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Introduction of new food and drink products in the UK: is there a trend towards more sustainability?

Cesar Revoredo-Giha

Food Marketing Research, Land Economy, Environment and Society
Research Group, Scotland's Rural College (SRUC),
King's Buildings, West Mains Road, Edinburgh EH9 3JG, United Kingdom.
E-mail: cesar.revoredo@sruc.ac.uk



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Introduction of new food and drink products in the UK: is there a trend towards more sustainability?

Cesar Revoredo-Giha¹

Abstract

Manufacturers and retailers are major influences in shaping consumers' food preferences and choices through a variety of activities such as the distribution formats they create, the ways they operate them and the new food and drink products that they introduce. This paper focuses on the UK food and drink market and its purpose is to explore the role of retailers and manufacturers, as agents of change, when introducing food and drink products with sustainability attributes. In particular the following questions were investigated: whether there is trend as regards food and drink products with sustainability related claims in the UK market and what companies are leading the introduction of new products with sustainable claims and in what categories. The data analysed in this paper were extracted from Mintel's Global New Products Database (GNPD), which provides information about new products launched in selected countries. The data was subject to a statistical analysis to answer the two aforementioned questions. The analysis revealed that products with sustainability claims show a positive trend, with 'environmentally friendly package' being the most popular claim. Overall, the results indicate that the sustainability message is increasingly present in the development of new products of retailers and manufacturers in the UK and retailers through their private labels are playing an important role.

Keywords: New product development, UK food industry, sustainability.

I. Introduction

Manufacturers and retailers are major influences in shaping consumers' food preferences and choices through a variety of activities such as the distribution formats they create, the ways they operate them and the new food and drink products that they introduce (Dawson, 2013).

Van Der Grijp et al. (2005) explored the question to what extent retailers and manufacturers can be considered agents of change towards increasing food and drink sustainability by studying the Brazilian market and the way the food and retailing industry was increasingly paying attention to food quality and safety issues by actively managing its supply chains of food products. Moreover, Grunert (2011) pointed out that retailers are the ones giving consumers the choice to select sustainable alternatives and therefore affecting the food chain sustainability impact.

¹ Food Marketing Research, Land Economy, Environment and Society Research Group, Scotland's Rural College, King's Buildings, West Mains Road, Edinburgh EH9 3JG, United Kingdom. E-mail: cesar.revoredo@sruc.ac.uk. The work on this paper is part of the An FP7 ERA-NET on Sustainable Food Production and Consumption project SUSDIET (Implementing sustainable diets in Europe) and the strategic research on sustainable supply chains (WP 5.1) funded by the Scottish Government.

Hooker and Souza Monteiro (2013) in their evaluation of sustainability corporate social responsibility (CSR) strategies of food manufacturers and retailers over eight thematic areas of relevance to UK grocers find that private label products launched by the leading food retailers with CSR positioning claims are uncommon. Ethical, nutrition and “specifically for” vegan and more frequently vegetarian claims account for approximately 15 per cent of the more than 5,000 products launched by the leading UK grocers over the period 2005 to 2012.

This paper focuses on the UK food and drink market and its purpose is to explore the role of retailers and manufacturers, as agents of change, when introducing food and drink products with sustainability attributes. In particular the following questions were investigated:

- Is there any trend on the launching of food and drink products with sustainability related claims in the UK market?
- What companies (food manufacturer or retailers) are leading the introduction of new products with sustainable claims and in what categories?

The importance of observing trends as regarding new products is because they provide information towards what is becoming available in the market and on what direction the different retailers and manufacturers are aiming to steer food and drink consumption, and in particular, whether they are interested in increasing the assortment of sustainable products in order to make diets more sustainable.

The structure of the paper is as follows: it starts with a brief overview of the literature of the introduction of new products to provide a guidance of the empirical section. It is followed by the empirical section, which describes the data and methods. The next section presents and discusses the results and the last one provides the conclusions.

II. New product development

The purpose of this section is to present the main results of a model of product proliferation (i.e., the introduction of new products) that is available in the industrial organisation literature (Raubitschek, 1988). This is done in order to have a guide on the empirical analysis.

Despite its relevance to understand the competition by multiproduct firms supplying convenience consumer goods (e.g., grocery products) actually compete, the model has only been marginally used in comparison with other models of product proliferation (e.g., Spence, 1976; Dixit and Stiglitz, 1977; Schmalensee, 1978).

