

## **What are we eating? Consumer information requirement within a workplace canteen**

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## **Abstract**

The workplace is a captive environment where the overall contribution of the meal served could be an important element of the overall diet. Despite growing demand little information is available to aid healthy dish selection.

This study identifies information valued by consumers in the UK, Greece, Denmark and France using best-worst scaling. Value for Money, Nutrition and Naturalness are key elements of information that consumers require to be able to make a conscious decision about dish selection in all four countries. Latent class analysis shows that consumers align to one of five cluster groups, i.e., Value Driven, Conventionalists, Socially Responsible, Health Conscious and Locavores.

Understanding key information needs can allow food operators to align their service with consumer preferences across different market segments.

## **Keywords**

Workplace canteen, Food choice, Food information, Consumer, Best-worst scaling, Latent class analysis

## **1. Introduction**

Compared to meals prepared at home, meals eaten out tend to contain more calories, total fat and saturated fat and it is here where the consumer has very little control or knowledge of the nutrient profile of the food they are eating (Bohm and Quartuccio 2008). The positive association between the rise in consumption of food prepared outside the home and the increasing prevalence of obesity has been described as a major health and wellbeing societal challenge (Hartwell et al. 2016).

In settings such as workplaces there is a growing acceptance that the food provided has a significant impact on the diet of employees (Pridgeon and Whitehead 2013). This is a captive environment where the overall contribution of the meal served could be an important element of the overall diet and represents an environment that is increasingly being used for daily main meal consumption. It is estimated, that most employees eat one or more meals per day whilst they are at work (Lassen 2011). Food served in workplace canteens is often criticized for being nutrient-poor and energy-dense (Sharma et al. 2016) with canteen operators promoting high calorie food that provides a high profit margin (Jawarowska et al. 2013). In 2011, UK food and drink sales in public sector organisations accounted for £2.1bn (6.5%) of total sales in the food service sector with most of this provision in the form of complete meals (Defra 2012).

The workplace can be a supportive and influential domain in the promotion of a healthy diet which has benefits not only for the individual but also for employers and society (Ni Mhurchu et al. 2010). A healthy and vital workforce is an asset to any organisation and initiatives within this environment reflect health promotion strategies advocated by the World Health Organisation (WHO 2004). The European workforce is increasingly diverse in terms of gender, ethnicity and culture; it is also increasingly older which implies a greater potential and prevalence of chronic disease (Zwetsloot et al. 2010). Health and well-being are key topics in the debate on improving the lives of individuals in society and are directly linked to labour force participation, productivity and sustainability (Eurofound 2013). Additionally, health and well-being at work are crucial elements of the overall Europe 2020 strategy for growth, competitiveness and sustainable development. A healthy economy depends on a healthy population. Without this, employers lose out on worker productivity and citizens are deprived of potential longevity and quality of life (Zwetsloot et al. 2010). The European Treaties legislation (2007) and policy measures recognise the importance of preserving the health of the workforce and it is here where effective menu labelling could support the healthy lifestyle of employees at a societal and individual level (European Union 2007). Health is seen as a factor that codetermines the functioning of people (human and social capital) and can contribute to an organisations value. The workplace could be a central venue for influencing dietary behaviour and

could be instrumental in reducing employee's risk of developing chronic disease by providing opportunities to take responsibility for their own health (Pridgeon and Whitehead 2013).

The settings approach to promoting healthy eating has been growing in importance especially at work where a large proportion of the adult population can be reached including those unlikely to engage in a preventive health behaviour programme and where the canteen supplies meals for a regular clientele (Kahn Marshall and Gallant 2012). Already established organisational structures and communication strategies enable the implementation of interventions that promote individuals to make healthier choices when eating at work (Taylor et al. 2016). Food choices made in workplace canteens are influenced by individual preferences, characteristics of the food itself but it is also context dependent (Machín et al. 2014). Participants expect inferior quality of food based on their previous experiences but accept this is due to time constraints and the convenience of eating onsite (Raulio 2012; Price et al. 2016). Nevertheless, the canteen is valued by employees because it provides a basis for interaction with other colleagues and the opportunity to take a break. The influence of convenience over other factors directing food choice has previously been recognised and plays an important role in the selection of food at work (Kamphuis et al. 2015). Notwithstanding, depending on the context, salient values such as taste and nutritional content are also compared and negotiated. These salient values are further influenced by employees' perceived stress at work which has been shown to favour the selection of dishes that are high in saturated fat, salt and sugar in workplace canteens (Stewart-Knox et al. 2014). Food choice in public sector foodservice relates to a meal rather than to individual ingredients, which differs from food choice made in a retail setting. Therefore, there is a stronger reliance on experience and visual appearance of the meal compared to choice made in a retail environment where full information is provided on the label (Price et al 2016).

