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When technology leads social business: Food truck innovation

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ABSTRACT

As restaurants and other non-essential businesses shut down to halt the spread of COVID-19, food-trucks adapted their business model, taking advantage of lower overheads and the ability to be mobile, to provide a response to the spike in demand for ready-made food. Set in France, this study identifies how food-trucks harnessed technology to support sustainable social business. We use triangulation to collect and analyse data from consumers and food-truck owners/managers on their perceptions of the value proposition and its limitations. Framed by the lockdown, we unpack the challenges faced by society and investigate ways in which food-trucks provide a sustainable alternative for eating out. We contribute to theory on social business and social innovation by acknowledging the socio-technical synergy existing in the specific context of food-trucks. The study acknowledges social equation as a key success element and validates the principles of social business in a new context.

1. Introduction

As countries face the challenges of the post-pandemic economic downturn, the use of technology for developing sustainable social business is returning to the forefront of business innovation (OECD, 2020). Mobile food trucks offer a rich context for examining how technology is leading social business, highlighting the importance of managing sustainability in the food supply chain. Food trucks are a sound example of this: mobile kitchens (Matzembacher et al., 2019) which use social media technology to bring local producers and suppliers into contact with communities of customers who seek ‘farm to food truck’ sustainable high-quality ready-made dishes (Anenberg and Kung, 2015). Food trucks use a ‘social-local-mobile’ or SO-LO-MO approach – the integration of social technologies (social media platforms and social networking sites), geolocation technologies and mobile commerce/marketing tools – to create a seamless consumer experience and a cohesive brand (Lichy et al., 2017; Kang, 2019). The notion of innovation lies in the re-engineering of the business model to enhance productivity and proximity, using sustainable and novel solutions to develop resilience to social change.

The social business model defined by Yunus et al. (2010) acts as structural inspiration for this paper, with which we extend the understanding of social business through the study of structure, technology and human interaction (Leavitt, 1964). Food trucks positively influence local communities in purposeful ways, contributing to environmental sustainability and social responsibility. Three key issues influence the food truck business model: (i) social impact, (ii) ecological impact, and (iii) economic impact. While the economic impact is outside the scope of this study, the social and ecological impacts resonate with social business. The social impact is noticeable in the regeneration of public spaces (Whyte, 1980); old parking lots and drab city lanes have been revitalized by freshly branded, hip, appealing food trucks that attract diverse communities of customers (Wessel, 2012). Food trucks facilitate and support the development of communities, both virtual and physical. Social media connect food truck owners and customers (existing and potential), keeping people informed on the whereabouts of the food trucks, their daily menu, and other news related to their services (Wessel, 2012; Martin, 2014; Matzembacher et al., 2019).

Adopting a ‘farm to food truck’ approach helps reduce the carbon footprint and (re)connects the general public with local farming communities. Under increasing pressure from consumers and society, businesses recognize that proactive environmental management can lead to profitable results: food trucks satisfy the demand for quality products that respect the environment (Gerbens-Leenes et al., 2005; Apostolidis et al., 2021). In particular, meat-free substitutes (Apostolidis and McLeay, 2016) and organic foods have a positive influence on perceptions of corporate social responsibility and purchase intentions (Holmes et al., 2018). Consumers are willing to pay more for products or services...
provided by socially responsible companies that support a social cause (Neilsen, 2014). Food trucks responded to the spike in demand caused by the COVID-19 pandemic by offering ready-to-eat meals to a ‘sustainable mainstream’. The principles of social business are evidenced in different elements of the food truck business model, including innovating the value proposition, adapting the cost structure, building/ maintaining relationships with customers and other stakeholders via social networking, social media, and informal community-based communication channels. These communication channels were of utmost importance as consumers adjusted to the changes brought about by the pandemic.

This paper responds to calls for research to examine the processes which make social enterprises effective (Engelke et al., 2015), and to further our understanding of how technology facilitates the ‘relational’ and ‘social’ processes of entrepreneurship (Nikolopoulos and Dana, 2017).

Technology is used in several ways. Anenberg and Kung (2015) show how the emergence and growth of food trucks has coincided with the introduction and uptake of the iPhone, one of the first popular smartphones capable of accessing the Internet from anywhere. Food truck owners/managers use their social and personal networks (their ‘strong ties’) to identify opportunities (Nikolopoulos and Dana, 2017), such as sharing market resources (locations and suppliers) and sharing knowledge resources such as advice to minimise customer dissatisfaction, which could potentially damage the reputation of the whole sector (Sonenshein et al., 2017). Emphasis is placed on cooperation among stakeholders and real-time communication with customers (Martin, 2014; Matzembacher et al., 2019), which reflects the SO-LO-MO philosophy. A practical example of this includes filtering search results to find a specific food truck or style of food, then customizing an order and paying online, and posting a photo or comment about the food experience on social media – thus, the customer is no longer a passive recipient of content but rather an active creator of it.

Above all, technology has an enabling effect on the food truck business model, pushing its profitability above that of brick-and-mortar restaurants (Anenberg and Kung, 2015). The focus is on prioritizing local suppliers, social responsibility and customer preference (Holmes et al., 2018), bound by friendly competition that helps gain prestige for the collective (Sonenshein et al., 2017).

Few studies have explored how food truck owners/managers leverage social media to develop sustainable social business. It remains unclear why researchers “tend to neglect the potential of technology for achieving a sustainable society” (Hauck, 2018:1728). Adopting an abductive approach, our objective is to explain how food trucks harness technology to develop a business model that supports sustainable social business. Thus, we propose the following research question and sub-question:

Framed by the pandemic context in France, how do food trucks use technology to develop social business? How, by integrating social business principles, can food trucks enhance their performance?

Certain pandemic measures entailed the use of online data collection, at a time when vendors and consumers were adjusting to social distancing, home quarantine, school closures and self-isolation (Yoo and Managi, 2020). Thus, the study is limited by lack of face-to-face data collection.

