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Research Paper

An Exploratory Examination of Sustainable Food Purchasing by Restaurants in Paris, France, by Product Category

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ABSTRACT:
While executive chefs invariably search for consistent quality, reliable delivery and a competitive price, few studies have sought to demonstrate how the importance of the supplier selection criteria differs by product category for sustainable food ingredients. For this study, 49 executive chefs in Paris, France, were interviewed using a structured questionnaire to explore the importance of the criteria chefs employed in purchasing five groups of food products: meat, fish, fresh fruit and vegetables, dairy products and baked products. Cluster analysis revealed the presence of two distinctly different groups of chefs: those who were primarily concerned about price and those who sought to purchase sustainably produced food ingredients. For those chefs purchasing primarily on price, there were no significant differences in the importance of the criteria utilized in the supplier selection process across the five product categories. However, for those chefs who sought to buy sustainably produced food ingredients, sourcing product from a desired geographic region was significantly less important for baked products. Similarly, in considering whether the food ingredients had been produced ethically and grown locally and sustainably, each of these criteria were ranked significantly lower for baked products than any other food category. Conversely, the availability of products all year round, proximity to the restaurant and the physical appearance of the product were all ranked significantly higher for baked products than any other food category.

KEYWORDS: Local food, organic food, ethical food, traditional food

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INTRODUCTION

With a growing "green awareness", an increasing number of consumers are looking for environmentally friendly products from restaurants (Aschemann-Witzel et al., 2015). According to Sarmiento and Hanandeh (2018), a "green restaurant" is described as any restaurant having a deep awareness of environmental issues. Within a green restaurant, consumers can expect to see: waste reduction and recycling; the more efficient use of water and energy; reusable and environmentally friendly disposable packaging; a reduction in the use of chemicals; the application of environmentally sustainable building materials and furnishings; the payment of a livable wage and the provision of a safe working environment; engagement with the local community; and the purchasing and procurement of sustainable food ingredients (Kim and Hall, 2020).

For a multiplicity of reasons, sustainable food is often associated with local food, alternative food, traditional and/or specialty food (Beer, 2015) and/or with organic and Fairtrade food products (Cavagnaro, 2015). Merle and Piotrowski (2012) deem a food product to be local when it is

distributed and consumed close to its place of production. The local character of the product, associated with reduced transport distances and the seasonality of supply, assure consumers of the freshness and superior taste of the product. However, local products may also have a strong identity (Masson and Bubendorf, 2022). The proximity between the place where the food is produced and consumed nurtures a sense of territorial belonging and local identity that often leads to perceptions of superior quality. However, the purchase of local food does not guarantee the ecological sustainability of the food (Alsetoohy et al., 2021) nor does it provide any formal mechanisms to support animal welfare or lead to a safe working environment where workers have been treated fairly and equitably.

Under the Common Objectives and Requirements of Organic Standards (COROS) developed by IFOAM, organics is a long-term, ecological and systems-based production system that minimises the use of synthetic inputs, prevents pollution and the degradation of the environment, avoids the use of unproven, unnatural and harmful technologies such as genetic modification, treats animals responsibly, promotes and maintains the natural health of animals, and where all employees have been treated fairly, with respect and without discrimination. While organic food is clearly perceived to be good for the environment, it is also perceived to be more healthy, safer, more nutritious and to taste better (Poulston and Yiu, 2011). However, organic food ingredients are also more expensive to purchase.

Traditional food products are an important element of European culture, identity and heritage (Guerrero et al., 2010). Such products are frequently linked to a regional identity and are perceived by consumers to be more healthy, natural, and to be produced on-farm or by artisans, without the use of industrial processes and without the use of additives.

One of the most notable attributes of traditional food products is a distinctive taste (Guerrero et al., 2010). However, according to the European Union (2006), a food is said to be traditional if its usage can be shown to be transmitted between generations, where one human generation is of at least 25 years duration. This is important for under European legislation, traditional food producers often seek protection under one of three quality assurance labels: Protected Designation of Origin (PDO), Protected Geographical Indication (PGI) or Traditional Specialty Guaranteed (TSG)(Rocillo-Aquino et al., 2021).

While Lu and Gursoy (2017) consider organic food to be sustainable food, Oosterver et al. (cited in Nascimento, 2023) describes sustainable food as that which has not been adulterated, has been produced through natural processes, does not contain any traces of pesticides or other chemical inputs, is sourced from producers concerned about animal welfare, and is derived from production processes that do not harm the environment. In a similar manner, Aschemann-Witzel et al. (2015) describe sustainable food as having a number of environmental and ethical attributes, including animal welfare. Synthesizing the many different concepts and definitions that are embedded within sustainable food, Verain et al. (2021) define sustainable food as food that has been produced, processed, packaged, transported and traded with respect for people, animals, the environment, and without compromising future generations.

While the sustainable purchasing of food ingredients has become one of the most common sustainability practices among restaurants (Abdou et al., 2023), the concept of sustainable food is expected to be different for different commodities. As Chevallier-Chantepie and Batt (2021) concluded, as the product quality parameters utilized by executive chefs in purchasing fresh fruit and vegetables, meat, dairy, fish and beverages are likely to be different, the importance of the offer quality determinants will also vary by product type.

To date, while the purchasing of sustainable food by restaurants has attracted a considerable amount of attention, the majority of research has been conducted at a general level: few have sought to explore how the purchasing of sustainable food ingredients may differ by product category. For this reason,

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this exploratory study of restauranteurs in Paris, France, seeks to explore how the importance of the purchasing criteria differs, if at all, across five commodity groups: fresh meat, fish, fruit and vegetables, dairy products and bakery products.