Given the amount of employees eating at their place of work, most research on this topic relates to the direct importance of making healthy dishes available (Nyberg et al. 2010). The EU Eatwell project (2014) identified that few countries have introduced measures targeting workplace catered food, although some schemes have been introduced in Finland and Denmark where data are suggestive of success and indicate that the public is willing to accept workplace measures that expand and inform food choice (Lassen et al. 2004; Raulio et al. 2010). Efforts taken to improve diet of employees include strategies such as developing healthier recipes, price reductions of healthy dishes, educational messages as well as the use of food labelling approaches (Bandoni et al. 2010).

Previous research based on the retail market has demonstrated that non-directive labels with high information content have many attributes that make people believe that they are being given

important evidence (Hodgkins et al. 2012). Even if the actual content is not used, consumers are reassured by the fact that the information is there. In retail situations individuals tend to process information in a more heuristic style (i.e., quickly and superficially) while in a foodservice environment where the pace is more leisurely, consumers will engage in more elaborate systematic processing (Feldman et al. 2015). Significant debate exists amongst stakeholders as to the best labelling approach but very little information is available in out-of home situations (Hoefkens et al. 2012). From a public health and food policy perspective, providing consumers with information at the point of purchase can empower and provide the framework for measured food choice decisions (Geaney et al. 2013). Providing tailored information can facilitate adoption of healthier nutrition practices and such a concept has been supported empirically in retail situations. Research has found that consumers appreciate messages tailored to their own needs, signposting specific values of interest that will enable consumers to utilize menus more effectively without being overwhelmed by the abundance of information given (Rasberry et al. 2007). Elicitation of categorisations from individuals has the potential to provide a very important perspective in this arena and one that can provide relevant insights for consumers.

Therefore, the aim of this research is to identify different criteria of importance that are more valued by consumers to inform food provision in workplace canteens. This will be achieved by a consumer survey performed in 4 EU countries (Denmark, France, Greece and UK), demonstrating a pan European approach, focusing on different criteria of importance that influence food choice and indicate the type of information needed when eating at work.

## **2. Methods**

Data from focus groups were used to inform the design of a best-worst questionnaire. Structured focus groups (n=8) were conducted with employees who regularly, at least twice a week, use the canteen at their place of work and were recruited using purposive sampling. Email invitations were sent out to various employers in the UK, Greece, Denmark and France who offer workplace canteens to their members of staff. The study and questions were approved by the local Ethics Committees of each country, 40 participants took part, 29 female and 11 male, with an age range of 22-64 years. In order to ensure continuity across the eight focus groups, specific questions were used rather than relying on a topic guide. Questions used for the discussions were influenced by the literature and focussed on factors affecting meal choice when eating at work. These questions were also tested and revised in discussion with key industry stakeholders and included open-ended comment on the

influences of food choice in workplace foodservice. Results from the focus groups were used to inform the criteria that were tested in a Best-worst experiment.

Best-worst scaling is constructed on the random utility theory developed by McFadden (1980) who concludes that a preference for one object over another is a function of the relative frequency of which this object has been chosen over the other. One of the benefits of using best-worst scaling is that it gives information about the top and bottom rated object in each choice set which provides more information about the rating of objects in each set. Consequently, as consumers are required to make a trade-off in choosing the most and least preferred option, this method does not suffer from the scale bias associated with rating based scales (Loose and Lockshin 2013). Therefore, it is specifically useful in cross-national research as undertaken in this study as previous research has found that participants from different countries make different use of verbal rating scales (Harzing et al. 2009). In the design of this questionnaire, respondents were presented with different scenarios, where they had to select the best and worst option out of tetrads shown.

The questionnaire consisted of two parts: firstly, the best- worst experiment testing food criteria of importance that are dependent on consumer profile, derived from the focus groups and lastly demographics. Respondents were presented with various choice sets, which comprised of a set of food criteria of importance and space for open-ended comment. The design developed for this experiment consisted of 8 criteria that were evaluated, resulting in eight tetrad choice sets, where each attribute co-appears with each other once and is shown four times across all choice sets. For each set the most preferred and the least preferred option must be chosen. After the most and least important criteria had been chosen in each of the eight presented sets, respondents were asked, in an optional question, to provide further comment about their decision making process. Answers from the open-ended questions were used to further describe the different clusters. Furthermore, to increase the results accuracy, 10 versions of the questionnaire were generated within the Sawtooth software (Furlan and Turner 2014). One of the benefits of creating multiple versions is that the way attributes are combined within choice sets and the occurrence of choice sets increases which can reduce context bias and order effects (Furlan and Turner 2014).