In line with the principles of social business (Yunus et al., 2010), our findings explain how food trucks re-engineer an innovative business model to enhance productivity and proximity, using sustainable and novel solutions to develop resilience to social change.Acknowledging that “a mediocre technology pursued within a great business model may be more valuable than a great technology exploited via a mediocre business model” (Chesbrough (2010:354), we contribute to current knowledge by arguing that a social business model should include a social profit equation as a core element. The next sections present the literature review, methodology and findings leading to a discussion, theoretical and managerial contributions and conclusions.

2. Literature review

The literature review is divided into sections to explain how food trucks leverage technology to develop sustainable social business. Attention is drawn to the importance of treating both ‘social’ and ‘technical’ aspects as interdependent parts of a complex system (Bosstrom and Heinen, 1977). Food trucks offer a socio-technical prism with which to explore social innovation and social business by studying structure, technology and human interaction (Leavitt, 1965).

2.1. From social innovation to social business

Social innovation addresses the process and pursuit of economic and social progress (Logue, 2019). In view of its diverse theoretical bases, the concept can be defined in various ways (de Souza Bispo and Almeida, 2020). For Philis et al. (2008:36), social innovation is a “novel solution to a social problem that is more effective, efficient, sustainable or just than existing solutions and for which the value created accrues primarily to society as a whole rather than to private individuals”. For Van Wijk et al. (2019), it describes the agentic, relational, situated and multilevel process to develop, promote and implement novel solutions to social problems in ways that are directed toward producing profound change in institutional contexts.

In earlier studies, Schumpeter (1950) introduces the concept of social innovation in the process of creative destruction, and Drucker (1987) suggests it should be a dimension of management. Three orientations can be identified in the literature. The first relates to social innovation as a catalyst of social change: improving well-being (Mouleart et al., 2013). The second recognises social innovation as an accelerator of human development (Jessep et al., 2013). The third focuses on collective behaviours changing over time (Panzar and Shove, 2010; Cajaiba-Santana, 2014).

In this paper, social innovation describes the ideas, ways and means, strategies and even organizations that develop innovative solutions to address the needs of the community and individuals. For Mulgan (2012), this involves innovations that are social in their nature, with considerable appeal for policymakers (Bayou et al., 2020), given that the EU is a significant player in funding and supporting such initiatives (Mouleart et al., 2017). The concept has attracted heightened academic interest “in the role of social innovation as an engine of economic, social and sustainable development” (Bayou et al., 2020:2).

Social business refers to organizations which have specific social objectives and address a social cause such as healthcare, housing, nutrition, education, financial services to the poor, etc. In that sense, social business fits seamlessly with the social innovation canvas, as it serves people and communities, rather than pursuing purely commercial gains (Dawson and Daniel, 2010).

Yunus et al. (2010) define social business as being based on seven principles (World Economic Forum in Davos, 2009), as follows:

1. The objective of the business is to overcome poverty, or one or more intractable problems of society (such as access to education, health, technology, and the environment); it is not profit maximization.
2. It must be financially and economically sustainable.
3. Investors receive a return on investment not exceeding the amount of their investment, i.e., no dividend is given.
4. When funds are repaid by the borrower, any and all company profits (i.e., loan interest) are retained and reinvested by the company for further expansion and improvement.
5. The business must be environmentally conscious.
6. The workforce should receive market wages with better working conditions.
7. ... ‘do it with joy’.

Social business is therefore “a no-loss, no-dividend, self-sustaining company that sells goods or services and repays investments to its
owners, but whose primary purpose is to serve society and improve the lot of the poor" (Yunus et al., 2010:309).

2.1.1. Social business model

As with any business, a business model is required. Acknowledging different interpretations of the business model canvas (Chesbrough and Rosenbloom, 2002; Ostervalder and Pigneur, 2010), three main components are recognized as essential: (1) a value proposition – what makes my company different from the others, from my customer's point of view, (2) a value constellation – how can we deliver this offer to our customers, and (3) a profit equation – the value captured from the revenues generated.

The concept of social business closely resembles Mair and Marti's (2006) concept of social entrepreneurship, social business being a subset of social entrepreneurship. Deciding to create a social business offers both the opportunity to solve social problems and develop one's business skills. Thus, building a social business model requires the addition of a social dimension. For Yunus et al. (2010), such models differ from conventional business models in their emphasis on social profit-oriented stakeholders and clearly defining the social profit objective.

The authors propose that a social business model should, in addition to the three components discussed earlier, include a fourth element: a social profit equation (see Fig. 1).

As such, this approach serves as a core element of our research, to show how food trucks follow a social business model to respond to increased demand for locally-sourced sustainable and environmentally-friendly food options.

2.2. Food trucks as social innovation

The popularity of food trucks has piqued the interest of researchers to explore the subtexts of food practices. Studies show how food trucks contribute to communal identity, socio-economic status and public space (Hernández-López, 2011; Lichy et al., 2017). Authentic and extremely Instagramable, food trucks generate employment and socio-economic value for communities (Bhowmik, 2012), while preserving cultural identity and social heritage (Steyn et al., 2014; da Silva et al., 2014).

Alfiero et al. (2017) identify several areas that have been under-researched, including how food truck vendors respect sustainable innovation and customer satisfaction. While scholars have explored business models of sustainable food trucks (Mokhtar et al., 2017; Wessel, 2012) and the use of social media as a marketing tool to promote food trucks (Ishak et al., 2018), few studies explain how food trucks harness technology to develop a business model that supports sustainable social business.

Despite the unprecedented stress on food systems revealed by the pandemic, some supply chain actors have managed to develop innovative responses (OECD, 2020). Food trucks have been able to adjust their business model to ensure the continued availability of food, reflecting their ability to tap into new sources of supply when existing sources are compromised (Matzembacher et al., 2019). Studies show that understanding the environmental impact of food supply chains is central for the food industry to help devise strategies for reducing the impact of over-production and over-consumption (Jeswani et al., 2015). Food trucks are stimulating environmental change by acting as ‘channel leaders’ in their supply chain, yielding sufficient power over suppliers to impose social innovation. Moreover, food trucks respond to and drive social change as they are customer-facing – unlike firms which operate far from the end-consumer and are hidden within a supply chain where there is little environmental scrutiny.

