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Intentionality or Identity? And Does it Matter? A Qualitative Study of Food Sustainability of Agritourism in Sardinia, Italy

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Abstract

The environmental sustainability of agritourism has been understudied in the literature. In the organisational environmentalism field, research grounded in the Theory of Planned Behaviour (TPB) has paid scant attention to the indirect variables. To bridge this gap, we contribute to the TPB applications in organisational settings by employing a qualitative lens to shed light on the indirect variables of the TPB in the context of food sustainability of agritourism in Sardinia, Italy. Based on 20 in-depth interviews, we examine the type of green food practices agritourism operators perform, the barriers they face, and the role that farmer attitudes, norms, and beliefs play in food sustainability. We also explore the link between farmers' climate change knowledge and their use of green food behaviours. Findings suggest that agritourism operators perform green food behaviours due to a deep sense of identity rather than a strong environmental concern. Thus, any policy design around sustainability must consider the powerful impact of identity and tradition on farmer behaviour. While we do not propose climate change knowledge as a permanent addition to the theory, awareness programs and education campaigns still play an important role in increasing farmer awareness of climate change.

Keywords – Green Food Practices; Food Waste; Plant-based; Climate Change Knowledge; TPB.

Paper type – Academic Research Paper

Sommario

Intenzionalità o identità? E ha importanza? Uno studio qualitativo sulla sostenibilità alimentare dell'agriturismo in Sardegna, Italia. – La sostenibilità ambientale dell'agriturismo è stata poco studiata nella letteratura. Nel campo dell'ambientalismo organizzativo, la ricerca fondata sulla Teoria del Comportamento Pianificato (TCP) ha prestato scarsa attenzione alle variabili indirette. Per colmare questa lacuna, contribuiamo alle applicazioni TCP in contesti organizzativi impiegando una lente qualitativa per far luce sulle variabili indirette del TCP nel contesto della sostenibilità alimentare dell'agriturismo in Sardegna. Sulla base di 20 interviste approfondite, esaminiamo il tipo di pratiche alimentari verdi che gli operatori dell'agriturismo svolgono, le barriere che affrontano, il ruolo che i loro atteggiamenti, norme e credenze giocano nella sostenibilità alimentare, e il legame tra le conoscenze degli agricoltori in materia di cambiamenti climatici e l'uso di alimenti ecologici. I risultati suggeriscono che gli operatori dell'agriturismo adottano comportamenti di cibo verde a causa di un profondo senso di identità piuttosto che di una forte preoccupazione ambientale. Pertanto, qualsiasi politica incentrata sulla sostenibilità deve tenere conto del forte impatto dell'identità e della tradizione sul comportamento degli agricoltori. Anche se le conoscenze sui cambiamenti climatici non sono proposte come aggiunta permanente alla TCP, i programmi di sensibilizzazione e le campagne educative svolgono ancora un ruolo importante nell'aumentare la consapevolezza degli agricoltori sui cambiamenti climatici.

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1 Introduction

Agritourism is a type of accommodation particularly relevant to sustaining rural and sustainable tourism development (Paniccia & Baiocco, 2020; Valdivia & Barbieri, 2014), a tool to protect natural resources, cultural identity, and the biodiversity of a region (Brandano, Osti and Pulina, 2018). In contrast to traditional forms of tourism, agritourism has the potential to increase biodiversity, reduce deforestation, and contribute to human health (FAO, 2020; Paniccia & Baiocco, 2020). It is often practiced in socially vulnerable settings (Sahebalzamani & Bertella, 2018), e.g., in rural parts of Sardinia, Italy, where most agritourism businesses are small and medium-sized (SME) family farms (Lupi et al., 2017). Agritourism was defined by Italian law no. 96/2006 as, “the hospitality activities practiced by agricultural entrepreneurs [...] through the use of their farms in connection with the farming activities, forestry-related activities, and livestock activities,” with the stipulation that “agricultural activities prevail over the agritourism activities” (Broccardo, Culasso, & Truant, 2017, p. 4).

Despite its environmental sustainability benefits, however, agritourism has not been studied thoroughly in the literature. In a systematic literature review, Rauniyar, Awasthi, Kapoor, and Mishra (2020) note that agritourism is under-researched compared with other forms of tourism. While the field is rapidly growing, farmers’ environmental attitudes, values, skills, and competencies have not received sufficient attention in scholarly research (Hardesty, 2018; Paniccia & Baiocco, 2020; Roxas & Coetzer, 2012). Additionally, scholars argue that more attention should be paid to the location of respondents and their experiences with climate change (Howe, Marlon, Mildemberger, & Shield, 2019). As an island, Sardinia is more exposed to climate change, which poses a serious threat to agriculture (Trabucco et al., 2018). However, Sardinia is also under-studied as an agritourism location, as most agritourism is concentrated in the North and Centre of Italy: currently, there are 640 agritourism farms in Sardinia, compared to 20,646 in Italy overall (ISTAT, 2024). Thus, scholars recommended extending agritourism research beyond continental Italy (Broccardo, Culasso, & Truant, 2017; Palmi & Lezzi, 2020).

To bridge these gaps, we use the Theory of Planned Behaviour (TPB) (Ajzen, 1991), enhanced with an additional variable, the climate change knowledge, to analyse the environmental sustainability of agritourism farms in rural Sardinia. TPB is a psychological theory that predicts human behaviour based on several factors: attitude towards the behaviour (positive or negative feelings about performing the behaviour), subjective norm (beliefs about what people important to the person think they should do), and perceived behavioural control (perceptions about the influence people have over the factors that facilitate or impede the behaviour). These factors influence an individual’s intention to perform a behaviour, which in turn, determines whether the individual will perform that behaviour and to what

extent (Ajzen, 1991). TPB was successfully used to explain pro-environmental behaviour in organisations (Blok, Wesselink, Studynka, & Kemp, 2015; Wang, 2016), but the decision-maker's knowledge of climate science was insufficiently integrated into the model thus far.

This study is unique in several ways. First, we follow the recommendations of Ajzen and Fishbein (1980) and adapt the indirect variables under study to the specific context of Sardinian agritourism. This is important, because we know from cross-cultural research that values and beliefs differ across nations and geographical contexts (Schwartz, 2003). Second, more than 80 percent of TPB studies were conducted within households (Yuriev, Dahmen, Paillé, Boiral, & Guillaumie, 2020b), with only a few being conducted in organisations (Blok, Wesselink, Studynka, & Kemp, 2015; Wang, 2016; Yuriev, Boiral, & Guillaumie, 2020a). Thus, by exploring the beliefs of the agritourism operators leading small, familial organizations, we add to the scarce empirical applications and extensions of TPB in organisations. It is important to understand how farmers form their beliefs regarding green food behaviour because understanding these mechanisms would enable researchers and practitioners to design evidence-based policies that support and encourage these behaviours.

Third, we enrich TPB with climate change knowledge, which was never previously explored in organisational environmentalism, although several applications in private environmentalism exist (Clement, Henning & Osbaldiston, 2014; Correia, Sousa, Viseu, & Leite, 2022). To our knowledge, this is the first time in the literature that the augmented TPB theory is employed to examine food sustainability in agritourism in Italy, and specifically in Sardinia. Climate change is often perceived as a distant phenomenon, as something that only affects other people, or a phenomenon that will only happen in the future (Atzeni, Kim, Del Chiappa, & Wassler, 2022), therefore, analysing farmers' beliefs with respect to climate change is key in understanding their intention to engage in green food behaviours.

Methodologically, we make an important contribution to the literature by employing qualitative research methods to understand farmers' indirect beliefs about sustainable behaviours and their link to climate change. In contrast to the theory founders' specifications, most TPB empirical studies to date focus disproportionately on measuring the direct variables quantitatively, paying scant attention to the indirect variables (Yuriev, Dahmen, Paillé, Boiral, & Guillaumie, 2020b). The interpretative power of the qualitative approach enriches the TPB theory and avoids a mechanistic application of its traditional variables and scales (Yuriev, Dahmen, Paillé, Boiral, & Guillaumie, 2020b).

We focus on the following green food practices: reducing food waste, using seasonal ingredients, producing locally, offering vegan/vegetarian dishes, practices that are insufficiently studied in the literature (Ivanova et al., 2020; Principato, Pratesi, & Secondi, 2018). Unsustainable food practices are considered important drivers of environmental problems (Moscatelli, El Bilali, Gamboni, & Capone,

2016), and farmers' attitudes and beliefs matter in determining green behaviours. Thus, our study aims to answer the following, overarching, research question: what is the role of the TPB theory, augmented with climate change knowledge, in shaping farmers' engagement in green food behaviours?

The paper is organised as follows. The first section reviews the literature on the environmental sustainability of agritourism, and the types of green food practices studied. The second section describes the theoretical framework employed, and the proposed addition to theory. The third section outlines our methodology, the fourth section describes our results, and the fifth section discusses findings in terms of theoretical and practical implications. The last section outlines our conclusions, limitations, and directions for future research.

2 Literature review

The environmental sustainability of tourism and that of small businesses such as agritourism farms, is neglected in the literature (Ammirato, Felicetti, Raso, Pansera, & Violi, 2020; Barbieri, 2019; Orefice & Nyarko, 2020; Rauniyar, Awasthi, Kapoor, & Mishra, 2020). In a systematic review of the research on green practices in the hospitality sector, agritourism was not even included (Kim, Lee, & Fairhurst, 2017), and in a literature review focused on agritourism, only six percent of articles addressed sustainable development (Rauniyar, Awasthi, Kapoor, & Mishra, 2020). This is unfortunate, because agritourism is intrinsically linked to agriculture, and globally, agriculture generates about one third of total GHG emissions (The World Bank, 2023). In Sardinia in particular, agritourism research has focused heavily on the sociological and economic aspects, and insufficiently on its environmental aspects (Arru, Furesi, Madau, & Pulina, 2019a, 2019b). Thus, scholars recommend analyzing the environmental values and beliefs of tourism operators in rural destinations (Del Chiappa, Usai, Cocco, & Atzeni, 2018).

The UN defines a sustainable food system as a system that “delivers food security and nutrition in such a way that [...] it has a positive or neutral impact on the natural environment” (FAO, 2018, p. 1). Within the “food system wheel” (FAO, 2018, p. 3), this paper focuses mainly on agritourism activities related to food production, processing, and consumption, including disposal of food waste. Green food practices are summarized in Table 1.