Table 1 outlines the food criteria of importance alongside their context definitions as derived from the focus groups and shown to respondents during the questionnaire.

Table 1- Food Criteria of importance included in the best-worst experiment

Criteria	Definition
Value for Money	The ratio between the perceived quality of the dish and the price paid for it
Organic	Organic food is produced in a way that respects natural life cycles. It minimises the human impact on the environment and operates as naturally as possible
Environmental Impact	The effect the food production has on the environment
Naturalness	The extent to which fresh ingredients are used, less use of processed foods containing additives and preservatives
Nutrition	Nutritional Composition of the food (Fat, Carbohydrates, Protein etc.). Availability of healthy food
Fair Trade	Fair Trade aims to help producers in developing countries to get a fair price for their products so as to reduce poverty, provide the ethical treatment of workers and farmers and promote environmentally friendly and sustainable practices
Provenance	Where the food was produced/ commodities grown
Animal Welfare	How an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if it is healthy, comfortable, well nourished, safe, able to express innate behaviour and if it is not suffering from unpleasant states such as pain, fear and distress

## 2.2 Sampling and data collection

The sample was defined as employees who regularly, at least twice a week, use the canteen at their place of work. The questionnaire was developed in English and translated into French and Greek, in Denmark, the English version of the questionnaire was distributed. Contacts were made with companies offering a worksite canteen, asking to distribute the online survey to their employees through their intranet. Workplaces approached differed in their style of canteens, however, in all canteens employees had to pay for their meal and were able to choose between dishes. A non-probability sampling method has been chosen whereby contacts have been made with an index person that distributed the survey further (Slattery et al. 2011). Furthermore, a link to the questionnaire was distributed through social networks. Participants were invited by email to take part in the survey. The invitation email was sent throughout autumn explaining the aim of the study and containing a link to the online questionnaire. The survey was hosted by Sawtooth software which provided a function whereby a survey cannot be submitted multiple times using the same IP address.

## 2.3 Analysis

Data analysis was undertaken in two steps; attribute importance was calculated on an individual level and per country. Hereby, a hierarchical Bayes (HB) application of a multinomial logit model was applied to estimate individual level utility scores using Sawtooth Software (Orme 2009). For the comparison of attribute importance per country, a rescaling approach was adopted, where raw HB logit scaled scores are directly related to probabilities of choice with overall scores summing to 100 (Orme 2009).

The individual level raw best-worst data was subject to latent class cluster analysis using Latent Gold 3.0 (Vermunt and Magidson 2003). Latent class analysis was used to detect relationships between observed variables on the basis of a smaller number of latent variables (Rindskopf 2009). In this study the best-worst utility scores were subject to latent class analysis to identify the degree of importance the sample gives to the eight food criteria of importance when making food choices in a worksite canteen. Latent class analysis can identify homogenous sub-groups of the sample population in respect to consumer preferences shown towards the tested attributes (Casini and Corsi 2008).

Furthermore, latent class analysis is robust to different scale types, which allows clustering of individual choice data in combination with socio-demographic data without changing the format of this data. Different to a traditional cluster analysis, latent class cluster analysis, does not assume that the data is linear and normally distributed (Chrysochou et al. 2012). Additionally, latent class analysis gave the opportunity to explore cross-country segments rather than merely using the UK, Greece, Denmark and France as segments (Lockshin and Cohen 2011). This was especially important considering that this study analyses what factors are important when making food choices in workplace canteens and those factors might be consistent across cross-cultural segments. The general latent class segmentation model is as presented in Equation 1:

$$f(Y_{nj}|\phi) = \sum_{(S=1)}^S \Pi_S f_S(Y_{nj}|\phi_S) \text{ with } \sum_{(S=1)}^S \Pi_S = 1 \text{ and } \Pi_S \geq 0$$

[1]

where S= number of latent class clusters,  $\Pi_S$  is the probability of belonging to a S latent class,  $Y_{nj}$  is the score for an n group of subjects in j observed attributes,  $f_S(Y_{nj}|\phi_S)$  is a conditional density of  $Y_{nj}$  given the vector of parameters  $\phi_S$  (Vermunt and Magidson 2005). Every observation can then be classified in the latent class (i.e., group) based on a higher probability of belonging to such a class. The model is probabilistic and not deterministic, as every observation has a different probability of belonging to each latent class.



