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# Choice for sustainable meals at staff restaurants: influence of at-home food habits and food triggers

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**Abstract :**

Purpose

Collective catering sector is increasingly offering alternative and more sustainable food propositions, but their success rests on their reception by guests and changes induced in individual behaviors. The authors investigate food-change determinants by examining the relationship between food behavior at staff restaurants and at home.

Design/methodology/approach

In an experiment over four days conducted in three staff restaurants, the authors monitored the behavioral changes and motivations of guests (n = 599) offered choices between standard and sustainable options for meat, fish, dairy products, fruit-based desserts and a vegetarian dish. The calculation of a "sustainable consumption score," based on actual consumption at a restaurant by a subsample (n = 160) of guests gives an indication of interest for sustainable options.

Findings

Higher overall choices were observed for vegetarian dishes and for the sustainable meat options rather than for the sustainable fish and desserts options, thus suggesting contrasted perceptions of the sustainable alternatives. The results revealed two profiles of consumers with contrasting scores. The "lower receptive guests" had lower commitment to sustainable food at home and at staff restaurants, while the "higher receptive guests" found in the intervention meaningful propositions for pursuing their existing at-home commitment.

Research limitations/implications

Long-term research would be required to verify whether repeated sustainable offers can break down deep-rooted choices and instill durable changes among consumers with lower commitment to sustainable food. This research contributes to the identification of some types of food that are more suitable for sustainable-oriented interventions.

Practical implications

Some food triggers are identified to further norm activation among the lower receptive profile of consumers.

Originality/value

By addressing continuities/discontinuities between at-home and at-restaurant consumption and mobilizing the “norm-activation” concept, the authors question the efficiency of sustainable food offers at work.

**Keywords** : sustainable food, staff retsaurant, interventions, food triggers, motivations

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## 1. Introduction

Contemporary dietary patterns are challenged by nutritional and ecological imperatives, which are making food choices ever more complex. To favor sustainable food choices (organic food, local sourcing, reduction of animal-based food, increased plant-based food, sustainable fish, waste reduction, etc.), marketers have increasingly turned to packaging labels and information, thus contributing to the transformation of food into a multifaceted product offering increasingly broad segmentation. Furthermore, the interrelationships between food's perceived healthiness and perceived sustainability vary across consumer segments, revealing the complexity of consumers' evaluations (Verain et al., 2016). Discomfort can arise when individual preferences (tasty, traditional, familial, etc.) conflict with poor nutritional or ecological scores. Moreover, food habits are changing more slowly than external imperatives and change depends on the eating context, specifically whether it is in private or social settings (Higgs and Thomas, 2016).

The collective catering sector is currently attempting to address all those challenges because it has a significant role to play in the expected turn toward sustainable food (Sonnino and McWilliam, 2011; Rimmington et al., 2006; Whalen, 2012). In the European Union (EU), contract-catering services in the public and private sectors provide one in every four meals eaten away from home (EU GPP, 2019). Food services interventions dedicated to further analyzing

the promotion of healthy and sustainable food have emerged over the last decade (Lorenz-Walther and Langen, 2020). In France, the implementation of the EGalim legislation in 2018 was aimed at enhancing sustainable food offers in collective catering.[1] Direct-to-guest initiatives are emerging and embracing various solutions, such as ecological-impact scoring systems for meals, nutritional content information and sustainable supply chain management, with customers expected to make more informed choices about their meals (Schaubroeck et al., 2018). The contrasting results and unintended effects of those interventions serve to underscore the lack of research on the role of determinant factors such as attitudes, beliefs, and past behavior (Ohlhausen and Langen, 2020). Little attention has been paid to the influence of at-home habits on food choices in collective catering and, more specifically, in staff restaurants where employees make food choices from pre-determined offers; resulting in case of service delegation from contractual requirements between their companies and catering company (Kaljonen et al., 2020), sometimes combined with national guidelines.

Against a backdrop of increasing research in real-life settings, our research is aimed at investigating the impact of interventions around sustainable food in staff restaurants, with a specific look at the continuities between food habits at home/at work canteens, and at the trigger effect of some food. After a literature review on factors influencing sustainable food choices and outcomes for interventions in collective settings, we present the methodological design based on experimentation in staff restaurants and results. Then, a discussion addresses the specifics of work settings when considering sustainable food choices and continuities/discontinuities with food habits in private. Lastly, practical implications are proposed around the categories of food most suitable for sustainable-oriented interventions in collective catering.

[1] https://www.gouvernement.fr/en/achieving-a-balance-in-trade-relations-in-the-agricultural-sector-and-healthy-and-sustainable. This legislation set a goal of 50% of the food offered in collective catering being labeled (sustainable food, quality labels, and organic labels) by 2022.

## 2. Literature review

### *2.1. Key drivers for sustainable food choices*

While providing information and education around healthy and ecofriendly food is useful, the relationship between knowledge level and willingness to purchase sustainable options remains equivocal (Roczen et al., 2014; Ran et al., 2022). Informing is not sufficient to engage consumers in a shift toward healthy and sustainable alternatives. Knowledge has a moderate effect, while health incentives and support from the social group have a stronger effect (Hsu et al., 2020). Concrete benefits for personal health and well-being motivate the purchase of organic products more than abstract benefits (Jäger and Weber, 2020). Education level and explicit—rather than implicit—environmental concern for climate change are key predictors of sustainable food choices (Panzone, 2016). Lastly, sustainable diets can be supported by consumer attitudes toward environmental protection (concern for climate) and/or toward nature preservation (concern for species decline) (de Boer and Aiking, 2021).

Reduced or subsidized prices for healthy and sustainable food products appear to have a larger effect on shifting consumer choices than logos or labeling (Hoek et al., 2017)**,** although price decoy strategies can lead to contrasted effects (Ohlhausen and Langen, 2020). How the sustainable alternative looks play an important role in consumer responsiveness. The more familiar consumers are with the alternative products and the closer those are in appearance to the regular ones, the more likely it is that they will adopt the substitute. Hedonistic factors (taste, appearance, and texture) can be essential for pleasure-oriented consumers, who are unlikely to respond to a decreased price (Hoek et al., 2017). Lastly, normalizing sustainable practices in everyday life could require an encompassing vision of ‘sustainable culinary cultures’ embracing patterns of buying, cooking and eating food (Niva et al., 2014)

*2.2. Promoting sustainable food choices in out-of-home consumption*

The issue of at-home vs out-of-home food choices has been studied extensively through choices at commercial restaurants, but more rarely in the context of worksite canteens. However, commercial restaurants differ from worksite canteens when looking at the success or failure of the implementation of sustainable food offers.

