the firm. However, sales turned out to be unprofitable, and they ceased collaboration for this reason. This reinforced the idea that when managers misunderstood the purpose of FWRAs and tried to use them as a promotional tool and compared the margin obtained with the usual profit made in the business, they were disappointed.

**NU8.** "It is an impoverishment of the business; you do not cover costs. Deeply analysed it is all a lie".

Figure 1 summarises the (de)motives for HoReCa organisations to adopt FWRAs.

## 4.4 | Portrait of a user: The antagonism in the perceived image among users and non-users

### 4.4.1 | A 'typical' FWRA adopter

The current users described FWRA adopters as those managed by sustainability-conscious people who, at the same time, were digitally skilled. Further, they described FWRA adopters as being modern, updated and using delivery apps such as Deliveroo and UberEats. Another frequently mentioned feature was related to the type of products offered by the adopters of FWRAs that is, the food that was easy to take away.

The non-users pictured the FWRA adopters differently: on the one hand, they described them as being modern, technology-savvy, and prosocial; on the other hand, they spoke of them as producing a lot of FW due to poor management or lacking infrastructure. FWRAs were referred to, in

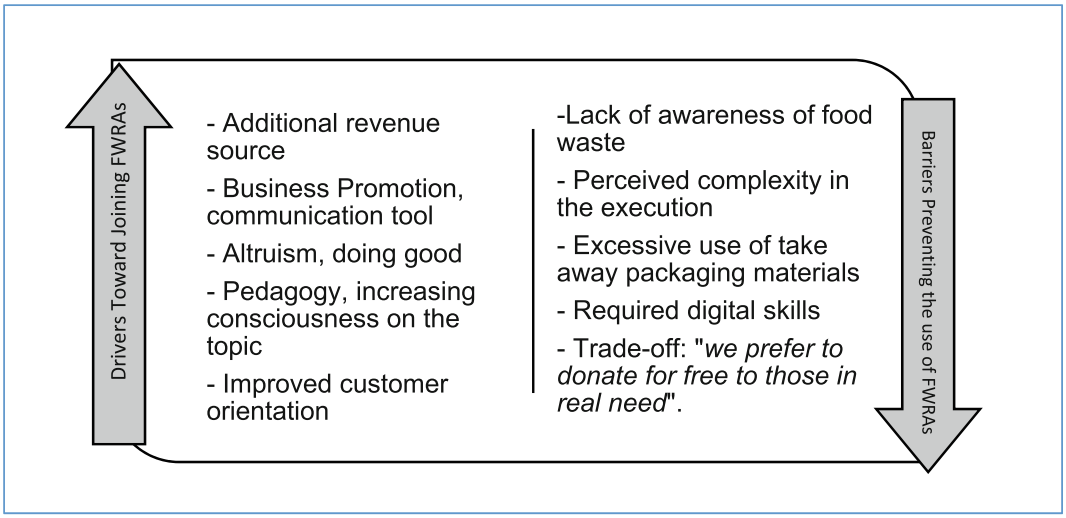


**FIGURE 1** Key (de)motives of adoption of food waste reduction applications (FWRAs).

| FACTOR | Users, typical characteristics | Non-users, typical characteristics |
|---|---|---|
| *Type of business* | ✓ *Bakeries, hotel buffets …*<br>✓ *Products easy to take away and reheat*<br>✓ *Organic / Green* | ▪ *Homemade food* |
| *Size of business* | ✓ *Big franchise chains* | ▪ *Small family business* |
| *Owners' / managers' profile* | ✓ *Young and digital*<br>✓ *Sustainability oriented* | ▪ *Traditional, "old-school"* |
| *Digital skills* | ✓ *Digitally advanced* | ▪ *Laggards, digitally unskilled* |
| *Marketing strategies* | ✓ *Targeting young / sustainability conscious consumers*<br>✓ *Low or Medium priced* | ▪ *Target mismatch*<br>▪ *High-end or very inexpensive* |

**FIGURE 2** Perceived features of users and non-users of food waste reduction applications (FWRAs).

this case, as the digital tools aiding in hiding managerial inefficiencies and poor knowledge, such as adequate stock management and demand forecasting.

> **NU23.** "They must be modern, updated businesses, not old-school like us at all. Addressing young consumers, owned by people who think on the common good, not exclusively on their own benefit".

> **NU17.** "Businesses that do not have the knowhow. They need to use these apps because they do not know how to manage their business, or they do not have the infrastructure to store food properly".