FOOD PURCHASING BY RESTAURANTS

In the purchasing and procurement of sustainable food ingredients, a chef's primary concerns are for product availability, quality and price (Strohbehn and Gregoire, 2003). As purchasing needs to be efficient, effective and integrated with other responsibilities in the business, executive chefs are looking for consistent quality, reduced lead times, greater productivity, reliable delivery and lower overall cost (Murphy and Smith, 2009). However, for many restauranteurs, purchasing sustainable food aligns with their own personal values and lifestyles, enabling them to establish their business on a more sustainable footing (Markram et al., 2013; Wang et al., 2013; Chevallier-Chantepie and Batt, 2021), while for others, it aligns with corporate social responsibility (Abdou et al., 2023). Other arguments for buying sustainable food have been to justify higher prices on the menu (Sharma et al., 2014; Alsetoohy et al., 2021) or to differentiate their product offer from competitors (Murphy and Smith 2009; Markram et al., 2013).

Sustainable food is perceived to be of superior quality, to be fresher, to taste better, to be safer, healthier, to have a lower environmental impact, to be more sustainable and to support culturally embedded food habits (Poulston and Yiu, 2011; Zanella 2020). In addition, sustainable food production is seen to support small family farms, to create local jobs, to protect farmland from urbanization, and to strengthen the linkage between farmers and consumers (Allen, 2010). Supporting local farmers and small businesses is not only good for public relations (Sharma et al., 2014; Markram et al., 2013; Roy and Ballantine, 2020), but it may also be instrumental in preserving food culture and traditions (Paciarotti et al., 2022; Bristow and Jenkins, 2018). By supporting local food suppliers, while the price uncertainty for farmers is reduced, farmers also gain a fairer and more equitable share of the retail price (Cappelli et al., 2022), and through the multiplier effect, a greater proportion of the income generated from sustainable farming activities stays within the community (Jia, 2021).

Taste is perhaps the most important quality variable for an executive chef. Not unexpectedly, as the reputation of a chef is based on the quality and uniqueness of the ingredients they use (Markram et al., 2013), this leads to greater customer satisfaction (Sharma et al 2014; Alsetoohy et al., 2021) and customer loyalty (Markram et al., 2013). However, taste is an experiential attribute that an executive chef can only evaluate post purchase. However, knowing from whom they purchased the product, where it was produced and how it was produced may also serve as an indicator of quality (Murphy and Smith, 2009).

Within France, many traditional food products carry labels of origin. Products covered by either the Appellation d'origine Controlee (AOC) or the European Protected Designations of Origin (AOP) label identify an agricultural product as having been produced and/or processed within a defined geographical area (INAO nd). Administered by the National Institute of Origin and Quality (INAO), the certification system protects distinctive and traditional regional products, based upon the concept of terroir. Terroir refers to a given geographical area that has very specific environmental and human features that give the product its distinctive qualities and taste. In addition, a larger number of food products carry the Label Rouge: a national quality assurance system that identifies products with a superior level of quality. Quality, in this case, refers to a set of unique properties and characteristics that enable the product to meet both the implicit and explicit needs of customers. Quality is therefore based on the production conditions, the image of the product and its presentation or service elements.

Under a voluntary program instigated by the French Ministry of Agriculture and Food, farmers in France are improving their farming practices with respect for biodiversity, the more efficient utilisation of water, and minimizing the application of agricultural chemicals and fertilizers at one of

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three levels: Level 1 requires farmers, with reference to the regulations, to perform a self-audit of their operations; Level 2 requires farmers to implement good agro-ecological practices; and Level 3, the highest level, requires producers to achieve a combination of performance objectives as measured through environmental performance indicators (INAO nd). To date, over 36,225 farms are permitted to label their output as "High Environmental Value" (HVE 3). In addition, some 16,500 farms in France are certified AB organic.

However, the purchase of sustainable food by restaurants may also be more resource demanding as it usually requires executive chef to transact with many small vendors to procure the desired range, quality and quantity [Sharma et al., 2014; Poulston and Yiu, 2011). As most local food suppliers are only small to medium sized enterprises, a limited amount of product is available (Alsetoohy et al., 2021; Markram et al., 2013; Paciarotti et al., 2022; Roy and Ballantine, 2020), the range of product is constrained (Paciarotti et al., 2022), the supply is often seasonal (Sharma et al., 2014; Roy and Ballantine, 2020) and the quality inconsistent (Alsetoohy et al., 2021). As there are few economies of scale, sustainably produced food ingredients are generally more expensive (Poulston and Yiu, 2011; Strohbehn and Gregoire, 2003; Markram et al., 2013; Roy and Ballantine, 2020). Furthermore, as executive chefs need to deal with a larger number of suppliers to procure the range of food ingredients that they require, transaction costs are higher (Sharma et al., 2014) and there are more problems associated with the irregular and untimely delivery of products (Alsetoohy et al., 2021; Markram et al., 2013; Paciarotti et al., 2022). Consequently, executive chefs need to spend more time communicating with local suppliers (Markram et al., 2013). Good communication enables the exchange partners to effectively work together to improve product quality, to launch and develop new products, and to collaboratively solve problems (Mason and Leek, 2012). As restaurants face considerable uncertainty in responding to highly variable customer demand and potential losses caused by food spoilage, waste, theft and over-portioning (Cho et al., 2019), establishing relationships with suppliers can help restaurants to reduce costs, improve product quality and customer service (Cho et al., 2018).

However, the major constraint in procuring sustainably produced local food is the lack of knowledge and difficulties in trying to identify and to subsequently connect with potential suppliers (Sharma et al., 2014; Alsetoohy et al., 2021; Paciarotti et al., 2022). Given these difficulties, having identified and evaluated the capacity of potential suppliers, it is not unusual for executive chefs to engage in mutually beneficial long-term relationships with preferred suppliers (Roy, 2022). These relationships usually result in improved access to markets and more reliable market information. Chefs can anticipate improved access to a more reliable supply of food ingredients, improved product quality and a higher level of technical interaction in the form of information exchange, potential product adaptations and technical assistance. Murphy and Smith (2009) highlight the importance of product knowledge and the commitment that preferred suppliers demonstrate in continuously improving the product quality, range or seasonality of supply, in responding to executive chefs changing requirements, and the willingness of preferred suppliers to pro-actively share information.