### 3. Results

Data were collected from 452 employees, (UK (n=152), Greece (n=100), Denmark (n=100) and France (n=100) who had access to a canteen at their place of work. Most of the employees worked full time at their place of work (60.4%) and their employment falls under the occupations classification of Technicians and Associate Professionals (74.1%). The majority of the sample was female (61.1%), aged between 20-29 (51.3%) and had completed some form of higher tertiary education (74.1%). Further socio-demographic characteristics of the sample are presented in Table 2.

**Table 2** - Socio-demographic characteristics of sample

	Overall Sample (452)	
	N	%
<b>Gender</b>		
Male	176	38.9
Female	276	61.1
<b>Age groups</b>		
Below 20	15	3.3
20-29	232	51.3
30-39	96	21.2
40-49	47	10.5
50-59	43	9.5
Over 60	19	4.2
<b>Country of birth</b>		
Within country of residence	351	77.7
In another EU member state	53	11.8
Outside the EU	48	10.6
<b>Dietary requirements</b>		
Religious	14	3.1
Allergies	28	6.2
Health related	11	2.4
None	366	81.0
Other	33	7.3
<b>Household type</b>		
Single person household	103	22.8
Multi person household	86	19
Lone parent children <25	18	4.0
Lone parent children >25	5	1.1
Couple without children <25	64	14.2
Couple with children <25	128	28.3
Other type of household	48	10.6
<b>Household size</b>		
One person household	77	17.0
Two person household	132	29.2
Three person household	81	17.9
Four person household	103	22.8
More than four person household	59	13.1
<b>Employment status</b>		

Full time	273	60.4
Part time	179	39.6
<b>Occupation</b>		
ISCO-08 Category 1 Managers	52	11.5
ISCO-08 Category 2 Professionals	125	28.3
ISCO-08 Category 3 Associate Professionals, Technicians, Students	181	40.0
ISCO-08 Category 4 Clerical Support	15	3.3
ISCO-08 Category 5 Service and Sales	44	9.7
ISCO-08 Category 6 Agriculture, Forestry, Fishery	1	0.2
ISCO-08 Category 7 Craft and related trades	4	0.9
Missing value	27	6.0
<b>Highest level of Education</b>		
Intermediate general qualification	11	2.4
Gen maturity certificate and/or vocational qualifications	84	18.6
Higher tertiary education	335	74.1

Best-worst scores were calculated through a Hierarchical Bayes estimation using Sawtooth Software. Thereby, utility scores were estimated on an individual level for each participant and averaged within each country for the different consumer criteria of importance tested for. Country specific results are presented in Table 3.

**Table 3** - Average best-worst utility scores for criteria of importance (ranked in importance per country in bold)

	<b>UK n=152</b>	<b>Greece n=100</b>	<b>Denmark n=100</b>	<b>France n=100</b>
<b>Nutrition</b>	<b>27.76</b>	<b>22.84</b>	<b>24.76</b>	<b>20.07</b>
<b>Value for Money</b>	<b>24.26</b>	<b>27.6</b>	<b>16.96</b>	<b>19.85</b>
<b>Naturalness</b>	<b>15.75</b>	<b>18.3</b>	<b>17.3</b>	<b>15.0</b>
<b>Animal Welfare</b>	12.13	5.58	11.08	5.72
<b>Organic</b>	6.42	5.65	11.14	13.05
<b>Environmental Impact</b>	5.63	4.56	8.33	8.21
<b>Fair Trade</b>	4.97	3.81	4.99	3.4
<b>Provenance</b>	3.07	11.66	5.44	14.7

The results are fairly consistent across the sample, in that Value for Money ie. Cost, Nutrition and Naturalness are ranked in the top three for all four countries. However, the order of the top three between countries differs. In the UK and France there is a high importance on Nutrition and Value

for Money. In Greece, Value for Money is the most important aspect and in Denmark, Nutrition is by far the criteria with the highest importance. Compared to Greece and France, the UK and Denmark also put higher emphasis on Animal Welfare. Both Denmark and France put higher value on Organic and Environmental Impact whilst the importance of Fair Trade is low in all countries. France distinguishes from the other countries through a higher value of Provenance.

Latent class analysis was used to detect relationships between observed variables on the basis of a smaller number of latent variables (Rindskopf 2009). In this study the best-worst utility scores were subject to latent class analysis to identify the degree of importance the sample gives to the eight food criteria of importance (Price et al. 2016) when making food choices in a workplace canteen.