Restaurants' food-focused attributes (using organic, locally and sustainably grown food) are higher determinants of behavior than environment-focused attributes (waste and pollution reduction, energy management) (Kwok et al., 2016). A heightened health consciousness and environmental awareness do not lead systematically to consistent choices when eating at a restaurant.

As with any out-of-home food choices, those in social settings at work, are not only dependent on temporal and situational conditions but also on social eating norms, which are non-consciously produced by/through commensals (Higgs and Thomas, 2016; Haugaard et al., 2016). Attitude, subjective norm, perceived behavioral control and personal norm are determinants of intention to choose organic menu items (Shin et al., 2018). In contrast, other studies have found social pressure (subjective norms) to have a non-significant effect (Elhousy, 2020). Additional variables such as activism were studied that appear to be significant antecedents of consumers' intentions toward sustainable food. Lastly, motivational imbalance, resulting from a conflict between personal outcomes and the negative judgments of others in social settings, seems to have a moderating effect and leads to weaker behavioral intentions (Elhoushy, 2020).

*2.3. Learning from interventions in worksite canteens*

The context of eating at work is specific, and food habits (lunch box, work canteen attendance, etc.) must be considered alongside an employee's position in the organization, the social context, and work autonomy (Lorenz-Walther and Langen, 2020). Indeed, the professional links between employees and employers lead to a form of subjection that could impact and/or restrict food choices (Fischler, 1990).

The weakness of the informational paradigm in changing food habits has been demonstrated by the merely modest positive effect of food labeling on individual choices, excepted when the information echoes personal motivations or social norms (Abrahamse, 2020). The current trend is to experiment with environmental and health nudges to promote healthier and sustainable food choices (Reisch et al., 2017). Some changes in the environment (top menu position or best counter position of sustainable offers) (Langen et al., 2022) or any visual cues which enhance the visibility of products (Coucke et al., 2019) can lead consumers toward more sustainable choices. Kaljonen et al. (2020) showed that consumers' attention to climate labels is low (e.g., fish labeled sustainable) but demonstrated the potential of nudges (discrete increases in dishes' vegetable content, one day without meat, more fish, etc.) to induce higher consumption of fish and of vegetarian dishes. They also showed the importance of consumers' predispositions, as nudges facilitated changes among consumers who were already motivated to increase their plant- and fish-based eating. Conversely, Abrahamse (2020) and Garnett & al. (2019) showed that for those who were not already motivated, the nudges actually contributed to increasing the visibility of the sustainable and plant-based/plant-rich offers. In a systematic review, Bianchi et al. (2018) confirmed that interventions restructuring physical micro-environments could contribute to lower demand for meat. Regardless of the alternative intervention, framing offers is an issue, as pro-environmental ('environmental benefits'), social ('enjoyable eating experience') or neutral ('main courses') frames tend to favor vegetarian choices more than the vegetarian frame (eg. 'vegetarian main courses') (Krpan and Houtsma, 2020).

From both approaches, some contrasting or unintended impacts have been observed, leading to the decrease of sustainable food choices (Ohlhausen and Langen, 2020) or to avoidance strategies when a mandatory vegetable day was introduced (Lombardini and Lankoski, 2013). This suggests the role of a set of moderators such as preexisting attitudes, beliefs, or "past behaviors" (see Abrahamse, 2020, for an overview of the dual approach of interventions, information-based *vs* nudges). The moderator called "past behavior" refers to preexisting food habits aligned with expected behavior. Its effect is stronger in interventions designed to favor more vegetarian meal choices for non-vegetarian consumers in comparison with frequent vegetarians (Abrahamse, 2020; Garnett & al., 2019).

In a meta-analysis, Lorenz and Langen (2018) provided a general understanding of consumer food behavior in out-of-home settings (university canteens, restaurants, and worksite canteens) by analyzing environmental influences. They showed that the combination of restricting less healthy alternatives and increased exposure to healthier foods nudge eaters toward improved behaviors. In comparison with "a la carte" systems, buffet-style serving systems were found to lead to healthier meals with higher fruit and vegetable content (Lassen, Hansen, and Trolle, 2007). Lastly, in canteens providing food with a certified healthy label, guests' changed habits had led to a spontaneous decrease in energy intake (Lassen et al., 2014). This suggests self-regulation among guests without normative indication.

Lastly, Lorenz-Walther and Langen (2020) explored employee acceptance of some changes in their worksite canteen such as the introduction of preordering, weight-based billing for all dishes, various portion sizes for all dishes and one mandatory "veggie day" per week. Unfortunately, it is difficult to draw solid conclusions regarding such operational aspects from results relying on an online survey with declarative dimensions.

*2.4. Eating at work: continuities and discontinuities with at-home food habits*

Regarding interdependencies between at work/at home food habits, Lorenz-Walther and Langen (2020) showed that the influence of personal food choice preferences, lunchtime habits, and environmental attitudes in predicting the acceptance of sustainable changes varies according to the types of changes (payment, pre-ordering, waste reduction, sustainable dishes, etc.) made to food offerings in worksite canteens. Guests that are more open to sustainability-related changes tend to be younger, more environmentally aware, and have less deep-routed eating behavior. The reason some guests do not respond might be because the changes in work canteens do not make sense and do not clearly reflect sustainable issues (Lorenz-Walther and Langen, 2020); or because guests keep a nonporous border between sustainable offers at work and their sustainability-related behavior at home, thereby creating two contrasting situational contexts for food consumption (Haugaard et al., 2016).

As a result, interventions in staff restaurants might lead unevenly to norm activation that is a function both of people's responsibilities ascription and an awareness of the environmental consequences of their behavior (Schwartz, 1977; Milfont et al., 2010). Norm activation has been widely used to predict people's altruistic and pro-environmental behavior (Shin et al., 2018). Furthermore, Sparkman and Walton (2017) showed that dynamic norms (information about how other people's behavior is changing over time) can lead to behavioral change, mediated by the anticipation of the decrease of meat consumption in the future and that reducing meat consumption matter to other people. So, interindividual differences regarding norm activation can be mainly explained by desired 'preconformity' (Sparkman and Walton, 2017) and/or by anticipated guilt if failing to act pro-environmentally (Onwezen et al., 2013).

