

Title

Developing a sustainable food strategy for large organizations: The importance of context in shaping procurement and consumption practices

Abstract

Organizations such as hospitals, educational institutions and workplaces feed thousands of people every day and are key intermediaries in the food system. They are in a position to significantly shape the production, processing and distribution of food as well as food-related practices of large groups. These activities have a significant impact on sustainable development, the global economy and health and wellbeing. Using a qualitative approach that draws on 21 interviews with key decision-makers based in 8 large national and multi-national organizations, this research examines the most important contextual factors that influence food provisioning across organizations. The study identifies opportunities and constraints for improving food sustainability that are likely to apply within and across different organizational contexts, and provides recommendations for implementing a sustainable food strategy. The findings provide interesting theoretical insights and have practical implications that are relevant for practitioners, business managers and sustainability consultants.

Keywords

Organizational culture; sustainable food procurement; sustainable food consumption; sustainable supply chain management; sustainable development.

1. Introduction

There is widespread agreement that the prevailing system of highly industrialized food provisioning is unsustainable and in urgent need of transformation (Foley *et al.*, 2011; Garnett, 2015). Exactly how to achieve a sustainable food system is less evident, with many of the proposed strategies and solutions focused on scientific and technological advancement, for example developing more climate resistant crops or energy efficient food production (Lam *et al.*, 2013; Godfray, 2015). However, the dominant focus of attention on supply side issues, although important, is alone insufficient to address the myriad challenges of food sustainability including environmental degradation, rising obesity and diet-related diseases, and high levels of food waste (Schönhart *et al.*, 2009; Laakso, 2017). Developing a sustainable food system requires a more integrated approach to food sustainability focusing on the structures, systems and relationships underpinning all stages along the value chain, including the role of intermediary actors such as large organizations (Grankvist and Biel, 2007).

Organizations such as schools, hospitals and workplaces play a significant role in the food system, although this is often underappreciated (Goggins and Rau, 2016). As well as handling large volumes of food, they represent a suitable focal point for interventions aimed at developing sustainable eating habits (Price *et al.*, 2016). Food provisioning in organizations is influenced by caterers, HR managers, general managers and others who work in key roles and make decisions that help shape the food culture and choices of thousands of consumers every day (Grankvist and Biel, 2007; Spaargaren *et al.*, 2013; Sahakian and Wilhite, 2014; Law *et al.*, 2017). The degree to which these roles can influence change, and the amount of work involved, is likely to vary across organizations according to a number of factors including the number of actors involved in decision-making, the financial resources and decision-making support available, the availability of different food through local and regional supply chains and level of consumer engagement (Young *et al.*, 2015; Boiral *et al.*, 2015; Fiorino and Bhan, 2016). These multidimensional factors are related to one or more contextual conditions that can support or hinder a transition to more sustainable food provisioning. However, how these factors interact and shape food consumption practices within complex socio-material systems such as large organizations is under researched and not fully understood.

The remainder of the paper is divided into four sections. Section 2 reviews key literature relating to sustainable food consumption, with a particular focus on food provisioning in organizations. This is followed by a description of the methodology used in the study (section 3). The results section (section 4) identifies a number of key contextual factors that influence and shape food consumption and procurement practices in large organizations including the primary function of the organization,

the sector in which they operate, contractual arrangements, organizational (food) culture and infrastructure available. Drawing on these findings, section 5 discusses opportunities and barriers for increasing food sustainability that apply within and between particular organizational contexts, and provides concrete recommendations for improvement. Finally, section 6 provides a succinct conclusion.

2. Literature Review

Sustainable food consumption

Despite the rapidly expanding body of literature related to food sustainability, there is no agreed definition for sustainable food, and it remains unclear what sustainable food consumption looks like in practice (Garnett *et al.*, 2015). Various studies have focused on the environmental impacts and GHG emissions associated with different foods (Avetisyan *et al.*, 2013; Hallström *et al.*, 2015) or the nutritional impact and health outcomes of diets (Vranken *et al.*, 2014; Thomas *et al.*, 2016). Other studies marry health and environmental concerns in an attempt to define a healthy sustainable diet (Sáez-Almendros *et al.*, 2013; Ruini *et al.*, 2015). Importantly, these latter studies demonstrate that consumption of healthy diets do not always result in lower environmental impacts. For example, healthy diets may not be sustainable if they contain excessive amounts of high impact foods such as vegetables grown using high levels of artificial inputs, fruit and vegetables transported by airfreight, or crops that contribute to deforestation or pollution (Avetisyan *et al.*, 2013; Benvenuti *et al.*, 2016). Crucially, sustainable food systems can only be achieved through a number of trade-offs, turning their creation and development into inherently political processes. What concessions are sought, by whom and for whom, will be dependent on the agendas of actors involved (Morgan and Morley, 2014). Therefore, outcomes deriving from a food system are largely context-specific, depending on who benefits from particular social and economic arrangements in a given food provisioning system.

Food sustainability must be considered in accordance with its interrelated social, political, environmental and economic impacts (see Figure 1) (Goggins and Rau, 2016). This points to a number of key characteristics that determine the sustainability of food including high environmental integrity (e.g. organic food), equitable contribution to local economies at home and abroad (e.g. fairly traded), and supporting social inclusiveness and healthy communities (e.g. fresh local produce). Integrated solutions to addressing food sustainability concerns need to move beyond individualistic perspectives to develop social infrastructures and systems of provision that facilitate a shift towards sustainable consumption across society, including in organizations such as hospitals, educational institutions and workplaces (Sahakian and Wilhite, 2014; Goggins and Rau, 2016).