Raubitschek’s model reflects three stylised facts that are important in the markets of convenience goods, where food is part of, one is that firms compete introducing new products into the market and “hoping” that by doing so they will be hitting jackpots, i.e., the new products introduced into the market become successful because they are uptaken by consumers, and

remain on retailers' shelves for a long time. Note that in the literature of product management, this product category are called "cash cows" see (Armstrong and Cunningham, 2002). However, note that the aim of Raubitschek's model is not to capture all the dynamics of product management and cycle. Second, the most important competing firms (i.e., those that have a large market share) are multiproduct firms, offering several products within a category. Note that multiple retailers can be included within this group of multiproduct firms as far as they offer their own private label products. The third aspect in the model is that the firms' decisions are made under uncertainty, i.e., only a percentage of the products are actually successful.

Decision making in Raubitschek's model is characterised as a two-stage process. In the first stage, the firm makes a centralised decision about the number of products to introduce. In the second stage, successful products are managed in a decentralised manner through independent brand managers. The first stage equilibrium is Nash equilibrium in the number of product introductions, whilst the second stage equilibrium is the standard monopolistic competition equilibrium quantities sold.

According to Raubitschek, "these equilibria attempt to capture two stylised facts: that frequently a small number of fiercely competing firms dominate convenience consumer goods industries, and that each firm must manage a relatively large number of successful brands in a market containing many successful products. This is consistent with the fact that a firm relies on a relatively small percentage of brands for its sales and profits since the total number of brands is typically large". (p. 472)

The model is solved backwards, i.e., first, the second stage is calculated, where the equilibrium in quantities is calculated taking the number of brands in each firm as given. The solution of the second stage is then introduced in the first stage and the Nash equilibrium is computed, finding the expected number of brands that are introduced and the product proliferation.

Let t be the number of firms and be greater than 1; n_i ($n_i \geq 1$) be the number of products that firm i has within a product category. The total number of products within a category is equal to $n = \sum_{i=1}^t n_i$.

The demand side of the model follows the product proliferation literature (e.g., Dixit and Stiglitz, 1977) where it is portrayed by an aggregate representative household. The consumers' demand comes from the solution of a standard consumer utility maximisation problem where preferences are expressed by a Constant Elasticity of Substitution (CES) utility function (income effects are assumed to be negligible). The maximisation problem is given by (1):

$$(1) \quad \text{Max}_{x_j} \quad \frac{\left[\sum_{j=1}^n a_j x_j^{\alpha_j} \right]^{1-\gamma}}{1-\gamma} - \sum_{j=1}^n p_j x_j$$

The results of (1) expressed in an inverse demand for are given by (2):

$$(2) \quad p_j = \left[\sum_{j=1}^n a_j x_j^{\alpha_j} \right]^{-\gamma} a_j \alpha_j x_j^{\alpha_j-1}$$

In the second stage of the model, the product manager within a firm, having operating costs $c = c_0 x_j^\beta$ solve a profit maximisation problem to find the quantity x to be supplied (the sub-index j is dropped due to the fact that the equilibrium to be computed is a symmetric equilibrium). The profit maximisation problem is given by (3).

$$(3) \quad \text{Max}_x \quad \pi_s = \left[n \cdot a x^\alpha \right]^{-\gamma} a \alpha x^{\alpha-1} \cdot x - c_0 x^\beta$$

The equilibrium quantities and profits (under the assumption of a monopolistic competition setting) are giving by (4) and (5) (the supra-index e indicates equilibrium values):

$$(4) \quad x^e = h_1 n^{-\frac{\phi}{\beta}} \quad \text{and} \quad p^e = h_2 n^{\frac{\phi(\beta-1)}{\beta}}$$

Where

$$\begin{aligned} h_1 &= a^{1/\alpha} h_3^{(\theta-1)/((\theta-1+\gamma)\alpha)} > 0 \\ h_2 &= \alpha a^{1/\alpha} h_3^{((\theta-1)(1-\gamma)\alpha-1)/((\theta-1+\gamma)\alpha)} > 0 \\ h_3 &= \left((a^\theta \alpha) / (c_0 \theta) \right)^{1/(\theta-1)} > 0 \\ \phi &= \gamma \theta / (\theta - 1 + \gamma) \quad 0 < \phi < 1 \end{aligned}$$

The equilibrium profits from the second stage are given by (5):

$$(5) \quad \pi_s^e = h n^{-\phi}$$

Using results from (5) the firm decides the number of products to introduce into the market (Ω_i). The binomial distribution is used to describe the probability for success of new products by each firm. The random variable k_i indicates the number of jackpots that the firm will obtain when it introduces Ω_i (thus the expected number of jackpots is given by $E(k_i) = p \Omega_i$, where p is the probability of success). Note that there is an introduction cost per product for each firm of F . Based on this setting the firm's problem is given by (6):

$$(6) \quad \text{Max}_{\Omega_i} \quad E(\pi_f) = E \left\{ h(n_i + k_i)(n + k)^{-\phi} - F \Omega_i \right\}$$