Further integrative research should address both *ex ante* attitudes toward and *ex post* acceptance of sustainable offers to question their degree of alignment (Lorenz-Walther and Langen, 2020). So, our research explores through an experimentation in French worksite canteens, actual food choices in response to additional offer of sustainable alternatives alongside 'conventional'

dishes. More specifically, we analyze continuities and discontinuities with at-home habits at the light of the degree of commitment to sustainable food and of the attractiveness of sustainable offers from different categories.

## 3. Materials and Methods

### *3.1. Consumer panel*

The French multinational corporation Sodexo, partner in the project, offered the opportunity to follow consumer behavior in various staff restaurants. Three companies were chosen in the city of Nantes to reach a varied panel of consumers (executive, nonexecutive, mixed ages, and genders): Ifremer, a marine research institute; Crédit Mutuel - Crédit Industriel et Commercial (CM-CIC) representing the banking sector; Sercel, a company manufacturing seismic equipment. The three self-service restaurants had a range of mean numbers of daily customers: 150 at Ifremer, 400 at Sercel, and 900 at CM-CIC.

### *3.2. Procedure*

The experiments were conducted at three staff restaurants on Tuesdays over four consecutive weeks. The same food options were provided for lunch in the three restaurants. Employees were informed in advance that they would be offered sustainable food options every Tuesday in June. Upon arrival at the restaurant, posters reminded the customers the principle of assessment of sustainable food as defined by a consulting agency associated to the experiment (Eco2Initiative-Etiquettable) (Supplemental material 1). It is based on existing labeling schemes in France allowing a notation (from A to E) for three pillars (environment, health, and local sourcing).

The customers followed the usual self-service route of starters, main courses, and desserts. The food options that were in the scope of our experimentation included a dish of the day (either meat or fish) identified, in parallel, by two different labels, “standard dish” and “sustainable dish.” The standard and sustainable dishes were exactly the same (same recipe and same ingredients), excepted the origin and/or production techniques for meat/fish/fruits/dairy products. More over, food items on the menu on the four days of data collection were dishes already familiar and common for the customers. The sustainable versions were defined by the type of farming (an organic label or the French “Label Rouge” certifying improved husbandry practices, like free-range production or lower animal density), the fishing method (Marine Stewardship Council (MSC) label certifying sustainable fishing practices), and resource conservation / product origin (local origin). A vegetarian dish was always proposed as an alternative. For the proposed desserts in the scope of our study, the dessert of the day was available in a “standard” and a “sustainable” version. The prices of each proposal reflected the actual extra costs for the sustainable options (EUR 0.50 extra for the sustainable chicken, 0.40 for fish, 0.20 for the dairy products, 0.15 for the fruit-based desserts). Table 1 summarizes the main courses and desserts which were considered and offered on each day of the experiment.

Customers were free to make their own decisions, and their choices were monitored through the checkout process. A questionnaire was also distributed post-checkout. It was divided into two parts: (1) reasons for choosing or not the vegetarian dish, the standard or sustainable options (with a maximum of two reasons from the five possible responses available covering sensory, health, price, environmental, and producer support aspects), (2) overall at-home eating habits (six questions focused on main indicators of commitment to sustainable food, i.e actual food purchasing habits, meat consumption evolution and frequency of vegetarian meal consumption), company catering expectations (Four questions on sustainable offers, price, support of extra cost) and personal information (age, gender and professional position). To

monitor the participants' responses over the four days of the experiment, they were asked to indicate their client number on the questionnaire.

**Tab. I Proposals of main dish and dessert on each day of experiment and the extra cost for the sustainable version**

*3.3. Data analysis*

- *Step 1: Monitoring choices in the three staff restaurants for total number of clients*

  The choices made among the proposed dishes by the total population of customers on the four experiment days were calculated across all restaurants. Because of an experiment in real catering conditions, it was not possible to control the other standard main course/dessert options proposed by the three distinct restaurants. The experiment required a lot from kitchen staffs, and additional constraints due to the supply chains made it difficult to forecast the effective food offers out of the scope of our study. Thus, the calculation aims to assess strictly the part of vegetarian dish (daily offered) and the choices into the binary alternative thereby labeled in the experiment (sustainable meat, fish and dessert vs their non-sustainable form). In order to evaluate statistical differences between choices, a chi-square test was applied on corresponding proportions for each day of experiment. When a significant difference was observed, a Marascuilo procedure compared each pair of proportion (Marascuilo and Serlin, 1988).

- *Step 2: Identifying the surveyed sample and corresponding number of guests*

  Customers who agreed to fill in the two parts of the questionnaire at the checkout constitute the surveyed population sample (n = 599 over the four days of experimentation). The choices were also registered for this population sample.

- *Step 3: Calculating an individual sustainable consumption score for the followed-up guests and highlighting some consumers profiles*

  A "sustainable consumption score" was calculated for people who participated in two days of experimentation (Table 2). This score was the sum of the sustainable proposals accepted over the two days. The score varies from 0 (the person did not choose a vegetarian dish, sustainable dish, or sustainable dessert) to 4 (the person had a sustainable dish or a vegetarian dish and a sustainable dessert on both days). This score could only be calculated for 160 (subsample) of the 599 people (whole sample) who completed a questionnaire. Too few people were present over the duration, did not respond each time or did not provide their client number. That is the reason why it was not possible to calculate this score over three or four days.

**Tab. II Methodological design**

To explore the relationship between consumption behavior in the company restaurant, the declared at-home habits (overall commitment or not to sustainable food), the population's demographic characteristics, and the consumers' expectations relating to the company restaurant, a multiple correspondence analysis (MCA) was performed on the different categorical data using XLSTAT statistical software (Addinsoft, Paris, France). MCA provides a structuring framework that allows for the graphical interpretation of associations between different variables of large categorical data sets by reducing a data matrix to a few dimensions or factors (Hoffmann and Franke, 1986). Two to four principal components are usually considered. Principal components can be understood as the latent or projected axes, which are constructed in such a way that the largest data variance is explained (Le Roux and Rouanet, 2010). This exploratory method was proposed to highlight the main associations between the

selected variables building a two-dimensional plot. The declared at-home habits were used as active variables. The population's demographic characteristics and expectations relating to the company restaurant were used as supplementary variables. The sustainable consumption score used as the consumption behavior criteria at staff restaurants was considered to be a categorical variable and added to the analysis as a supplementary variable.

## 4. Results

### *4.1. Behavior of customers at staff restaurants: overall choices*

On each day of the experiment, customers' choices were collected across all restaurants. Regarding the distribution of choices, our sample population reflected the behavior of the whole population (Supplemental material 2).