Organizational food procurement

The procurement of food gives organizations a direct opportunity to influence the food system by deploying their purchasing power to promote social, economic and environmental goals (Figure 1) (Grankvist and Biel, 2007; Morgan and Morley, 2014; Goggins and Rau, 2016). In particular, public procurement is recognized for its potential to promote more sustainable food systems and increased public health through the provision of catering services (Smith et al., 2016). By purchasing certain items, organizations support the production of specific foods and the methods used to produce them (Testa *et al.*, 2014). In addition, organizations support and legitimize specific modes of distribution through their direct and indirect supply chains (Fiorino and Bhan, 2016; Ansari and Kant, 2017). Organizations also influence consumption behavior through their decisions that affect the availability, accessibility, and affordability of different foods (Pridgeon and Whitehead, 2013; Baskin *et al.*, 2016). At the same time, catering professionals are restricted by the extent of food supply and distribution networks that operate in the region, as well as their internal institutional structures, which may or may not accommodate the purchase of certain produce (e.g. local food). Organizational food provisioning is further influenced by national and international policy, and caterers must operate within the confines of health and safety, procurement and other regulations (Smith *et al.*, 2016).

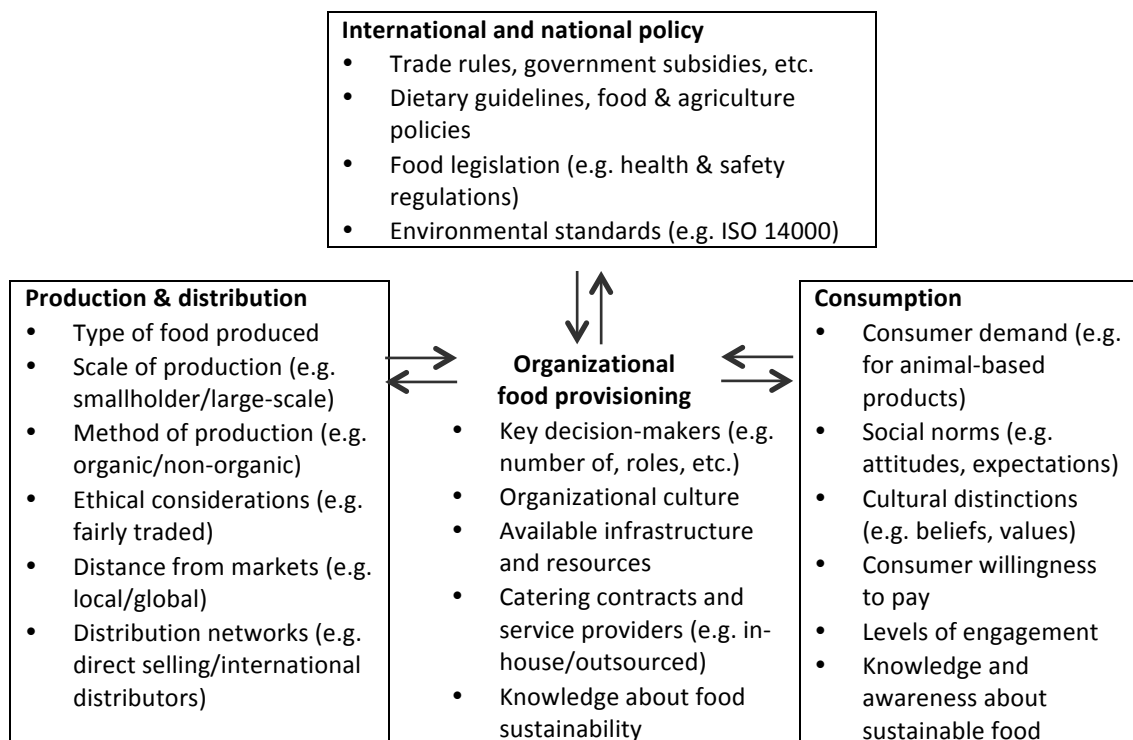


Figure 1: Contextual factors that influence food service delivery in organizations (conceptualized as a two-way process).

Many large organizations, both in the public and private sector, provide meals through contracts with facilities management companies, some of which already operate on a global scale (Goggins and Rau, 2016). From a production efficiency perspective, with globalized systems of production and distribution at its core, these large multinational companies could be viewed as part of an overall strategy to improve efficiencies in the food system and deliver economies of scale in terms of cost and environmental impact (Beske *et al.*, 2014; Fiorino and Bhan, 2016). That many companies offering catering services do so as part of an expanded facilities service (to include, for example, security, cleaning, administration, etc.) indicates a shift towards consolidation in wider service provision within organizations, beyond the provision of food (Morgan and Morley, 2014). In these cases, food is just one aspect of an integrated service management operation that may impact on how food related strategies are implemented.

Organizational culture and food

Organizational culture plays a significant role in shaping and reinforcing prevailing attitudes to food provisioning. In the context of this study, organizational culture refers to the practices of organizations in relation to food provisioning and their promoted values and statement of beliefs concerning food-related activities. These dominant attitudes impact on the food service delivery, including consumer expectations and the type and quality of food provided (Price *et al.*, 2016). Organizational culture is influenced by myriad internal and external factors, however, in individual cases, some influences are likely to be more dominant than others (Harper, 2015; Boiral *et al.*, 2015; Law *et al.*, 2017). In some instances, attitudes towards sustainable food can be primarily driven by interested individuals working within an organization; while in other cases it may be down to wider external factors such as government directives (Walker and Preuss, 2008; Goggins and Rau, 2016).