From the solution of (6), the equilibrium occurs when $\Omega_i = 0$ for all the firms, i.e., no incentives to introduce more products. For the case when the number

of firms in the market is greater or equal than 2 and a symmetric equilibrium is considered, the number of expected products in equilibrium and the number of products per firm are given by (7) and (8).

$$(7) \quad (n^e)^\phi = \frac{\rho h}{F} \left\{ 1 - \frac{\phi}{t} - \frac{\phi}{n^e} (1 - \rho) \right\}$$

$$(8) \quad n_i^e = \frac{n^e}{t}$$

A result that it is interesting from Raubitschek's model is that as the probability of hitting a jackpot increases, the number of products introduced by each firm and the total number of products introduced by all the firms will increase. This result is important because the probability of hitting the jackpot can be associated with factors both related to the competition (number of products on a category) but also with consumers' interest on new products (e.g., healthier products) that provides an incentives for introducing more products.

One could expect that the introduction of new products (e.g., healthier) would bring cannibalisation of profits from other products maintained by the firms. This could eventually force the firms to remove those products from their assortment. However, as shown by Raubitschek, although the profits of the other firms' products are reduced, as the probability of hitting a jackpot increases: (i) the expected number of products per firm and the total expected number of products in the market in the symmetric equilibrium increases; (ii) the expected operating profits of each firm in the symmetric equilibrium increase. In other term, as the current products are still producing profits for the firms, these do not have any incentive to stop offering them.

III. Empirical approach

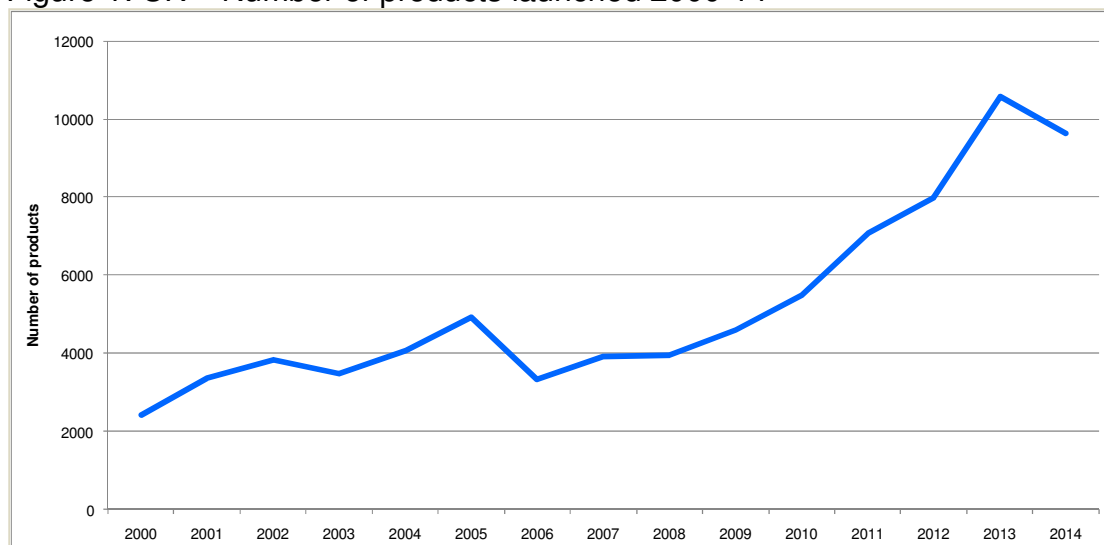
In this section the data used in the analysis and the methods used to explore the data are presented.

III.1 Data

The data analysed in this paper were extracted from Mintel Global New Products Database (GNPD), which provides information about new products launched in selected countries around the world.

For products launched in the UK market, the dataset contains information for 78,541 new products launched in different types of store retails for the period 2000 - 2014, by 8,675 manufacturing or retailing companies and considering 18,390 different brands. Figure 1 below presents the evolution of the launching of products.

Figure 1: UK – Number of products launched 2000-14



Source: Own elaboration based in Mintel's GNPD database.