Latent class analysis was performed using Latent Gold 3.0 (Vermunt and Magidson 2003) to estimate a latent class cluster model based on the individual best-worst scores. Models were estimated from two to six clusters and the log-likelihoods (LL) and its relative Bayesian Information Criterion (BIC<sub>LL</sub>) of each model compared as shown in Table 4. Hereby, the most parsimonious model that provides an adequate fit was selected. The improvement of the LL and BIC after the 5 cluster solution is minimal. Therefore, the model with five clusters was chosen based on parsimony alongside interpretability of the model in Table 4 (Chrysochou et al. 2012).

**Table 4** - Latent class cluster models fitted to individual-level best-worst scores of the eight food criteria of importance

Model	LL	BIC <sub>LL</sub>	Classification Error
<i>Criteria of importance</i>			
One-cluster model	-8679.7833	17457.385	0.0000
Two-cluster model	-8422.6597	17047.071	0.0697
Three-cluster model	-8332.1259	16969.936	0.0999
Four-cluster model	-8248.5769	16906.770	0.1273
<b>Five cluster model*</b>	<b>-8193.6150</b>	<b>16900.779</b>	<b>0.1129</b>
Six cluster model	-8136.6926	16890.8671	0.1138

Notes: LL=Log-likelihood; BIC<sub>LL</sub> =Bayesian Information Criterion based on the log-likelihood \*This model has been chosen based on the smallest BIC<sub>LL</sub> and lowest classification error as indicated in bold.

Hence, a decision was made to select a five cluster model (Table 4). All clusters were defined based on the revealed importance of each attribute that has been identified by the individual-level best-worst scores and are shown in Table 5. Specifically, the coefficients in Table 5 are the utility scores, representing preference judgements for each of the tested criteria in this study. Hereby, negative weights have to be read not as negative influences but as a deviation from the average zero utility to

indicate a less important attribute. All attributes tested for in the survey are significantly different between the clusters ( $p$ -values $<0.05$ ), and are therefore useful in segmenting the participants into five clusters. Cluster 1 was tagged 'Value Driven' (33.0% of respondents) as these respondents acknowledged value as important. Cluster 2 was tagged 'Conventionalists' (23.2% of respondents) as these respondents were not so concerned about 'new ideas' such as organic and valued most criteria. Cluster 3 was tagged 'Socially Responsible' (19.2% of respondents) and these respondents were driven by socially responsible factors. Cluster 4 was tagged 'Health Conscious' (14.2% of respondents) and as the name suggests these respondents were interested in Naturalness, Organic and Nutrition. Lastly, Cluster 5 was tagged 'Locavores' (10.4% of respondents), a term coined from a French participant who described an importance in local sustainable development. There are some socio-demographic differences between the clusters as measured by chi-square. Gender, age, employment status and participant country are significant ( $p < 0.05$ ) whilst country of birth, dietary requirements, household type, household size, occupation and highest level of education are not significant ( $p > 0.05$ ). Therefore, in order to keep the results concise, socio-demographic variables that are not significant have been omitted from Table 5.

**Table 5** - Latent class cluster parameter values for all participating countries

	<b>Value Driven (33%)</b>	<b>Conventionalists (23.2%)</b>	<b>Socially Responsible (19.2%)</b>	<b>Health Conscious (14.2%)</b>	<b>Locavores (10.4%)</b>	<b>p-value</b>	<b>R<sup>2</sup></b>
<b>Value for Money</b>	4.44	2.92	-4.71	-2.14	-0.51	<0.01	0.59
<b>Organic</b>	-0.82	-2.17	1.85	2.0	-0.86	<0.01	0.42
<b>Environmental Impact</b>	-2.52	0.26	2.55	-0.86	0.57	<0.01	0.59
<b>Naturalness</b>	0.05	-1.42	-1.3	2.4	0.27	<0.01	0.27
<b>Nutrition</b>	1.65	1.13	-1.8	1.30	-2.28	<0.01	0.32
<b>Fair Trade</b>	-1.12	0.77	2.0	-1.16	-0.49	<0.01	0.39
<b>Provenance</b>	-0.30	-2.24	-0.15	-0.96	3.65	<0.01	0.33
<b>Animal Welfare</b>	-1.38	0.75	1.56	-0.58	-0.35	<0.01	0.20
<b><u>Socio-Demographic Variables</u></b>							
<b>Gender</b>							
Male	46.3	45.7	29.9	28.1	31.9		0.014
Female	53.7	54.3	70.1	71.9	68.1		
<b>Age groups</b>							
Below 20	4.7	4.8	1.1	3.1	0.0		0.000
20-29	61.1	58.1	40.2	42.2	38.3		
30-39	23.5	19.0	19.5	23.4	19.1		
40-49	6.7	10.5	9.2	17.2	14.9		
50-59	2.7	5.7	21.8	12.5	12.8		
Over 60	1.3	1.9	8.0	1.6	14.9		
<b>Employment status</b>							
Full time	55.7	63.8	59.8	78.1	44.7		