Non-users also described users based on the type of outlet, picturing at first a franchise or an organic or ecological restaurant. Japanese restaurants were also pictured as potential users, alleging they could not reuse ingredients. Further, hotel restaurants and buffets were mentioned as potential FWRA users. Bakeries and supermarkets, in particular, were described as prospective fits because their meals were easy to pack or already prepacked. As for size, FWRAs were considered to be used by medium or large, often chain affiliated HoReCa businesses. Figure 2 summarises the perceived features of FWRA users and non-users as highlighted by the study participants. Typical characteristics of FWRA users are listed in the first column while typical non-users' characteristics are listed in the column on the right.

> **NU6.** "Big restaurants are the most likely to offer this kind of service. They are big enough to add a small activity without jeopardizing the profitability of the restaurants".

#### 4.4.2 | The final consumer: Young, bargain-hunter and digital

Likewise, there were different views on a 'typical' final FWRA consumer. The current FWRA users described a consumer using FWRAs as young, following a healthy-eating diet, with a strong economic motivation behind FWRA adoption, and environment-caring. With regard to the level of environmental concern, they described final consumers as neither extremists nor activists but concerned. Not surprisingly, a 'typical' user of FWRAs was described as technology-savvy and a frequent user of diverse apps.

> **U7.** "A typical customer using the app is young, looking for quantity rather than quality in food".

The non-users provided a radically different perspective. They considered the sustainability concern of FWRA consumers as secondary, adding such features to their profile as low purchasing power, being up to date with technology and familiar with digital tools, such as apps. A final consumer was also described as a bargain seeker, whereby this economic feature was considered primary. Lastly, a final consumer was associated with someone who did not like or want to cook. Figure 3 summarises the perceived features of a final FWRA consumer.

> **NU17.** "This is for consumers who search for low priced places".

> **NU24.** "It must be for youngsters; they are used to order food through their phones".

> **NU16.** "I guess many people will use the app for the deal, without caring at all about the waste".

## 5 | DISCUSSION

Consistent with the literature (Derqui et al., 2016; Filimonau et al., 2023), this current study finds that FW awareness of owners/managers of HoReCa enterprises is low. Alleged wasteless operations demotivate managers from adopting FWRAs. Concurrently, zero-waste foodservices are rare, if not impossible (Principato et al., 2018),

**FIGURE 3** Perceived features of consumers using food waste reduction applications (FWRAs).

| *FACTOR* | As described by USERs | As pictured by NON-USERs |
|---|---|---|
| Common Features | *Young*<br>*Tech-savvy/Up to date in technology* | |
| Differently perceived Features | ✓ *Healthy dieters* | ▪ *Do not care about quality in food* |
| | ✓ *Money driven* | ▪ *Low purchasing power* |
| | ✓ *Environment caring* | ▪ *Hate cooking* |

which showcases the need for a dramatic change in business mindsets. This change should be concerned with manager's willingness and preparedness to accept that FW occurs in different stages of foodservice operations and that they must undertake measures towards its minimization, such as by adopting FWRAs in the case of surplus meals.

Our results are consistent with the work of Schanes and Stagl (2019) as they highlight the lack of visibility of prospective collaborators as a barrier to the adoption of digital technologies. Further, our findings support and extend previous literature by confirming the technical challenge observed by Fuentes et al. (2021), as well as the potential marketing-related benefits (Mattila et al., 2020). However, our results differ from those of Mu et al. (2019) as our participants prioritised economic motivations over environmental ones and a desire to capitalise economic benefits prevails among users. The study enriches the literature on this topic by introducing the increased use of plastic and packaging as barriers to the adoption of FWRAs. Another relevant insight uncovered is the perception by HoReCa managers of a potential contribution to FW awareness that may arise from firms joining these new applications.

Interesting is that, while many HoReCa owners/managers recognise the need to become more sustainable as this is what customers want and what they feel is 'the right thing to do', they refuse to acknowledge FW in their operations, often blaming external factors, including staff and customers, for its occurrence. Again, this underlines the need for a shift in owners/managers mentality as only when the FW problem becomes acknowledged and quantified, it can be effectively managed (Eriksson et al., 2019).

As for the motives of owners/managers of HoReCa enterprises to join FWRAs, these are largely economic, such as additional sales income, new customers, increased store footfall, sampling of products in their portfolio, increased brand awareness or even an enhanced corporate image through being perceived as more sustainable. This finding questions the utility of FWRAs, such as Too Good To Go, to primarily excel in environmental conservation and building more cohesive and collaborative societies (Fragapane & Mortara, 2022). The current study shows that a desire to capitalise on the economic benefits provided by FWRAs prevails among surplus food providers. This highlights that some current and prospective users do not consider FWRAs in line how these digital solutions would like to be seen by the public.