The products were classified into 26 categories. In addition, the dataset also provides information about sub-categories, the type of retail establishment where the new product was launched amongst others. Table 1 presents the frequency distribution of launched products. As shown by the Table, the bakery and 'Meals and meal centres' categories are the top ones in the introduction of products representing 11.6 per cent and 11.4 per cent of the total launched products.

Of particular importance for this study was the fact that the dataset also provides information about the positioning claims in each product. This is important because they convey information to consumers about the product. A total of 74 different claims were found in the dataset. For the analysis these were classified into 5 groups namely: convenience (e.g., microwaveable), demographic (e.g., if destined to a particular demographic group), health and nutrition (e.g., low in calories), safety (e.g., no additives/preservatives) and sustainable. The following claims were considered within the sustainable group: carbon neutral, animal welfare product, environmentally friendly package, environmentally friendly product, and organic.

Table 1: UK – Frequency distribution of launched products 1/

Category	Percent
Bakery	11.62
Meals and meal centres	11.36
Sauces and seasonings	8.67
Processed fish, meat and egg products	8.65
Snacks	7.58
Dairy	6.97
Alcoholic beverages	6.93
Desserts and ice cream	5.72
Chocolate confectionery	4.82
Side dishes	4.04
Sugar and gum confectionery	3.41
Fruit and vegetables	3.02
Juice drinks	2.99
Hot beverages	2.70
Breakfast cereals	1.71
Soup	1.70
Savoury spreads	1.41
Sweet spreads	1.35
Carbonated soft drinks	1.24
Baby food	1.12
Water	0.94
Other beverages	0.84
Sports and energy drinks	0.71
Sweeteners and sugar	0.28
Ready to drink beverages (RTDs)	0.22
Total	100.00

Source: Own elaboration based in Mintel's GNPD database.

Note: 1/ Considers the entire database, i.e., data from 1996 to February 2015.

III.2 Methods

The statistical methods used comprised descriptive statistics (i.e., frequency distributions and cross tabulations) and trend analyses.

To answer the first question, namely whether there is any trend on the launching of food and drink products with sustainability related claims in the UK market, three analyses were carried out: first, a trend analysis was performed by category by regressing the number of products launched (y_i) against trend variable (t) to see whether the number of products with at least one sustainable attribute was increasing by category. The estimated equation is given by (9), where α_s are parameters to estimate:

$$(9) \quad y_i = \alpha_0 + \alpha_1 \cdot t$$

Second, with the purpose of see whether the number of products with sustainable attributes was increasing in importance, the share of those products with respect to the total number of products launched in the category was computed and that share was subject to a trend analysis.

Third, in order measure the intensity of the launching of sustainable products by category, location quotients by category were constructed. A location quotient is a way of measuring the relative contribution of one specific category to the whole for a given outcome. Let x_i and n_i , denote the outcome (i.e., number of products with sustainability attributes in category i) and population size of the i_{th} category (number of products launched in category i), respectively. Similarly, let x and n be the outcome (number of launched products with sustainable attributes) and population size (number of products launched) of the whole, respectively. The location quotient for the i_{th} category is defined as (10):

$$(10) \quad LQ_i = \frac{\frac{x_i}{n_i}}{\frac{x}{n}} = \frac{r_i}{r}, \quad r > 0$$

The location quotients were also subject to a trend analysis.

To answer the second question namely what firms (food manufacturer or retailers) are leading the introduction of new products with sustainable claims and in what categories, a table was built with the top 5 firms introducing products with sustainable products and the share that they represent was computed.

IV. Results and discussion

Before answering the research questions it should be noted that within the claims related to sustainability, 'environmentally friendly package' is the most popular, and ranks third after 'vegetarian' and 'without additives or preservatives' with 16,575 products. It is followed by organic (4,907 products) and environmentally friendly products (2,214 products). In contrast, products with carbon neutral claims are only 110.

Tables 2, 3 and 4 aimed to answering the first question posed in the paper, i.e., whether there was any trend towards sustainability. Table 2 presents the results of the trend analysis as regards the number of products with sustainability attributes launched at the different food and drink categories. A positive and statistically significant slope increase an increasing number of products launched over time. The slope coefficients for all the twenty five categories were positive and statistically significant indicating that there has been an increase in the number of products introduced over time which reported at least one sustainability attribute.

The result from Table 2 is not strange because as shown in Figure 1 the total number of products launched by retailers and manufacturers have been increasing. However, it is possible that despite the increase in the number of products with sustainability attributes, they are just growing at the same rate

than the total products in the category, i.e., keeping a constant share in the category. Table 3 was constructed to test whether the share of sustainable products within the category has been growing over time (i.e., they have been gaining importance within the category).