Table 1 – Green food practices and sustainability considerations

Green food practices	Sustainability considerations
Reducing food waste	▪ Kitchen waste, due to incorrectly preparing, or spoiling food (Principato et al., 2018). ▪ Client waste, due to lack of planning, opening hours, buffet style (Pirani & Arafat, 2016). ▪ Food uses land, water, and fertilizers to grow (Katsarova, 2016; Munir, 2022).
Own production and local sourcing	▪ Farm-to-table approach reduces CO₂ emissions from transportation (Soligo, 2022).
Seasonality	▪ Using fresh ingredients does not require freezing or canning reduces CO₂ emissions (Soligo, 2022).
Plant-based dishes	▪ Vegan dishes have lower CO₂ impact, generally (Benvenuti et al., 2022). ▪ Adding eggs and dairy dishes to a vegan menu increases its carbon footprint by 48%; adding red meat increases the carbon footprint by 34% (Benvenuti et al., 2022). ▪ A meat-based menu generates more food waste than a vegan/vegetarian menu (Principato et al., 2018).

Source: Authors' elaboration

Recent studies found that almost 40 percent of food produced on farms is wasted (WWF-UK, 2021). In Italy, it is estimated that restaurants waste about 21 percent of all food they produce (Coldiretti, 2017). Purchase planning, menu planning, and managing inventory carefully helps reduce food waste (Principato, Pratesi, & Secondi, 2018), but little research is conducted in agritourism. Given the importance of food waste generated by the hospitality sector, scholars agree that more research is necessary to understand the causes of food waste and how to reduce it (Dhir, Talwar, Kaur, & Malibari, 2020; Principato, Pratesi, & Secondi, 2018).

Generally, the agritourism model uses a farm-to-table approach, also called 'kilometre zero', meaning that the food has travelled zero km from production to consumption. Indeed, often, agritourism restaurants do not even have a written menu because their dishes vary with the season (e.g., farms on the Prosecco Route) (Soligo, 2022). However, not all products can be made locally (e.g., coffee, sugar, Coca-Cola), thus it would be relevant to determine whether farmers consider the distance to the country of origin in their purchasing decisions. Additionally, food menus of agritourism in rural Sardinia are traditionally meat or dairy-based (see the Agriturismo Agrisole (n.d.) menu as an example), so it would be interesting to study farmers' beliefs and intentions regarding plant-based offerings in the future.

3 Theoretical framework

A widely used theory in environmentalism (Yuriev, Dahmen, Paillé, Boiral, & Guillaumie, 2020b; Wan, Shen, & Choi, 2017), the TPB theory posits that individual behaviour is determined by seven variables, three indirect (behavioural, normative, and control beliefs), and four direct (intention, attitude, subjective norm, and perceived behavioural control; Ajzen, 1991).

Essentially, the TPB suggests that, the more favourable an individual views a certain behaviour (attitudes), the more accepted/encouraged by the society and important people in their lives (subjective norms), and the more they can control the circumstances surrounding the behaviour (perceived behavioural control), the more likely it is that they will carry out their intention. Conversely, when an individual lacks the necessary infrastructure, or when they do not feel knowledgeable enough or confident enough to engage in a certain behaviour, they will not do so (Ajzen & Driver, 1992; Davies, Foxall, & Pallister, 2002).

The theory has been supported empirically in numerous studies of ecological behaviour in organisations. Apart from being tested in different contexts, the theory has been enriched with additional variables, such as environmental awareness (Blok, Wesselink, Studynka, & Kemp, 2015), environmental values (Morgan, Hine, Bhullar, & Loi, 2015), moral norms, and habit (Klöckner, 2013). The founder himself was open to adding variables as long as they meet several criteria (Fishbein & Ajzen, 2010), and empirical studies found that enriching TPB with additional variables increased its predictive power by at least 10 percent (Yuriev, Dahmen, Paillé, Boiral, & Guillaumie, 2020b).

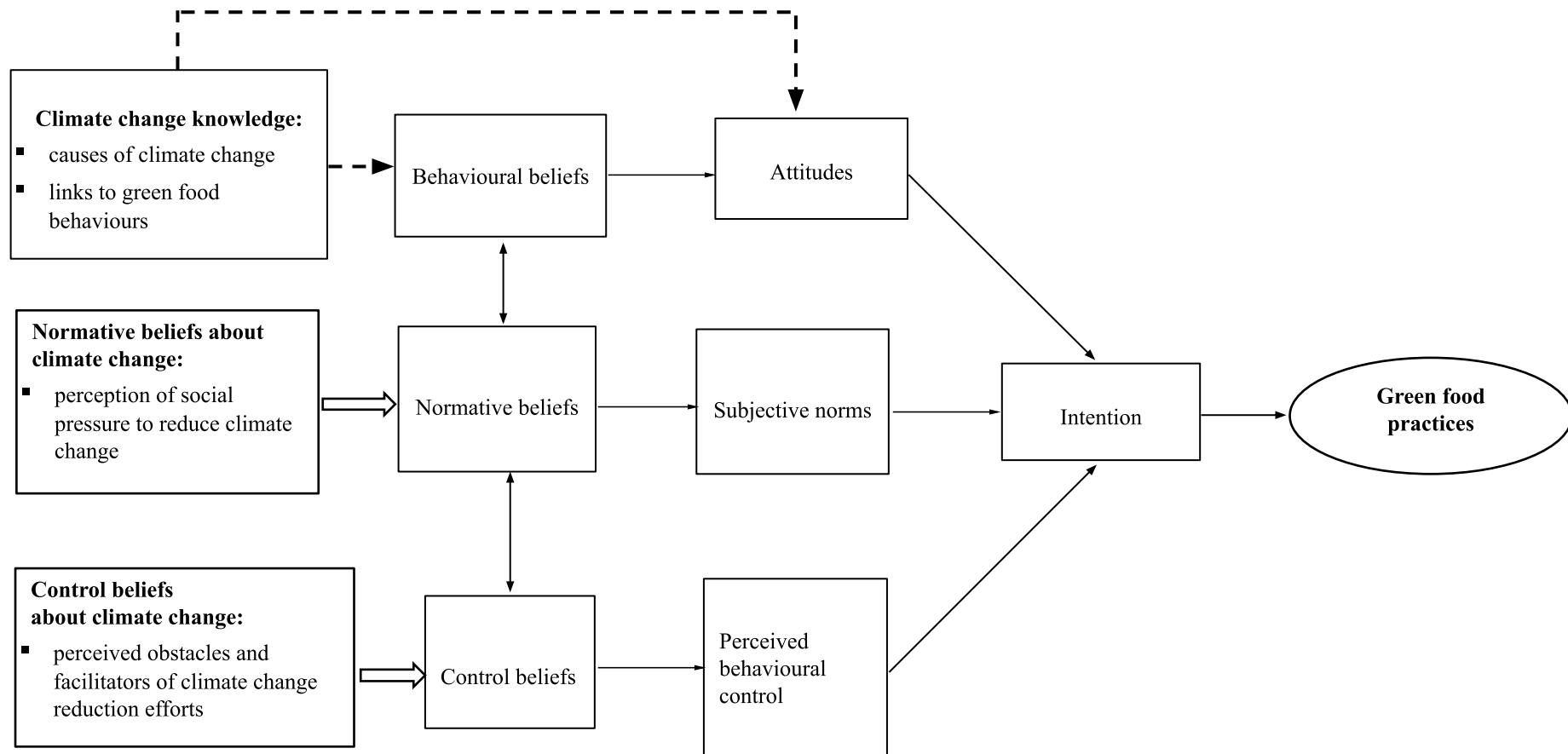
The TPB was criticized for giving too much importance to attitudes, and for not incorporating knowledge and habits, which may largely influence ecological behaviours (Stern, 2000; Yuriev, Dahmen, Paillé, Boiral, & Guillaumie, 2020b). In organisations, the TPB framework was only rarely augmented with environmental knowledge and awareness (e.g., Blok, Wesselink, Studynka, & Kemp, 2015), and this was never done in agritourism.

To bridge this gap, we extend the TPB theory with climate change knowledge, following the criteria suggested by the founder of the theory (Fishbein & Ajzen, 2010): first, the additional variables must be domain-specific, *i.e.*, compatible with the green behaviours studied (Yuriev, Dahmen, Paillé, Boiral, & Guillaumie, 2020b). Climate change knowledge is domain-specific, since climate change is a complex phenomenon that can be mitigated by a diverse set of behaviours (in the context studied here, reducing food waste, preparing a seasonal menu, buying local, etc). However, the findings with respect to the link between climate change/environmental knowledge and intention to engage in green behaviours are not conclusive. Some studies find that the more decision-makers know about environmental science, the

more they engage in green behaviours (Bradley, Babutsidze, Chai, & Reser, 2020; Latif et al., 2023), while others find weak or no correlations between knowledge and behaviour (Ajzen, Joyce, Sheikh, & Cote, 2011; Correia, Sousa, Viseu, & Leite, 2022). Despite these contradictory findings, one can conceive of climate knowledge as a factor influencing action (Yuriev, Dahmen, Paillé, Boiral, & Guillaumie, 2020b). Second, additional variables must be conceptually different than the existing TPB variables and must be related to a wide range of green behaviours (Yuriev, Dahmen, Paillé, Boiral, & Guillaumie, 2020b; Fishbein & Ajzen, 2010). Climate change knowledge meets this criterion as well, because the existing TPB variables measure attitudes, norms, and beliefs, which are conceptually different than knowledge or cognitive information. Indeed, empirical studies find that environmental knowledge and environmental attitudes are two distinct constructs, and they are barely correlated or not correlated at all (Ajzen, Joyce, Sheikh, & Cote, 2011; Clement, Henning & Osbaldiston, 2014). Thus, we aim to explore whether climate change knowledge influences farmers' beliefs about the expected consequences of green food behaviours (i.e., their behavioural beliefs), that is, if farmers attribute anthropomorphic causes to climate change, do they infer that green food behaviours contribute meaningfully to mitigating it? Conversely, if they deny anthropomorphic causes, they may conclude that performing green food behaviours may not make a difference.

We propose adding climate change knowledge to the theory, as described below. For parallelism reasons, the adapted model also includes farmers' normative beliefs about climate change, that is, their perception of social pressures from significant others to address climate change, and their control beliefs, that is their assessment of obstacles and facilitators of climate change reduction efforts. However, for model parsimony reasons, the last two variables are not tested in this study and form the basis for future research. The adapted theoretical model is shown in Figure 1.