The meat dish offered on days 1 and 2 was chosen by 37 and 36% of them, respectively (Fig.1). Only 5% of these choices, for day 1 and 6% for day 2, were for the standard version. The choice for fish, all versions combined, is generally lower than for meat, only 23% on day 3 and 19% on day 4. As in the case of meat, the percentage of choice is significantly different between the standard and sustainable versions. However, it can be pointed out that the gap in choice between standard and sustainable alternatives is greater for meat than fish. Indeed, the sustainable version is chosen five or six times more often than the standard version in the case of meat, whereas it is only two to three times more in the case of fish. The vegetarian dish also found wide approval throughout the four days of experimentation and sometimes represented almost a third of the choices for the main course. Regarding the dessert (Fig.2), there is very little difference in choice between the standard version and the sustainable alternative. Only the fruit-based dessert (strawberry crumble, Day 1) was chosen significantly more often in its sustainable version. No significant difference was observed with the dairy dessert.

**Fig. 1 Main course – distribution of choice by proposal (Total clients)**

**Fig. 2 Dessert – distribution of choice by proposal (Total clients)**

### *4.2. Continuities or discontinuities with at-home food habits*

- *Characterization of the population sub-sample: followed-up guests*

The questionnaire was completed by 599 people (*whole sample*) during the four days of experimentation, but only 160 attended the restaurant or returned a questionnaire during at least two sessions. To analyze this subsample's representativeness, a comparison with the whole sample was performed (Table 3).

Overall, the subsample (n=160) and the whole sample (n=599) have similar characteristics, except when it comes to the age groups. The younger group (18–45 years) is overrepresented (79.4% in the subsample and 63.4% in the whole sample) to the detriment of the oldest (46 years and more) (20.6% in the sub-sample vs. 36.6% in the whole sample). Moreover, in the subsample population, 23.4% stated that they buy sustainably caught fish every week or once or twice a month, compared to 29.9% of the whole sample population, suggesting a lowest awareness toward sustainable fish in the subsample population. As sustainable fish is not yet to attract as much attention among consumers as sustainable meat (Kaljonen et al., 2020), we further discuss this issue, but no other differences appear between the two populations.

**Tab. III Characteristics of total surveyed population (599) and subsample population (160)**

Overall, as regards the distribution of answers to food-habit questions, the sample population seems rather split into those already committed to sustainable food at home and those who are not, or at least not really. Expectations of more sustainable food at the company restaurant were rather high (mean =4.11), as was the wish to pay around the same price as for standard food (mean =3.66). Lastly, the issue of who would pay the extra cost is not clear-cut (by the employer: mean =3.31; by the customer: mean =3.56). We explore in more depth below the segmentation of surveyed guests as revealed in the experiment.

- *Motivations for choices at staff restaurant*

In the subsample (n =160 clients), the reasons for choosing the vegetarian dish or sustainable options for the main course and dessert revealed an awareness of their ecological benefits and positive local impact before concern for taste and health (Table 4). Conversely, the motivations for not choosing the vegetarian dish were no desire to eat it and self-identifying as a fish or meat eater. The main reasons given for choosing the standard meat/fish were not being willing to pay more and feeling that the sustainable options did not add any value. Lastly, the very first reason for choosing the standard dessert was its more appetizing appearance.

**Tab. IV Motivations for choosing / not choosing the sustainable options (subsample, n =160)**

- *Distribution of sustainable scores*

The distribution of scores calculated on two days (Fig. 3) shows that score 0 and score 4 were the least frequent scores while score 2 was the highest. That means with score 4, that very few followed-up guests have repeated the choice of two sustainable options over two days. Regarding the distribution of choices, vegetarian dishes followed by the sustainable main dishes have contributed significantly for scores 1 and 2 while for scores 3 and 4, alongside vegetarian dishes sustainable desserts have a significant contribution.

**Fig. 3 Distribution of sustainable scores and type of sustainable choice**

We further discuss these results by looking at the influence of pre-established preferences and an at-home commitment to sustainable food.

- *Relationship between food habits at home, expectations relating to company restaurants and consumption behavior at restaurants*

The result of the MCA is presented in Fig. 4. The first two dimensions explain 29.5% of the total data variance. Fig. 4 shows a good degree of scattering, thus indicating that the chosen sets of variables have low similarity. The test values indicate significant spread from the center of the plot ($p < 0.05$) for all modalities of active variables and all the variables (short channel, organic food, season, sustainable fishery, and meat and vegetarian consumption) significantly contribute to the creation of the two dimensions (supplemental material 3).

The relative positions of modalities of variables allow for the visual interpretation of degrees of association. The distribution of the active variables' modalities on the first dimension highlights the main associations in at-home food habits. Thus, a higher frequency of

consumption in short channel (++) is generally associated with higher consumption of vegetarian meals (+) and organic foods (+), a decrease in meat consumption (-), and more attention to the season (++). The weak modalities for these variables are located at the opposite end of dimension 1, thus indicating different habits and probably less consideration given to the sustainable food issue. Thus, in each polarity of dimension 1, we can note a good internal consistency in at home food habits of those who are committed to – or not – sustainable food.

**Fig. 4 Representation of active categorical variables related to food habits at home and supplementary variables (demographic, expectations related to company restaurant, and consumption behavior in real situations) on dimensions 1 and 2 of the multiple correspondence analysis**

The projection of variables describing the customer population characteristics (age, gender, and position) and their expectations relating to the company restaurant as supplementary variables on the MCA allows for some associations to be identified. The two dotted circles on Fig.4 oppose two logics for at home/at staff restaurants food habits. First, on the upper left of the figure, the variables corresponding to consumers with a "sustainable food" inclination, as expressed in their daily purchasing and consumption behavior, are associated with strong expectations in terms of sustainable food in the workplace ("sustainable food +"), no particular position on the price to be paid ("similar price +/-") but a willingness to pay if necessary ("extra cost custom +"), and no necessity for an employer contribution ("extra cost employ +/-"). Those associations correspond more to female, executive, and middle-aged. Secondly, on the bottom right of Fig.4, low use of short purchase channels and low organic or vegetarian consumption are associated with lower expectations in terms of sustainable food ("sustainable food +/-") and a lower willingness to pay ("extra cost custom -"). This profile corresponds more to male, nonexecutive, and both older and younger people than the previous profile.

The relative position of each modality of the supplementary variable "sustainable score" gives a graphical interpretation of the global associations with attitudes and demographics. First, on

the upper left of Fig.4, people who already had sustainable food practices at home were more inclined to choose options labeled sustainable in company restaurants (sustainable scores 3 or 4) during the experiment. That reflects an at-home/at-work alignment of food behavior and higher acceptance of paying an extra cost. Second, on the bottom right of Fig.4, those not already committed to sustainable food in private were less inclined to choose sustainable options and support extra costs (sustainable score 0), thus showing an at-home/at-work alignment that might prevent them from changing their food choices.