Part time	44.3	36.2	40.2	21.9	55.3	0.004
<b>Participant Country</b>						0.000
UK	38.9	47.6	31.0	18.8	10.6	
Greece	34.2	17.1	9.2	14.1	29.8	
Denmark	16.8	21.0	29.9	35.9	8.5	
France	10.1	14.3	29.9	31.3	51.5	

Note: p-values represent the significance of the difference of each row variable across clusters

### Cluster 1: Value Driven

The first cluster was tagged Value Driven due to the high importance of selecting a dish that provided good value for money (4.4). This cluster stands out with its four times higher importance of Value for Money. Furthermore, Nutrition (1.64) and Naturalness (0.05) are also of importance. However, employees in this cluster are the least concerned about Environmental Impact (-2.52). This cluster is the largest segment containing 33% of the sample population. In the group, there is a fairly even distribution between males (46.7 %) and females (53.7%). The UK (38.9%) and Greece (34.2%) have the largest membership in the Value Driven cluster. One of the Danish participants described the reasoning behind his selection of high importance of Value for Money and Nutrition as follows: *“First I’m interested in myself, do I get good value for money and is the food a good source of nutrition? The environment and the people who produce the food aren’t something I think about when I eat in the canteen.”* (Denmark, male participant)

### Cluster 2: Conventionalists

This is the second largest cluster, encompassing 23.2 % of participants. Similar to the first cluster, Value for Money (2.92) and Nutrition (1.13) are still of high importance, although the differences between criteria are smaller and therefore these respondents have an appreciation of most. However, this cluster distinguishes itself from other clusters through its low importance on Organic (-2.17), Naturalness (-1.42) and Provenance (-2.24). The UK is over-represented in this cluster with 47.6% participants. Out of the employees in this cluster, 45.7% are male and 54.3% are female and 63.8% worked in full time positions. One employee from the UK belonging to this cluster described his process of decision making as: *“I selected value for money, fair trade and animal welfare as most important as I am on a budget, but not to the extent that I can’t afford a few extra pence to ensure farmers get value for their product and maintain support of animal welfare. Things that are less important are provenance and organic ... and I believe that growing some produce in the UK out of season is more harmful to the environment than shipping it in from overseas. In terms of organic produce, this is not something noticeably different for the consumer.”* (UK, male participant)

### **Cluster 3: Socially Responsible**

In this cluster criteria that are related to socially responsible factors of food production are of higher importance than the cost or nutritional composition of the dish. Consequently, Environmental Impact (2.55) scores the highest in this cluster followed by Fair Trade (2.0), Organic (1.85) and Animal Welfare (1.56). Value for Money (-4.71) for this group is the least important criteria when selecting a dish. This cluster consists of 70.1% female employees. This group is equally distributed between the UK (31%), France (29.9%) and Denmark (29.9%) with fewer participants from Greece (9.2%). A Danish participant from this cluster described her reasoning behind choosing criteria that are classed as Socially Responsible: *“For me being healthy goes beyond nutrition. I prefer organic and if I know that the animal had a bad life, I prefer not to eat it ... I prefer it if food is natural without artificial ingredients. I assume that I will be healthier if I eat that way rather than thinking about calories. I also think about the environmental impact of my food choice.”* (Denmark, female participant)

### **Cluster 4: Health Conscious**

Cluster 4, is tagged as Health Conscious due the highest proportion of Naturalness (2.4) and Organic (2.0) compared to the other clusters. Additionally, Nutrition (1.3) is also of higher relevance than other criteria. There is less emphasis on criteria such as Value for Money (-2.14). There are 14.2% of employees included in this cluster, which has larger memberships from Denmark (35.9%) and France (31.3%). Furthermore, this cluster is predominantly female (71.9%) and consists of employees working full time (78.1%). An employee from the UK described why she puts a high emphasis on healthy meals: *“I’m very aware of what I eat yet not in the respect of where it comes from or who made it. I guess that isn’t good but I would rather concentrate on healthy meals and the nutritional value I’m getting from my meal.”* (UK, female participant)