2.3. Food trucks as social business

Highlighting the articulation between food studies and organization studies, de Souza Bispo and Almeida (2020) argue that street food per se is social innovation, as it introduces a reconfiguration of an everyday practice: eating. The food truck industry emphasizes how the sector has shifted in response to social change and is now one of the best performing segments in the broader food-service sector (Anenberg and Kung, 2015). Success can be attributed to a hybridization of two forms of authenticity (food truck and brick-and-mortar), blended into a new product that “is temporal and changes through each process of hybridization; the value of this product is derived from the concrete but temporary relations between the product, the producers, the consumers, and the spaces where the product is produced and consumed.” (Irvin, 2017:44).

Alfiero et al. (2017) and Irvin (2017:44) identify five innovations (changes) brought about by food trucks in the practice of ‘eating out’: gourmetization, vehicle customization, the use of social media to communicate with customers, specific forms of food truck management, and the use of space. These innovations resonate with sustainable social business, in terms of redesigning the business model to address changes in the surrounding environment and adopting an ideology for merging economic and social elements (Grove and Berg, 2014; Yunus, 2017).

This paper aligns with the definition of social business put forward by Hyva et al. (2018:1354), which states that “all three components, social, environmental and economic are compatible with each other, and it is not simply the implementation of the private sector in social development”. The interaction with social and economic actors illustrates a shift from the traditional business model to a social ‘curative’ business model (Czinkota et al., 2018). Many food trucks operate as ‘small businesses’ and, when possible, support other small businesses and the wider community (Holmes et al., 2018): they uphold environmentally sustainable behaviour, and are motivated to source local and organic products to satisfy consumer demand (Apostolidis and McLeay, 2016). In this respect, food trucks demonstrate “good housekeeping through prevention of pollution and waste and efficient use of scarce resources” (Gerbens-Leenes et al., 2003:232). However, while food trucks provide a pertinent illustration of social business, less is known about the role played by technology in the business model.

2.4. Food trucks in France

Barrière (2013) defines French gastronomy according to two parallel models: the elitist model (based on the ’superior’ and more sophisticated nature of food and its preparation) and the populist model (which rather promotes local or regional products typically used in everyday recipes). The populist model is more conservative in its food choices, while the elitist model promotes innovation at each level, using highly qualified culinary experts and chefs recognized in the community. The concept of the French food truck is a hybrid model, which combines the local “cuisine du terroir” (Le Corre, 2015:10) of the populist model with the finesse and innovation of the elitist model, in other words “convenience
meets connoisseur” (Jackson, 2014:67).

Embedded in a social context, food trucks offer a mobile and digital version of good quality restaurant dining, using locally-sourced products (Pokrovsky, 2017). By using the SO-LO-MO approach, they bring together social media, geolocation technologies and mobile commerce (Kang, 2019) to maximize communication and enhance the customer experience through a multitude of touchpoints, which in turn builds relationships and loyalty (Lichy et al., 2017).

Acknowledging the literature, we gather data to determine the extent to which food trucks harness technology to develop a business model that supports sustainable social business. Attention is also paid to identifying potential barriers to the success of food trucks in the French context.

3. Methodology

To address our research question, we adopted methodological triangulation (Hussein, 2009) combining qualitative and quantitative data collection methods and analysis in studying the same phenomenon (Thurmond, 2001). The concept of triangulation influences the design of this embedded mixed-methods study, including the use of multiple methods (Mertens and Hesse-Biber, 2012). Although, in its original form, triangulation refers merely to the use of multiple forms of qualitative research methods (Denzin, 1970), it has been more recently defined as the use of more than two methods in studying the same phenomenon (Mitchell, 1986; Denzin, 2012). Creswell and Miller (2000) define triangulation as “a validity procedure where researchers look for convergence among multiple and different sources of information to form themes or categories in a study”. It is more precise than using one single methodology, aiming to reveal complementarity, convergence and dissonance among the findings (Erzerberger and Prein, 1997), adding rigour, richness and depth to any investigation (Flick, 2007). When combined, there is a strong likelihood of neutralizing the flaws of one method and strengthening the benefits of the other for more robust research results (Hussein, 2009).

The design of the data collection was shaped by the pandemic measures in place (self-isolation, lock-down and social distancing) forcing scholars to tackle how the restrictions on their movement affect how the research is conducted (Fry et al., 2020). The pandemic underscores how a lack of face-to-face interaction can be problematic for researchers, retailers and consumers, as people adjust to social distancing (Glass et al., 2006; Kim et al., 2008). Thus, a 2-step online data collection was chosen (outlined below): qualitative (2 focus groups) and quantitative (a survey). Arguing the benefits of using focus group discussion as an initial exploratory step in a mixed-methods approach, Galliott and Graham (2016) demonstrate how the findings from focus groups inform the design of the survey instrument to be used in the subsequent step of the research.

Step 1: Focus group with food truck owners/managers

In order to study the social business model of food trucks in France, we organised a focus group with owners of food trucks located in the city of Lyon, World Capital of Gastronomy (Lyon, 2008). We brought together several people to talk about the same topic to produce collective narratives on the research question, which go well beyond individual perspectives (Hennick, 2014). The focus group discussion was held via Microsoft Teams, lasting 90 min, with four participants (three men and one woman). Participants were contacted via social networks.

Table 1 participants of online focus group (French food trucks owners).

| First name | Gender | Age | Food truck specialty          |
|------------|--------|-----|------------------------------|
| Ayman      | Male   | 35  | Mediterranean food           |
| Antoine    | Male   | 46  | Regional (Lyon) food         |
| Julien     | Male   | 31  | Burgers                      |
| Marie      | Female | 42  | Shellfish and seafood        |

Participant profiles are presented in Table 1.