## 5. Discussion

Eating at worksite canteens carries some specific behavioral implications due to the non-ordinary social setting. Beyond the food-related expectations and individual preferences, overall satisfaction also depends on situational factors such as perceived ambience, sharing meals with colleagues that could enhance the feeling of well-being, good mood and reduced stress when going back to work after lunch (Hauggard et al., 2016). As mentioned by those authors, their study looked at guests' satisfaction when making "normal choices" or sticking to routines. Any interventions in food choices or settings can disrupt the established daily choices and satisfaction, thus revealing the main key drivers of food choices.

In our study, offering an alternative to standard food through labeled sustainable options invited guests to engage their awareness to choose between the two proposed options. It also reactivates the ambiguity of the employee–employer relationship between hierarchical dependence and personal demands (Fischler, 1990). In a context of both increasing individual nutritional requirements and need for environmental compliance in worksite canteens (EU GPP, 2019), the tensions between suggested/imposed food and expected/desired food could rise. Managing those tensions could also depend on guests' desires to maintain to some extent their lunchtime habits and personal food preferences. Our results showed that choice of sustainable options was

influenced by at-home food habits. Consumers already committed to sustainable food in private are more likely to adopt sustainable choices at work in spite of extra-costs. Conversely, sustainable offers do not encourage consumers who are not committed to sustainable food at home to change their food behavior in staff restaurant, in line with Kaljonen et al. (2020).

Sustainable food-oriented consumers explained their choices for vegetarian dishes and sustainable options by a willingness to reduce their meat consumption, and concerns for local producers and the ecological impact. The issues of taste and health benefits were of secondary importance. Thus, certain labelings can be more significant than others, the key drivers of the sustainable choices at staff restaurants appearing to be more altruistic- and environment-oriented than self-oriented (Milfont et al., 2010). This result confirms norm activation's moderator role (Milfont et al., 2010; Shin et al., 2018), including in the specific context of workplace restaurants. Our study suggests that situational factors and non-food expectations (e.g. commensality with colleagues, let go through lunch, etc.) (Hauggard et al., 2016) do not inhibit guests' responsibilities ascription and awareness of the environmental impact of their food choices (Schwartz, 1977). This normative effect is higher among consumers already committed at home, thus it allows them to maintain their food habits through sustainable alternatives in the workplace without cognitive load (Reed et al., 2011).

Some hedonistic, economic and identity-related arguments were given for not selecting sustainable food options. The initial taste preferences, the lack of willingness to pay more and/or being unaware of the added value of the sustainable options, and self-identification as a meat/fish eater offer insights into the perceived meaninglessness of the alternative offer. For those not committed to sustainable food in private, the experiment in staff restaurants did not lead to change. At-home/at-work continuities were observed; facing a choice between standard and sustainable options did not produce any norm activation for those consumers. Questioning routines in food choices and engaging personally in sustainable behaviors could lead to higher

personal costs (Harland et al., 2007). When food choices in staff canteens are deeply rooted (Lorenz-Walther and Langen, 2020) or generate hedonistic and psychological satisfaction (Hauggard et al., 2016), the costs associated with sustainable options can relate to the time involved and the higher cognitive load in choosing meals (Reed et al., 2011), renouncing convenience or money (Shin et al., 2018). Regarding prices, the actual extra-costs of sustainable options proposed in the real staff restaurants of our study are not the unique issue for lower committed consumers. As showed by Ohlhausen and Langen (2020), the use of a price decoy strategy does not always encourage the choice of targeted sustainable dishes. Our results also show self-identification as a meat/fish eater to be a reason expressed by guests for not choosing vegetarian options. This suggests that those guests consciously decided not to conform to the expected behavior and to maintain their self-positioning as meat eaters in at-work social settings (Rothgerber, 2014; Rosenfeld and Burrow, 2017). Therefore, contrary to our expectations, those guests do not face real tensions between suggested/imposed food and expected/desired food. They feel free to follow their routine choices at work canteens.

## 6. Practical implications for promoting sustainable food in at-work settings

Our study showed some evidence of continuity between at-home/at-work habits: both for "higher receptive guests" already committed to sustainable food at home who prioritized the sustainable options proposed during the experiment period; and for "lower receptive guests" not already committed, who did not change their behavior, and went on prioritizing the standard options.

With the greening of catering service, food offers now firmly on the agenda, the key question for practitioners becomes how to induce behavioral changes for the "lower receptive guests." Consideration should be given to the types of food suitable for sustainable-oriented interventions. First, vegetarian dishes are initial food triggers to commit in sustainable food as

they found wide approval in the total clients population and contributed significantly in the sustainable scores for followed-up guests.

Second, in our study the overall choices for the sustainable alternatives were higher for the main course than for the dessert, and specifically, higher for sustainable chicken than for sustainable fish, in line with Vanhonacker *et al*. (2013) and Kaljonen *et al.* (2020). The meaning of "sustainable fish" was rather confusing for restaurant guests[2]. It is likely that consumers are more sensitive to the difference between farmed and wild fish than to differences in the sustainability of the species caught (Kole et al., 2009). They still have limited knowledge of the impact of fishing methods (Maesano et al., 2020) and fish consumption habits remain difficult to change (Altiok et al., 2021). Thus, our study showed that sustainable chicken appears to be a more effective trigger to induce behavioral changes, due to the still growing consumer interest in organic and free-range poultry production for health and environmental benefits (Castellini et al., 2008). Third, although sustainable and appealing fruit-based desserts appear to be slightly more effective triggers than dairy-based desserts, stronger hedonistic expectations resulted in sustainable desserts having the lowest attractiveness. Furthermore, as the contribution of sustainable desserts increased with the rise of "sustainable score", this suggests that desserts might not be initial food triggers for the "lower receptive guests". Further research could explore more broadly innovative strategies to reduce some mismatches between (i) non-attractive sustainable options in some food categories for consumers and (ii) the core food categories to be scrutinized to actually increase the sustainability of food offers.

[2] Results from an exploratory qualitative approach (not presented here) revealed that guests do not actually understand the differences between standard fish and sustainable-labeled fish (MSC label), and they do not perceive any taste differences (as expected for French consumers with taste as their first purchase criteria). However, in this study we decided to use the MSC label because that is the most frequent label on sustainable fish in France.