To maximize effectiveness in their role as intermediaries in a sustainable food supply chain, it is important for organizations to be aware of the social, economic and environmental qualities of the food they provide (Jabbour and de Sousa Jabbour, 2016). In turn, organizations can be considered conduits for dissemination of knowledge between producers and consumers (Kneafsey *et al.*, 2013; Wei *et al.*, 2017). Providing clear and easy to understand information regarding waste reduction, sustainable choices, food provenance and healthy eating can influence consumption practices and build trust between caterers and consumers (Price *et al.*, 2016; Law *et al.*, 2017). However, recent studies have shown that information alone is likely to have limited effect on consumer behavior and therefore should be used as part of a wider sustainability promotion strategy (Davies *et al.*, 2014; Fraser *et al.*, 2015). Consumption practices are also influenced by a multitude of social and

cultural factors such as norms, relationships, networks and meanings (Sahakian and Wilhite, 2014; Laakso, 2017). In this regard, information combined with additional measures such as educating consumers, catering staff and organizational management about sustainable food can bring multiple benefits including increasing the availability and consumption of more sustainable products and encouraging a more sustainable organizational food culture (Verain *et al.*, 2015; DeMagistris and Gracia, 2016; Wei *et al.*, 2017). This study explores the importance of organizational culture, procurement practices and other contextual factors that influence food provisioning in large organizations, and demonstrates how these factors relate to opportunities and constraints for developing a sustainable food strategy.

3. Methodology

The research draws on case study data collected from 8 large organizations based in a medium sized city in the West of Ireland. Organizations were selected based on the following criteria: a) limited to large organizations (>250 employees); b) located in a single city in the West of Ireland; c) provide prepared food on-site; and d) food provisioning is not a primary activity of the organization. In addition the following criteria were considered significant: e) a mix of public and private sector organizations and f) organizations operating in a diverse range of sectors (e.g. education, healthcare, business and industry). In total, 12 organizations matching the case criteria were identified and all were invited to partake in the study. A number of techniques were deployed to increase participation rates, including direct contact by email and telephone, and indirect contact through third parties. Ultimate participation included a total of 8 organizations, with a combined consumer base of up to 40,000 people daily (see Table 1).

The decision to limit the research sample to large organizations was two-fold. First, these organizations were more likely to provide food on-site, and second, they potentially feed more people and handle a greater volume of food than smaller organizations. Conducting the research in a single location reduces any anomalies arising from the geographical determinants of food sustainability – for example variations in access to distribution channels, markets, or the types of food produced in the region – thereby facilitating a more accurate cross-case comparison. The case-study location, with its proximity to the ocean, freshwaters and agricultural hinterland, and its access to road and rail networks, provides numerous options for sourcing a variety of food either directly from producers or through regional, national and international supply chains. A growing local food culture and increasing domestic production ensures the increasing availability of fresh, seasonal foods. The conscious inclusion of a diverse range of organizations (e.g. public/private sector; multinational/independent) encourages the collection of data that can challenge expectations that might manifest if a narrower research sample were used (Yin,

2013). Finally, the researcher had built personal contacts in the region, thus increasing the likelihood of gaining access to research participants.

Qualitative empirical material was collected through 21 semi-structured interviews with participants from the 8 organizations. The initial strategy, articulated in the recruitment process, was to interview a minimum of two people from each participating organization, to include catering managers as well as the person overseeing the catering contract on behalf of the organization (e.g. services, facilities or HR manager). However, in one organization (Case 5), a single interview was sufficient as the catering and services manager roles overlapped. In two further organizations (Case 1 and 3), additional participants (e.g. general manager, waste coordinator, finance manager) were recruited following recommendation from their colleagues. Interviewees were both male and female with 15 females and 6 males taking part in the study. The length of interviews ranged from 77 to 10 minutes, with an average duration of 40 minutes. An interview guide was used to maintain consistency and improve analysis of data. Interview questions were influenced by the literature related to organizational food provisioning, and could be grouped into 4 broad themes including 1) aims and objectives of food provisioning in the organization, 2) factors determining product choices, 3) current, previous and potential procurement practices, and 4) contractual arrangements and tendering processes.

Following its development, the interview guide was discussed and revised in accordance with feedback obtained from industry stakeholders. Interviews took place at participants' workplace – in their own office, an assigned meeting room, or in the canteen – and at a time convenient to them. All interviews were audiotaped and transcribed verbatim, with participants' consent obtained prior to recording. Handwritten notes were recorded during some interviews with additional field notes recorded afterwards. Recordings, notes and transcripts were categorized and stored for efficient retrieval. Additionally, the canteens/restaurants in the 8 case study organizations were visited either pre or post interview. This facilitated the collection of valuable observational and material data such as menu offerings, information boards and waste reduction strategies. In addition, observation of the layout of canteens, the various products offered, and location and prominence given to different types of food provided an indication of strategies to 'push' certain items on consumers (Lehner *et al.*, 2015). Crucially, triangulation of different types of evidence (interviews, observations, documentary evidence) adds strength and credibility to the findings, and reduces the chances of factual errors (Flyvbjerg, 2006; Riccucci, 2010).