A competitive price, although important, is for most executive chefs a secondary consideration (Wang et al., 2013). While the cost of sustainably produced food ingredients are generally more expensive, as food ingredients make up around 15-18% of the total operating costs of a restaurant (Zanella, 2020), in most cases, the margins are sufficiently high to offset any additional costs of procurement. This is where your main text is. This is the first paragraph.

METHODS

To obtain the information sought from restauranteurs, a structured questionnaire was developed. The questionnaire was divided into three parts: Part I focused on the restaurant itself, providing essential information about the restaurant, its size, the type of cuisine and the nature of ownership

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(independent, franchise or corporate). Information was also collected about the respondent's professional experience.

Part II focused on the criteria executive chefs utilized in their decision to purchase food ingredients from potential suppliers. In the first instance, using an open-ended question, respondents were asked to list the most important criteria that impacted their decision to purchase food ingredients from a potential supplier. In the second instance, based on a comprehensive review of industrial purchasing theory, respondents were asked to indicate how important 23 items were in their decision to purchase on a six-point Likert scale, where 1 was 'not at all important' and 6 was 'very important'.

Part III focused on how the importance of the criteria used to select potential suppliers differed across five categories of food ingredients: fresh meat, fish, fruit and vegetables, dairy products and bakery. In this instance, respondents were shown their responses to the earlier question in Part II, but rather than to answer all questions again, because of time limitations, chefs were asked only to address those criteria that were either more or less important in their decision to purchase by product category. Selecting only those items that were more or less important from the list proved to be both easy and actively engaged the respondent, overcoming any potential issues associated with boredom and fatigue.

To collect the data required, face-to-face interviews were conducted with executive chefs in Paris. On each day, the enumerator visited one of the twenty arrondissements that comprise the city of Paris, randomly approaching restaurants and hotels and requesting an interview. However, in selecting restaurants for interview, a number of criteria had to be met: the restaurant had to provide seating for their patrons; and fast-food restaurants were excluded. In addition, the respondent had to be directly involved in the purchasing of food ingredients for the restaurant.

As there is no publicly available list of restaurants in Paris that provides information on their location, cuisine or seating capacity, it was not possible to undertake any stratified sampling. Nor was any decision made to stratify restaurants on either the number of Michelin stars or community ratings on social media.

To accommodate the demanding schedules of restaurant staff, interviews generally took place during the early morning hours, namely between 9 and 10 am, or during the afternoon break, which normally runs from 3 pm to 5 pm. The chosen schedule greatly enhanced the probability of obtaining a positive response while minimizing any disruption to the restaurant's core activities. Data was collected from July to September 2023.

Data were entered into SPSS for analysis. For the open-ended responses where chefs were asked to list the criteria, they used in selecting food suppliers, a dynamic master list was prepared in parallel with the entry of the data into the software.

In the initial phase of data analysis, frequency tables were reviewed to correct any errors associated with data entry. The next step in the analytical process was to calculate the means and standard deviation for all metric data. To analyse any statistically significant differences in the means across the five commodity groups, the analysis of variance (ANOVA) was utilized, with Tukey's HSD. Similarly, by transforming the data matrix, it was also possible to utilise ANOVA to rank the importance of each item.

For many of the items measured, a large standard deviation indicated the presence of some underlying construct. Returning to the aggregate importance scale for the 23 items in Part II, a two-stage cluster analysis was performed. Hierarchical cluster analysis revealed the presence of two distinct groups of chefs which were subsequently established using the k-means clustering algorithm (Hair et al., 1998). To profile the clusters, chi-square tests were conducted, and to identify any statistically significant differences between the importance of the purchasing criteria across the two clusters, the independent

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t-test was employed. To examine any statistically significant differences by cluster for each of the five commodity groups, ANOVA was utilised with Tukey's HSD.

RESULTS

A total of 49 restaurants participated in the study. The majority of the restaurants surveyed (51%) were independently owned and operated (Table 1). Some 35% of the restaurants surveyed were associated with a hotel and were under corporate management, while 14% were franchisees.

Table 1. Ownership of the Restaurant

	Frequency	Percent
Independent	25	51.0
Hotel/corporate	17	34.7
Franchise	7	14.3
Total	**49**	**100.0**

Source: Researcher

The range of cuisine offered by the restaurants surveyed, ranged from French (43%) to Italian (14%), to Asian (8%) and Middle Eastern (2.0%) in (Table 2).

Table 2. Type of Cuisine Prepared by the Restaurant

Type of Food	Frequency	Percent
French	21	42.9
Contemporary	10	20.4
Italian/ Mediterranean	7	14.4
Asian	4	8.2
Spanish/ Tapas	3	6.1
European	3	6.1
Middle Eastern	1	2.0
Total	**49**	**100.0**

Source: Researcher

The size of the restaurants, as evaluated by their seating capacity, ranged from 11-30 patrons (2%) to more than 101 (47%) patrons (Table 3).

Table 3. Restaurant Seating Capacity

Seating Capacity	Frequency	Percent
11-30	1	2.0
31-50	11	22.4
51-100	14	28.6
>101	23	46.9
Total	49	100.0

Source: Researcher

Some 45% of the respondents had more than 11 years' experience in the hospitality industry (Table 4). At the other end of the spectrum, newcomers (with only 1-3 years of experience) represented only 8% of the sample, with those having 4-6 years and 7-10 years of experience, accounting for 29% and 18% of the sample respectively.