Lastly, the lower rate of sustainable-oriented changes among the lower receptive guests suggests, in line with Kaljonen et al. (2020), the weakness of both the informational and free-choice paradigms in our experiment. Despite food labeling, the overall explanation of sustainable food, and the side-by-side presentation of the sustainable and standard options allowing a free choice, the norm activation remains insufficient in at-work settings for lower receptive guest segment. Further research more focused on social norms within collective catering would be needed to explore how the repeated presence of vegetarians can lead meat eaters to embrace dissonance-reducing strategies and actual behavior changes (Rothgerber, 2014). At last, for these guests who remain insensible to information and to free choice among alternative offers, nudging strategies would appear especially relevant, like the slight change of meat/vegetable proportions in meals or systematic offers of vegetarian dishes whose taste would be adapted to those guests preferences by the canteen chef (Reinders, 2020).

While limits of our study are the sample size of followed-up consumers and the lack of monitoring to evaluate the conservation of choices overtime, long-term research with repeated nudging strategies would be required to verify whether nudges can break down deep-rooted choices and instill durable changes (Abrahamse, 2020).

The contribution of worksite canteens to long-term climate change mitigation might also depend on the durability of those consumer choices.

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**Tab. I Proposals of main dish and dessert on each day of experiment and the extra cost for the sustainable version**

| Day of experi-ment | Vegetarian dish | Dish of the day (standard vs. sustainable) | Extra cost (EUR) | Dessert of the day (standard vs. sustainable) | Extra cost (EUR) |
|---|---|---|---|---|---|
| 1 | Buckwheat balls, lentils, and vegetables in tomato sauce | *Chicken:* No label vs. Label Rouge certification and local origin | 0.50 | *Strawberry crumble*: Spanish origin vs. local origin | 0.15 |
| 2 | Seitan steak | *Chicken:* No label vs. Label Rouge certification and local origin | 0.50 | *White cheese*: No label vs. organic | 0.20 |
| 3 | Lentil patties | *Fish (Saithe):* No label vs. MSC certification | 0.40 | *Fruit compote*: No label vs. organic | 0.15 |
| 4 | Vegetarian pizza | *Fish (Haddock):* No label vs. MSC certification | 0.40 | *Chocolate cream*: No label vs. organic | 0.20 |

**Tab. II Methodological design**

| **Research steps** | **Objectives** | **Statistics over the four days of the experiment** |
|---|---|---|
| Step 1 | Monitoring choices through total collected questionnaires | 1 220 questionnaires in total (Guests who filled in the first part of the questionnaire) |
| Step 2 | Identifying the corresponding number of individuals | 599 guests (*whole sample*) (Guests who filled in both parts of the questionnaire) |
| Step 3 | Identifying the number of followed-up guests and calculating the individual sustainable consumption score | 160 guests (*subsample*) (Guests who participated in two days of experimentation) |

**Tab. III Characteristics of total surveyed population (599) and subsample population (160)**

| | | | Whole sample population | Subsample population | |
|---|---|---|---|---|---|
| ***Categories*** | ***Variables*** | ***modalities*** | **% (n = 599)** | **% (n = 160)** | **Chi-square test** |
| ***Demographics*** | Gender | F | 48.9 | 54.4 | ns |
| | | M | 51.1 | 45.6 | |
| | Age (years) | 18–30 | 19.7 | 25.0 | $p$ =0.002 |
| | | 31–45 | 43.7 | 54.4 | |
| | | 46–55 | 22.0 | 13.1 | |
| | | > 55 | 14.5 | 7.5 | |
| | Position | Executive | 55.6 | 48.1 | ns |
| | | Nonexecutive | 44.4 | 51.9 | |
| ***At home food habits**** | Purchase in short channel | Each week | 35.1 | 36.9 | ns |
| | | 1–2 times/month | 24.2 | 24.4 | |
| | | Rarely | 25.0 | 22.5 | |
| | | Never | 15.7 | 16.3 | |
| | Purchase organic food | Each week | 61.1 | 61.9 | ns |
| | | 1–2 times/month | 21.4 | 21.9 | |
| | | Rarely | 12.7 | 11.3 | |
| | | Never | 4.8 | 5.0 | |
| | Purchase of sustainable fish | Each week | 9.3 | 3.4 | $p$ =0.04 |
| | | 1–2 times/month | 20.6 | 20.0 | |
| | | Rarely | 35.0 | 44.8 | |
| | | Never | 35.0 | 31.7 | |
| | Respect of seasons | Systematically | 55.0 | 54.4 | ns |
| | | Occasionally | 41.4 | 39.4 | |
| | | Never | 3.5 | 6.5 | |
| | Meat consumption evolution | Decreasing | 67.3 | 71.3 | ns |
| | | Stable | 31.2 | 28.8 | |
| | | on the rise | 1.5 | 0 | |
| | Vegetarian meals consumption | | | | ns |
| | | Each day | 13.6 | 17.3 | |
| | | 1–3 times / week | 33.9 | 41.3 | |
| | | 1–3 times/month | 26.7 | 22.0 | |
| | | Never | 25.8 | 19.3 | |
| | | | **Mean (std)** | **Mean (std)** | ***t*-test** |
| ***Expectations relating to the company restaurant**** | Expectation of more sustainable food at restaurant | Likert scale 1: Fully disagree 5: Fully agree | 3.99 (0.81) | 4.11 (0.73) | ns |
| | Sustainable food / Similar price | Likert scale 1: Fully disagree 5: Fully agree | 3.68 (0.85) | 3.66 (0.82) | ns |
| | Extra cost paid by the employer | Likert scale 1: Fully disagree 5: Fully agree | 3.31 (1.06) | 3.31 (0.96) | ns |
| | Extra cost paid by the customer | Likert scale 1: Fully disagree 5: Fully agree | 3.41 (1.01) | 3.56 (0.93) | ns |