Thematic analysis was applied to categorize interview responses according to frequently occurring themes. Data were further analyzed through an inductive process where more distinct categories emerged through sorting and refining observational, material and interview data. Cases were cross-analyzed to determine similarities, differences, comparisons and contrasts between ways in which organizations support (un)sustainable food consumption and production. Putting the organization, rather than individual consumers, at the centre of analysis incorporates contextual considerations that might otherwise be overlooked (Yin, 2013) (see Figure 1). The integration of findings from a review of the literature concerning sustainable food provisioning and consumption in organizations further enhances the empirical results of the study.

4. Findings: The importance of contextual considerations

Contextual considerations are important in determining how, why and to what effect organizations provide food. Although this research focuses on large organizations located in a single city, it nevertheless captures a heterogeneous sample in terms of size, structure, function, and consumer base (Table 1). Importantly, the organizations under scrutiny are each unique in the manner in which they deliver their catering service, and each are influenced by myriad factors, both from within their own organization and externally. Nevertheless, it is possible to identify opportunities for, and barriers to, more sustainable food provisioning and consumption that are common across organizations, and that arise from the specific organizational characteristics and decision-making practices in relation to food.

Table 1 Selected contextual data for Cases 1-8

	Primary function	Consumer base	Sector	Scale	Size (number employees)	Potential daily consumers
Case 1	Education	Employees, students, visitors, others	Public	National group	2,000 - 2,500	20,000
Case 2	Education	Employees, students, visitors, others	Public	National group	500 - 1,000	10,000
Case 3	Healthcare	Employees, patients, visitors, others	Public	National group	2,500 - 3,000	8,000
Case 4	Healthcare	Employees, patients, visitors, others	Private	National group	500 - 1,000	1,500
Case 5	Healthcare	Employees, patients, visitors, others	Private	Independent	500 - 1,000	1,500
Case 6	Business & Industry	Employees	Private	Multi-national	500 - 1,000	750
Case 7	Business & Industry	Employees, others	Private	Multi-national	3,000 - 3,500	3,500
Case 8	Business & Industry	Employees	Private	Multi-national	500 - 1,000	750

Primary function and consumer base

The 8 cases under study in this research primarily operate in three different areas – education, healthcare, and business and industry (B&I) (see Table 1). This has

significant implications in terms of food provisioning activities for the selected organizations. The two educational institutions (Case 1 and 2) conduct a wide range of activities in the areas of teaching and research. Their student populations are mainly young, well educated, and generally have low levels of disposable income, although this can vary. Employees constitute a second consumer base for campus-based restaurants and canteens, with a variety of staffing roles being fulfilled. Additional catering facilities are provided for visitors, dignitaries, corporate dining/VIPs, conference attendees, functions, summer schools and other events. Consequentially, these organizations represent a diverse community in terms of catering requirements and expectations.

The three healthcare providers in the study (Case 3, 4 and 5) have a high turnover of service users. Advances in medical and surgical techniques have resulted in a reduction in the average stay in hospital, and hospitals are catering for greater numbers of patients than ever before in outpatient departments and day clinics. The healthcare providers also employ staff across a wide range of areas. In addition, hospital in-patients tend to receive a significant number of visitors, while outpatients are often accompanied to appointments by relatives or friends. Therefore, food provisioning in these organizations caters for an extremely diverse population, with variations occurring across all demographic and socio-economic indicators including age, gender, occupation, income, and health. Food service delivery is also diverse and includes a bedside service for in-patients, staff and visitor canteens and restaurants, convenience stores and vending machines.

Although the area of B&I can be considered diverse, these organizations (Case 6, 7 and 8) cater for a narrower consumer base, the vast majority of which is made up of direct employees. Consumer variations – both within and between organizations – occur in terms of education, income, age, gender, nationality, and employment status (e.g. full-time; part-time). The motivation to provide on-site catering facilities also differs between these organizations. For example, one organization provides catering facilities for staff as a fringe benefit, and part of an overall strategy for *“attracting people and keeping people and securing people”* (Facilities manager, Case 8). Catering services are also linked to workplace efficiencies, as evident in the following viewpoint: *“it would be about providing the on-site facilities so it causes minimum disruption to the working day, keep the breaks short”* (HR manager, Case 7). In addition, the nature of work (e.g ICT-based in Case 8; manufacturing in Case 7) and working hours (e.g. shift-work in Case 7) has an impact on decisions taken around food provisioning, for example in relation to expected calories burned during working hours.

Sector (Public; private)

This study incorporates both public (n=3) and private (n=5) sector organizations (see Table 1 for details). The sector is relevant in terms of its impact on current and potential food sustainability practices, particularly in relation to policy and regulations, and their influence on specific actions that can be taken by organizations to improve sustainability – including procurement of organic, local and seasonal produce. Although geographical specifications such as ‘buy local’ preferences cannot be stated on public procurement tender documents, production processes that are recognised at EU level – such as organic – can be stipulated. Nevertheless, the use of organic food was almost non-existent among all eight cases in this study, including public and private sector organizations. Moreover, in three private sector cases (Case 6, 7 and 8), catering managers did not have the option to provide organic food, as it was not available on their ‘Approved Product Listing’ (APL). In these cases, APLs and prices are negotiated and agreed with suppliers at head-office level rather than on an individual site basis. Individual site managers then purchase only from within the APL and at the agreed prices. Hence, depending on the catering service provider, and the nature of the catering contract, private sector organizations are potentially even more restricted than their public sector counterparts in terms of providing certain foods (e.g. local, organic food). However, it must be recognized that these restrictions are more due to autonomous choices that have been taken, rather than legislation and regulatory constraints.