Table 4. Respondent's Years of Experience

Years of Experience	Frequency	Percent
1-3 years	4	8.2
4-6 years	14	28.6
7-10 years	9	18.4
More than 11 years	22	44.9
Total	**49**	**100.0**

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Source: Researcher

On average, restauranteurs engaged with around 12 food ingredient suppliers (Table 5). However, one restaurant had only one supplier while 14 restaurants were engaged with 12 or more suppliers. Some 22% of the restaurants engaged with 5 suppliers, while 14% had nine suppliers.

Table 5. Mean Number of Food Suppliers for Restaurants

Category	Mean	Standard Deviation
In total	12.22	10.34
Meat	3.82	4.58
Fresh fruit and vegetables	2.89	2.19
Fish	2.43	2.87
Dairy	1.96	1.31
Baked products	1.26	0.88

Source: Researcher

Across the five product categories, on average, restauranteurs engaged with around 4 suppliers in purchasing the fresh and/or chilled meat that they required. While 29% of the respondents dealt with only one supplier, 22% dealt with two suppliers and 31% dealt with three suppliers. Four restaurants were dealing with either 15 or 16 different meat suppliers. For fresh fruit and vegetables, on average, restauranteurs were transacting with 3 suppliers: 31% had only one supplier, 25% had two and 17% had three, with one restaurant engaging with 10 different suppliers. For dairy products, restauranteurs generally had 2 suppliers, with 45% sourcing from just one supplier and 37% procuring dairy products from two suppliers. The situation for fish was very different, as 8 of the restaurants interviewed (16%) did not buy fresh or chilled fish. For those restaurants that did offer fish on the menu, 31% engaged with just one supplier, 25% with 2 suppliers and 12% with 3 suppliers, although one restaurant dealt with as many as 12 suppliers. For baked products, 78% of the sample dealt with just one supplier.

Across the three different types of restaurants by ownership, it was observed that corporate and franchised restaurants generally engaged with a larger number of suppliers (Table 6).

Table 6. Number of Suppliers by Restaurant Ownership

	Mean Number of Suppliers		
	Independent	Corporate	Franchise
In total	7.68^{a}	16.94^{b}	17.00^{b}
Meat	2.52^{a}	5.11^{a}	5.29^{a}
Fresh fruit and vegetables	1.88^{a}	4.06^{b}	3.83^{ab}
Fish	1.16^{a}	4.06^{b}	3.00^{ab}
Dairy	1.28^{a}	2.59^{b}	2.86^{b}
Baked products	0.92^{a}	1.59^{a}	1.71^{a}

where those items with the same superscript are not significantly different at p=0.05
Source: Researcher

Corporate restaurants generally dealt with a larger number of suppliers for fresh fruit and vegetables, fresh and chilled fish, and dairy products than those restaurants that were independently owned and operated.

In response to an open-ended question about the different criteria restauranteurs employed in choosing their food suppliers, the most frequently cited response was quality (71%)(Table 7).

Table 7. Food Supplier Selection Criteria

Item	Listed Criteria						%
	1	2	3	4	5	Sum	
Quality	20	13	1	1		35	71.4
Price	8	3	3	4	5	23	46.9
Freshness	7	11	4			22	44.9

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Provenance	1	2	3	3	7	16	32.7
Taste	5	5		2	2	14	28.6
Label		1	6	1	5	13	26.5
Local	2	1	2	2	2	9	18.4
French	2	1	2		2	7	14.3
Safe		5		1	1	7	14.3
Quantity	1		3	1	1	6	12.2
Reputation			3	3		6	12.2
Reliability	1		1	1	2	5	10.2
Seasonal		1	3	1		5	10.2
Eco Responsible		1	1	1	1	4	8.2
Delivery services		1	1	1	1	4	8.2
Direct		1	2		1	4	8.2
Respect for environment			1		3	4	8.2
Sustainability				1	3	4	8.2
Traceability	1		1	1		3	6.1
Animal welfare		1		1		2	4.1
Ethics			1	1		2	4.1
Rapidity				2		2	4.1
Preferred	1					1	2.0
Discounted price			1			1	2.0
Brand			1			1	2.0
Zero waste			1			1	2.0
Negotiable prices			1			1	2.0
Gluten free				1		1	2.0
Storage after delivery					1	1	2.0
Strong partnership					1	1	2.0
N = 49							

Source: Researcher

Expanding the quality concept somewhat, freshness was the most important consideration for 45% of respondents. However, quality was also related to the place (or provenance)(33%) and associated with the taste of the product (28%). Local food was cited by over 33% of the respondents, but in choosing local food, some 18% of respondents considered food to be local at a regional level, while 14% considered food to be local if it had been sourced within France. To assist buyers in making their selection, some 27% of the respondents valued the label that was attached to or accompanied the product. A competitive price was cited by almost 50% of the respondents.

Issues such as eco-responsible, sustainable and respect for the environment were cited by some 24% of respondents, with some 4% citing animal welfare and 4% looking more broadly at the issue of ethics.

Utilizing the list of 23 items developed from the review of literature, respondents were then asked to rate the importance of each item on a six-point scale where 1 was ‘not at all important’ and 6 was ‘very important’. The most important criteria in the restauranteur’s choice of food supplier were the taste, quality, freshness, punctual delivery and the ability to deliver quickly. Respondents also valued the trust (confidence) that they had established over time with preferred suppliers and the presence of third-party quality assurance labels/certificates (Table 8).