Conversations were conducted in French. For publication purposes, the conversations were transcribed and then translated into English by the authors. The approach adopted was to adhere, where possible, to the cultural context (foreignization) as advocated by Venuti (1995). Hence, to capture the full meaning of the conversation, the translation was scrutinised by the authors’ professional network to ensure that cultural nuances were reproduced.

Step 2: Study of French consumer perceptions

The success of a business relies upon cooperation among key actors (suppliers, vendors, partners, customers, financiers) and adherence to the business model designed by the entrepreneur (Servantie and Verstraete, 2012). While the sustainability of a business depends on the ongoing adhesion of its actors, the place and role of customers must remain central to the business strategy: customers drive revenue and provide positive endorsement. Furthermore, the contribution from customers to the creation of value is generated from their loyalty to the brand, reputation, frequency of purchase and trust (Post et al., 2002).

Following Osterwalder and Pigneur (2010), customer-driven innovation is an essential epicentre for questioning or innovating a business model. Thus, to identify potential barriers to the development of food trucks in France, we explored perceptions of food trucks among French consumers. We employed a methodological protocol in two stages: (i) online focus groups for collecting qualitative information, followed by (ii) online surveys to refine the focus group data and yield quantitative data.

3.1. Conducting online focus groups with French consumers

Two focus groups were conducted in March 2020. The collective dynamic generated detailed information on the representations and experiences of consumers about food trucks. As advocated by Milroy and Milroy (1992), participants were selected from the authors’ professional networks. Participants were therefore contacted and invited (by phone or social networks) by the authors. The first focus group comprised three women and two men, all having no vested interest in food trucks. The second focus group comprised three men and two women, all regular customers of food trucks. The participant profiles are presented in Tables 2a and 2b (see appendices). The focus groups were conducted via Microsoft Teams and lasted on average 1 hour.

3.2. Administering an online survey among French consumers

In the second part of the study, it was not possible to use measurement scales due to the lack of pre-existing studies using this approach in our specific context. We therefore designed our own online survey instrument, developed from key topics revealed in the focus groups. The survey provided insights into respondents’ habits and behaviours. Prior to distribution, the survey was pilot-tested with ten people, chosen from the authors' professional networks, to verify the clarity and relevance of the questions (Zikmund, 2003). After some syntax changes, it was uploaded to LinkedIn, widely used for interpersonal communication, information, and career development (Garcia and Nima, 2016) and social networking (Lichy et al., 2017). The survey was available from April to June 2020 for a period of twelve weeks (i.e., during the first lockdown in France). After three successive days without further responses, the
Table 2b
Participants of online focus group 2 (French consumers).

| First name     | Gender | Age | Professional activity |
|---------------|--------|-----|-----------------------|
| Ahmed         | Male   | 45  | Engineer              |
| Jeremy        | Male   | 24  | Waiter                |
| Nicolas       | Male   | 19  | Student               |
| Lauriane      | Female | 22  | Student               |
| Myriam        | Female | 33  | Journalist            |

Note that we used the same protocol stated in Step 1, regarding the translation of conversations.

survey was disabled. Online collection yielded 250 responses from the participants whose profiles are shown in Table 3. Data processing and treatment was carried out using R software.

4. Results and discussion

The focus group discussions were recorded, transcribed, then manually analysed thematically using template analysis, in order to generate themes and patterns (King et al., 2018) consistent with the key elements of social business defined by Yunus et al. (2010). This step involves assigning preliminary codes to the data in order to describe the content, then searching for themes in the codes, then reviewing, defining and naming the themes. Equal attention was given to each recorded data item; transcripts were annotated to indicate potential themes in the data that characterise perceptions of a food truck social business model, paying attention to surrounding data to avoid downplaying the context (Bryman, 2016).

Technology is a central factor throughout the study, used to create a sustainable, customer-centric, resilient local economy that can achieve diverse objectives including growth, inclusion and equity, as well as triggering change beyond economic growth, by adopting societal well-being as a sphere for informing local producers and suppliers.

4.1. Step 1: Perceptions of the food truck social business model (by owner/managers)

4.1.1. Focus group results

The following excerpts from food truck owners/managers reflect the key elements of social business defined by Yunus et al. (2010), resonating with the seven principles (World Economic Forum in Davos, 2009).

4.1.2. Social profit and value proposition

Consistent with the second (financially and economically sustainable) and fifth theme (environmentally conscious), the results show how food truck business objectives address a number of societal well-being and environmental issues. Indeed, food trucks endeavour to offer responsibly-sourced food with sustainable and organic products procured from a network of responsible suppliers who invest in the local community. The participants insisted on the quality of the products offered and the short supply chain, as the differentiating values of their business. Moreover, they also highlighted the environmental/sustainable dimension of their activity:

“My suppliers deliver fresh foodstuffs every day. The products have the quality label, which guarantees responsible and sustainable fishing... the dishes are prepared in front of the customers, and served in convenient biodegradable packaging, and the cutlery is made from recycled wood. My food truck adheres to a zero-plastic objective” (Marie, shellfish and seafood food truck).

“All my meals are compatible with vegetarian and vegan preferences; customer tastes are evolving... customers seek novelty like locally sourced vegetable smoothies and will pay more to support local trade. Customers are shifting over to organic menus, taking an interest in our new buy-one-give-one initiative, donating money to a local project to build a neighbourhood compost” (Ayman, Mediterranean food truck).

“I enjoy pleasing my customers by serving quality products... the mobile side of the food truck is a big advantage, we can operate in areas which are easy to get to outside the city centre, this has a positive impact on the environment: fewer traffic jams and less pollution” (Julien, burger food truck).

4.1.3. Passion for local/sustainable food

Articulating the enjoyment expressed regarding the seventh principle (‘do it with joy’), the participants voiced their satisfaction and passion for sourcing and preparing local food. Indeed, the participants described their activity as a source of happiness, considering their work as a mission that goes beyond financial profit, which resonates with the first principle (overcoming one or more intractable problems of society, not profit maximization). Their passion clearly goes beyond the commercial transaction.