Figure 1 – The conceptual model based on the Theory of Planned Behaviour



Note. Dashed lines represent hypothesised relationships. Relationships represented by the block arrows are not tested in this study.

Source: adapted from Ajzen and Schmidt (2020) and enriched with climate change knowledge

4 Methodology

4.1 Data collection and analysis

As recommended by Ajzen (1991) and Yuriev, Dahmen, Paillé, Boiral, and Guillaumie (2020b), qualitative data were collected via in-depth, structured, interviews, about the indirect variables of the TPB (behavioural, normative, control beliefs) and about the climate change knowledge variable. The interview questions (see *Appendix*) are based on the TPB and its applications in environmentalism (e.g., Blok, Wesselink, Studynka, & Kemp, 2015). Demographic information is presented in Appendix, Table 3. The interviews were pre-tested with two farmers, and their feedback was incorporated into the interview guide. A deductive approach was used, guided by an augmented TPB framework, which gives us a good idea of what we may expect to find (Braun & Clarke, 2006). Twenty in-depth interviews were conducted in May and September 2023. We chose these months to avoid interfering with the busy tourist season of our participants (usually summer). The participants were randomly selected from a list of agritourism operators who offer some kind of dining experience (breakfast, lunch, and/or dinner) located in northeast Sardinia. We used a snowball sampling process, where participants were invited to nominate other farmers for us to interview. Ethics approval with the IRB number 1784156-1 from the first author's institution was obtained. Since one of the authors is fluent in Italian, interviews were conducted in Italian, recorded with respondents' permission, and lasted for about 60-90 minutes. The completed interviews ensured data saturation, which occurs when repeated patterns emerge and no additional information is added by subsequent interviews (Patton, 2014). They were transcribed verbatim, translated into English, and then translated back into Italian, as it is typical in cross-cultural research (Olya, Kim, & Kim, 2024), to ensure accuracy and preserve intended meanings. The resulting transcript was subject to content analysis and initial themes were identified. The final themes were identified through an iterative content analysis process, recommended by Braun & Clarke (2006) (see Table 2).

Table 2 – Phases of analysis

Phases	Activities
First phase	▪ Transcribed interviews verbatim and checked transcripts against the audio recordings to ensure accuracy.
Second phase	▪ Actively read and re-read the data, created code categories and sub-categories, and generated themes, by combining and re-combining codes and sub-categories of codes. ▪ Paid particular attention to the internal consistency of these themes to ensure the themes are distinct from each other.
Third phase	▪ Organized codes with the help of a visual thematic map (1st order dimensions in Figure 2). ▪ Discarded some of the codes that appeared infrequently in the data or were too vague to constitute a theme.
Fourth phase	▪ Verified if themes work relative to the data excerpts and the broader data set. ▪ Defined and named overarching themes, and eliminated overlap, to make sure they accurately reflect the meaning of ideas expressed by our respondents.
Fifth phase	▪ Created a final thematic map (2nd order and aggregate dimensions in Figure 2).
Sixth phase	▪ Selected compelling examples to illustrate the themes, re-analysed the examples, related our analysis back to our research questions and literature, and wrote our findings. ▪ Used the Gioia, Corley and Hamilton (2013) method, codifying the results into three levels (Figure 2).

Source: Authors' elaboration

5 Results

5.1 Green food behaviours

Content analysis indicates that farmers reuse and repurpose kitchen scraps and uneaten client foods in the production process, they use an efficient food ordering and production process, and value seasonality and local sourcing of ingredients. They do not plan on adding more vegan and vegetarian dishes to their menu, although they respect the dietary preferences of their clients. Their attitudes and beliefs regarding these behaviours are described in more detail below, and interview quotes are presented in Appendix, Table 4.

5.2 Behavioural beliefs

As a reminder, behavioural beliefs refer to an individual's opinions about the expected consequences of performing a certain behaviour. These consequences can be positive or negative, which can affect their attitudes toward the behaviour analysed favourably or unfavourably.

5.2.1 Beliefs about food waste

Identity. Since most agritourism farms also grow animals (pigs, cows, chicken, sheep), they give the kitchen scraps and uneaten (but touched by clients) food to animals. Kitchen scraps are also composted for their vegetable garden, vegetable peels are used to make broth, and used frying oil is repurposed for making soap, donated to oil deposits, or used to power chainsaws. Farmers mentioned that this approach also reduces the direct costs associated with feeding animals or making soap. Many farmers cited the Gadda Law (n. 166/2016) as impetus for providing 'doggy bags' to clients, so they can take home leftovers. Food that is not touched by clients is given to kitchen personnel, to family members, or to poor people in the village. Farm operators who do not grow animals place their kitchen waste in organic waste bins. Farmers noted that not wasting food is a normal assumption of operation, grounded in long-standing values and identity. That is, everything that is produced goes back into the production process.

Efficiency. Many farmers mentioned that they don't have much waste to begin with because they use a careful planning process, based on years of experience. In contrast to "all you can eat" resorts, they use a fixed price menu based on a reservation system and employ analytics (although they did not call it that way), that is, they keep track of items that are not selling well and frequently revise the menu with an eye toward reducing waste.

Client responsiveness. Sometimes concerns to reduce food waste are driven by clients, who often ask what happens with the food that is not eaten. Farmers note that clients like it when farmers try to avoid wasting food by offering 'doggy bags.' The 'doggy bag', however, is often not conceived of in terms of its ecological benefits, but as an advertising form for agritourism (#16), or as a way to express their identity and to illustrate their aversion toward food waste.

5.2.2 Beliefs about own production and local sourcing

Stimulating the local economy. In addition to having to follow the 2015 Regional Law #11, n. 18 on Agritourism in Sardinia (see above), which many agritourism owners mentioned, they also emphasized the importance for small enterprises to support each other, to benefit the local economy. Many belong to

local agriculture associations, such as *Coldiretti*, or *Confagricoltura*, which focus on local sourcing, and enable farmers to sell excess production and purchase needed items from other farmers in the network.

Convenience. Farmers value the convenience and ease of access to a supplier network that these associations provide. Farmers also emphasized the convenience of being part of a local network of farmers, as they provide ease of access to traditional, high-quality products that they wouldn't otherwise have.

Identity. Offering local products is linked to the Sardinian culture, to their land, to their customs, to their traditions, it is *the* reason for existence, for being in business, their *raison d'être*, it is so intrinsically connected to their identity that farmers did not even conceive of alternative ways of operating. Simply put, *who* they are is embedded in *where* they are. They follow tradition, agricultural principles that were in place 60-70 years ago. Some farmers mentioned with pride that they have managed to revive in Sardinia an ancient grain, einkorn wheat, which was first recovered in France from the Fertile Crescent. While their costs are higher because they produce almost everything in-house, they also believe that doing so is worth it, because they can offer a stronger value proposition to their clients. They wouldn't have it any other way. Farmers emphasize the importance of the traditional pork roast, which is a constant offering in their agritourism.

Quality. Regarding the ingredients that are not produced on their farm, farmers mention the importance of guaranteeing quality and taste. By feeding pigs natural foods rather than industrial produced feed, the pigs have the vitamins, proteins, and fibre they need, thus the quality of the meat is going to be better. Also, purchasing ingredients from local producers in Sardinia ensures the guarantee of quality, because farmers know their suppliers well, as they have established long-standing relationships with them.

Human health. By nature of their business, farmers care about product freshness, taste, wholesomeness, and benefits to human health. They cultivate grains that are disease-resistant, which do not require medication, not even organic treatments, so they are healthy for people to consume. They must have the guarantee that they know how and where the product is grown/raised.

5.2.3 Beliefs about seasonality

Identity. The theme of identity is also reflected in farmers' focus on seasonality. Most farms don't even list dishes on the menu because the dishes change according to the seasonality of ingredients. Often, they offer a few classic dishes that are always available, and they vary the vegetable dishes with the season. As mentioned above, they offer a fixed price menu with seasonal fruits and vegetables, not a buffet, and only in an insignificant number of cases, they use ingredients from greenhouses.

Lack of variety. Grounded in their strong sense of identity, farmers make a conscious choice of seasonality over variety: For instance, they prefer to offer a small variety of fruits at breakfast (but in season) rather than a large variety of fruits (out of season). One farmer spoke with disdain of another local agritourism that did not follow the principle of seasonality (see quote from #4 in Appendix, Table 4).

Quality. Farmers noted that seasonal ingredients are fresh, wholesome, 'better for you', and taste better than non-seasonal ingredients. Some farmers even stopped canning vegetables (#16), precisely to appreciate the freshness of vegetables that are in season.

Cost. Farmers noted that their costs are lower if they produce/buy ingredients in season.

As with beliefs regarding local production, the environmental aspect of seasonality did not figure prominently in farmers' reasoning, in their arguments for using seasonal ingredients. Overall, when asked why seasonality is important to them, farmers mention three main reasons: identity (this is who we are), quality (the seasonal products taste better), and cost (seasonal ingredients are cheaper than those produced in greenhouses).

5.2.4 Beliefs about plant-based dishes

Plant-based dishes were split between vegetarian and vegan, because farmers held substantially different beliefs about them.

Vegetarian dishes. Again, the *identity* theme was evident in farmer attitudes toward vegetarian dishes. Most farmers perceive vegetarian dishes as an integral part of the Sardinian cuisine, of their identity. They did not see vegetarian cooking as a particular type of cooking, as a large part of their menu was inherently composed of vegetarian dishes.

Vegan dishes. In contrast to vegetarian dishes, vegan dishes were perceived almost as a dietary restriction to which, if one wants to stay in business, they must adapt. Indeed, farmers try to accommodate an increasing number of vegan clients. Many mentioned plant-based diets in the same breath as allergies, intolerances to gluten or lactose, and so on. Thus, the theme of *client responsiveness* is evident here.

5.2.5 Summary of behavioural beliefs

Starting from the perceived advantages and disadvantages outlined above, farmers developed favourable attitudes toward green food behaviours (the final themes are summarised in Figure 2). To sum up, farmers see mostly positive consequences of the green food behaviours analysed. Primarily, these behaviours are in line with their traditions, with their values, they are an inherent part of who they are, of their identity.