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Table 8. Mean Importance of Supplier Selection Criteria

	Mean	Standard Deviation
Great tasting products	5.85[a]	0.500
Good quality	5.83[a]	0.533
Fresh products	5.67[a]	0.851
Punctual delivery	5.55[a]	0.738
Confidence	5.51[a]	1.120
Ability to deliver quickly	5.18[a]	1.014
Quality certification	5.08[a]	1.441
Good appearance	4.89[b]	1.104
Good relationship	4.88[b]	1.252
Desired geographic origin	4.84[b]	1.419
Good reputation	4.73[c]	1.169
Sufficient quantities	4.65[c]	1.234
Local products	4.65[c]	1.601
Competitive prices	4.61[d]	1.151
Ethically produced products	4.57[e]	1.594
Promoting sustainability	4.55[e]	1.415
Chemical-free/organic products	4.37[e]	1.616
Regular communication	4.08[f]	1.367
Financial stability	3.81[g]	1.333
Strong customer base	3.71[h]	1.399
Good variety/range of products	3.22[i]	1.311
Available all year-round	2.51[j]	1.474
Proximity to my restaurant	2.24[k]	1.299

where 1 is 'not at all important' and 6 is 'very important'
those items with the same superscript are not significantly different at p=0.05
Source: Researcher

Sourcing products from a desired geographic region was among a group of three items considered to be the second most important in the respondent's choice of supplier. Local product was among a group of three items considered to be third most important, with issues such as ethically produced products, sustainability, and chemical free and/or organic products resting in a fifth group.

A competitive price was considered to be the fourth most important item in the respondents' choice of food supplier. Of least importance was the year-round availability of the product and proximity to the restaurant.

Across the five product categories, there was no significant difference in the importance of the ranking of the top seven items: issues such as taste, quality, freshness, punctual delivery and the ability to deliver quickly, confidence and quality certification were all equally important (Table 9).

However, in relation to the purchase of baked products, sourcing ingredients from the desired geographic location and the importance of sourcing local ingredients were both ranked significantly lower. Conversely, as most restauranteurs sourced baked products from only one supplier, the supplier's capacity to deliver the product in sufficient quantities all year round was ranked significantly higher. Proximity to the restaurant was also ranked significantly higher in selecting preferred suppliers for baked products.

Table 9. Mean Importance of the Supplier Selection Criteria by Product Category

	Mean					
	ALL	FFV	Meat	Fish	Dairy	Bread
Great tasting products	5.85[a]	5.88[a]	5.77[a]	5.59[a]	5.75[a]	5.77[a]
Good quality	5.83[a]	5.86[a]	5.71[a]	5.59[a]	5.75[a]	5.89[a]
Fresh products	5.67[a]	5.78[a]	5.65[a]	5.41[a]	5.65[a]	5.49[a]

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Punctual delivery	5.55[a]	5.65[a]	5.53[a]	5.36[a]	5.56[a]	5.70[a]
Confidence	5.51[a]	5.47[a]	5.49[a]	5.45[a]	5.52[a]	5.67[a]
Ability to deliver quickly	5.18[a]	5.31[a]	5.22[a]	5.16[a]	5.33[a]	5.61[a]
Quality certification	5.08[a]	4.90[a]	5.24[a]	5.20[a]	5.10[a]	4.83[a]
Good appearance	4.89[a]	4.88[a]	5.02[a]	4.86[a]	4.96[a]	5.46[a]
Good relationship	4.88[a]	4.94[a]	4.92[a]	4.86[a]	5.08[a]	5.26[a]
Desired geographic origin	4.84[b]	4.61[b]	5.08[b]	4.91[b]	5.65[b]	3.39[a]
Good reputation	4.73[a]	4.45[a]	4.82[a]	4.70[a]	4.56[a]	4.50[a]
Sufficient quantities	4.65[a]	4.63[a]	4.57[a]	4.54[a]	4.75[a]	5.55[b]
Local products	4.65[b]	4.39[ab]	4.65[b]	4.57[b]	4.65[b]	3.54[a]
Competitive prices	4.61[a]	4.65[a]	4.53[a]	4.52[a]	4.75[a]	5.02[a]
Ethically produced products	4.57[a]	4.55[a]	4.65[a]	4.57[a]	4.37[a]	4.11[a]
Promoting sustainability	4.55[a]	4.37[a]	4.53[a]	4.50[a]	4.23[a]	3.76[a]
Chemical-free/organic products	4.36[a]	4.45[a]	4.65[a]	4.50[a]	4.19[a]	3.96[a]
Regular communication	4.08[a]	3.92[a]	3.96[a]	3.82[a]	3.79[a]	3.89[a]
Financial stability	3.81[a]	3.71[a]	3.80[a]	3.59[a]	3.58[a]	3.63[a]
Strong customer base	3.71[a]	3.60[a]	3.92[a]	3.68[a]	3.62[a]	3.67[a]
Great variety of products	3.22[a]	3.22[a]	3.12[a]	3.02[a]	3.35[a]	3.37[a]
Available all year-round	2.51[ab]	2.59[ab]	3.37[bc]	2.95[ab]	4.02[c]	5.52[d]
Proximity to my restaurant	2.24[a]	2.33[a]	2.27[a]	1.98[a]	2.27[a]	4.54[b]

where 1 is 'not at all important' and 6 is 'very important'
those items with the same superscript in the same row are not significantly different at p=0.05
Source: Researcher

Returning to Table 8, from the low standard deviation, it was evident that good quality, fresh products that tasted good and were delivered punctually and on time were important to all executive chefs. However, a significant amount of variance was observed for the remaining 19 criteria. As such variance can often conceal some other underlying factor, a two-stage cluster analysis was performed. The results of the hierarchical cluster analysis revealed the presence of two clusters that were subsequently identified using the k-means algorithm. It was immediately evident that the 11 members of Cluster 1 were primarily interested in procuring good quality products at the lowest possible price (Table 10). As the members of Cluster 1 ranked good quality, taste and freshness significantly lower than the members of Cluster 2, it appeared that they were willing to trade off quality in order to secure a lower price.