“I love the products of my region... I love cooking with them and introducing them to people in other regions... I’ve revisited recipes that have been neglected or forgotten... I feel like I’m on a mission to perpetuate the culinary traditions of my region and support sustainable food production” (Antoine, regional specialties food truck).

“I strive to ensure that there is no ‘food apartheid: quality food must be accessible for low-income communities too... I’m currently working on a full student menu at an affordable price. I hope to launch this menu soon then move on to designing a ‘social menu’ so more customers can enjoy quality products” (Julien, burger food truck).

“When customers line up in front of my food truck, they are coming together around a common interest linked to the food of my home country... naturally, we chat about ‘food from home’; travel and culinary experiences are part of the community fabric... I also like to surprise some customers with special Mediterranean recipes unknown to the public. I’m currently working on some ideas to showcase the cultural melting-pot of this community” (Ayman, Mediterranean food truck).

4.1.4. Value constellation and stakeholders

Participants pointed out that location is a central issue in their operation, partly defining their target customers, which links to the second principle (financially and economically sustainable). Indeed, food trucks can take their mobile business to the local community and beyond. However, most slots are regulated by local legislation, and acquiring permission from local authorities can be complicated. On the other hand, this mobility allows food trucks to have greater proximity and closeness to different customer segments which are not directly targeted by traditional restaurants, and thus reflects the first (overcoming one or more intractable problems of society) and fifth principle (environmentally conscious).
“Before the pandemic, I managed to negotiate with firms specializing in events so I could set the food truck up near the event. The firms were quite enthusiastic... I think the modern-yet-elegant side of my food truck played a very important role” (Ayman, Mediterranean food truck).

“We pitch up at the local marketplace twice a week, but we also move around the city centre where there’s a concentration of companies and universities... our target market is employees and students who want value-for-money at lunchtime” (Julien, burger food truck).

“I managed to get a spot near the park in the city centre where there is high footfall: people want healthy, responsibly-sourced food options to eat on-the-go. The old-meets-new side of food trucks attracts curiosity and allows me to diversify my menus... I’m just as comfortable catering to customers outside the local football club as I am at a wedding or a wake” (Marie, shellfish and seafood food truck).

Linking with the fifth principle (environmentally conscious), participants defined their food trucks as ecologically responsible. They consider the sourcing of the ingredients from local suppliers (i.e., guaranteeing a short supply chain) as being one of the most important activities in their business.

“Keeping the whole thing in order is vital: working with our supply chain, maintaining relationships with suppliers to get top quality food, responding to customers... not forgetting invoicing and accounting” (Marie, shellfish and seafood food truck).

On the other hand, the location of their food truck is also a key element for their activity.

“... and in some cases, with private companies or universities to set the food truck up on their private land or parking lot” (Julien, burgers food truck).

When Yunus et al. (2010) sketched out the principles that were to become the model for social businesses today, the use of social technologies was not explicitly stated. However, as demonstrated in our findings, the notion of ‘technology at the service of social business’ is very clearly embedded throughout, underscoring the interdependency of technology and society. Specifically, social technologies are couched in the context of the first principle (overcoming one or more intractable problems). It is also a way of supporting local businesses and quality ingredients and paying wages, which relates to the sixth principle (the workforce should get market wages with better working conditions).

“The beginning was very difficult... what with the monthly payments to the bank, purchasing products and start-up costs, we weren’t able to afford anything beyond paying the bills and minimum wage” (Julien, burger food truck).

“I managed to repay my loan after a year, and today my expenses are more orientated towards purchasing exceptional products or developing my business” (Antoine, regional specialties food truck).

“We’ve just finished paying off our loan, so from now on we’ll be able to invest in renewing stock, especially quality professional equipment for preparing the new menus, and a small wage increase” (Marie, shellfish and seafood food truck).

In their comments, the food truckers mentioned that their profits are reinvested into the business so that it can improve and grow, consistent with the fourth principle (when funds are repaid by the borrower, any and all company profit is retained by the company for additional expansion and improvement).

4.2. Step 2: French consumers’ perceptions of food trucks

4.2.1. Results of focus groups

The two focus groups articulated several issues that reflect the interdependence of ‘social’ and ‘technical’ aspects. The following excerpts reveal various opportunities and challenges faced by food truck owners/managers in France.

A ‘practical’ way of eating out

Many of participants felt strongly that purchasing a meal from a food truck is consistent with the modern ‘connected’ lifestyle and time/space constraints. It is also a way of supporting local business:

“I go through Instagram notifications of daily menus, food-for-the-soul, often based on old recipes revisited; it’s good value for money and convenient for busy people... if it supports regional food producers then we’re going to buy it... review it, share and comment” (Ahmed, focus group 2).

“It’s really user-friendly and accommodating; I just check my phone to find a food truck near my house. I customize my order then go and collect” (Laurianne, focus group 2).

“If I’m in a rush, I go over the local food truck apps, choose what I want or mix-and-match my order... then click and collect. I always make a point of posting a brand selfie on my story, then like, share and comment” (Marie, focus group 1).

Bridging the gap between physical and virtual communities, customers enjoy the convenience of being kept informed and updated in real-time via touchpoints (social media and apps) regarding the daily menu, locality, origin of food and so on:

“We’ve got abundant choices these days but there’s plenty of room for good food trucks... I might eat McDonalds tonight and Bocuse [a top French restaurant] tomorrow; it’s about having options and staying connected to know what’s in and what’s out” (Marie, focus group 1).

“Food trucks are a paradox of social media, giving the illusion of many choices but making it harder to find viable options... food trends in northern Europe, Scandinavia especially, are based on ‘back-to-basics’ –

4.1.5. Economic profit

Participants provided insights into financial and economic aspects of their activities, echoing the second principle (financially and economically sustainable). They considered that the food sales are their main source of revenue:

“I offer a menu consisting of a starter (with two choices), a main course (two choices of fish), fruit juice and a dessert (two choices). Usually, the price of a menu varies between 12€ and 16€” (Marie, shellfish and seafood food truck).