### **Cluster 5: Locavores**

The smallest cluster with 10.4 % is cluster 5, tagged Locavores. In this cluster there is a high consumer importance of Provenance (3.65), Environmental Impact (0.57) and Naturalness (0.27). Whereas, Nutrition (-2.28) was of less importance. France has got the highest cluster membership (51.5%) followed by Greece (29.8%) with low memberships from the UK (10.6%) and Denmark (8.5%). This group includes the smallest percentage of 20-29 year olds (38.3) and the highest amount of over 60s (14.9%) compared to other groups. Furthermore, it is the only cluster that consists of more employees working part time (55.3%) than full time (44.7%). One of the French Participants described his reasoning for attributing a high importance to provenance as: *“being a locavore*

*contributes to sustainable development and trade...and is empowering for consumers*". (France, male participant)

#### **4. Discussion**

In revealing consumers' preferences, the findings from this study suggests that Value for Money, Nutrition and Naturalness are key elements of information that consumers require to be able to make a conscious decision about dish selection and this is the consistent across the UK, Greece, Denmark and France. Specifically, Value for Money was operationalized as the ratio between perceived quality of a dish and its cost, which despite importance for other criteria was the most important factor (Sweeney and Soutar 2001). The demand for healthy and natural food has been identified as key areas of consumer importance when eating out commercially (Intel 2016) and this study has shown that these aspects also form key information requirements for employees when eating at work.

It is possible to align consumers to cluster groups such as Value Driven, Conventionalists, Socially Responsible, Health Conscious and Locavores. The importance of Value for Money communicated through the cost of a dish is evident from the results of the cross-cultural comparison as well as the results of the latent class analysis, whereby the Value Driven cluster forms the biggest cluster. When making food choices at work, the perceived value for money plays an important role due to employees likely to eat in the canteen at their place or work regularly (Pridgeon and Whitehead 2013). Food prices have been rising in past years resulting in a greater amount of income spent on food not only in the retail sector but also when eating out commercially or at work (Defra 2015). Nevertheless, consumers do not solely expect food at a low cost but rather at a cost that reflects good value for money (Price et al. 2016). In Greece, consumers are driven by Value for Money, which may reflect the economic situation that is currently prevalent within that country. In the UK, the biggest cluster was aligned to Conventionalists, suggesting that most criteria are valued and this consumer segment is conventional in their approach. Many consumers put higher emphasis on ethically produced food to express societal norms, morals as well as community concerns and ecological standards. Although the Socially Responsible cluster is not a main cluster in any of the countries, about 19.2 per cent of participants fall within this cluster. Sales in food products that can be classed socially responsible have risen steadily for the past years despite the economic downturn and in the UK account for 8.5 per cent of all food purchases (Defra 2015). Consuming food that is produced ethically presents an opportunity to support causes that are perceived as important (Bratanova et al. 2015). Many consumers have developed a collective consciousness that challenges

the conventional production of food (Bildtgard 2008), which also translates into food choices made at work.

Although Nutrition forms one of the most important criteria in the cross-cultural comparison, the health conscious cluster is the second smallest cluster. Healthy diets have become well established in people's everyday lives (Mintel 2016). Whilst some employees criticize a lack of healthy option available, for others eating in the canteen is associated with certain aspects of eating out commercially such as viewing it as a treat (Symonds et al. 2013). In Denmark, respondents showed a high alignment with health consciousness again reflecting the philosophy of a consumer who values a balanced diet. Danish consumers compared to other European countries have got a high nutritional literacy and knowledge (Niedzwiedka et al. 2014).

Locally produced food has received increased attention for a range of economic, social and environmental reasons (Goggins and Rau 2016). Changes to procurement practices by many catering operators have resulted in a greater amount of sustainably sourced products, typically including a rise in the amount of locally sourced produce served on the public plate (Marsden and Morley 2014). Therefore, there is a higher awareness and demand for information on locally sourced ingredients of food served in workplace canteens. Nevertheless, this cluster forms the smallest. However, in France local sustainability featured as important. Evidence suggests that French consumers have high quality associations with local food which is strongly embedded in their eating culture (Bildtgard 2013). The differences between clusters show that consumers have different agendas that relate to food criteria of importance, which are often influenced by lifestyle choices and values. These range from having an economically, value driven outlook to a focus on health to putting a high value on moral aspects of food consumption including ecological sustainability as well as the fair treatment of animals and others.