On average, while the members of Cluster 1 dealt with a lower number of suppliers (Table 11), in transacting with their suppliers, they placed significantly less importance on the reputation of their supplier(s) and their long-term relationship with those supplier(s). This implied that the members of Cluster 1 would readily switch suppliers if they could secure a better price. It was also evident that the members of Cluster 1 placed little if any value on transacting with suppliers who were promoting sustainable and ethical practices. Purchasing chemical free and/or organic products from local producers who were located in desired geographic regions was of little importance to these executive chefs.

Table 10. Comparison of Supplier Attributes by Clusters

	Cluster 1		Cluster 2		sig
	Mean	SD	Mean	SD	
Great tasting products	5.36[a]	0.92	6.00[a]	0.00	0.046
Good quality	5.27[a]	1.01	6.00[a]	0.00	0.038
Fresh products	4.55[a]	1.29	6.00[a]	0.00	0.004
Confidence	4.82[a]	1.66	5.71[a]	0.83	0.112
Punctual delivery	5.18[a]	0.87	5.66[a]	0.67	0.059
Quality certification	3.09[c]	1.45	5.66[a]	0.78	0.001
Desired geographic origin	2.91[d]	1.14	5.39[a]	0.91	0.001
Ability to deliver quickly	4.82[a]	1.40	5.29[a]	0.87	0.310

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Local products	2.45[e]	1.13	5.29[a]	1.06	0.001
Ethically produced products	2.27[f]	1.10	5.24[a]	0.97	0.001
Good relationship	3.82[a]	1.25	5.18[a]	1.09	0.001
Good reputation	3.55[a]	0.82	5.08[b]	1.02	0.001
Promoting sustainability	2.91[d]	0.83	5.03[b]	1.17	0.001
Products with the desired appearance	4.55[a]	1.37	5.00[b]	1.01	0.233
Chemical-free/organic products	2.45[e]	1.51	4.92[b]	1.17	0.001
Sufficient quantities	4.27[a]	1.79	4.76[c]	1.02	0.403
Competitive prices	5.64[a]	0.92	4.32[d]	1.04	0.001
Regular communication	3.27[b]	1.49	4.32[d]	1.25	0.024
Financial stability	2.81[d]	1.83	4.10[e]	1.01	0.046
Strong customer base	2.55[e]	1.04	4.05[f]	1.31	0.001
Great variety of products	3.09[c]	1.70	3.26[g]	1.20	0.705
Available all year-round products	3.00[d]	1.90	2.37[h]	1.32	0.320
Proximity with my restaurant	2.27[f]	1.49	2.24[h]	1.26	0.943
N	11		38		

where 1 is 'not at all important' and 6 is 'very important'
those items in the same column with the same superscript are not significantly different at p=0.05
Source: Researcher

Table 11. Number of Suppliers by Clusters

	Cluster 1		Cluster 2		Sig.
	Mean	SD	Mean	SD	
In total	5.09	1.92	14.29	10.88	0.001
Meat	1.18	0.40	4.57	4.96	0.001
Fresh fruit and vegetables	1.18	0.40	3.41	2.25	0.001
Fish	0.91	0.70	2.87	3.11	0.001
Dairy	1.27	0.47	2.16	1.40	0.047
Baked products	1.09	0.30	1.32	0.99	0.229

Source: Researcher

Conversely, for the 38 chefs in Cluster 2, quality was paramount: price was very much a secondary consideration. Indeed, price was the fourth most important variable in their decision to purchase food ingredients. For these executive chefs, sourcing fresh, local produce, from desired geographic regions enabled them to deliver superior tasting meals to their patrons. Chefs preferred to transact with food ingredient suppliers who were engaged in sustainable and ethical food production practices that resulted in the application of fewer chemicals. To assure the executive chefs that such practices were being adhered to, most relied on third party quality assurance systems, and, over time, the reputation and the long-term relationship that they had established with their suppliers. As both parties were actively engaged as partners, such suppliers regularly communicated with executive chefs, advising them in advance of any quality issues or supply issues arising from seasonal variations. As many of these suppliers were small local producers, executive chefs placed significantly more importance on ascertaining the financial stability of their suppliers, with a strong customer base providing an additional assurance of continuity of supply.

From the results of a cross-tabulation, it was evident that the majority of chefs in Cluster 1 (90%) were operating independently (Table 12). However, while the membership of Cluster 2 was composed primarily of corporate (94%) and franchised operators (100%), some 40% of the cluster members were operating as independent restaurants.

Table 12. Crosstabulation of Restaurant Ownership by Clusters

	N	
	Cluster 1	Cluster 2

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Independent	10	15
Corporate	1	16
Franchise	0	7
N	11	38

Chi-square = 9.130; likelihood ratio = 10.93
Source: Researcher

Utilizing the resulting clusters, the importance of the criteria employed by executive chefs in purchasing the five food commodities was explored. For the members of Cluster 1, no significant difference in the importance of the purchasing criteria across any of the five commodity groups could be found. However, it is possible that the small sample size of this group (11) may have contributed to these findings.

On the other hand, for the members of Cluster 2, several statistically significant results emerged across the five product categories (Table 13). For baked products, the importance of sourcing local products and products from a desired geographic region were both significantly less important in the executive chef's decision to purchase. Conversely, as most of the members of Cluster 2 had only one supplier for baked products, being able to purchase the desired quantity of product all year round and proximity to the restaurant were each rated significantly more important than any of the other commodity groups. As the baked products delivered to the restaurant were often in their final form, a good appearance was also ranked highly.

The issue of sustainability and ethics for the different product categories provided some interesting results. No doubt, because of the considerable distance that grains had to travel from the farm to the miller and the distance that the flour then travelled from the miller to the baker, sustainability was rated the lowest for baked products among the five product categories. While France is a major producer and exporter of wheat (World Grain), in order to produce flour with the desired characteristics for baking, it is not unusual for millers to blend wheat from multiple regions to meet the specifications required by institutional buyers (Batt and Rola-Rubzen, 2012).