Reducing food waste by offering a reservation-based system, by entering food scraps back into the production process through animal feed, saving leftovers, providing clients with doggy bags, all ensure an efficient operation. Clients expect to see a farm where animals are free to roam around and are fed a natural diet. They expect high-quality ingredients and taste, so farmers carefully offer and preserve this image. By producing food in house, or by purchasing it from other local producers in Sardinia, whom they know and have developed a long-term relationship with, farmers ensure high quality of ingredients. While their menu may not be as varied as their competitors in the hospitality industry (e.g., ‘all you can eat’ resorts), and while they do not realize high margins, their focus on preserving tradition is primordial. Vegetarian dishes are an integral part of Sardinian cuisine, but vegan dishes are perceived as a burden, to which, while inconvenient, they must adapt.

Given the focus of our research, it is as important to identify the themes that emerged from farmers’ beliefs about the consequences of green food practices, as well as the themes that did not. While some farmers mentioned the benefits of their farm-to-table approach in terms of reducing CO₂ emissions, environmental concerns were not strong enough or connected enough with the other themes to be able to constitute a theme. Rather, environmental considerations were mentioned more like an afterthought than as a rationale for performing green food behaviours. As a rationale to perform green food behaviours, identity was more prevalent than intentionality (*i.e.*, an intention to protect the environment).

5.3 Normative beliefs

According to the TPB, normative beliefs refer to farmers’ perceptions of social pressures exerted by institutions or individuals. In turn, these beliefs shape farmers’ perceptions about how their green food behaviours are perceived by others (subjective norms). Farmers mentioned that trade associations, EU institutions and clients, all appreciate and recognise agritourism farmers’ use of traditional practices. They felt supported by Italian and European Union institutions (public administration agencies, schools, Coldiretti) who are perceived as protecting farmers’ way of life and their traditions.

When asked about individuals or organisations who do not appreciate their efforts, farmers often mentioned clients. Regarding their fixed price menu, sometimes clients complain that their portions are too large, and they want to try more and smaller portions, but of a larger variety. Thus, some farmers have adjusted their behaviour in response to client concerns about food waste and prices (see quote from #11 in Appendix, Table 4).

Other than some clients, farmers could not name any individuals or organisations who do not appreciate their use of green food practices. Overall, farmers feel supported by important constituencies in their performance of these behaviours and so, they are inclined to continue to perform them. They developed positive perceptions about how their green food behaviours are perceived by relevant entities. The final themes of farmers' subjective norms are shown in Figure 2.

5.4 Control beliefs

As described above, TPB posits that individuals' beliefs about the presence of factors that can help or hinder their engagement in green food behaviours (control beliefs) influence their belief about the capability they have over performing that behaviour (perceived behavioural control, or PBC).

5.4.1 Obstacles to engaging in green food practices

Bureaucracy. In their pursuit of offering natural products from their own production, farmers mentioned bureaucratic impediments, grant application complexity, and inspection fatigue. Although several farms do not hold the organic certification anymore, they still follow the organic standards of meat and vegetable production, the health and safety rules and regulations, veterinary norms, and use non-GMO ingredients in food production. Additionally, the regulations needed to obtain a cage-free pork certificate are perceived as very stringent and, preventing small growers from providing this certificate. Similarly, many farmers perceived health and safety rules and regulations as stifling and inefficient.

Difficulty. Regarding vegan dishes, farmers emphasised the difficulty of offering a vegan menu, in terms of time, costs, and complexity.

Regarding their capacity to reduce or eliminate these obstacles, farmers did not feel that they had this ability. Many of the rules and regulations they mentioned are imposed by the European Union. With respect to bureaucratic impediments, eliminating the middleman in grant applications would make it easier for them to access the funds available at the national and EU level.

5.4.2 Facilitators to engaging in green food practices

Identity. Many agritourism owners mentioned that it comes natural for them to use green food practices, because of the culture they grew up in, the habits they developed growing up, in terms of not wasting food, or reusing materials. While no incentives were provided to encourage local production, farmers felt that buying local was their duty (quote from #18 in Appendix, Table 4).

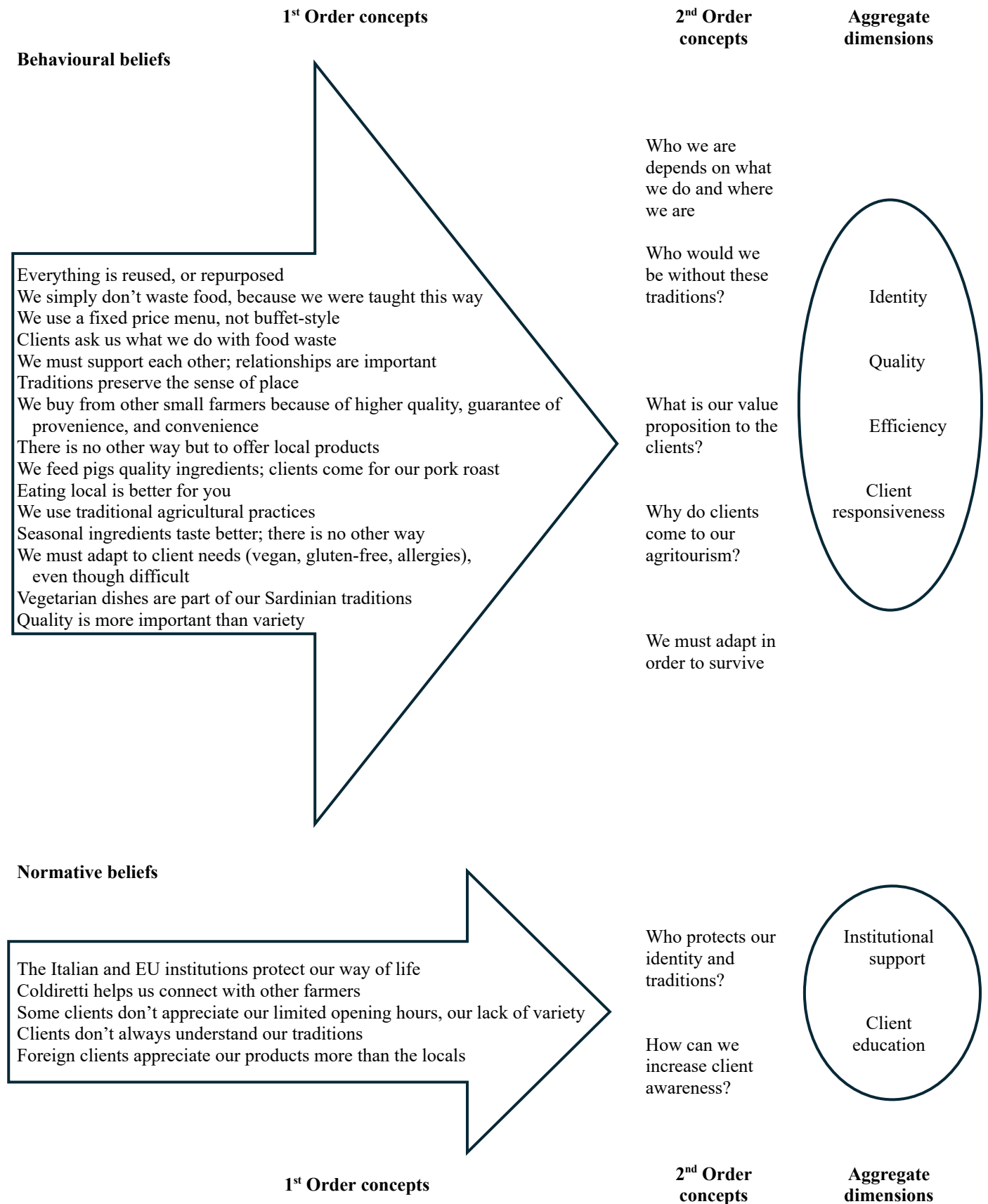
Survival imperative. Overall, farmers had a positive attitude and viewed food sustainability as a personal responsibility and an imperative for business survival.

The final themes of farmers' control beliefs are shown in Figure 2.

5.5 Climate change knowledge

When asked about the causes of climate change, some did not think it was 'a real problem'; rather, they saw it as a natural phenomenon. Others believed in a mixture of human and natural causes, yet others held an entirely anthropocentric view. Farmers who held an anthropocentric perspective blamed the careless attitude of people, especially in large cities, industrial pollution, the CO₂ emissions caused by the burning of fossil fuels and the waste of energy, and intensive agriculture. Yet others held some misconceptions regarding the cause of climate change (e.g., pollution, sprays), but most farmers seemed aware about climate change and its impact on their business. They cited the effects of climate change in Sardinia, such as, a late vegetable growing season, a more tropical climate, an intense drought, which caused them to choose between feeding their animals and watering their gardens, or to reduce their wine production due to extremely hot temperatures followed by a large amount of rain. While most farmers were unsure about the causes of climate change, they were clear about the impact of intensive agriculture on climate. This was a consistent theme in their views about climate change. The final thematic analysis is shown in Figure 2.

Figure 2 – Thematic analysis



Control beliefs

Obstacles:

- funding is available, but application process cumbersome
- health and safety regulations are stifling
- organic certification difficult/expensive to maintain/achieve
- it is difficult, timely, and expensive to cook vegan dishes

Facilitators:

- it comes natural for us to use green food practices
- it is our duty
- we need to adapt if we want to survive in business

Overcoming bureaucracy and difficulty is possible with the right mindset

Our traditions and identity help us overcome obstacles

Bureaucracy

Difficulty

Identity

Survival imperative

Climate change knowledge

Causes:

- people (industrial pollution, intensive agriculture, careless attitude, CO₂ emissions)
- volcanoes, earthquakes, natural causes
- half human activity, half natural causes
- nevertheless, negative impact (droughts, later growing season, etc)

Links with green food practices:

- cannot explain link to food waste
- food waste needs energy/resources to produce
- intensive agriculture is to blame, not us
- km 0
- not sure how local sourcing relates to climate
- eating meat is good for you
- not sure how plant-based diet relates to climate
- depends how meat is grown

Causes most likely anthropomorphic, but intensive agriculture is to blame

The climate is definitely changing

Nuanced perspective on meat versus plant-based diet

Intensive agriculture

Changing climate in Sardinia

Green food behaviors help

Source: based on Gioia, Corley & Hamilton (2013)

5.5.1 Links between green food behaviours and climate change

Food waste and climate change. Many farmers agreed that a positive link exists between food waste and climate change but could not explain this link or the mechanism by which it happens. Others explained that energy, machinery, and fertilizers had to be used to produce the food that ends up wasted, thus generating larger amounts of CO₂, “so, every time we produce and consume more than we need, it has a negative impact on the environment.” (#5). They argued that the food produced in an intensive fashion tends to be more wasteful than familial, small-scale production.