Public sector organizations can effect positive change through their procurement activities, yet, in this study they were found to face internal and external pressure to provide ‘value for money’, a term generally construed in economic terms of cost-cutting or cost minimization. As indicated by one respondent: *“Cleaning and catering would be well up there in terms of expectations on saving”* (General manager, Case 3). In some cases, public sector organizations are not only expected to reduce costs in relation to non-core activities such as catering, they *“are asked to be creative and resourceful in generating income”* by capturing spending on-site (Services manager, Case 1). From an economic-based perspective, some public sector organizations are finding it increasingly difficult to justify retaining their food service in-house (e.g. Case 2). At the same time, similar pressures to reduce service costs are exerted on private sector organizations. For example, in Case 4 the pressure to centralize food procurement across the organization’s four locations came from both internal (i.e. organizational management) and external (i.e. external consultants) sources, again highlighting the widespread acceptance and expectation for implementing prominent low cost food provisioning business models.

Catering contracts and procurement practices

Incorporating food sustainability considerations into catering contracts can open up specific opportunities for organizations to increase their sustainability performance. In Case 8, for example, the catering contract includes food waste reduction targets of less than 2%, while in Case 2, tenders were broken down into smaller lots to facilitate small-scale producers in winning contracts, and quotes to fulfil these tenders were actively sought locally. Significantly, the organization in this case operates in the public sector and was able to support local small-scale producers whilst remaining within the relevant national and European regulatory frameworks. In Case 4, local food producers were perceived as both suppliers of a service (i.e. food) as well as potential costumers, as evident in the following excerpt: “*when you’re in a business, no matter what the business is, you would like the support of local people using your hospital, so you want to support local businesses*” (Services manager, Case 4). While these cases demonstrate that willing organizations can support local food systems through creative procurement practices, it should be noted that these organizations (Case 2 and 4) were also prepared to invest significant time and effort in developing reciprocal relationships with suppliers.

Organizations have numerous options when designing catering contracts, with each decision having an impact on food service delivery (Table 2). For example, organizations can outsource catering operations or provide them in-house. During interviews for Cases 4 and 5, the advantages of in-house catering were articulated in terms of maintaining control over the food service and having the flexibility to change and quickly adapt to any arising situations. In Case 3, the perceived advantages of outsourced catering were expressed in terms of a reduction in people management (i.e. staffing, administration), maximization of labour efficiency (i.e. more flexible terms and conditions for contract staff) and reduced financial and operational risk.

Table 2 Catering and contract arrangements for Cases 1-8

	Catering contract	Scale of contract	Scope of contract	Type of contract	Food subsidized	Procurement practices
Case 1	Outsourced	Site-specific	Catering only (4 contracts)	Concession	No	Various
Case 2	In-house	Site-specific	Catering only	Concession	No	Non-centralized
Case 3	Outsourced	Regional	Catering only	Cost-plus-incentive fee	Yes (staff only)	Centralized
Case 4	In-house	Site-specific	n/a	n/a	Yes (staff only)	Semi-centralized
Case 5	In-house	Site-specific	n/a	n/a	Yes (staff only)	Non-centralized
Case 6	Outsourced	Global	Non-core activities	Commercial	Yes	Centralized
Case 7	Outsourced	European	Non-core activities	Commercial	Yes	Centralized
Case 8	Outsourced	National	Catering only	Cost-plus	Yes	Centralized

Some organizations operating in more than one location expand the scale of catering contracts across numerous sites on a regional (e.g. Case 3) or international basis (e.g. Case 6). In addition, organizations choose to extend the scope of contracts to include other activities such as cleaning, security, administration and landscaping (e.g. Case 6 and 7). Hence, the catering contract is not always a catering contract *per se*, but rather a component part of a larger facilities management arrangement, with further implications for food service delivery due to the providers' potential to, for example, offset losses in one area (e.g. food) against profits made in another (e.g. cleaning), or to deploy staff to different services as required.

In addition, organizations agree numerous different types of contracts with catering providers. These include concession contracts (Cases 1 and 2), cost-plus contracts (Cases 3 and 8), and commercial contracts (Cases 6 and 7). A concession agreement grants the caterer the right to operate on the organization's premises under specified conditions, the terms of which vary. In return, the owner of the concession pays a fixed sum or a percentage of revenue to the organization. A cost-plus contract is an agreement where the caterer is paid for their expenses to an agreed limit plus additional payment to allow for profit. In commercial contracts, the caterer is generally paid a small management fee in order to run the canteen/restaurant under agreed terms and conditions. The caterer retains any profit generated, however, they also absorb any loss thereby shifting a large quantity of the financial risk onto the contract caterer.

In some cases, economic measures are strategically incorporated into catering contracts to influence the supply and demand for (sustainable) food. Several of the organizations subsidize food for employees, thereby keeping food prices low and "*[encouraging] staff to use catering facilities*" (Catering manager, Case 4). Mechanisms for implementing food subsidies range from direct payments to caterers (e.g. Case 6 and 8), to indirect subsidies such as the provision of catering facilities and payment of associated overhead costs including gas, electricity and insurance (e.g. Case 7). As well as subsidies, many organizations agree tariffs with contract caterers (e.g. Case 1, 6, 7 and 8). In effect, the tariffs restrict caterers from charging consumers above the agreed price for particular items or dishes. Hence, tariffs can be effective in making healthy and sustainable food more affordable for consumers, whilst offsetting price reductions against unhealthy items:

"in the last number of years we got some very, very strong feedback from employees that they felt it was more expensive to eat healthy, you know, the chips with curry sauce, the cost of that versus to get some salads at the salad bar. So with that in mind we've consciously not increased the cost of some of our healthier options, our salad bars, etc., but we might have

increased the cost of other products, the sausages...the chips, that kind of thing" (HR manager, Case 7).