Conversely, sustainability in sourcing both fresh and chilled meat and fish were ranked significantly higher. Similarly, ethical issues associated with the production of fresh and chilled meat were ranked significantly higher than they were for the production of baked products, presumably because of the need to accommodate issues such as animal welfare. According to the EAT-Lancet Commission (2019), animal based foods have a much greater environmental footprint than grains, especially in terms of greenhouse gas emissions. The livestock sector is a major contributor to climate change, for it generates significant emissions of carbon dioxide, methane and nitrous oxide, either directly from enteric fermentation and manure management, or indirectly through the production of animal feeds (FAO, 2021). Furthermore, as livestock farming systems become more intensive, there are growing concerns about issues such as animal welfare and antimicrobial resistance arising from the widespread use of antibiotics.

Table 13. Mean Importance of the Supplier Selection Criteria by Product Category for the Members of Cluster 2.

Item	Mean					
	ALL	FFV	Meat	Fish	Dairy	Bread
Great tasting products	6.00[a]	6.00[a]	6.00[a]	5.80[a]	6.00[a]	5.83[a]
Fresh products	6.00[a]	5.97[a]	5.97[a]	5.71[a]	6.00[a]	5.64[a]
Good quality	6.00[a]	5.97[a]	5.97[a]	5.80[a]	5.97[a]	6.00[a]
Punctual delivery	5.65[a]	5.74[a]	5.76[a]	5.54[a]	5.81[a]	5.82[a]
Confidence	5.71[a]	5.76[a]	5.76[a]	5.77[a]	5.76[a]	5.91[a]
Quality certification	5.65[a]	5.42[a]	5.74[a]	5.60[a]	5.64[a]	5.20[a]
Ability to deliver quickly	5.29[a]	5.37[a]	5.47[a]	5.31[a]	5.51[a]	5.77[a]
Good relationship	5.18[a]	5.16[a]	5.28[a]	5.28[a]	5.41[a]	5.51[a]

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Good appearance	5.00[a]	5.00[a]	5.34[ab]	5.11[ab]	5.24[ab]	5.62[b]
Good reputation	5.07[a]	4.79[a]	5.21[a]	5.11[a]	5.16[a]	4.91[a]
Desired geographic origin	5.39[b]	5.21[b]	5.55[b]	5.37[b]	5.13[b]	3.48[a]
Local products	5.28[b]	4.89[b]	5.21[b]	5.17[b]	5.11[b]	3.68[a]
Ethically produced products	5.23[ab]	5.21[ab]	5.42[b]	5.28[ab]	5.08[ab]	4.63[a]
Sufficient quantities	4.76[a]	4.66[a]	4.63[a]	4.66[a]	4.86[a]	5.69[b]
Promoting sustainability	5.03[b]	4.97[ab]	5.13[b]	5.17[b]	4.81[ab]	4.14[a]
Competitive prices	4.32[a]	4.37[a]	4.37[a]	4.43[a]	4.70[a]	4.88[a]
Chemical-free/organic products	4.92[a]	5.00[a]	5.26[a]	5.05[a]	4.67[a]	4.48[a]
Regular communication	4.31[a]	4.23[a]	4.39[a]	4.20[a]	4.27[a]	4.20[a]
Strong customer base	4.05[a]	3.94[a]	4.16[a]	3.97[a]	4.02[a]	3.97[a]
Available all year-round	2.37[a]	2.31[a]	3.24[bc]	2.74[ab]	4.00[c]	5.74[d]
Financial stability	4.10[a]	4.03[a]	4.05[a]	3.86[a]	3.86[a]	3.91[a]
Great variety of products	3.26[a]	3.23[a]	3.28[a]	3.14[a]	3.41[a]	3.34[a]
Proximity to my restaurant	2.24[a]	2.29[a]	2.15[a]	1.85[a]	2.13[a]	4.66[b]

where 1 is 'not at all important' and 6 is 'very important'
those items with the same superscript are not significantly different at p=0.05
Source: Researcher

Similarly, with about 60% of the world's fish stocks fully fished and more than 30% overfished, the size of the catch has been progressively declining (EAT-Lancet Commission, 2019). In addition, the rapidly expanding aquaculture sector is negatively impacting coastal habitats, freshwater and terrestrial systems. For many executive chefs, the quality of the product derived from intensive fish farming systems is highly questionable due to the negative impact on the environment, the poor treatment and handling of the fish and the extensive use of antibiotics (Rickertsen et al., 2017).

The importance of the year-round availability for both fresh produce and fish were ranked significantly lower than the other commodities. In both cases, executive chefs recognized that the availability of fresh fruit and vegetables and many seafood items were seasonal, and hence most were willing to adapt their menus (Chevallier-Chantepie and Batt, 2021). Acknowledging also that there were seasonal differences in the availability of the products, executive chefs also dealt with a larger number of suppliers.

For fresh and chilled meat, while seasonality of supply could also present an issue, most executive chefs were dealing with an average of four local suppliers to provide the variety of meat required. For dairy products, while milk production is also seasonal, many of the cheeses produced by small artisan dairies required a period of maturation. In utilizing these products in the preparation of their meals, executive chefs required a regular and reliable supply of product from preferred local suppliers who were located in very specific regions. As most of these production areas were located at some distance from the city of Paris, proximity to the restaurant was not a major consideration.

DISCUSSION

In a similar manner to the results of a previous study (Chevallier-Chantepie and Batt, 2021), this study has revealed the presence of two very different groups of restauranteurs in Paris, France. The first of these groups can be described as being value driven, for in their decision to purchase food ingredients for the restaurant, they were primarily driven by price. While quality, taste and freshness, and reliable delivery were all equally important, preferred suppliers were expected to source and to deliver the food ingredients required at the lowest possible price. For these chefs, sourcing food ingredients that had been produced locally, in preferred geographic regions, sustainably and ethically was of very little importance.