The barriers in FWRA adoption among HoReCa enterprises are poor availability of resources, such as time and labour, and a lack of digital skills. This suggests that FWRAs are most likely to be adopted by HoReCa establishments possessing these resources and skills i.e., large, chain affiliated enterprises owned/managed by young, technology-savvy individuals. However, the bulk of the HoReCa sector is represented by small-to-medium sized, or even micro, enterprises (Filimonau & Uddin, 2021). This questions the utility of FWRAs given that the largest share of their target market of surplus food providers lacks the necessary adoption attributes.

The findings on the (de)motives of FWRAs' adoption by HoReCa managers are well aligned with the theoretical framework of UTAUT. First, in terms of performance expectancy as the main element of this theory, the study participants repeatedly elaborated upon the (predominantly economic) benefits of using Too Good To Go, thus confirming that perceived usefulness, in this case the financial gains, played a major role in the HoReCa's managers views on the potential for (not)adopting this FWRA. Multiple studies underpinned by UTAUT and conducted in the HoRECa context have indicated the same tendency of industry professionals (Hao, 2021), and the current study adds empirical evidence to literature, but specifically in the context of 'green' technology adoption. Second, effort expectancy as another core element of UTAUT was frequented in the study participants' responses. More specifically, the need for Too Good To Go to be easy and straightforward to use was often discussed. This is again well aligned with literature showcasing the importance of easy deployment and implementation of technological solutions in HoReCa enterprises for the managerial propensity to adopt them (Palau-Saumell et al., 2019). Third, facilitating conditions as another main element of UTAUT, were featured repeatedly in interviews. More specifically, digital capabilities of HoReCa enterprises alongside senior leadership support determined the extent to which the study participants were (un)willing to adopt FWRAs. This finding demonstrates the relevance of digital skills and ethos of business owners for technology uptake as previously shown in literature (Filimonau et al., 2022). Lastly, although social influence as the final element of UTAUT was less pronounced in this study's findings compared to the other elements of this theoretical model, there was nevertheless evidence in the data that the level of FWRAs' uptake by HoReCa businesses known to the study participants could potentially influence their decision to (dis)engage with Too Good To Go. Thus, this current study adds to the empirical evidence of UTAUT application to explain the determinants of organisational embracement of 'green' technology exemplified by FWRAs in the HoReCa sector of Spain.

In terms of HoReCa specialism, the novel contribution of this study to literature is in establishing that bakeries, coffee shops and sushi bars represent natural target markets for FWRAs. For these HoReCa enterprises, FWRAs offer a helpful tool for managing their business. In such businesses, FW generation is often considered the lesser of two evils when compared FW to losing sales or customers (Heikkilä et al., 2016). FWRAs offer an opportunity for recovering part of the value of finished products that otherwise would be worthless. Further, there is the opportunity to promote business through FWRAs, thus reaching higher visibility and improving image. However, when profitability is the only purpose of the business for adopting FWRAs, owners/managers may eventually be disappointed trying to find a return on the investment given that FWRAs are not designed to provide stable markets.

It is interesting to compare the views on FWRA adoption in the HoReCa sector among users and non-users. The non-users portray FWRA users as businesses that are poorly managed, showing that the generation of FW is perceived as a mismanagement, with only a few exceptions, such as namely displays and buffets. This may potentially be attributed to the conservative nature of HoReCa businesses where the benefits of FW reduction are undervalued and the role of digitisation in managing surplus food are misunderstood (Mattila et al., 2020). Increasing visibility and awareness of FW in restaurants can promote adoption of FWRAs as well as other FW prevention measures.

To facilitate adoption of FWRAs by providers of surplus meals, its design should be simplified as much as possible given that time restraints and digital illiteracy prevent HoReCa enterprises from joining FWRAs. This is especially relevant if FWRAs wish to improve their appeal to micro and small-to-medium-sized HoReCa enterprises given that the levels of their digitisation remain limited, even in such metropolitan regions as Barcelona (Vo-Thanh et al., 2022). The delivery option can be added as well as the option of 'bring your own packaging' to the app functionality. Finally, the economic benefits of joining FWRAs should be emphasised as they are most appealing for HoReCa owners/managers. The current economic downturn, including the cost of living crisis, can also aid FWRAs in increasing their market penetration, creating habits that may endure.