Table 3 shows the results of the trend analysis applied to the shares of sustainable products within categories. Similar to the results in levels all the slopes associated to the trends are positive and significant, indicating that the products with sustainable attributes are gaining share within the launching of new products within all the categories.

Note that the largest the slope the faster is the growth. The highest slopes were observed for water, breakfast cereals and juice drinks, all of them with coefficients above four (4.84, 4.23 and 4.21, respectively). The lowest rate was observed for the sugar and gum confectionery and snacks (0.74 and 0.82, respectively).

Table 4 presents the regression analysis applied to the location quotients by category. As pointed out in the section methods, the quotients aimed to compare the share of products with sustainability attributes in each category with the one observed for the products altogether. A positive sign on the trend slope indicates that the share of sustainable products is growing above the observed average, potentially indicating a more substantive activity towards sustainability attributes. Note that it is not possible to infer from this result whether this is due to a pull in the demand (greater interest of consumers) or to a push from retailers and manufacturers.

The results in Table 4 show that some of the coefficients are negative indicating that the share of sustainable products in some of the categories are growing at a rate lower than the one observed by all the categories together. It was observed that ten categories show a decreasing trend in the location quotients with the largest negative coefficients being baby food and hot beverages (-0.38 and -0.16, respectively). The highest coefficient was shown for water (0.12).

Table 2: UK – Results of trend regressions on share of products with sustainability products by category

	Intercept				Trend coefficient			
	Coeff.	St. dev.	t-stat	Sig.	Coeff.	St. dev.	t-stat	Sig.
Bakery	-163.87	66.65	-2.46	0.03	28.03	7.35	3.82	0.00
Meals and meal centers	-158.13	66.15	-2.39	0.03	29.69	7.67	3.87	0.00
Sauces and seasonings	-154.70	61.79	-2.50	0.03	24.96	6.71	3.72	0.00
Processed fish, meat and egg products	-166.77	61.95	-2.69	0.02	27.54	6.60	4.17	0.00
Snacks	-45.65	22.41	-2.04	0.06	9.52	2.46	3.87	0.00
Dairy	-81.42	37.86	-2.15	0.05	14.89	3.89	3.83	0.00
Alcoholic beverages	-32.43	18.41	-1.76	0.10	6.76	1.87	3.62	0.00
Desserts and ice cream	-62.43	30.40	-2.05	0.06	12.10	3.45	3.51	0.00
Chocolate confectionery	-86.96	26.28	-3.31	0.01	13.49	2.74	4.92	0.00
Side dishes	-60.42	24.01	-2.52	0.02	10.44	2.61	4.00	0.00
Sugar and gum confectionery	-16.79	6.71	-2.50	0.03	2.72	0.70	3.90	0.00
Fruit and vegetables	-51.52	20.35	-2.53	0.02	8.51	2.23	3.82	0.00
Juice drinks	-87.73	32.34	-2.71	0.02	13.46	3.52	3.83	0.00
Hot beverages	-80.57	32.12	-2.51	0.03	13.74	3.48	3.95	0.00
Breakfast cereals	-53.96	18.43	-2.93	0.01	8.80	1.87	4.70	0.00
Soup	-36.49	15.74	-2.32	0.04	6.22	1.70	3.67	0.00
Savoury spreads	-20.13	10.85	-1.86	0.08	3.83	1.19	3.21	0.01
Sweet spreads	-33.29	12.62	-2.64	0.02	5.33	1.34	3.97	0.00
Carbonated soft drinks	-30.67	12.53	-2.45	0.03	4.66	1.32	3.54	0.00
Baby food	-30.47	16.40	-1.86	0.08	5.76	1.82	3.16	0.01
Water	-28.00	8.74	-3.20	0.01	4.13	0.91	4.55	0.00
Other beverages	-15.75	6.26	-2.52	0.02	2.45	0.67	3.67	0.00
Sports and energy drinks	-17.10	6.62	-2.58	0.02	2.38	0.72	3.31	0.01
Sweeteners and sugar	-6.31	2.70	-2.34	0.03	1.04	0.26	3.98	0.00
Ready to drink beverages (RTDs)	-7.09	3.84	-1.84	0.09	1.01	0.45	2.24	0.04

Source: Own elaboration based on Mintel's GNPD data.