On the other hand, for the second of these groups which we describe as quality driven, executive chefs were not prepared to compromise quality, taste or freshness. For this group of chefs, quality

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included not only the intrinsic and extrinsic characteristics of the product, but also the credence quality attributes: they needed to know that the food ingredients they intended to purchase had been produced in a manner that was both ethical and sustainable, by local food producers, in preferred geographic locations. To guide their decisions, they relied heavily on third-party quality assurance labels and over time, the trust that they had established with preferred suppliers through an enduring long-term relationship.

As most restaurants in Paris have very little storage space (Chevallier-Chantepie and Batt, 2021), executive chefs also valued the functional quality aspects: the ability of preferred suppliers to deliver the required food ingredients reliably and on time. Cognisant that many of the food ingredients they used in the kitchen were seasonal, not only did chefs adjust their menus, but they also transacted with a greater number of suppliers to procure the food ingredients that they required. For this group of chefs, price was very much a secondary consideration, implying that any additional costs associated with the purchase of sustainably produced food ingredients could be passed onto consumers because of the superior taste.

Nevertheless, Zanella (2020) describes how distribution and procurement problems associated with sourcing sustainable food ingredients from small local producers is the most significant cost in operating a sustainable kitchen. The greatest challenge is not the additional cost of the ingredients, but rather the large amount of time – and hence the additional cost - associated with the purchasing and procurement of sustainable food ingredients.

In purchasing sustainable food ingredients, Rimmington et al. (2006) outlined five key principles: (1) the purchasing of food ingredients from the country in which they are offered, where these products are good quality, available in sufficient quantities and competitively priced; (2) avoiding the purchase of foods ingredients that have been produced using processes known to endanger human health and/or the environment; (3) ensuring that food products are processed using facilities that are resource efficient; (4) working with suppliers to adapt existing centralized purchasing systems to meet the needs of small local and/or regional suppliers; and (5) to provide appropriate information to restaurant patrons so that they can make choices based on food provenance and sustainability.

In a similar manner, Legrand et al. (2016) described how sustainable restaurants should endeavour to: (1) purchase local food ingredients wherever the geographic and climatic conditions are favourable and the infrastructure is well developed; (2) build strategic partnerships with key suppliers who offer good quality products that are competitively priced, and where those suppliers have proven themselves to be reliable and flexible; (3) strive for quality; and (4) communicate with restaurant patrons, advising them where the food ingredients have come from and how they were produced.

In pursuing a sustainable strategy for their restaurant, Chevallier-Chantepie and Batt (2021) found that the personal beliefs of the executive chef had a profound effect on the purchasing of food ingredients. However, in this study, as most of the corporate hotels and franchisees were also participating in the purchase of sustainable food ingredients, it was evident that an element of corporate social responsibility may also have been involved.

Corporate social responsibility is a business model in which restaurants and hotels integrate social and environmental concerns into their business operations and their interactions with stakeholders rather than to focus solely on profits (Legrand et al., 2016). Within the hospitality industry, there is a growing demand from patrons for hotels and restaurants to proactively adopt environmental sustainability as a core business value (Khatter et al., 2019). In their daily operations, restaurants consume a vast amount of materials, water, energy and food (Teng et al., 2014). According to Wang et al. (2013), restaurants are the largest consumers of energy in the retail world, consuming, on average, five times more energy per square foot than any other commercial building. However, the food service sector has many other impacts on the environment, including waste disposal, the use of various cleaning and sanitizing agents, food packaging (Shokri et al., 2014) and the construction of

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buildings and furnishings that invariably have a negative impact on the natural environment (DiPietro et al., 2013). Sustainable purchasing is but one aspect in operating a sustainable restaurant.

CONCLUSION

The results of this study have revealed the presence of two very different groups of restauranteurs in Paris: those who are actively engaged in the purchase of sustainable food ingredients and those who are not. For some executive chefs, their decision to purchase sustainable food ingredients is a personal decision, driven by their own values, while for others, where the restaurant operates as part of a franchise or a larger corporation, the decision to purchase sustainable food ingredients is a strategic decision embedded within the organisation's corporate social responsibility portfolio.

For those executive chefs who do not actively seek to procure sustainable food ingredients, a competitive price is the most important consideration. It is also apparent, given the low level of importance attached to their relationship with preferred suppliers that these executive chefs will readily switch suppliers if an alternative supplier is able to present a comparable offer at a lower cost. For this group of executive chefs, no significant difference in the importance of the offer quality determinants could be ascertained across the five commodity groups. However, it is highly possible that the small sample size of this group may have contributed to these findings. According to the Paris Convention and Visitors Bureau, there are around 26,000 restaurants in Paris: our sample was comprised of just 49 and with only 11 respondents in this group, these results should be considered as preliminary.

However, for those chefs pursuing a sustainable purchasing strategy, it was evident that there were several significant differences in the product quality parameters utilized by chefs in purchasing sustainable food ingredients across the different food commodity groups. For baked products, the importance of sourcing local products and products from a desired geographic region were both significantly less important. As most chefs had only one supplier for baked products, being able to purchase the desired quantity of product all year round and proximity to the restaurant were each rated significantly more important than any of the other commodity groups. As good appearance was also more highly ranked, it is apparent that most of the baked products delivered to the restaurant were in their final form.

Within France, many food products carry labels which promote either the distinctive features of the region within which they were produced and traditions in both farming and food processing, or the adoption of voluntary environmental management systems. As this study has revealed, executive chefs placed considerable importance on these labels in making their decision to purchase sustainable food ingredients. However, we do not as yet know which of these labels are more or less influential in their decision to purchase. This warrants further investigation.

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