## 6 | CONCLUSIONS

### 6.1 | Implications for practice

Reducing FW in HoReCa firms is challenging due to low awareness of owners/managers of FW generation, business relevance and manageability. Through the lens of UTAUT theory, this study analysed how digital technology, in particular FWRAs, such as Too Good To Go, could facilitate surplus food redistribution. The results show that FWRAs are still in an introductory stage and, thus, widely unknown. Further, current users were mainly driven by economic benefits which was well aligned with the performance expectancy element of UTAUT theory. These benefits dominated despite the desired positioning of most FWRAs to be seen by its users as the technology promoting environment-related benefits. In order to encourage the use of FWRAs, economic benefits should be highlighted to its prospective users as the most relevant factor. However, projected economic benefits, when overestimated, were at the same time found to be a motive for companies abandoning FWRAs, and therefore, the environmental and social benefits should also be considered when addressing HoReCa managers. Moreover, the potential for FWRAs adoption to serve as a communication tool, attracting new customers and enhancing brand image, should also be emphasised in any prospective communication campaign aimed at encouraging FWRA adoption.

Further, to reduce the environmental footprint, a potential trade-off between reducing FW and increasing the use of plastic packaging containers should be addressed. The designers of FWRAs should encourage final consumers to bring their own reusable containers from home. Moreover, the designers of FWRAs should simplify as much as possible the apps, in order to overcome perceived barriers for its adoption by the vast majority of companies in the HoReCa industry, namely small, independent outlets lacking the required resources for its implementation. This is well aligned with and explained by the effort expectancy element of UTAUT theory.

Finally, our study unveils that the HoReCa establishments which may most benefit from or be most receptive to the utilisation of FWRAs are bakeries, coffee shops and sushi bars. Given the low penetration of such applications in Spain, FWRAs operators should prioritise these types of establishments in their commercial policies.

Given that our study once again highlights the lack of awareness regarding FW generated in HoReCa establishments, policy makers could implement targeted campaigns specifically tailored to HoReCa managers with the aim of raising visibility about the FW generated in their businesses.

### 6.2 | Theoretical contributions

The primary theoretical contribution of the study lies in the application of the UTAUT framework, a well-established theoretical model for understanding technology acceptance, to elucidate the factors influencing the adoption of FWRAs among HoReCa managers. In doing so, the theory demonstrates its efficacy by highlighting the significance of performance expectancy, notably economic returns, as a key motivator for FWRAs adoption. Additionally, it underscores effort expectancy, reflecting the perceived ease of use, and facilitating conditions, encompassing digital capabilities, as prominent barriers to adoption.

### 6.3 | Limitations and future lines of research

As with any studies, this one had limitations. First, due to the yet low market penetration of Too Good To Go, our sample was dominated by prospective, rather than current, users. Future research should attempt at recruiting a larger number of current adopters of Too Good To Go. Second, the study was geographically limited to HoReCa

enterprises based in Barcelona, Spain and, thus, due to the particularities of the HoReCa industry in Spain, together with the food and drink unique culture in the country, results cannot be generalised. Future research should expand the geographical scope of investigation to cover other markets of food consumption outside the home. This can reveal the wider (de)motives for the adoption of FWRAs by HoReCa enterprises attributed to market-specific, but also cultural factors. Third, the design and analysis of the current study was informed by UTAUT. Future research can however be grounded on TAM as this alternative theory of technology acceptance may offer additional, interesting insights. Moreover, future research may avail of the quantitative research methodology to obtain more generalisable results. The current study made use of qualitative research methods purely because of the exploratory nature of this investigation. Lastly, this study dealt with Too Good To Go, a major food rescue app in Europe (Vo-Thanh et al., 2021). Future research should examine other FWRAs as this can enable a comparative analysis, thus shortlisting the key factors driving the (non-)adoption of digital technology for environmental sustainability purposes among HoReca enterprises alongside their customers.

## CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

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## APPENDIX A

**TABLE A1** Qualitative study sample description.

| Code | Type | Size | Location | Business structure | Use of delivery apps |
|---|---|---|---|---|---|
| NU1 | Traditional restaurant (Tapas) | One outlet<br>Big (>40 tables) | Barcelona City | Independent | No |
| NU2 | Canteen (students residence) | One outlet | Barcelona City | Independent | No |
| NU3 | Bakery and coffee shop | Three outlets<br>Small (<15 tables) | Small town (Barcelona Area) | Independent | No |
| NU 4 | Traditional restaurant | One outlet<br>Medium (25 tables) | Barcelona City | Independent | No |
| NU 5 | Takeaway (Italian) | One outlet<br>No tables | Barcelona City | Independent | |
| NU6 | Traditional restaurant (Tapas) | One outlet<br>Small (<15 tables) | Barcelona City | Independent | No |
| NU7 | Patisserie | One outlet<br>Small (<15 tables) | Barcelona City | Independent | |
| NU8 | Take away (traditional food) | One outlet<br>No tables | Barcelona City | Independent | No |
| NU9 | Traditional restaurant | Two outlets<br>Small (<15 tables) | Barcelona City | Independent | No |
| NU10 | Traditional restaurant | Three outlets<br>Medium (25 tables) | Small town (Barcelona Area) | Independent | Yes |
| NU11 | Traditional restaurant | One outlet<br>Medium size (25 tables) | Barcelona City | Independent | No |
| NU12 | Two outlets<br>Hotel restaurants | Small (<15 tables) | Barcelona City | Independent | No |
| NU13 | Traditional restaurant | Small (<15 tables) | Barcelona City | Independent | Yes |
| NU14 | Traditional restaurant | Three outlets<br>Medium (25 tables) | Barcelona City | Independent | Yes |
| NU15 | Traditional restaurant | Three outlets<br>Medium (25 tables) | Barcelona City | Independent | No |
| NU16 | Traditional restaurant | | Barcelona City | Independent | No |
| NU17 | Luxury hotel restaurants | One outlet<br>Medium (25 tables) | Small town (Barcelona Area) | Independent | No |
| NU18 | Takeaway (Pizza) | One outlet<br>No tables | Barcelona City | Franchise | Yes |
| NU 19 | Fast food restaurant | One outlet<br>Medium size (25 tables) | Barcelona City | Independent | Yes |
| NU20 | Traditional tapas | One outlet<br>Small (<15 tables) | Barcelona City | Independent | No |
| NU21 | Luxury<br>Vegetarian restaurant | One outlet<br>Medium (25 tables) | Barcelona City | Belongs to a Group | Yes |
| NU22 | One outlet<br>Hotel restaurants | One outlet<br>Medium (25 tables) | Barcelona City | Independent | No |
| NU23 | Catering services | No tables | Barcelona City | Independent | No |
| NU24 | Traditional restaurant (Tapas) | One outlet<br>Medium (25 tables) | Barcelona City | Independent | No |
| NU25 | Take away prepared meals | One outlet<br>Small (<15 tables) | Barcelona City | Independent | Yes |
| U1 | Bakery and coffee shop | One outlet<br>Small (<15 tables) | Barcelona City | Independent | No |
| U2 | Bakery and coffee shop | Small (<15 tables) | Barcelona City | Franchise | Yes |

**TABLE A1** (Continued)

| Code | Type | Size | Location | Business structure | Use of delivery apps |
|---|---|---|---|---|---|
| U3 | Coffee shop | Two outlets<br>Small (<15 tables) | Barcelona City | Independent | No |
| U4 | Patisserie and coffee shop | One outlet<br>Small (<15 tables) | Barcelona City | Franchise | Yes |
| U5 | Pizzeria | Two outles<br>Small (<15 tables) | Barcelona City | Franchise | Yes |
| U6 | Bakery and coffee shop | Small (<15 tables) | Barcelona City | Independent | Yes |
| U7 | Bakery | One outlet<br>No tables | Barcelona City | Independent | Yes |
| U8 | Take away (traditional food) | One outlet<br>Small (<15 tables) | Small town (Barcelona Area) | Independent | Yes |
| U9 | Fruit store | One outlet<br>No tables | Small town (Barcelona Area) | Independent | No |
| U10 | Patisserie and coffee shop | One outlet<br>Small (<15 tables) | Small town (Barcelona Area) | Franchise | Yes |
| U11 | Patisserie and coffee shop | One outlet<br>Small (<15 tables) | Barcelona City | Franchise | Yes |
| U12 | Eco supermarket | Two outlets | Barcelona City | Independent | No |
| U13 | Traditional restaurant | One outlet<br>Small (<15 tables) | Barcelona City | Independent | Yes |
| U14 | Traditional restaurant | One outlet<br>Big (>40 tables) | Barcelona City | Independent | No |
| U15 | Italian restaurant | Four outlets<br>Medium (25 tables) | Barcelona City | Franchise | Yes |
| U16 | Butchery | One outlet<br>No tables | Barcelona City | Independent | Yes |
| U17 | Hotel restaurant | One outlet<br>Big (>40 tables) | Barcelona City | Hotel Group | Yes |