Table 3: UK – Results of trend regressions on share of products with sustainability products by category

	Intercept				Trend coefficient			
	Coeff.	St. dev.	t-stat	Sig.	Coeff.	St. dev.	t-stat	Sig.
Bakery	-2.43	4.48	-0.54	0.60	1.84	0.38	4.81	0.00
Meals and meal centers	-19.44	7.89	-2.46	0.03	3.90	0.82	4.76	0.00
Sauces and seasonings	-1.42	4.54	-0.31	0.76	1.81	0.35	5.18	0.00
Processed fish, meat and egg products	-15.89	6.98	-2.28	0.04	3.47	0.67	5.16	0.00
Snacks	3.47	3.84	0.90	0.38	0.82	0.27	3.09	0.01
Dairy	2.34	5.68	0.41	0.69	1.48	0.43	3.43	0.00
Alcoholic beverages	-11.47	5.65	-2.03	0.06	2.15	0.59	3.62	0.00
Desserts and ice cream	-10.91	5.78	-1.89	0.08	2.82	0.60	4.69	0.00
Chocolate confectionery	-9.17	4.60	-1.99	0.06	2.32	0.42	5.58	0.00
Side dishes	-4.66	4.04	-1.15	0.27	2.14	0.37	5.80	0.00
Sugar and gum confectionery	-3.15	1.78	-1.76	0.10	0.74	0.15	5.06	0.00
Fruit and vegetables	-7.69	6.66	-1.15	0.27	2.43	0.53	4.63	0.00
Juice drinks	-20.07	8.65	-2.32	0.03	4.21	0.81	5.22	0.00
Hot beverages	8.25	7.61	1.08	0.30	2.84	0.60	4.74	0.00
Breakfast cereals	-14.06	9.49	-1.48	0.16	4.23	0.77	5.48	0.00
Soup	-6.01	10.86	-0.55	0.59	3.00	0.80	3.73	0.00
Savoury spreads	1.91	7.12	0.27	0.79	2.01	0.54	3.74	0.00
Sweet spreads	3.26	7.94	0.41	0.69	2.15	0.56	3.81	0.00
Carbonated soft drinks	-20.41	10.32	-1.98	0.07	3.88	0.92	4.21	0.00
Baby food	32.71	10.67	3.07	0.01	1.82	0.69	2.65	0.02
Water	-29.76	9.55	-3.11	0.01	4.84	0.92	5.23	0.00
Other beverages	-10.29	7.61	-1.35	0.20	2.62	0.65	4.03	0.00
Sports and energy drinks	-21.77	7.46	-2.92	0.01	3.21	0.71	4.50	0.00
Sweeteners and sugar	0.08	13.01	0.01	1.00	2.33	0.93	2.51	0.02
Ready to drink beverages (RTDs)	-16.65	12.68	-1.31	0.21	3.61	0.99	3.65	0.00

Source: Own elaboration based on Mintel's GNPD data

Table 4: UK – Results of trend regressions on location quotient of products with sustainability products by category

	Intercept				Trend coefficient			
	Coeff.	St. dev.	t-stat	Sig.	Coeff.	St. dev.	t-stat	Sig.
Bakery	1.25	0.09	14.11	0.00	-0.02	0.01	-3.72	0.00
Meals and meal centers	0.54	0.21	2.51	0.03	0.06	0.01	3.68	0.00
Sauces and seasonings	1.43	0.18	8.02	0.00	-0.04	0.01	-3.39	0.00
Processed fish, meat and egg products	0.72	0.11	6.83	0.00	0.03	0.01	5.02	0.00
Snacks	1.42	0.26	5.53	0.00	-0.06	0.02	-3.25	0.01
Dairy	1.55	0.22	6.91	0.00	-0.05	0.02	-3.08	0.01
Alcoholic beverages	0.28	0.11	2.60	0.02	0.03	0.01	3.26	0.01
Desserts and ice cream	0.88	0.19	4.73	0.00	0.02	0.01	1.53	0.15
Chocolate confectionery	0.58	0.14	4.11	0.00	0.02	0.01	2.40	0.03
Side dishes	1.30	0.17	7.69	0.00	-0.02	0.01	-2.03	0.06
Sugar and gum confectionery	0.21	0.14	1.51	0.15	0.00	0.01	0.34	0.74
Fruit and vegetables	0.63	0.23	2.73	0.02	0.02	0.02	1.60	0.13
Juice drinks	0.87	0.20	4.40	0.00	0.04	0.01	2.81	0.01
Hot beverages	4.16	0.51	8.09	0.00	-0.16	0.03	-4.62	0.00
Breakfast cereals	1.48	0.34	4.32	0.00	0.01	0.02	0.31	0.76
Soup	1.23	0.47	2.64	0.02	0.00	0.03	-0.06	0.95
Savoury spreads	2.38	0.86	2.75	0.02	-0.09	0.06	-1.51	0.15
Sweet spreads	2.34	0.47	4.99	0.00	-0.08	0.03	-2.81	0.01
Carbonated soft drinks	0.25	0.42	0.59	0.56	0.06	0.03	2.22	0.04
Baby food	8.00	1.80	4.43	0.00	-0.38	0.12	-3.12	0.01
Water	-0.32	0.29	-1.09	0.30	0.12	0.02	6.26	0.00
Other beverages	0.48	0.25	1.94	0.07	0.03	0.02	1.53	0.15
Sports and energy drinks	-0.14	0.42	-0.34	0.74	0.07	0.03	2.32	0.04
Sweeteners and sugar	1.41	0.89	1.58	0.14	-0.01	0.06	-0.15	0.88
Ready to drink beverages (RTDs)	0.22	0.52	0.43	0.67	0.05	0.04	1.18	0.26