Greater information provision is welcomed and even if this information is not being utilised it provides transparency and reassurance for the consumer. Even so, food labelling is not only a tool to communicate factual information but also acts as a representative of the food system (Bildtgard 2008). Consequently, consumers make inferences from labels about the foodservice operator that it is trustworthy through transparency and their willingness to share information. Workplace canteen operators need to be able to tailor their offer towards the requirements of their customers. However, changing menus and providing food information pose practical challenges for foodservice providers (Mackison et al. 2016). Additionally, whilst consumers are increasingly seeking more information about the food that they eat (Lusk and Marette 2012), not all consumers wish to receive the same information. Therefore, having an understanding of the consumer profile can help canteen



operators to refine their offer to enhance the experience of their clients and provide information on criteria that are of relevancy to their customers. Across all participating countries, there are high requirements for information on the Value for Money, Nutrition and Naturalness of a dish, but there are differences between countries in regards to consumer classifications. There seems to be a higher focus on Value for Money amongst UK and Greek respondents, as those form the majority of the Value Driven Cluster. Further, respondents from the UK seem to be interested in most criteria evaluated but put less emphasis on organic as shown in the Conventionalist Cluster. The cluster of the Socially Responsible is the third largest cluster with similar memberships of UK, Danish and French respondents indicating that information on ethical food production is of value for some consumers in these countries. Nutrition information is one of the main information requirements amongst all participating countries but Danish and French respondents form the majority of this cluster. Overall, provenance was the least important criteria in the UK and Denmark which is also reflected in the results of the latent class analysis. Hence, the cluster of the Locavores, mainly consists of French respondents, followed by respondents from Greece. There is a growing understanding that the tailoring of food information provision to different segments may be the only way to satisfy each groups needs in a clear and comprehensible manner (Souiden et al. 2013).

Portraying food information through menu labelling can also act as a key communication tool between operator and consumer and is important for the establishment of a relationship to foster trust. Therefore, as well as the literal message which is of relevance, it can also be used as a vehicle to make judgements about the food operators (Tonkin 2015) in the absence of face-to-face contact (Giddens 1994).

From a public health perspective, providing nutritional information at the point of purchase can provide the framework for measured food choice decisions (Geaney et al. 2013). However, nutrition information does not always lead to a major change in actual behaviour (Swinburn et al. 2011) and often only receives limited attention (Drichoutis et al. 2005). Although consumers are guided towards making healthier choices, ultimately, freedom of choice persists. Enriching menus in canteens achieves a greater acceptability compared to restricting choice and removing unhealthy dishes completely (Jørgensen et al. 2010). Policies incorporating information provision not only enable consumers to make healthier choices but also allow caterers to demonstrate transparency and foster consumer trust. Furthermore, using the canteen as a setting for health promotion can offer a more economical option compared to interventions targeting individuals (Trogdon et al. 2009). Consequently, from a food operator point of view, adapting strategies that foster a good relationship with their customers can also lead to a competitive advantage through its impact on promoting healthier behaviours.

This research identified the type of criteria that are valued by consumers to inform food provision in workplace canteens. Findings of this study need to be considered in light of a few limitations. The majority of respondents were under 30 years of age and working in professional or associate professional positions. Additionally, this study tested the importance consumers attach to eight different criteria only. Further research should investigate how information on identified criteria of importance can be made available in workplace canteens so that food service providers can develop offers that meet the needs of their customers.

## **Conclusion**

Food purchasing habits have changed in a retail setting and when eating out commercially, leading to pressure on public sector foodservice to keep up with current consumer demands and expectations. Furthermore, the food service sector is in principle connected to both food producers and consumers, which enables an influence in supply as well as a need to satisfy. Contemporary trends and this research demonstrate that consumers put a high emphasis on Value for Money, Nutrition and Naturalness. However, these trends are not always reflected when eating at work and there is currently very little information provided to the consumer despite a growing demand for more transparency. Consumers have the right to be provided with information about what they eat especially in light of the new EU regulation 1169/2011 where information on allergens has to be available through either labelling on the menu or availability on request. Understanding key drivers of food choice can allow food operators to align their service with consumer preferences across different market segments. Results from this study begin to fill a gap in the current knowledge of consumer requirements in canteens. Information provision in the food retail industry makes people believe that they are being given important evidence and currently there is a consumer demand for this information to be translated into eating out of home. Although consumers may not make use of all information provided, they are reassured by its presence. It is also a way for foodservice operators to demonstrate transparency and strengthen the relationship with their customers. This relationship can be encouraged through various forms of providing food information which when combined can enable operators to resonate with different segments of their consumers. The challenge for the foodservice industry is to provide products and services that facilitate and enhance positive food choice in all population segments especially in a canteen where meals are eaten on a consistent basis.

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