“In addition to set menus, my vegetarian sandwiches at 5€ per unit are very popular with young people” (Ayman, Mediterranean food truck).

No specific information was offered by participants regarding an average day’s takings, or the number of dishes consumed. Concerning cost structure, participants reported that at the beginning of their activities they obtained a bank loan to buy and personalize their food truck, and that currently their main expenditure is linked to purchasing quality ingredients and paying wages, which relates to the sixth principle (the workforce should get market wages with better working conditions).

Concerning customer satisfaction, the food truckers provided insights into financial and economic aspects of their activities, echoing the second principle (financially and economically sustainable). They considered that the food sales are their main source of revenue:

“I spend considerable time negotiating my slot with local authorities... and in some cases, with private companies or universities to set the food truck up on their private land or parking lot” (Julien, burgers food truck).

When Yunus et al. (2010) sketched out the principles that were to become the model for social businesses today, the use of social technologies was not explicitly stated. However, as demonstrated in our findings, the notion of ‘technology at the service of social business’ is very clearly embedded throughout, underscoring the interdependency of technology and society. Specifically, social technologies are couched in the context of the first principle (overcoming one or more intractable problems) in the sense that they require low initial investment, involve relatively low operational costs, attract a wider customer base (than traditional restaurants), and enable innovation in product design (i.e., meal offerings), distribution (i.e., location) and promotion (building the brand).

In our study, the participants considered that social technologies are essential for maintaining and retaining current customers, as well as for acquiring new customers, in line with their business objectives, which relates to the second principle (financially and economically sustainable). Indeed, food truck owners/managers use social technologies for two-way communication and interaction (e.g., posting pictures and sharing stories), to build relationships and reputation, and to gauge customer satisfaction:

“I use social networks to inform customers of my location [...] and I keep track of customer feedback. I see their need to dialogue with me and I modify my offer based on their comments... like asking us to use food delivery apps like Deliveroo and JustEat” (Ayman, Mediterranean food truck).

“Social networks give us a powerful ‘visual’ word-of-mouth, two-way dialogue and space to develop ideas together” (Antoine, regional specialties food truck).

“Social technologies enabled us to introduce click-and-collect and other options like digitized payment and loyalty schemes” (Julien, burger food truck).
natural, organic, sustainable food – food trucks in France must do more to support local producers and offer healthier choices” (Myriam, focus group 2).

Highlighting practicality and convenience, these comments resonate with the findings of Anenberg and Kung (2015) who demonstrate how technological innovation has an enabling effect on the food truck business model and can push profitability above that of brick-and-mortar restaurants. More importantly, food trucks can respond swiftly to the ongoing changes in consumer food preferences. For example, user-generated content provides an indication of emerging food fads and trends, which can help food truck owners/managers to plan.

A satisfactory compromise between speed, price, and quality?

Some participants believe food trucks are competitive because they meet the changing needs and expectations of urban customers:

“Food trucks offer a happy medium between a short lunchbreak and the desire to eat healthily; people pay increasing attention to what they eat now” (Jeremy, focus group 2).

“These days, I find our local food trucks very clean and modern, good service and rather chic… I don’t have a minute to waste in my day” (Virginie, focus group 1).

Some participants praised the availability of affordable and authentic food, sourced from local producers and adapted to contemporary consumer preferences. They considered food trucks a great way to showcase the freshness of a minimalist menu while offering alternative (gluten-free, meat-free and dairy-free) options.

“Somewhere between a restaurant and a superior food delivery, our food truck sells garden-fresh produce… the menu is put together from supplies delivered that day and there are many options for people with food allergies; it’s inexpensive and good quality, we like knowing where the food comes from” (Ahmed, focus group 2).

“Food truck prices are in the same range as restaurant food… but are more authentic. Quality over quantity…” (Christophe, focus group 1).

These comments illustrate how technology complements urban consumption amenities and communities of consumers, in line with the literature (Wessel, 2012; Martin, 2014; Matzemacher et al., 2019). The economic mechanisms behind the growth in food trucks have a positive knock-on effect on environmental sustainability and social responsibility.

Covid-19 compatible

The participants overwhelmingly agreed that food trucks offered a very practical solution during lockdown, encouraging customers to try new food alternatives, and compensating for restaurant closures.

“We respect the pandemic measures that stipulate the use of face-masks and hand sanitizer and ban seating area and customers mingling… most of us bring our own plates to reduce waste” (Jeremy, focus group 2).

“Being outdoors, there’s less contact with airborne germs… food trucks are set up to operate in click-and-collect mode” (Elsa, focus group 1).

Based on these comments, we can situate food trucks in the emerging yet fragmented literature on social business models in pandemic conditions, in which consumer demand is visibly shifting toward greater environmental sustainability and social responsibility. The excerpts highlight various ways in which food trucks provide a practical and convenient alternative for time-strapped customers. Food trucks offer solace for individuals who want someone else to do the cooking; they sit within the confines of the French cultural context in which mealtimes are strictly adhered to (i.e., no snacking outside mealtimes) – as noted by Buret (2013).

Our findings demonstrate the extent to which the principles of social business (Yunus et al., 2010) can be applied to food trucks, drawing attention to the need for shared understanding and dynamic responses to ongoing social changes. Only the third principle (investors receive a return on investment that does not exceed the amount of their investment) was not openly revealed by the participants. This omission suggests that other models may be needed to explain contemporary social business.

Changes in the external landscape (such as technological advances, evolution in customer demands, new regulations) will trigger new business models. Anenberg and Kung (2015) showed how the introduction of smartphones acted as a catalyst for food trucks, enabling the integration of social technologies and apps for innovating marketing efforts and customizing consumer needs (Lichy et al., 2017; Kang, 2019). Drawing from the field of (sustainable) business model and transition research, Bidmon and Knab (2018) proposed three scenarios: (i) business models as part of a socio-technical regime, hampering transition to more sustainable models by reinforcing the stability of the current regime; (ii) business models as intermediaries between the techno-logical niche and socio-technical regime; and (iii) novel business models driving transition by building a substantial part of a new regime without relying on technological innovation. What can be deduced from this study is that future business models will leverage technology to guarantee the complex exchange relations and resource configuration needed for creating and capturing value.