This example shows a potential pathway towards promoting healthy sustainable eating in organizational settings, using targeted pricing as a key strategy. However, with pricing restrictions in place, caterers may be tempted to 'push' items with higher profit margins, such as confectionary and processed foods, on consumers. Hence, organizations must work with caterers, and vice versa, to develop an optimum strategy that allows caterers make a profit, keeps consumer prices at reasonable levels, and ensures a healthy sustainable supply of food.

Organizational food procurement occurs through different scales and structures, ranging from large multinationals purchasing through centralized procurement systems (e.g. Case 6 and 7) and large public sector purchasing consortia (e.g. Case 3), down to individual organizations with independent non-centralized purchasing models (e.g. Case 2 and 4). Interestingly, caterers operating using centralized procurement systems identified cutting carbon emissions as a justification for streamlining suppliers and consolidating supply chains (e.g. Case 6 and 7). Although a reduction in transport emissions has got a sustainability benefit (i.e. less CO₂), sourcing through large conventional supply chains tends to favor large-scale producers using highly industrialized agricultural systems, thereby resulting in a net sustainability loss. Within this centralized system, caterers operate with more rigid purchasing systems broadly determined and negotiated by officials based in a head office and situated away from the food consumption site. As a result, some caterers, particularly those purchasing from APLs, are somewhat detached from their supply chains and unaware of key sustainability issues such as food provenance, as reflected in the following excerpt: *"Even our milk, our dairy products, comes from [one supplier], where they source this stuff from, I've no idea"* (Catering manager, Case 7). This lack of knowledge was also evident in a number of other cases (e.g. Case 1), although there were also examples to the contrary, such as in Case 4: *"we would be very conscious of our suppliers and where those products are sourced from"* (Services manager, Case 4).

Significantly, catering managers working for larger service providers reported less flexibility in adjusting to specific sourcing requirements than smaller independent caterers or in-house catering operations. In the opinion of one respondent: *"when your menu goes out, it has to be what you're allowed to buy, so your ability to be creative is null and void"* (Catering manager, Case 1). This lack of control over purchasing was also articulated in another large organization: *"in terms of the producers and the suppliers, that would be out of our hands"* (General manager, Case 3). Individual catering managers also reported an inability to quickly change or add

suppliers, a process that can take up to 12 months. Furthermore, some large caterers are shifting their delivery model towards standardized recipes across their nationwide operations, thereby further eroding the influence of on-site catering managers and chefs to innovate and respond to sustainability challenges. The disempowerment of catering staff and its effect on their professional development was clearly articulated in the following observation,

“...the quality of chefs is disappearing greatly. Basically what you have is one person in the kitchen that is a chef and you have 3 to 4 catering assistants around him, traying up rolls, taking stuff from the oven when the timer goes off. They have no idea how long it’s in the oven for, they just hear the timer and they withdraw it, stick a probe in it, and throw it out on the counter. No passion, no skill-sets for it at all” (Catering manager, Case 1).

For sustainable food practices to take root in organizations, it is essential that information and knowledge concerning the social, economic and environmental impacts of food choices becomes embedded in the food provisioning process, for example through appropriate staff training and knowledge exchange. In this regard, the impact of mass centralization of catering knowledge and skills is unlikely to feed well into sustainability.

Organizational culture

Acknowledging and understanding the prominence of diverse food cultures across organizations suggests that certain decisions or changes in relation to food services may impact differently between organizations. Hence, attempts to improve food sustainability will not be equally as effective across all organizations, with prominent food cultures playing a major role in the variation.

Although cost is a central factor in relation to food provisioning for organizations, it is not necessarily their primary concern. This is particularly evident for Cases 4 and 5, where the quality of food is not compromised for cost; however, they do attempt to attain their respective standards at the lowest price possible. When put in context – these are both private sector healthcare providers – it is understandable that these two organizations must maintain a high standard in order to attract customers in a competitive market. Nonetheless, their attitude towards expectations in terms of food standards is notably different in comparison to the public sector healthcare provider (Case 3). Whereby, in Case 5, the nutritional value of the meal service is considered to be *“a very important part of the rehabilitation of patients”* (Catering manager, Case 5), in Case 3 it is considered more of *“a requirement that patients are fed”*, to *“offer a good enough choice that it’s not damaging the well-being of the patient”* and *“that the food is up to an acceptable edible standard”* (Catering manager, Case 3). These contrasting examples illustrate the existence of a wide

range of expectations and standards in organizational food, and are reflective of the willingness of the respective organizations to invest in their food services.

From a consumption perspective, one crucial aspect of any sustainable food system is the relationships that it fosters (Kneafsey *et al.*, 2013; Carroll and Fahy, 2014). Relationships are also paramount in forming and reinforcing organizational culture (Law *et al.*, 2017). As well as fostering linkages with consumers and organizations, the catering service, whether in-house or outsourced, also creates an important link between the organization and food producers and suppliers. For some organizations, food procurement is seen as an opportunity to support local business (e.g. Case 2) and build meaningful or reciprocal relationships within the community (e.g. Case 4). In other organizations, food procurement is a functional activity and there is little consideration from the organization's perspective to food provenance or its sustainability credentials (e.g. Case 7).