Own production, local sourcing, seasonality, and climate change. Farmers correctly identified the low impact of seasonal ingredients, in-house production and local sourcing on the environment, by avoiding the carbon emissions associated with transportation. They saw traditional agricultural practices as mitigating climate change, they had a multi-faceted view of the link between local production and climate change, and they often struggled with the complexity of this link.

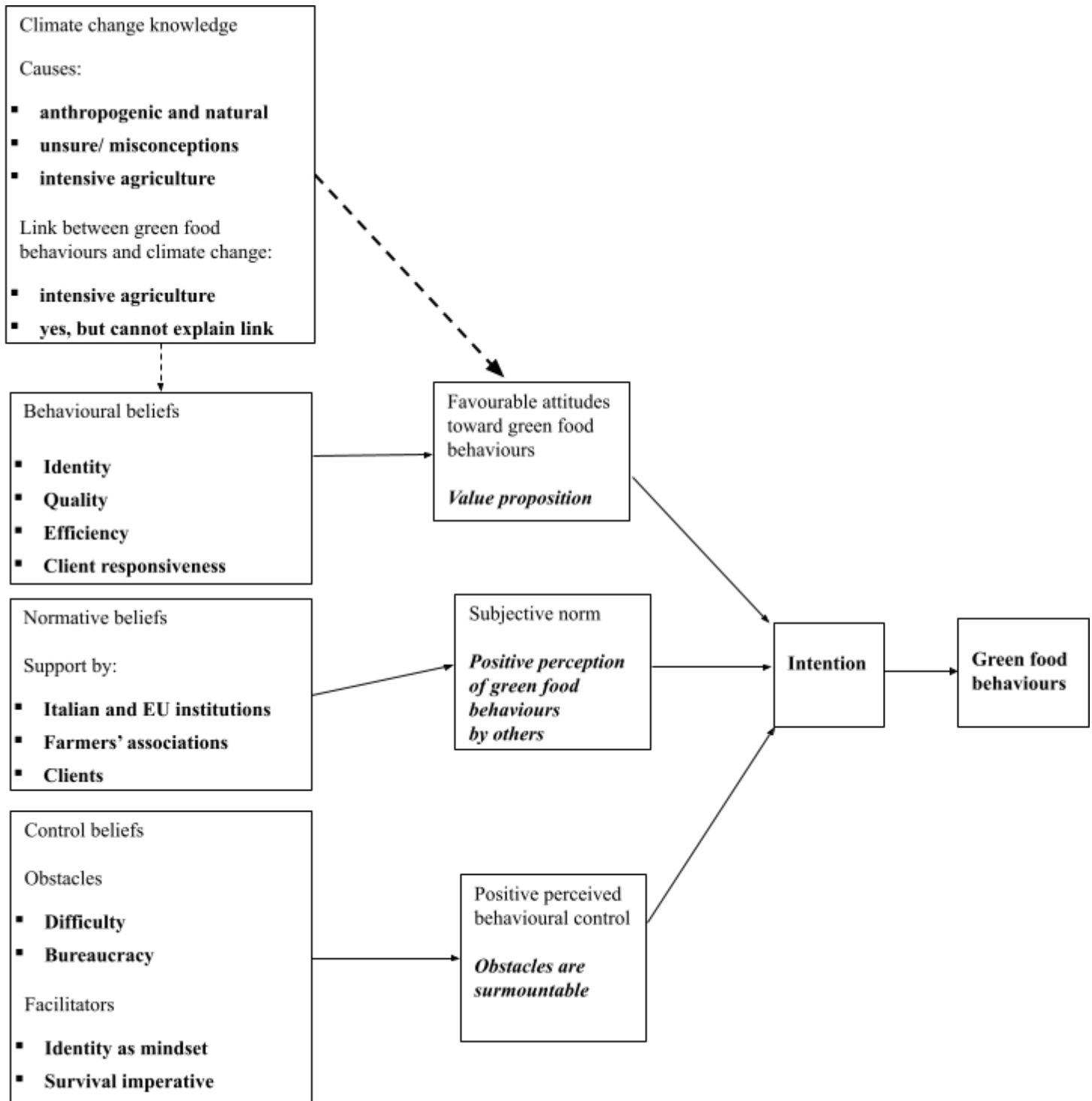
Plant-based diet and climate change. Farmers’ opinions on the nature of our diet and the environment were strongly linked to their opinions related to diet and human health. Opinions ranged from “eating meat is in fact good for you,” to “eating meat in moderation is good for you,” to “eating less meat and more vegetables is good for you” (although very few farmers believed the latter).

Farmers explained the impact of a meat-based diet on the environment by focusing on the environmental impact of the feed needed to raise animals. Others presumed a vegan/vegetarian diet had a smaller impact on the climate, but could not explain this link, responding in a general manner (see quote from farmer #9 in Appendix, Table 4).

In general, farmers believe that meat production does not contribute in a significant way to climate change, unless the meat is produced in an intensive manner. Other farmers also (correctly) observed that vegan cooking does not always contribute less to climate change: it depends on how vegetables are grown, and it also depends on how the animals are grown (intensive manner or not). They correctly pointed out that the production methods are important, not necessarily the type of diet.

Results using the TPB framework augmented with climate change knowledge are summarised in Figure 3.

Figure 3 – Summarising findings using the framework of TPB enhanced with climate change knowledge



Note. Dashed lines represent hypothesised relationships.

Source: Authors' elaboration

6 Discussion of findings

6.1 Theoretical implications

This paper contributes to the literature on TPB and environmental sustainability of agritourism in several ways. First, in contrast to the majority of TPB studies, we focus on organisational, not private environmentalism (Yuriev, Dahmen, Paillé, Boiral, & Guillaumie, 2020b). Since many agritourism operations are family/entrepreneurial businesses, understanding the role of attitudes, beliefs, and intentions of agritourism operators in determining their environmental behaviour can help researchers refine current models of environmentalism in family business/entrepreneurship. Second, by employing qualitative research methods to explore the *indirect* beliefs of agritourism owners, this study follows the suggestions of the TPB founders for rigorous applications of theory (Ajzen & Fishbein, 1980), and differs from current applications of TPB, which focus solely on measuring the *direct* beliefs of decision-makers in a quantitative manner (Yuriev, Dahmen, Paillé, Boiral, & Guillaumie, 2020b). Further, the qualitative approach has been useful to clarify the meaning and measurement of the traditional TPB variables. We also take a rigorous approach to theory development, by adapting indirect belief variables to the unique context of Sardinian agritourism. Regarding theory extension using the climate change variable, we follow Ajzen and Fishbein's (1980) criteria for additions to theory by ensuring that climate change knowledge is a) behaviour-specific, thus following the principle of compatibility, b) directly related to the green food practices studied in terms of action, context, and time, c) conceived as a causal factor between intention and behaviour, d) conceptually different than the existing variables of the model, and e) applicable to a wide range of ecological behaviours studied in organisational environmentalism (Fishbein & Ajzen, 2010). Future research employing our TPB-enhanced model will determine whether the climate change knowledge variable will become a permanent addition to the theory in empirical applications to ecological behaviour.

Our exploratory findings do not support the addition of the knowledge of the phenomenon under study as a permanent variable in TPB. Knowing the causes of climate change or the link between green food behaviours and climate change did not matter in determining farmer behaviour. In fact, even farmers who struggled with explaining the scientific causes of climate change and the complex link between food waste and climate change, or between meat and vegetable production, performed green food practices out of a bedrock sense of tradition and identity that is connected to their place and history. In other words, identity appears to be a more powerful predictor than any sense of intentionality that may be grounded in knowledge of the phenomenon under study. This said, future studies are needed to explore this link further.

6.2 Practical implications

While the TPB framework is considered one of the most effective models for developing interventions, few interventions to stimulate ecological behaviours based on TPB have been developed in the literature (Yuriev, Dahmen, Paillé, Boiral, & Guillaumie, 2020b). Interventions should be based on assessment of indirect beliefs (Yuriev, Dahmen, Paillé, Boiral, & Guillaumie, 2020b), which are uncovered effectively by this qualitative research.

A central implication of our findings is that policymakers should consider interventions that increase farmers' PBC. These interventions could focus on reducing the strength of external obstacles (lack of funding, inspection fatigue) and of internal obstacles (increasing the sense of self-efficacy of farmers, by normalising these behaviours and making them part of operating norms). Although farmers felt supported by the relevant institutions in their pursuit of green food practices, they also felt stifled by the number of regulations impeding their operations. Government agencies may explore ways to reduce inspection fatigue, reduce the middleman in grant applications, or provide tax incentives for buying Sardinian ingredients, or increasing taxes on non-local products (Place et al., 2022).

Increasing self-efficacy could also be done by increasing farmers' knowledge and competences with respect to the impact of green food behaviours on climate change and the level of cognitive effort needed to sort out the complexity of green behaviours (Clement, Henning & Osbaldiston, 2014). While farmers were keenly aware of how dependent their livelihood is on the weather, many could not explain the causes of climate change, or held misconceptions about it. Similarly, while many presumed that a positive link exists between green food practices and climate change, they could not always articulate the mechanism underlying this process. Additionally, farmers struggle with complex issues, *i.e.*, what is more environmentally friendly, raising animals or growing vegetables, growing fish or meat, producing vegetables in an intensive manner versus producing meat in a small, familial setting, buying local meat grown with imported feed versus eating vegetables grown intensively, and so on. Thus, policymakers, tourism association, and destination marketers have an important role in clarifying the causes of climate change and the link between non-green food practices and climate change. Posting such information on the local Chamber of Commerce or trade associations websites, including it in newsletters, or social media, would help increase farmers' awareness and capacity in climate change mitigation. Awareness programs would enhance farmers' knowledge about why, how, and to what extent green food practices help reduce climate change, may reduce misconceptions, and may lead to an increased acceptance of these practices (Poltimäe & Peterson, 2021). Helping farmers and clients compare the carbon emissions of their menu in comparison with the carbon emissions of alternative menus would help reduce this uncertainty, by using food labelling, for instance (Kapała, 2021).