Source: Own elaboration based on Mintel's GNPD data.

As regards the second question, Tables 5 and 6 present the analysis by company. Table 5 shows that on the aggregate (i.e., without differentiating by category), retailers lead the introduction of product with at least one sustainability attribute. This is not surprising since they compete with manufacturers on several of the food and drink categories.

Table 5: UK – Top 30 firms introducing products with at least one sustainability attribute

Firm	Firm type	Total products	Share %
Tesco	Retailer	2252	9.39
Marks & Spencer	Retailer	1987	8.28
Asda	Retailer	1727	7.20
Sainsbury's	Retailer	1645	6.86
Waitrose	Retailer	1413	5.89
Morrisons	Retailer	1383	5.76
Aldi	Retailer	666	2.78
The Co-operative Group	Retailer	647	2.70
Lidl	Retailer	453	1.89
Nestlé	Manufacturer	254	1.06
Premier Foods Group	Manufacturer	204	0.85
H.J. Heinz	Manufacturer	176	0.73
Coca-Cola	Manufacturer	156	0.65
Birds Eye	Manufacturer	149	0.62
Organix Brands	Manufacturer	133	0.55
Kellogg	Manufacturer	131	0.55
Iceland	Retailer	120	0.50
Unilever	Manufacturer	118	0.49
Young's	Manufacturer	118	0.49
Boots	Retailer	117	0.49
Biona	Manufacturer	107	0.45
Princes	Manufacturer	105	0.44
HiPP	Manufacturer	95	0.40
Britvic Soft Drinks	Manufacturer	90	0.38
Marlow Foods	Manufacturer	89	0.37
Ocado	Retailer	83	0.35
Twinings	Manufacturer	77	0.32
Ella's Kitchen	Manufacturer	76	0.32
Yeo Valley	Manufacturer	76	0.32
Innocent	Manufacturer	72	0.30

Source: Own elaboration based on Mintel's GNPD data.

Table 6 explores the results of Table 5 by category and finds a mixed of situations. The importance of retailers is shown clearly in the Table.

Table 6: UK – Top 5 firms introducing products with at least one sustainability attribute by category