4.3. Results of the online survey

The findings reveal several interesting characteristics of food trucks. In the first part of the study, the intention was to understand consumer perceptions of food trucks, the results of which are summarized in the appendices (see Table 4). The results show that the French consumer perceives food trucks as fast-food and snacking (72 % associate it with food trucks).

Table 4

| Perceptions of food trucks | Value % |
|---------------------------|---------|
| What is your idea of a food truck? |          |
| Snack van (junk food, street food) | 180 72 % |
| Restaurant van (set menu: starter, main course, dessert) | 25 10 % |
| Catering service | 40 16 % |
| Other | 5 2 % |
| Fast service | 5 28 % |
| Inexpensive | 55 22 % |
| Unhealthy eating | 60 24 % |
| Exotic food (foreign food and dishes) | 35 14 % |
| Proximity | 25 10 % |
| Other | 5 2 % |
| Never | 35 14 % |
| Rarely | 70 28 % |
| Occasionally | 95 38 % |
| Regularly | 50 20 % |
| If never or rarely, why? (n = 105) |          |
| No food truck nearby | 8 8 % |
| Hygiene | 38 36 % |
| Quality of produce | 23 22 % |
| Unhealthy | 32 30 % |
| Other | 4 4 % |
| Proximity | 163 65 % |
| Price | 145 58 % |
| Originality | 150 60 % |
| Recommendation (peers, the press or seen online) | 180 72 % |
snack vans parked at outdoor events). An analysis of the choice of words used to describe food trucks - ‘fast’ (28 %), ‘cheap’ (22 %) and ‘unhealthy’ (24 %) – is an indication of the extent to which the concept of food trucks has a negative connotation in France. This negative perception is due to food trucks being associated with fast food, which is often regarded as a “treat” (Rydell et al., 2008; 2067) but may not fit well with consumers’ perception of a healthy meal.

Furthermore, 28 % of consumers rarely eat from food trucks, and 38 % only occasionally. Despite the growing numbers of food trucks in France, consumers identify them with poor hygiene (36 %), unhealthy food (30 %) and lack of fresh products (22 %). This (mis)perception poses a problem for further expansion and may also explain the low awareness.

It is interesting to note that consumers claim to be interested in testing a new product from a food truck if recommended by peers, the press or seen online (72 %) or if the food truck was nearby (65 %), or due to ‘price’ (58 %). Word-of-mouth and social networks play a key role, as this type of ‘mobile food’ thrives on personal/peer recommendations, and therefore the information is perceived as trustworthy, echoing the findings of previous studies (Anenberg and Kung, 2015; Lichy et al., 2017; Kang, 2019). For food trucks to increase their visibility among potential customers, they must engage with customers via social technologies.

A Chi-square test ($\chi^2$) was used to test the adequacy of the answers concerning the frequency of food truck consumption and participant profiles (gender, age and current activity). The cross-tabulated results of the survey are presented in Tables 5, 6 and 7.

The data enable us to confirm, with a 1 % risk, the link between the level of food truck consumption and the gender of the consumers ($\chi^2$ calculated = 55.805, degree of freedom = 3, p-value = 4.623e-12). In addition, we can confirm, with a 1 % risk, that the level of food truck consumption is higher among men (p-value = 5. 240253e-14). This finding contradicts other studies undertaken in the street food sector, which found that most street food consumers were female (e.g., Isoni Auad et al., 2019). However, our results can be explained by the negative perception of French consumers of food trucks. Indeed, women are more aware of environmental issues and perceive them more favourably than men do, even becoming green consumers (do Paço et al., 2009).

Moreover, the data enable us, with a 1 % risk, to confirm the dependency between the level of food truck consumption and age of consumers ($\chi^2$ calculated = 88.782, degree of freedom = 9, p-value = 2.857e-15). We can confirm that consumers aged 20–40 (Generation Y) buy from food trucks more often than other age cohorts. Undeniably, food trucks appeal to consumers because of their convenience, accessibility, taste, and hedonic value (Shin et al., 2019). Food trucks offer an innovative and interactive environment, with an authentic and gourmet cuisine at affordable prices. Generation Y is the most likely clientele and a powerful driver of the food truck business (Isoni Auad et al., 2019).

Finally, the data enable us to confirm, with a 1 % risk, the link between the level of food truck consumption and consumer activity ($\chi^2$ calculated = 34.14, degree of freedom = 9, p-value = 8.442e-05). The positive rate (“occasionally” or “regularly”) of consumption is proportionally higher among managers than among students (p-value = 0.0001699212 < risk = 1 %) and employees (p-value = 0.02988076 < risk = 5 %). We deduce that managers have greater spending power and opportunity to eat out, compared with non-managerial employees and students. However, this result is not consistent with the description of food truck consumers in America for example, where they are portrayed as more professional-looking, artistic, or students (Martin, 2014).

From these findings, we draw several theoretical and managerial implications (below).

## 5. Implications

### 5.1. Theoretical implications

Food trucks offer a socio-technical prism with which to explore social innovation and social business (Yunus et al., 2010). Various factors can be identified that enable food trucks to leverage technology to support social innovation, sustainable social business and underscore the ‘social’ and the ‘technical’ as interdependent parts of a complex system (Bosstrom and Heinen, 1977). In response to changes in the surrounding business environment, food trucks have emerged as an innovative response combining principles of socially-oriented activities to satisfy the changing demands of customers (Anenberg and Kung, 2015).

We build on, and broaden, the stream of literature on social business models and the use of technology for responding to change in society. First, we extend existing research on business models (c.f., Mokhtar et al., 2017; Wessel, 2012) and more precisely social business models (Yunus et al., 2010) by positioning the principles of social business in a new context (i.e., food trucks) and in a new setting (i.e., consumption during the pandemic). We contribute to knowledge by arguing that a social business model should include a social profit equation as a core element. Second, we emphasize the use of social media as a marketing tool to promote food trucks (Ishak et al., 2018), and contribute to the literature on using geolocation technologies and mobile commerce/marketing tools to deliver optimum consumer experience, in line with the SO-LO-MO approach of food trucks (Lichy et al., 2017; Kang, 2019).