7 Conclusions

Given the importance of agritourism for the Italian economy, and the lack of academic attention to the environmental sustainability of agritourism in Sardinia, a qualitative study was conducted, to explore farmers' use of green food practices, barriers they experience in this effort, and their attitudes and beliefs regarding climate change. Findings suggest that farmers hold favourable attitudes toward most green food practices (reducing food waste, producing locally, sourcing seasonally), and these attitudes are grounded in a bedrock sense of identity. Overall, their sense of who they are (identity) is inextricably linked to their sense of place (where they are located) and time (seasonality of ingredients). Farmers wouldn't have it any other way, because these practices are part of their identity, their culture, of who they are. Preserving the traditional Sardinian agricultural practices and carrying them over into the future is seen as their ethical responsibility. Ultimately, farmers performed green food behaviours whether they knew the scientific causes of climate change or not. Environmental reasons were not expressed as an important rationale for conducting these behaviours. In fact, even farmers who denied the anthropomorphic causes of climate change or those who were unsure of its causes, performed green food behaviours. Rather, identity and tradition were a much stronger predictor than any kind of intentionality grounded in knowledge about the scientific phenomenon under study. While we are not proposing knowledge as a permanent addition to TPB, it is still important to study the climate change knowledge in relation to vegan offerings, both because vegan dishes represent a large departure from traditional Sardinian cuisine, and because knowledge of climate change may be a causal factor in determining intention and action with respect to this behaviour.

Regarding limitations, our study is highly site-specific, and it is based on qualitative data, thus rendering the findings hardly generalizable. Another potential limitation is that we did not measure normative beliefs and control beliefs with separate questions about each of the four behaviours analysed. Future studies may use more behaviour-specific measures of the normative and control beliefs. For instance, researchers may use our adapted TPB model to study farmers' intentions to offer a richer vegan menu.

References

- Agriturismo Agrisole. (n.d.). *Menu*. <https://www.agriturismo-agrisole.com/enca/menu>
- Ajzen, I., Joyce, N., Sheikh, S., & Cote, N. G. (2011). Knowledge and the prediction of behavior: The role of information accuracy in the theory of planned behavior. *Basic and applied social psychology*, 33(2), 101-117.
- Ajzen, I., & Driver, B. (1992). Application of the theory of planned behavior to leisure choice. *Journal of Leisure Research*, 24(3), 207-224.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Ajzen, I. & Fishbein, M. (1980). *Understanding attitudes and predicting behavior*. Englewood Cliffs.
- Ammirato, S., Felicetti, A. M., Raso, C., Pansera, B. A., & Violi, A. (2020). Agritourism and Sustainability: what we can learn from a systematic literature review. *Sustainability*, 12(22). <https://doi.org/10.3390/su12229575>
- Arru, B., Furesi, R., Madau, F. A., & Pulina, P. (2019a). Recreational services provision and farm diversification: a technical efficiency analysis on Italian agritourism. *Agriculture*, 9(2). <https://doi.org/10.3390/agriculture9020042>
- Arru, B., Furesi, R., Madau, F. A., & Pulina, P. (2019b). "Value portfolio", value creation and multifunctionality: the case study of an Italian wine agritourism farm. *Aestimum*, 163-181.
- Atzeni, M., Kim, S., Del Chiappa, G., & Wassler, P. (2022). Ecotourists' intentions, worldviews, environmental values: Does climate change matter? *Journal of Destination Marketing & Management*, 25. <https://doi.org/10.1016/j.jdmm.2022.100723>
- Barbieri, C. (2019). Agritourism research: A perspective article. *Tourism Review*, 75(1), 149-152.
- Benvenuti, L., De Santis, A., Ferrari, M., Martone, D., & Rossi, L. (2022). The carbon footprint of Italian schools meals: An optimal choice of dishes in vegan, vegetarian, and omnivorous menus. *Frontiers in Nutrition*, 9. <https://doi.org/10.3389/fnut.2022.854049>
- Bradley, G. L., Babutsidze, Z., Chai, A., & Reser, J. P. (2020). The role of climate change risk perception, response efficacy, and psychological adaptation in pro-environmental behavior: A two nation study. *Journal of Environmental Psychology*, 68. <https://doi.org/10.1016/j.jenvp.2020.101410>
- Brandano, M. G., Osti, L., & Pulina, M. (2018). An integrated demand and supply conceptual framework: Investigating agritourism services. *International Journal of Tourism Research*, 20(6), 713-725.
- Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Blok, V., Wesselink, R., Studynka, O., & Kemp, R. (2015). Encouraging sustainability in the workplace: A survey on the pro-environmental behaviour of university employees. *Journal of Cleaner Production*, 106, 55-67.
- Broccardo, L., Culasso, F., & Truant, E. (2017). Unlocking value creation using an agritourism business model. *Sustainability*, 9(9), 1618.

- Clement, C. A., Henning, J. B., & Osbaldiston, R. (2014). Integrating factors that predict energy conservation: the theory of planned behavior and beliefs about climate change. *Journal of Sustainable Development*, 7(6), pp. 46-69.
- Coldiretti, (2017). *Consumi. Coldiretti, 6 Italiani su 10 tagliano sprechi nel 2016*. <https://www.coldiretti.it/economia/consumi-coldiretti-6-italiani-su-10-tagliano-sprechi-nel-2016>
- Correia, E., Sousa, S., Viseu, C., & Leite, J. (2022). Using the theory of planned behavior to understand the students' pro-environmental behavior: a case-study in a Portuguese HEI. *International Journal of Sustainability in Higher Education*, 23(5), 1070-1089.
- Davies, J., Foxall, G., & Pallister, J. (2002). Beyond the intention-behaviour mythology: an integrated model of recycling. *Marketing theory*, 2(1), 29-113.
- Del Chiappa, G., Usai, S., Cocco, A., & Atzeni, M. (2018). Sustainable tourism development and climate change: A supply-side perspective. *Journal of Tourism, Heritage & Services Marketing (JTHSM)*, 4(2), 3-9.
- Dhir, A., Talwar, S., Kaur, P., & Malibari, A. (2020). Food waste in hospitality and food services: A systematic literature review and framework development approach. *Journal of Cleaner Production*, 270. <https://doi.org/10.1016/j.jclepro.2020.122861>
- FAO (2018). *Sustainable food systems*. <https://www.fao.org/3/ca2079en/CA2079EN.pdf>
- FAO (2020). *The state of agricultural commodity markets 2020. Agricultural markets and sustainable development: Global value chains, smallholder farmers and digital innovations*. <http://www.fao.org/3/cb0665en/cb0665en.pdf>
- Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. Psychology Press.
- Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational research methods*, 16(1), 15-31.
- Hardesty, S. (2018). *Fostering Agricultural Sustainability Through Agritourism*. Paper prepared for the 166th EAAE Seminar "Sustainability in the Agri-Food Sector".
- Howe, P. D., Marlon, J. R., Mildenerberger, M., & Shield, B. S. (2019). How will climate change shape climate opinion? *Environmental Research Letters*, 14(11), 113001.
- ISTAT (2024). *Agritourism*. <https://dati.istat.it/Index.aspx?QueryId=28000&lang=en>
- Ivanova, D., Barrett, J., Wiedenhofer, D., Macura, B., Callaghan, M., & Creutzig, F. (2020). Quantifying the potential for climate change mitigation of consumption options. *Environmental Research Letters*, 15(9). <https://doi.org/10.1088/1748-9326/ab8589>
- Kapała, A. (2021). Legal instruments to support local food systems: Conclusions de lege ferenda. *Studia Iuridica*, 89, 151-175.
- Katsarova, I. (2016). *Tackling Food Waste*. European Parliamentary Research Service.
- Kim, S. H., Lee, K., & Fairhurst, A. (2017). The review of "green" research in hospitality, 2000-2014: Current trends and future research directions. *International Journal of Contemporary Hospitality Management*, 29(1), 226-247.
- Klöckner, C. A. (2013). A comprehensive model of the psychology of environmental behaviour – A meta-analysis. *Global Environmental Change*, 23(5), 1028-1038.

- Latif, B., Gaskin, J., Gunarathne, N., Sroufe, R., Sharif, A., & Hanan, A. (2023). Climate change risk perception and pro-environmental behavior: the moderating role of environmental values and psychological contract breach. *Social Responsibility Journal*, 20(3), 538-567.
- Lupi, C., Giaccio, V., Mastronardi, L., Giannelli, A., & Scardera, A. (2017). Exploring the features of agritourism and its contribution to rural development in Italy. *Land Use Policy*, 64, 383-390.
- Morgan, M. I., Hine, D. W., Bhullar, N., & Loi, N. M. (2015). Landholder adoption of low emission agricultural practices: A profiling approach. *Journal of Environmental Psychology*, 41, 35-44.
- Moscatelli, S., El Bilali, H., Gamboni, M., & Capone, R. (2016). Towards sustainable food systems: A holistic, interdisciplinary and systemic approach. *Agrofor*, 1(1), 103-112.
- Munir, K. (2022). Sustainable food waste management strategies by applying practice theory in hospitality and food services-a systematic literature review. *Journal of Cleaner Production*, 331. <https://doi.org/10.1016/j.jclepro.2021.129991>
- Place, F., Niederle, P., Sinclair, F., Carmona, N. E., Guéneau, S., Gitz, V., et al. (2022). *Agroecologically-conducive policies: A review of recent advances and remaining challenges*. Working Paper 1, Transformative Partnership Platform on Agroecology. https://www.cifor.org/publications/pdf_files/WPapers/TPP-WP-1.pdf
- Poltimäe, H., & Peterson, K. (2021). Role of environmental awareness in implementing farmland conservation measures. *Journal of Rural Studies*, 87, 58-66.
- Soligo, M. (2022). Agritourism and the prosecco route of Italy. In M. Novelli, J. M. Cheer, C. Dolezal, A. Jones, & C. Milano (Eds.). *Handbook of Niche Tourism* (pp. 84-98). Edward Elgar Publishing.
- Olya, H., Kim, N., & Kim, M. J. (2024). Climate change and pro-sustainable behaviors: application of nudge theory. *Journal of Sustainable Tourism*, 32(6), 1077-1095.
- Orefice, C., & Nyarko, N. (2020). Sustainable value creation in event ecosystems – a business models perspective. *Journal of Sustainable Tourism*, 29(1), 1-16.
- Palmi, P., & Lezzi, G. E. (2020). How authenticity and tradition shift into sustainability and innovation: Evidence from Italian agritourism. *International Journal of Environmental Research and Public Health*, 17(15). <https://doi.org/10.3390/ijerph17155389>
- Paniccia, P. M., & Baiocco, S. (2020). Interpreting sustainable agritourism through co-evolution of social organizations. *Journal of Sustainable Tourism*, 29(1), 87-105.
- Patton, M. Q. (2014). *Qualitative research & evaluation methods: Integrating theory and practice*. Sage Publications.
- Pirani, S. I., & Arafat, H. A. (2016). Reduction of food waste generation in the hospitality industry. *Journal of Cleaner Production*, 132, 129-145.
- Principato, L., Pratesi, C. A., & Secondi, L. (2018). Towards zero waste: An exploratory study on restaurant managers. *International Journal of Hospitality Management*, 74, 130-137.
- Rauniyar, S., Awasthi, M. K., Kapoor, S., & Mishra, A. K. (2020). Agritourism: structured literature review and bibliometric analysis. *Tourism Recreation Research*, 46(1), 52-70.
- Regione Autonoma della Sardegna. (2015). *Legge Regionale 11 maggio 2015, n. 11, Norme in materia di agriturismo, ittiturismo, pescaturismo, fattoria didattica e sociale e abrogazione della Legge Regionale n. 18 del 1998*.
- Roxas, B., & Coetzer, A. (2012). Institutional environment, managerial attitudes and environmental sustainability orientation of small firms. *Journal of Business Ethics*, 111(4), 461-476.