Categories	Top 5 firms	Number of products	Shares %
Alcoholic beverages	Tesco, Marks & Spencer , Carlsberg, Aldi , InBev	177	24.1
Baby food	Organix Brands, HiPP, Ella's Kitchen, Plum Baby, H.J. Heinz	381	64.6
Bakery	Marks & Spencer, Asda, Sainsbury's, Tesco, Waitrose	1126	43.7
Breakfast cereals	Kellogg, Tesco , Weetabix, Sainsbury's , Cereal Partners	279	36.4
Carbonated soft drinks	Coca-Cola, Britvic Soft Drinks, Tesco , PepsiCo, Morrisons	184	49.6
Chocolate confectionery	Nestlé, Sainsbury's, Marks & Spencer, Asda, Tesco	305	27.7
Dairy	Sainsbury's, Asda, Morrisons, Tesco, Waitrose	460	30.8
Desserts and ice cream	Marks & Spencer, Sainsbury's, Asda, Waitrose, Tesco	625	50.2
Fruit and vegetables	Tesco, Sainsbury's, Waitrose, Asda, Morrisons	345	45.9
Hot beverages	Twinnings, Tesco, Morrisons, Sainsbury's , Clipper Teas	334	26.4
Juice drinks	Tesco, Marks & Spencer, Morrisons, Sainsbury's , Tropicana	321	29.7
Meals and meal centers	Marks & Spencer, Tesco, Asda, Waitrose, Sainsbury's	1672	56.7
Other beverages	Tesco, Asda , Britvic Soft Drinks, Morrisons , Superdrug	81	40.1
Processed fish, meat and egg products	Tesco, Waitrose, Marks & Spencer, Asda, Sainsbury's	1129	46.6
Ready to drink beverages (RTDs)	Emmi, Hampstead Tea & Coffee, Starbucks Coffee, Unilever, Lidl	30	40.5
Sauces and Seasonings	Tesco, Asda, Sainsbury's, Marks & Spencer, Morrisons	923	43.0
Savoury spreads	Tesco, Sainsbury's, Marks & Spencer, Asda, Waitrose	230	59.1
Side dishes	Tesco, Waitrose, Morrisons, Marks & Spencer, Asda	441	45.7
Snacks	Marks & Spencer, Tesco, Sainsbury's, Morrisons, Waitrose	379	36.9
Soup	Tesco , New Covent Garden Food Co, H.J. Heinz, Waitrose, Morrisons	255	44.2
Sports and energy drinks	GlaxoSmithKline, Tesco , Red Bull, Morrisons, Asda	64	38.8
Sugar and gum confectionery	Asda, Marks & Spencer, Sainsbury's, Morrisons , Dunhills	84	35.7
Sweet spreads	Tesco, Asda, Sainsbury's, Morrisons, Aldi	189	40.7
Sweeteners and sugar	Silver Spoon, Tate & Lyle Sugars, Marks & Spencer , McNeil Nutritionals, Lidl	31	33.7
Water	Highland Spring, Coca-Cola, Nestlé, Britvic Soft Drinks, Danone Waters	82	26.3

Source: Own elaboration based on Mintel's GNPD data.

Whilst there are only two categories where the top five companies are manufacturers, there are ten categories where the top five companies introducing products with sustainable attributes are only retailers.

V. Conclusions

The purpose of this analysis has been to explore whether the introduction of new products with sustainable attributes shows any trend (either positive or negative) using Mintel's GNPD database.

The statistical analysis revealed that the UK market is dynamic and it is reflected in the process of continuously launching new food and drink products, which not necessarily need to show greater sustainability attributes.

Results indicate that bakery, prepared meals, sauces and seasonings, processed fish, meat and egg products, snacks and dairy are the categories that comprise more than 50 per cent of the products launched in the market during the studied period.

As regards the first question, i.e., the existence of a trend, the results show both that an increasing number of products with sustainable attributes and also that the share of those products within the category is also raising.

As regards the second question of the paper, when all products are considered, retailers (in particular, Tesco) through their own private brands are the leaders regarding the number of products with sustainability claims. Although the performance of manufacturers improves when the analysis is carried out by categories, and some large manufacturers take the lead in terms of sustainability claims; however, retailers also remain as an important presence being the top five in ten of the studied categories.

Overall, the results indicate that the sustainability message is increasingly present in the development of new products of retailers and manufacturers. However, further research is needed to verify whether the assortment of products available to consumers reflects greater sustainability, and in particular whether the products actually bring greater sustainability, i.e., when the products are uptaken by consumers.

VI. References

Dawson, J. (2013). Retailer activity in shaping food choice. *Food Quality and Preference*, 28(1): 339-347.

Grunert, K. (2011). Sustainability in the food sector: a consumer behaviour perspective. *International journal on food system dynamics*, 2 (3) 207-218.

Van der Grijp, N., Marsden, T., Salete, J., and Cavalcanti, B. (2005). European retailers as agents of change towards sustainability: The case of fruit production in Brazil. *Environmental Sciences*, 2, (4) 445-460

Armstrong, G., and Cunningham, M. H. (2002). *Principles of marketing*. Scarborough, Ont.: Prentice Hall.

Dixit, A. K., and Stiglitz, J. E. (1977). Monopolistic competition and optimum product diversity. *The American Economic Review*, 297-308.

Hooker, N. H., and Monteiro, D. M. S. (2013). UK Food Retailer sustainability strategies: Competitive or cooperative?. Paper to be presented at Labels on Sustainability: An Issue for Consumers, Producers, Policy Makers, and NGOs EAAE 134th Seminar Paris, France, March 21-22.

Raubitschek, R. S. (1988). Hitting the jackpot: product proliferation by multiproduct firms under uncertainty. *International journal of industrial organization*, 6(4): 469-488.

Schmalensee, R. (1978). Entry deterrence in the ready-to-eat breakfast cereal industry. *The Bell Journal of Economics*, 305-327.

Spence, M. (1976). Product selection, fixed costs, and monopolistic competition. *The Review of Economic Studies*, 217-235.