Interview data also revealed that staff training regarding food sustainability was not adequately implemented across organizations. Where such training was in place (e.g. Case 1), it was undertaken only by certain individuals (e.g. head chef) or training was restricted to certain aspects (e.g. supplier information). In this regard, educating catering staff about the wider sustainability characteristics of products would increase the likelihood that such information will reach the end user. Nonetheless, several organizations did provide details of food suppliers on menus or noticeboards (e.g. Case 1, 2 and 4). Although not a direct indication of quality or sustainability, providing this information leads to greater transparency and facilitates more informed choice for consumers. In Case 6, nutritionists and other medical professionals regularly provided on-site health screening and dietary advice for employees, and some unhealthy foods (e.g. fried breakfast) were removed from the menu. In Case 8, where a free lunch is provided for employees, the organization takes on a larger proportion of financial risk and responsibility. In this case, they also take a more hands-on approach to food provisioning that involves greater interaction with both caterers and consumers, manifested through the role of facilities manager. Similarly, healthcare organizations with in-house catering operations (Case 4 and 5) were found to have more open relationships involving organizations (management), caterers and consumers in decision-making processes, including regular meetings and stakeholder engagement forums. Finally, some organizations facilitate special events aimed at promoting sustainable food consumption such as hosting local food dinners (Case 2), local food markets on-site (Case 3) and providing free fruit every Monday (Case 6).

Infrastructure

The importance of infrastructure to facilitate sustainable food strategies is often

underappreciated by organizations (Devi *et al.*, 2010). Infrastructure can be understood as an umbrella term that covers a wide array of issues including facilities, structures and systems that support food services in the organization. In a broader sense, infrastructure can also relate to information technologies, software development tools or channels of communication. For example, healthcare organizations were found to have taken diverse measures to reduce food waste, including the introduction of technological innovations (e.g. temperature controlled food trollies in Case 4) and more effective communication and coordination between departments (e.g. Case 5). It is worth noting that, despite these efforts, food waste remains a key concern among healthcare providers, *“we’re very conscious of the fact that we’ve an awful lot of wastage as well within our food industry, and that’s a huge cause of concern for us, because it’s good food that’s being wasted”* (Services manager, Case 5).

Failure to allocate sufficient space and resources to food provisioning can lead to operational constraints, particularly for organizations that are expanding their workforce or consumer base. Catering managers in two organizations cited lack of cooking/dining space as a severe constraint on their operations (Case 3 and 7). As a result, caterers in Case 3 were considering alternative options such as ‘cooked-chilled’ and centralized production as a means of increasing capacity. Infrastructure also incorporates the food service area and vending machines, representing a further opportunity to influence food consumption through strategic positioning of certain foods to make them more visible and accessible. Of course, choice architecture can also be used to ‘nudge’ consumers towards unsustainable and unhealthy choices. Worryingly, from a public health perspective, nudging consumers towards unhealthy treats and sweets for the purposes of generating income was observed to be prevalent in a number of organizations (e.g. Case 1 and 7), including hospitals (e.g. Case 3 and 5).

5. Discussion: Identifying opportunities for improving food sustainability across organizations

In order to increase food sustainability, organizations need to facilitate and support a sustainable eating environment. Organizations can use their purchasing power to create a demand for sustainable food, and use their position as intermediaries in the food chain to increase the availability of sustainable foods such as local, organic and fairly traded produce. They can introduce a combination of practical changes (e.g. economic, communicative, regulatory) and product changes (e.g. local, organic, fairly traded) to improve food sustainability performance. In cases where sustainable food might incur a higher procurement cost (e.g. local, organic), savings can be made by redesigning menus to include cheaper seasonal produce or reduce the volume of expensive (less sustainable) items such as meat (Hallström *et al.*, 2014).

Sustainability indicators and related performance measures and expectations should be included in the design, negotiation and delivery of catering contracts, covering social, environmental and socio-economic aspects. Sustainability goals should be concrete and measurable as well as being realistically achievable, and related performance reports should be made publically available. Organizations can strategically apply tariffs in order to reduce the prices for more sustainable choices (e.g. vegetarian meals), whilst offsetting any potential losses by maintaining higher prices for less sustainable options (e.g. high fat dishes). Where tariffs are not in place, for instance with many in-house catering operations, differentiated pricing strategies can be implemented to the same effect without negatively impacting on catering profits. Similarly, food subsidies can be applied in a more nuanced manner that distinguishes between sustainability of choices, with greater subsidies granted for more sustainable options.

Many caterers are working to extremely tight budgets, with some operating their food service at a loss. Consequentially, a low-cost model is inevitably going to result in sourcing cheap industrialized food. Hence, it is incumbent upon organizations to ensure that adequate resources are invested in catering to ensure that sustainability goals can be achieved. Resources might include food budgets, infrastructure, and investing time and effort in building relationships with caterers and consumers. Key decision-makers (e.g. HR managers, service managers, catering managers, etc.) need to be educated about the importance of healthy sustainable food, and organizations as a whole need to assess their relationship with food provisioning so that it is not just evaluated in terms of price and functionality but also viewed as an important component in shaping the wellbeing of consumers and of the organizational culture more generally.