- Sahebalzamani, S., & Bertella, G. (2018). Business models and sustainability in nature tourism: A systematic review of the literature. *Sustainability*, 10(9). <https://doi.org/10.3390/su10093226>
- Schwartz, S. H. (2003). A proposal for measuring value orientations across nations. In *Questionnaire package of the European social survey* (pp. 259-318).
- Stern, P. C. (2000). New environmental theories: toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, 56(3), 407-424.
- The World Bank (2023). *Climate-Smart Agriculture*. <https://www.worldbank.org/en/topic/climate-smart-agriculture#:~:text=Agriculture%20is%20a%20major%20part,is%20either%20lost%20or%20waste&d>
- Trabucco, A., Sušnik, J., Vamvakieridou-Lyroudia, L., Evans, B., Masia, S., Blanco, M., et al. (2018). Water-Food-Energy Nexus under Climate Change in Sardinia. *Proceedings. Multidisciplinary Digital Publishing Institute*, 2(11). <https://doi.org/10.3390/proceedings2110609>
- Valdivia, C., & Barbieri, C. (2014). Agritourism as a sustainable adaptation strategy to climate change in the Andean Altiplano. *Tourism Management Perspectives*, 11, 18-25.
- Wang, Y. F. (2016). Modeling predictors of restaurant employees' green behavior: Comparison of six attitude-behavior models. *International Journal of Hospitality Management*, 58, 66-81.
- Wan, C., Shen, G. Q., & Choi, S. (2017). Experiential and instrumental attitudes: Interaction effect of attitude and subjective norm on recycling intention. *Journal of Environmental Psychology*, 50, 69-79.
- WWF-UK (2021). *Driven to waste: The global impact of food loss and waste on farms*. Woking.
- Yuriev, A., Boiral, O., & Guillaumie, L. (2020a). Evaluating determinants of employees' pro-environmental behavioral intentions. *International Journal of Manpower*, 41(7), 1005-1019.
- Yuriev, A., Dahmen, M., Paillé, P., Boiral, O., & Guillaumie, L. (2020b). Pro-environmental behaviors through the lens of the theory of planned behavior: A scoping review. *Resources, Conservation and Recycling*, 155. <https://doi.org/10.1016/j.resconrec.2019.104660>

Appendix

Interview guide

This research project aims to study food sustainability practices of agritourism businesses in Sardinia. Examples include offering a vegan/vegetarian menu, using local ingredients (produced on own farm or purchased from other local farmers), reducing food waste, etc. There are no right and wrong answers, we are just interested in learning your opinion on these subjects. Your responses are confidential, and they will be shared only in an anonymous and aggregate manner if our study is published. This interview will be recorded solely for accuracy purposes.

Behaviours

1. Could you tell us what you do with the food scraps resulting from food preparation or with the leftover food in your restaurant?
2. When you prepare your dishes, do you try to give priority to local ingredients (even if sourced from other local farmers, not necessarily from your farm)? If yes, why is it important to do so? If not, why are you not doing it?
3. Regarding non-local ingredients/products, do you care about their source market/country of origin? If not, why? If yes, in what sense?
4. Do you consider the seasonality of the ingredients when deciding what dishes to make? If yes, why is it important to do so? If not, why not?
5. Are you inclined to offer a separate vegan/vegetarian menu, or at least to increase the number of plant-based dishes offered by your restaurant? If yes, how and why? If not, why not?
6. Beyond the practices we mentioned above (using local ingredients, reducing food waste, offering vegan/vegetarian menus) what other food sustainability practices do you use in your agritourism business?

Behavioural beliefs

7. What are the advantages and disadvantages of performing food sustainability behaviours in your agritourism?

Normative beliefs

8. Are there any individuals or groups who would approve of your actual or future food sustainability behaviours? If yes, who are they and what do they tell you regarding this topic?
9. Are there any individuals or groups who would disapprove of your actual or future food sustainability behaviours? If yes, who are they and what do they tell you regarding this topic?

Control beliefs

10. Are there obstacles or circumstances that make it difficult or impossible for you to perform food sustainability behaviours?

11. Do you have the ability to remove/reduce these obstacles? If yes, why? If not, why not?
12. Conversely, are there factors or circumstances that make it easy for you to perform food sustainability behaviours?

Climate change knowledge

13. Given the ubiquitous talk about climate change, do you think climate change is a problem that is real or not? (uncertainty)

Yes No

- 13.1. If you believe it's not, could you please explain why you believe this?

- 13.2. If you believe it is real,

- a. What are the factors that cause climate change?
- b. Do you think that wasting food contributes in any way to climate change? If so, could you explain how?
- c. Do you think eating local foods helps reduce climate change? If so, could you explain how?
- d. In your opinion, does a plant-based diet (by reducing meat consumption) contribute to the reduction of the climate change phenomenon? Please provide arguments.

Demographics

Gender

Age

Highest education level

Do you have children? If yes, how many? How old are they?

of years in agritourism:

How many people work in your agritourism?

How many of them are not related to you?

How many hectares of land do you own?

How many rooms do you have?

How many covers does the restaurant have?

What percent of the food you serve, approximately, is produced in-house?

Do you serve breakfast, lunch, and dinner, or only some of these?

Do you belong to an agritourism, agriculture, or hospitality association, such as Agrituristi, ColDiretti, etc? If yes, which ones?

Business location: _____

Table 3 – Demographic characteristics of the sample

Id #	Sex	Age	Highest education level	Has children? (number, age)	# of years in agritourism	# total employees	# family employees	# hectares	# rooms	# covers in restaurant	Food produced in-house	Opening hours	Agritourism association	Location
1	f	24	BA degree	no	2	6	4	75	6 rooms, 2 apartments	80	35-40%	Breakfast, lunch, and dinner	Coldiretti	Aglientu
2	m	65	BA degree	2 (40, 35 yrs old)	28	4	3	14	6 rooms, 1 apartment	100	80%	Breakfast, lunch, and dinner	Coldiretti	Oliena
3	m	51	Middle school	no	32	22	0	4	none	300	100%	Dinner	no	Olbia
4	f	40	BA degree	no	31	7	7	--	10 rooms	80	70%	Breakfast & dinner	Coldiretti	San Teodoro
5	m	47	High school	no	7	10 (summer) 5 (winter)	3	80	2 rooms	70	30%	Dinner (summer); lunch (winter)	CIA	Olbia
6	f	41	BA degree	no	17	8	3	60	6 rooms	120	60%	Breakfast & dinner	Confagricoltura	Olbia
7	f	41	BA degree	1	20	5	2	--	7 rooms	100	40%	Lunch & dinner	Confagricoltura	Olbia
8	m	36	High school	1 (2 yrs old)	10	4	4	80	12 rooms	100	80%	Breakfast & dinner	Confagricoltura	Tula
9	f	57	High school	1 (27 yrs old)	25	8	1	30	8 rooms	80	60%	Breakfast & dinner	Confagricoltura	Olbia

10	f	45	BA degree	1 (10 yrs old)	31	22	11	110	13 rooms	80	80%	Breakfast & dinner	Coldiretti & Terranostra	Alghero
11	f	50	High school	3 (31, 26, 15 yrs old)	26	3-4	2	45	8 rooms	30	80%	Breakfast & dinner	Coldiretti	Dorgali
12	m	53	High school	1 (9 yrs old)	18	usually 2 (5-6 depending on need)	3	30	3 rooms	90	80%	Breakfast, lunch, and dinner	no	Bonorva
13	m	28	Middle school	1	10	5	3	15	none	120	60%	Lunch & dinner	Confagricoltura	Telti
14	f	41	Masters	no	17	8	3	60	6 rooms	120	60%	Breakfast & dinner	--	
15	f	57	High school	1 (27 yrs old)	25	8	1	30	8 rooms	80	60%	Breakfast & dinner	Confagricoltura	Olbia
16	m	53	High school	1 (9 yrs old)	18	2 full-time (5-6 seasonal)	2	30	3 rooms	90	80%	Breakfast, lunch, and dinner	--	Bonorva
17	m	51	Middle school	no	32	30 (in season) (average 22)	0	4	none	300	-	Dinner	--	Olbia
18	m	28	Middle school	1 (1 yr old)	10	5	3	15	none	120	60%	Lunch & dinner	Confagricoltura	Telti
19	f	40	Masters	2 (under 2 yrs old)	5	12	7	-	8 rooms	40	80%	Breakfast, lunch, and dinner	EcoTourism Sardegna	Gergei
20	m	59	Accountant	3 (26, 22, 19 yrs old)	26	9	0	8	5 mini-apartments	250	90%	Breakfast, lunch, and dinner	Coldiretti, Consorzio Vacanze Nature	Oristano

