SIGNALS IN THE QUEST FOR THE HOLY GRAIL: CONSUMER RANKING OF NUTRITIONAL CLAIMS IN CEREAL BASED PRODUCTS

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- Consumers' consciousness regarding the healthiness of foods is increasing.

- Demand of healthier food alternatives is increasing.

- Industry responds to this demand by offering variants of processed foods.

  - Reducing or eliminating unhealthy components (fats)
  - Adding beneficial ingredients (fibre)

- Higher prevalence of food products with different nutritional claims

- On the other hand,

- Consumers limiting time to shopping drives that they are able or willing to process the information that attracts their attention and it is more important for them.

- Understanding to which extent and how important different nutritional claims are for consumers is relevant.

- The **aim of the paper** is to **assess** the **importance** attached by **consumers** to different **nutritional claims on processed cereals**.

Nutritional claims:

•Source of fibre
•Reduced saturated fat
•With no added sugar
•Reduced fat
•Low salt
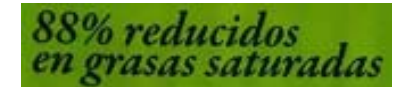
Processed cereals:

•   Breakfast biscuits
•   Pastries

Direct ranking preference method.

Respondents have to rank the five selected nutritional claims for the two processed cereals products from 1 (the most preferred) to 5 (the least preferred).

Statistical analysis.

1) Probabilities of different ranks (first, second, etc.) and rank means.
2) After transforming the data, **this new data** can be used **within the random utility theory framework (RUM) and the Lancaster's characteristics demand theory**

Lancaster stated that total utility depends on the product's characteristics.

This utility is known to the individual but not to the researcher:

- The researcher observes some attributes, in our case, the attributes included in the direct rank question ($\beta' x_{njt}$)

- But not others that can be treated as stochastic within the random utility model ε_{njt}

$$U_{njt} = \beta' x_{njt} + \varepsilon_{njt}$$

Rank-ordered mixed logit model is specified with transformed data

Original data was re-coded by treating each rank as a sequential choice process where respondents make a discrete choice between alternatives (Train, 2003).

- For the first pseudo-observations, the choice set includes j (j=5) alternatives. The choice variable identifies the alternative ranked as the most preferred.
- For the second, the alternative ranked first is discarded, leading to a choice set of J-1 alternatives and the choice variable identifies the alternative ranked first.

- Untill only two alternatives

- Therefore, the ranking of J alternatives can be represented as J-1 independent choices - **New data -**

   The NLOGIT software was used to estimate.

- Data was obtained from a survey conducted in Aragón to a total of 400 respondents in 2017.

- The questionnaire was administrated online to the responsible of the food purchase in the households stratified by gender, age, and province of residence by a specialized company in market surveys.

- The questionnaire was structured in three parts
    - consumption and purchase habits
    - Direct rank questions
    - questions on socio-demographic characteristics (i.e. age, family size, income and education level, residence province) and healthy lifestyles

Characteristics		Sample (n=400)	Population
Gender	Male	50.0	49.1
	Female	50.0	50.9
Age[1] (average, standard dev)		48.0 (14.0)	N/A
	18–34	21.0	21.6
	35–44	21.0	20.9
	45–54	19.9	19.2
	≥ 55	38.5	38.2
Studies level[2]	Primary	27.5	23.0
	Secondary	32.5	48.7
	Higher	40.0	28.3
Province of residence[1]	Huesca	14.2	17.00
	Teruel	6.8	11.00
	Zaragoza	79.0	72.00

Rank means

	Breakfast biscuits		Pastries	
	Mean (st dev)	Ranking	Mean (st dev)	Ranking
Source of fibre[a]	2.83 (1.54)	3	3.17 (1.46)	4
Reduced saturated fat[b]	2.57 (1.38)	1-2	2.25 (1.35)	1
With no added sugar[b]	2.57 (1.29)	1-2	2.59 (1.27)	2
Reduced fat[c]	3.21(1.21)	4	3.01 (1.17)	3
Low salt[d]	3.80 (1.23)	5	3.96 (1.17)	5

Estimates for the rank-ordered mixed logit

Parameters estimates	Breakfast biscuits		Pastries	
	Coefficient	Z-ratio	Coefficient	Z-ratio
Source of fibre	1.754 (3)	4.07***	1.1954 (4)	3.46***
Reduced saturated fat	2.231 (1)	4.31***	2.8022 (1)	4.11***
With no added sugar	2.199 (2)	4.31***	2.1017 (2)	4.06***
Reduced fat	1.199 (4)	3.90***	1.6510 (3)	4.04***
Standard deviation of parameters				
Source of fibre	3.449	3.40***	2.3215	2.59**
Reduced saturated fat	3.643	4.26***	3.1126	3.10**
With no added sugar	2.390	3.58***	1.8733	2.16**
Reduced fat	2.873	7.62***	2.3041	2.54**
Number of observations	1600		1600	
Log likelihood at convergence	-1749.8		-1694.5	
McFadden Pseudo R-square	0.32		0.34	

- Results indicate that the ranking of the claims differs between the two products (biscuits and pastries) and among consumers.

- Consumers prefer nutritional claims that signaling the reduced presence of unhealthy nutrients than claims that communicate the presence of healthy ones.

- Preferences for nutritional claims are heterogeneous across consumers

To investigate heterogeneous preferences and segmented consumers according to the importance attached to the different nutritional claims (results from estimations)

Thank you
for your attention

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