The findings complement the existing literature by combining both theory and practice to provide a pertinent example of socio-technical synergy in the food truck sector during pandemic conditions, based on exploiting the potential offered by mobile apps, geolocalisation, communication and navigation tools. Our originality lies in explaining how food trucks re-engineer their business model to enhance productivity and proximity, using sustainable and innovative solutions to address the challenges and harness the opportunities brought about by social change. We contribute to the stream of literature on using technology to reduce food-waste and over-consumption (Apostolidis and McLeay, 2016; Apostolidis et al., 2021).

Given the pandemic measures imposed, the availability of food trucks on the streets of France enabled society to maintain a modicum of routine (Yoo and Managi, 2020); delivery technology kept French food trucks afloat, ensuring that customers can order doorstep delivery of food.
food. The social business model enables food trucks to respond to new consumer preferences and food intolerance (e.g., gluten and lactose). It also enables the ‘farm-to-food truck’ concept that caters to discerning customers who favour quality-over-hunger, underscoring the advantages of SO-LO-MO (Lichy et al., 2017; Kang, 2019). The re-visiting of classic recipes to produce new dishes made from responsibly-sourced ingredients and local/seasonal products has resonance with studies of social media and social change (Hernández-López, 2011; Wessel, 2012; Martin, 2014).

5.2. Managerial implications

We propose four suggestions food truck owners/managers could consider integrating: (i) digital and secure payment methods (e.g., via PayPal), (ii) partnerships with food delivery apps (e.g., Deliveroo or JustEat) to enhance visibility, (iii) a digital loyalty program, and (iv) a social media strategy to leverage sustainability and responsibility issues, such as building online local communities, and sharing ‘visual’ word-of-mouth promoting local food suppliers. The use of technology is crucial for creating the brand and raising awareness of the value proposition, to show how their offers are different from their direct and indirect competitors.

The findings demonstrate the use of social technologies for communicating, interacting and building relationships with local communities (Sonenshein et al., 2017; Nikolopoulos and Dana, 2017). Food truck owners/managers need to develop a social media strategy to help build their business on and offline. They need to provide basic content such as opening hours, location information, food specialties, mini-games and so on; they also need to be familiar with social media KPIs (key performance indicators) for tracking business, including follower count, impressions (i.e., how many times a post showed up on a timeline or newsfeed), response rate and brand awareness. Staying connected is vital for reaching customers (existing and potential) as well as for engaging with local communities. The findings also show that younger customers are more connected and more outgoing in terms of seeking novelty, and perhaps more open-minded to using food trucks as a substitute for restaurant dining during the pandemic. The convenience of receiving digital updates from food trucks and being able to order food during lockdown (when restaurants are closed) is evident.

To address the negative connotation of food trucks manifested by some French consumers, food truck owners/managers need to invest efforts into raising awareness of the concept, for example, by involving consumers in crowdsourcing to develop new products and services. If a customer can communicate with a food truck in real-time and through a platform that suits them, they will feel valued and respected and may become a brand advocate.

The food truck business model espouses the principles of social business (Yunus et al., 2010), by using technology to reconfigure the concept of supply and demand in the food supply chain. Due to the pandemic, many traditional restaurants are in financial difficulty: food trucks may provide a viable solution for a new value proposition based on quality over quantity, proximity with local communities, and a philosophy of ‘buy local, make local, digitize’.

5.3. Limitations and future research

This study has several weaknesses. Firstly, by focusing on the French market, we overlook other national contexts. We plan to extend the study by adopting a cross-country comparison.

The emphasis was on understanding how food trucks harness technology to evolve into a social business; it would be interesting to develop the study by examining how different platforms can be integrated, for example, by tracking Foursquare® check-ins and social media stories. Equally, it would be constructive to investigate the principles of social business (Yunus et al., 2010) in other service sectors, in order to look into alternative business models as a social business.

6. Conclusion

Having examined how food trucks in France embrace the principles of social business, and acknowledging customer perceptions, the present findings emphasize the interdependence of ‘social’ and ‘technical’ aspects, epitomizing the SO-LO-MO approach. Technology is used by food truck owners/managers to support a connection (physical and digital) to local producers and local communities, blending tradition and innovation, while respecting the principles of social business.

In terms of the food truck business model, this study confirms the need to add the social profit equation to the trystic: value proposition, value constellation, and profit equation. The findings point to the spirit of communitas, highlighting environmental sustainability and social responsibility, and the relevance of using quality/fresh local products in food preparation and offering nutritionally balanced healthy meals by combining raw ingredients with innovative cooking processes – these elements underpin the principles of social business developed by Yunus et al. (2010). As the post-pandemic era unfolds, food trucks have the potential to act as incubators for future social business in the restaurant trade.

As a way to develop the offer going forward, we must consider several contextual factors. Namely, in the French mindset, food is to be savoured rather than merely consumed to prevent hunger. Therefore, the practicalities of providing online information, convenient distribution and food aesthetics are extremely relevant. By innovating the business model and paying attention to the social profit equation, food trucks can steer around the pandemic and offer a sustainable alternative for diners.

CRediT authorship contribution statement

| Author              | Contribution                                                                 |
|---------------------|------------------------------------------------------------------------------|
| Jessica Lichy       | Idea generation and formulation, Research goals and aims, Guide for literature review on food truck, Co-writing of the first draft, advanced draft, and final paper, Finalize the paper |
| Vincent Dutot       | Idea generation and formulation, Research goals and aims, Guide for literature review on social business, Co-writing of the first draft, advanced draft, and final paper, Finalize the paper |
| Maher Kachour       | Idea generation and formulation, Development of methodology, Analysis and reduction of the results section, Co-writing of the first draft, advanced draft, and final paper, Finalize the paper |

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