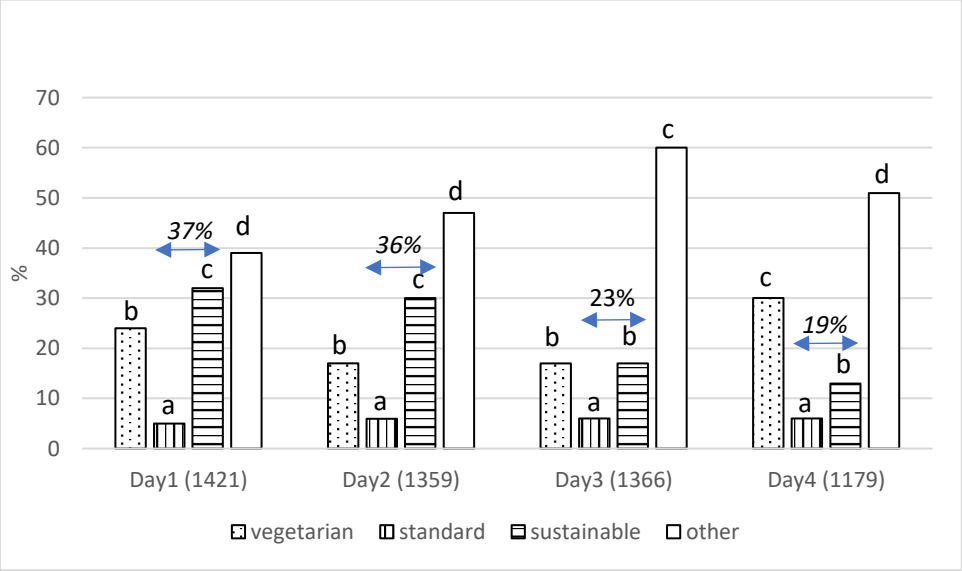
Note: * 4 points likert-scales; ** 5 points likert-scales

**Tab. IV Motivations for choosing / not choosing the sustainable options (subsample, n = 160)**

| | Vegetarian dish | | Main dish (Fish/chicken) | Dessert |
|---|---|---|---|---|
| **Choosing the vegetarian dish**[1] | % | **Choosing the sustainable option**[1] | % | % |
| Taste | 20.70 | Taste | 13.33 | 14.18 |
| Lower ecological impact | 19.89 | More appetizing | 9.74 | 12.77 |
| Health impact | 18.82 | Lower ecological impact | 27.69 | 24.82 |
| Support for local producers | 11.56 | Health impact | 14.36 | 13.48 |
| Willingness to reduce meat consumption | 29.03 | Support for local producers | 34.87 | 34.75 |
| **Not choosing the vegetarian dish**[1] | % | **Choosing the standard option**[1] | % | % |
| Fear of tasteless dish | 3.37 | Accustomed to taste | 4.17 | 12.90 |
| Fish/meat eater | 23.22 | More appetizing | 16.67 | 35.48 |
| No concern for ecological issues | 0.37 | Do not want to pay more | 33.33 | 6.45 |
| Fear of dish not being filling | 4.49 | Quality–price ratio | 16.67 | 22.58 |
| Not accustomed to vegetarian dishes | 7.49 | Sustainable option added no value | 29.17 | 22.58 |
| Do not feel like vegetarian dish today | 61.05 | | | |

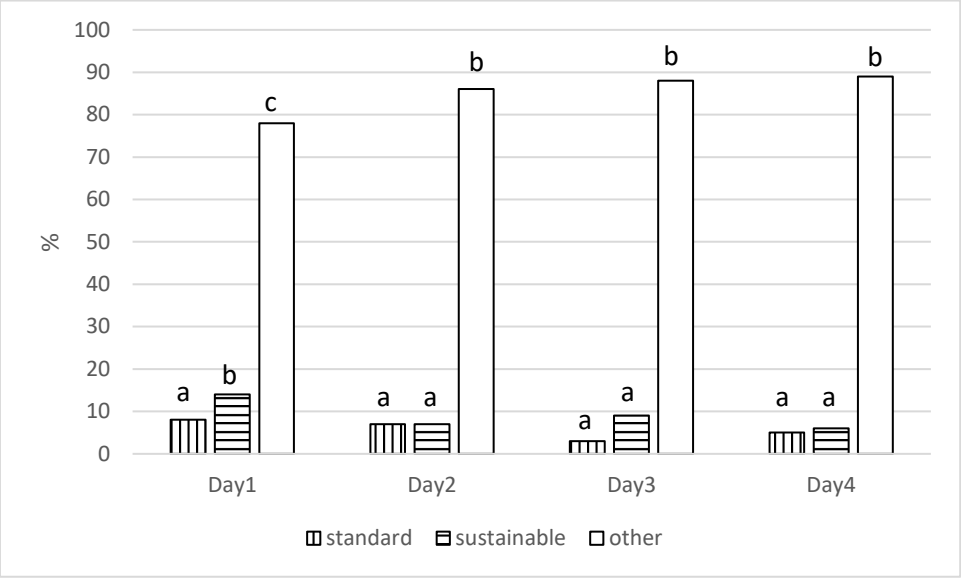
[1] Multiple choice questions

**Fig. 1 Main course – distribution of choice by proposal (Total clients)**



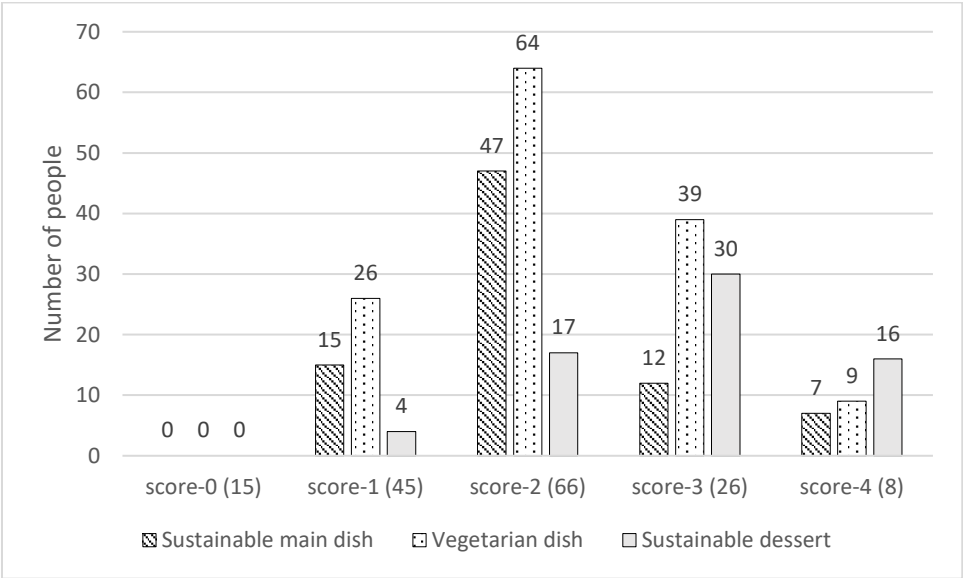

The dish of the day was meat at Day 1 and Day 2, fish at Day 3 and Day 4
Day 4[1]: results from two restaurants only.
'Other': 'out of the experimented options'
For each day, a different letter indicates significant difference between choices of main course (Khi[2] test and Marascuilo procedure)