Source: Authors' elaboration

Table 4 – Illustrative quotes, categorized by TPB category and theme

Climate change knowledge	<i>Causes of climate change</i>	Anthropocentric	▪ “Here in agriculture, we are very dependent on the weather. To give you an example, out of the seven vineyards we have, two have not produced anything this year, because we had a very hot weather that dried the vines, and then the rain came and ruined everything. [...] This caused us to work twice as hard to take care of our remaining vines, which impacted our productivity in a major way.” (#7)
		Natural causes	▪ “A natural evolution of the Earth, and that volcano explosions and earthquakes can affect our climate more than humans will ever do.” (#2)
		Misconceptions /somewhat anthropocentric	▪ “What causes climate change? Pollution all-around, pollution of water, of soil, of air.” (#20) ▪ “The problem exists, don’t ask me if it’s caused by sprays, smog, or other factors, because I couldn’t tell you, I think no one really knows, but our climate is definitely changing. I believe it’s 50-50 due to human activity as much as to natural causes. But we’ve had six months without any rain, and we must find solutions.” (#18)
	<i>Links between green food behaviors and climate change</i>	Food waste and climate change	▪ “Small producers like us cause very little food waste, thus, it’s a drop in the ocean; rather, the large intensive producers are to blame.” (#7)
		Own production, local sourcing, seasonality, and climate change	▪ “[...] living on an island, we would have to import everything if we didn’t produce it locally – the less we import, the less [CO2] we consume, and the less we pollute (because the need for transportation is lower).” (#8) ▪ “Our traditional [farm-to-table] production methods help, but it’s like fighting against the windmills: it seems that our society, our eating habits, are inherently tied to the intensive production methods, which are very difficult to change.” (#16) ▪ “For instance, if I don’t plow one year and let only the sheep do the job, I will have a lower production next year, for sure, but I pollute less.” (#5) ▪ “The first thing that comes to mind is the impact of transportation. I don’t want to buy pigs from Lombardia,¹ because of the costs associated with transportation, so I buy them five kilometres from here, but I also think about the feed used to grow these pigs, which is often imported from outside Sardinia. Even the cereal mill here in Sardinia imports cereals from the United States, by ship. Our grandparents did not have mass distribution channels; thus, they led more sustainable lives, but we must deal with all these issues.” (#18)

¹ A Northern region of Italy.

Behavioural beliefs	<i>Food waste</i>	Identity	▪ “If the grass doesn’t grow, we have to feed our animals imported feed, which, [in turn], has a negative environmental impact.” (#6)
			▪ “[...] to produce one kg of meat, you need to use several kgs of vegetable feed; thus, producing meat has a large impact on the environment; plus, it’s not good for you to eat meat very often.” (#12) ▪ “I think there is a link between a meat-based diet and climate change; and, if we ate less meat, it would be good not only for the environment, but from other points of view; I think little by little, we are moving toward a plant-based diet.” (#9) ▪ “Eating less meat at our small level, it’s too small to have an impact; it’s the intensive producers of meat that have more of an impact: if everyone produced meat the way we do (cage-free, etc.), in a familial way, the impact would be much smaller.” (#8) ▪ “Vegan diets are not always better for the environment than meat-based diets. [...] Organic avocados that travel from South Africa or from South America have a worse environmental impact than the meat that we produce locally.” (#19) ▪ “They say that the tomatoes grown in a greenhouse in the Netherlands have a larger impact on the environment than the meat I am producing here in Sardinia.” (#11)
			▪ “we don’t waste food, first, because it is simply a shame to do so, and second, because food waste has a cost” (#5) ▪ “[...] our respect for food is primordial, it is fundamental.” (#7)
			▪ “Our approach of careful planning based on reservation numbers helps reduce inventory and thus costs associated with food waste” (#4). ▪ “We used to have two meat-based dishes on the menu. But we noticed that clients came here specifically to eat the pork roast, so we decided to discontinue the other dish, which was generally not eaten here but taken away, thus reducing the costs associated with both the doggy bags and producing that dish.” (#14) ▪ “[...] the doggy bags have a cost, as we have to purchase them, and this cost is not insignificant.” (#7) ▪ “The pork roast requires a raw ingredient that is costly and non-reusable, so we cannot prepare this dish for 50 people and then we only have 30 clients, so we must optimize the relationship between the number of reservations and menu preparations.” (#15)
		Client responsiveness	▪ “The type of client that chooses to stay in an agritourism wants to be immersed in nature and prefers to eat simple but delicious products.” (#14)

<i>Own production and local sourcing</i>	Stimulating local economy	▪ “We are members of <i>Terranostra</i>,² which has the rule of using Sardinian-only products.” (#11)
	Identity	▪ “We always have the pork roast on the menu, because we know that clients come to an agritourism for this traditional dish.” (#14)
<i>Seasonality</i>	Quality	▪ “We try to get to know our suppliers and their production methods very well, because when we serve the product to the client [...], we are the ones who must guarantee the quality of the product; thus, we try to have few but carefully selected suppliers, so we visit them so we can develop a direct knowledge and understanding that they work in line with our values, and make a product that is the most natural possible.” (#14) ▪ “When using mostly local products, you can be sure of the provenience of ingredients. I visit local farms, and I taste their cheese, and I choose those with the highest quality.” (#17) ▪ “The main dish of Sardinia is pork roast; but in August you cannot find Sardinian pigs anymore, so there are pigs coming from the Netherlands and you can tell the difference; in Sardinia we don’t grow pigs in an intensive manner, you can taste the difference, quality is important.” (#8) ▪ “I don’t raise pigs, so I buy them from my neighbor, because I know he raises them like I would. In general, whenever I can, I buy from local rather than from multinational companies.” (#18)
	Identity	▪ “We always have four dishes on the menu, regardless of season: the gnocchi, the ravioli, the Gallurese soup, and the pork roast, while the vegetable starters are seasonal, for instance, in the summer, we offer grated zucchini, while in the winter, we have mushrooms or cauliflower; basically, we cook the product that is offered by our land and the season” (#14).
	Lack of variety	▪ “My sister went to an agritourism here in Sardinia, I won’t name names, who served watermelon at breakfast, in November/December! (laughs). We, instead, prefer to serve just a few kinds of fruits but in season.” (#4) ▪ “[...], compared to our competitors, our menu is not very varied or exotic.” (#19) ▪ “By June, cows are not milked anymore, thus, it is difficult to find fresh ricotta.” (#17)
	Quality	▪ “A tomato produced in the greenhouse can never taste as good as a tomato produced in its natural stage of the season.” (#11)
	Cost	▪ “[...] Also, eating tomatoes out of season is costlier, both from an economic perspective and from a human health perspective.” (#11)

² *Terranostra* is a branch of *Coldiretti* focused on agritourism, local region, and the environment. Source: <https://www.agriturismo.it/it/extra/terranostra,-da-noi-l-ospitalita-e-una-tradizione-antica-365>

Normative beliefs	<i>Plant-based dishes</i>	Identity	▪ “[...] we always have vegetarian dishes, as they are an integral part of the Sardinian cuisine, which is often erroneously perceived as “all meat based.” Our mothers and grandmothers told us that in the past, meat was eaten in Sardinia only on holidays or special occasions; it has entered the Sardinian cuisine only recently, as people became wealthier and could afford it.” (#11) ▪ “We always have vegetarian dishes, that is not a problem. And we can always substitute meat with cheese.” (#4) ▪ “[...] we have returned to traditional ways of eating in our families, which was primarily based on vegetables, and eating meat only on holidays or special occasions. This being said, pork roast is always present in our agritourism.” (#16)
		Client responsiveness	▪ “We are ‘constrained’ to offer vegan and vegetarian dishes. It’s impossible not to offer vegetarian dishes, because, at every table, there are always two or three vegetarians; vegans, a bit fewer; not to speak of other types of allergies/intolerances.” (#20) ▪ “[...] with enough of a notice, we prepare vegan, vegetarian, gluten-free, lactose-free dishes, to make sure we accommodate clients with any allergy, intolerance, etc.” (#7) ▪ “It is not easy to offer a vegan menu, because it requires more space; also, we are a traditional agritourism, so we include cheese even in desserts, but we try to be responsive to client needs and various intolerances, such as gluten sensitivities.” (#4)
	<i>Supporters</i>		▪ “I think no wants to come here in Sardinia and tell us to eat grasshoppers instead of pork roast! (laughs)” (#2) ▪ “We are founding members of the network Eco Tourism Sardinia, which share our values, so this network definitely appreciates our efforts” (#19) ▪ “Coldiretti is an organization that protects our interests, that follows our work and advertises it.” (#11)
	<i>Detractors</i>		▪ “Sometimes clients are upset because we are closed, but we only open based on reservations, and if we don’t have reservations, we are closed. We don’t re-heat food already prepared; we prepare it based on demand.” (#8) ▪ “Some of our clients, especially those who do not share our eco-values, feel that our offerings are too limited, and below their expectations.” (#19) ▪ “Some clients do not appreciate the surplus that require us to use doggy bags. These are ignorant people who don’t understand the philosophy behind it.” (#18)

Control beliefs	<i>Obstacles</i>	Difficulty	▪ “To produce a vegan sour cream, you have to start from rice milk and recreate it to obtain a product that is similar to our traditional sour cream; this requires a very complex and elaborate process.” (#15) ▪ “For vegan customers, I need advance notice to prepare.” (#11) ▪ “Vegan dishes are more complex, both because they are more time-intensive, and because require a different way of thinking. To make a traditional Sardinian dish in a vegan version, you have to reinvent it, substituting soy milk or oat milk, for instance, for regular milk, and that is very complex. [...] Sometimes we need an entire morning to prepare a vegan menu, and sometime the vegan customers cancel, which causes us to waste a lot of time and money, because the vegan substitutes are costly” (#9).
	<i>Facilitators</i>	Identity	▪ “I am lucky because I’ve seen these practices implemented in my family (so growing up, there was no alternative), so it becomes a habit [...]” (#11) ▪ “If I buy my prosciutto from Fonni [Sardinian producer] rather than from Parma, it’s not like I get a tax discount of 10 percent from the government, or anything, they don’t care. It is my choice to buy local, because it is my philosophy.” (#18)
		Survival imperative	▪ “Obstacles are not insurmountable; they can be eliminated/reduced if you have a positive attitude: the idea is that one must adapt to a changing world.” (#6) ▪ “We have to ensure that the traditions remain, but we have to also look to the future and change with the times.” (#15) ▪ “You have to conduct a thorough analysis of your business and evaluate your weak points. You have to stay abreast of the outside trends because the world changes, and if you want to stay in business, you have to change with it; sometimes, you have to be prepared to change your objectives daily.” (#14)

Source: Authors’ elaboration