While many of the aforementioned recommendations for improving food sustainability are already in place in one or more of the organizations in this study, their implementation is often fractured and incoherent. Surprisingly, none of the organizations under study had a dedicated sustainability manager in place. Decisions around food provisioning were often taken on an ad hoc basis, rather than as a component of an overall long-term sustainable food strategy. Drawing on the data presented in this study, Table 3 identifies 12 areas where organizations have the autonomy to directly influence and shape food provisioning and consumption, and which are likely to be effective across different organizational contexts. These measures can be introduced incrementally and at the appropriate juncture (e.g. during contract negotiations).

Table 3 Opportunities for increasing the sustainability of food provisioning in organizations

Food procurement	Refers to the purchasing of food including food procured through contract caterers, tender processes or on an ad hoc basis
Catering contract	Refers to the formal legal agreement between the organization and appointed catering provider. Includes terms and conditions of the service provision. Can be a component of a broader facilities management contract
Menu development	Refers to planning, designing and delivering food options. Specifies the ingredients, preparation method, portion sizes, range of options and special offers available
Tariffs, subsidies and pricing	Tariffs refer to the fixed consumer price of products and meals agreed between the organization and the caterer. Subsidies are sums of money granted by the organization to the caterer to keep consumer prices low. Pricing refers to the amount of money required as payment from consumers for food and beverages offered
Waste management	Refers to the management of food waste including initiatives aimed at reducing the volumes of food wasted
Infrastructure	Includes services and facilities necessary to support sustainable food provisioning. Can include physical improvements such as gardens, kitchens, notice boards and water provisioning, or IT systems such as communications technology and software development
Staff training	Refers to the education and training of staff in areas relating to sustainable food provisioning such as product information or waste reduction
Information	Refers to information regarding sustainable food provided for consumers by the organization and/or caterer
Education	Refers to measures aimed at improving organizations, caterers and consumers' knowledge and understanding of sustainable food
Communication and feedback	Refers to the mechanism by which organizations or caterers interact with consumers to gather or disseminate information, knowledge and opinions relating to sustainable food
Partnership	Refers to the opportunity to foster cooperative relationships with people and groups based outside of the organization with potential to increase sustainability
Special events	Refers to irregular or specially arranged events undertaken by the organization and/or caterers to promote sustainable food. Examples include local food dinners, field trips, or tendering information events

As found in other studies (e.g. Brammer and Walker, 2011; Smith *et al.*, 2016), cost remains a major impediment to sustainable food provisioning. However, this research also found that additional financial constraints beyond food procurement costs are equally restrictive (Table 4). High rent and rates charged by organizations, low food price tariffs (set by organizations), consumer unwillingness-to-pay, and high profit targets set by caterers all contribute to difficulties in developing a sustainable food strategy. Significantly, overcoming these economic-based barriers involves action by organizations (e.g. reducing rent and rates, increasing catering budgets), caterers (e.g. lowering profit margins) and consumers (e.g. increasing willingness-to-pay).

Table 4 Economic barriers to sustainable food provisioning in organizations

Barrier	Issue	Responsibility
Budget allocation	Inadequate budget allocated by organizations for food provisioning and/or budget cuts imposed on catering departments	Organization
Lack of government investment	Underinvestment in public food provisioning by government agencies	Government
Economic orientated food-tendering processes	Food provisioning and procurement contracts based on 'low cost' models	Organization; Government
Poor recognition of values versus cost	Oversight of social, environmental and sustainability benefits in favor of economic considerations	Organization; Caterer

High rents and rates	Exorbitant levels of rent and rates charged to caterers by organizations	Organization
Low meal prices	Restrictively low sale prices fixed in accordance to tariffs agreed between caterers and organizations	Organization; Caterer
Consumer unwillingness to pay	Unwillingness on behalf of consumers to pay a premium for sustainable food	Consumer
Financial targets	Financial pressure on individual catering units to meet gross profit targets set by their head office	Caterer

Additional barriers to sustainable food provisioning emerging from the interview data include a lack of relevant skills, knowledge and awareness; inertia and lack of leadership; perceived risk associated with working with smaller suppliers; and a lack of resources allocated to food provisioning. Many of these obstacles are interrelated and do not occur in isolation, therefore they should be treated not as individual barriers, but as coexisting challenges that need to be overcome for sustainable food to become embedded in organizational settings. It is also pertinent to note that while the aforementioned barriers are significant, they are by no means insurmountable.

6. Conclusion

There is an urgent need for a transition towards a more environmentally sound and socially just system of food provisioning. Achieving such a transformation requires support from actors at all levels of society, including organizations that provide food. This paper has shown that organizations are largely heterogeneous in their food related activities; they differ in terms of their primary function, size and scale, contract arrangements and food procurement practices, and organizational food culture, each having implications for food service delivery. Understanding the contextual influences on organizational food provisioning and consumption can facilitate the identification of opportunities and sectoral constraints for improving food sustainability, thereby providing the foundation for the implementation of a sustainable food strategy. As demonstrated in this paper, this strategy can include a diversity of initiatives including economic (e.g. increasing prices for unsustainable foods), communicative (e.g. providing information on food provenance and production methods) and regulatory (e.g. restricting access to unsustainable food) measures. These initiatives can be introduced in an iterative process in cooperation with organizational management, caterers and consumers, each of whom can play an important role in driving change. The appointment of a dedicated sustainability manager could also provide a mechanism, as well as the motivation, for implementing sustainability measures.

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