**Fig. 2 Dessert – distribution of choice by proposal (Total clients)**




The dessert of the day was a fruit based dessert on Day 1 and Day 3, a dairy product on Day 2 and Day 4
Day 4[1]: results from two restaurants only.
'Other': 'out of the experimented options'
For each day, a different letter indicates significant difference between choices of dessert (Khi$^2$ test and Marascuilo procedure)

**Fig. 3 Distribution of sustainable scores and type of sustainable choice**

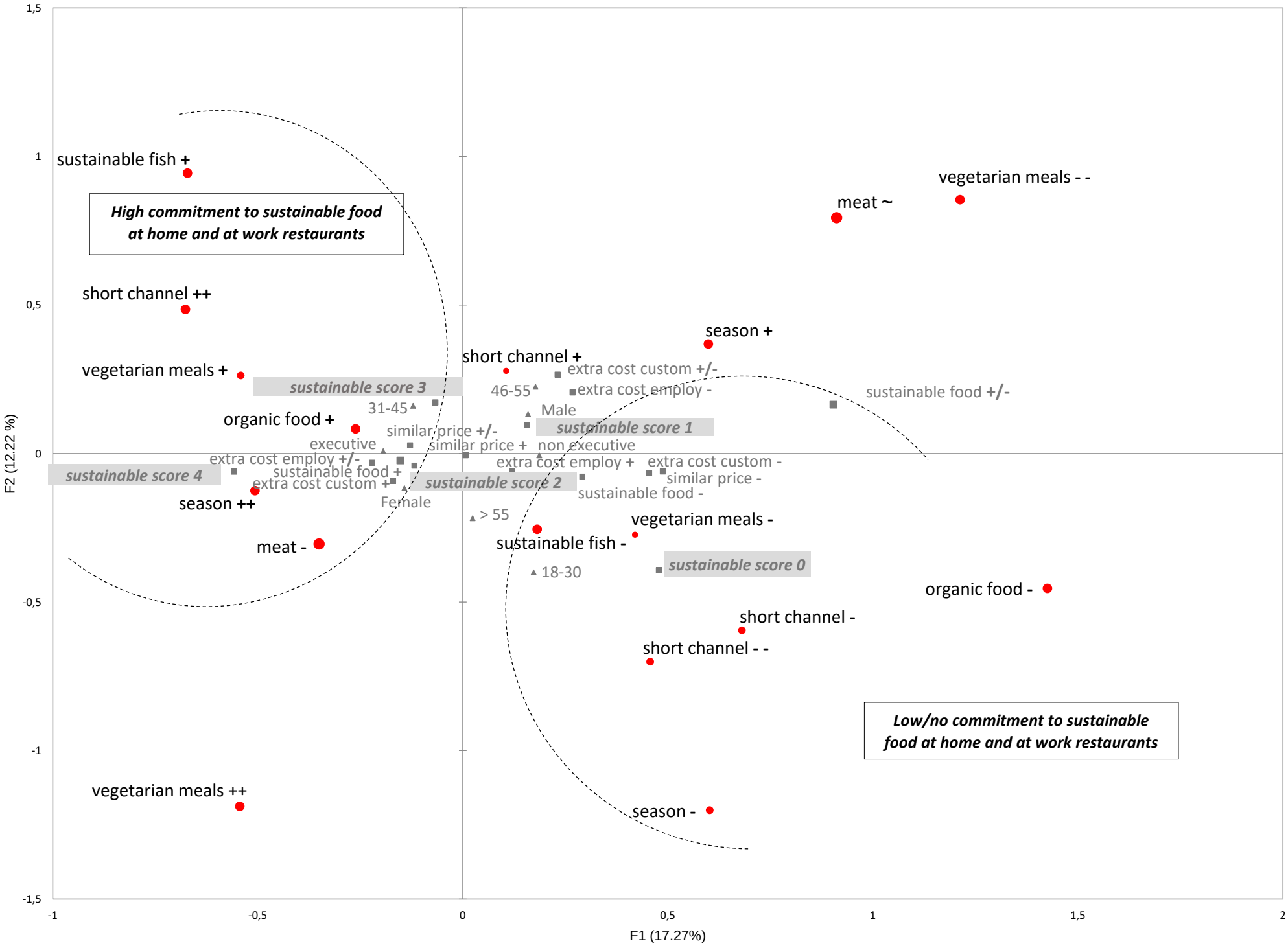



Note: () total number of sustainable choice for each score

**Fig. 4 Representation of active categorical variables related to food habits at home and supplementary variables (demographic, expectations related to company restaurant, and consumption behavior in real situations) on dimensions 1 and 2 of the multiple correspondence analysis**

Note: Dot size is proportional to the value of square cosine indicating the quality of the representation of each modality. At-home food habits are represented by a solid circle, expectations by a square, and demographics by a triangle

**At-home food habits**
*(Purchase) in short channel, organic food, sustainable fish*: ++ each week; + 1–2 times/month; - rarely; -- never
*(Respect of) seasons*: ++ systematically; + times to times; - never
*Meat (consumption)*: + on the rise; ~ stable; - decreasing
*Vegetarian meals (consumption):* ++ each day; + 1-3 times/week; - 1-3 times/month; -- never
**Consumers' expectations**
*Sustainable food, similar price, Extra cost-employer, Extra cost-customer:*
- - Fully disagree; - Disagree; +/- Neither/Nor; + Agree; ++ Fully agre


1,5
1
0,5
0
-0,5
-1
-1,5
-1
-0,5
0
0,5
1
1,5
2
F2 (12.22 %)
F1 (17.27%)
sustainable fish +
High commitment to sustainable food at home and at work restaurants
short channel ++
vegetarian meals +
sustainable score 3
organic food +
31-45
similar price +/-
executive
extra cost employ +/-
sustainable score 4
sustainable food +
extra cost custom +
season ++
meat -
vegetarian meals ++
Female
sustainable score 2
> 55
short channel +
extra cost custom +/-
46-55
extra cost employ -
season +
Male
sustainable score 1
similar price +
non executive
extra cost employ +
extra cost custom -
similar price -
sustainable food -
vegetarian meals -
sustainable fish -
18-30
sustainable score 0
meat ~
vegetarian meals - -
sustainable food +/-
organic food -
short channel -
short channel - -
season -
Low/no commitment to sustainable food at home and at work restaurants

1