

The use of Conjoint Analysis utility scores as cluster seeds: results based on a dry-cured ham survey

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- 1 Brief introduction to market segmentation
- 2 **Methodology**: The use of individual scores in Conjoint Analysis applied as initial seeds for a Cluster Analysis
- 3 Application and results
- 4 Conclusions and future work

The market segmentation

- The aim of a market segmentation is to target consumers in different categories with some specific characteristics.
- Statistically speaking, it could be realized using Conjoint Analysis (in presence of customers' preferences) or Cluster Analysis (quantitative measures).

The objectives of the research is to mix the two techniques using them sequentially in 4 steps:

- 1 Use Conjoint Analysis to achieve ideal product profiles and to rank attributes of the asset
- 2 Use consumers' preferences to obtain individual scores applying Conjoint Analysis
- 3 Utilize individual scores as quantitative variables to employ Cluster Analysis.
- 4 Compare results from 2 different segmentation techniques

Conjoint Analysis

- Conjoint Analysis is a technique widely used to investigate consumer choice behaviour
- In this study Conjoint Analysis refers to the stated preference model used to obtain part-worth utilities
- The utility function U_k for the characteristics describing several profiles is defined as follow:

$$U_k = \sum_{s=0}^n \beta_s x_{sk} \quad (1)$$

- β_s is the partial change in U_k for the presence of the attribute level s , holding all other variable constants.

Cluster Analysis

- Cluster Analysis is a technique of post-hoc market segmentation
- Statistical units are grouped considering Euclidean distance
- Among various clustering algorithms, in this study we are going to use classical nearest-neighbor chain algorithms:
 - 1 Complete linkage method
 - 2 Ward's method

Data

Our experiment was run using a Paper and Pencil interviews. Respondents were 212 cured meats consumers. They have to express their preferences about 8 profiles of dry-cured ham containing a combination of these attributes.

Attributes	Levels
Authentication	DOP/IGP None
Taste	Sweet Salty
Price	20€/Kg 25€/Kg 30€/Kg
Producer	Local Italian
Aging	12 months 16 months

Ideal profile for new graduates

Ideal profiles and importance indexes for each job vacancy are shown.

Competencies	HR	MKT
Field of Study	Psychology	Economic
Degree level	Bachelor	Master
Degree Mark	High	High
English Knowledge	Suitable	Suitable
Work experience	Regular	Regular
Willingness to travel	Long	Short

Job Position Attributes \ Activity sectors	HR Assistant			Marketing Assistant		
	Serv.Ind.	Pers.Serv.	Manufact.	Serv.Ind.	Pers.Serv.	Manufact.
Field of Study	55.58%	52.19%	51.03%	47.03%	57.00%	48.05%
Degree level	1.32%	0.26%	3.50%	0.16%	8.08%	2.97%
Degree Mark	8.59%	11.86%	9.40%	5.19%	7.38%	6.70%
English Knowledge	10.66%	9.44%	16.48%	22.90%	2.23%	19.31%
Relevant work experience	9.50%	17.90%	5.16%	14.78%	18.43%	12.82%
Willingness to travel	14.35%	8.35%	14.43%	9.94%	6.89%	10.14%

Part-worth utilities for job position and Field of study

Part-worth utilities for Field of Study attribute are displayed for the 2 job position. Economics studies represents the best profile considering MKT, while a degree in Psychology optimizes utility for HR.

The economic re-valuation index

Part-worth utilities of levels obtained from CA represents the starting point to re-evaluate the proposed Gross Annual Salary of the job vacancies. Economic re-evaluation is carried out through relative importance of attributes in non-standard CA using Mariani-Mussini coefficient of economic valuation MI_{ij} . The general formulation of MI_{ij} is:

$$MI_{ij} = \frac{U_i - U_b}{U_b} * I_j \quad (2)$$

where U_i is the total utility associated with the profile i , U_b the total utility associated with a baseline profile and I_j is the relative importance for the attribute j . Given the salary associated with the baseline profile π , the coefficient can be expressed, in monetary terms, as:

$$V_{ij} = MI_{ij} * \pi \quad (3)$$

MI_{ij} coefficients for Field of Study

The attention is focused on coefficients for Field of Study in which the best profile is chosen as baseline so all coefficients MI_{ij} are negative.

Job Position Attributes \ Activity sectors	HR Assistant			Marketing Assistant		
	Serv.Ind.	Pers.Serv.	Manufact.	Serv.Ind.	Pers.Serv.	Manufact.
Philosophy and literature	-10.65%	-8.41%	-10.35%	-8.06%	-11.38%	-14.51%
Educational sciences	-10.00%	-1.78%	-7.40%	-10.51%	-2.88%	-9.64%
Political science/ Sociology	-10.48%	-11.76%	-12.06%	-6.42%	-14.18%	-1.95%
Economics	-9.60%	-3.54%	-6.41%	-%	-%	-%
Law	-10.16%	-%	-15.09%	-11.44%	-23.72%	-13.94%
Statistics	-18.62%	-11.28%	-15.39%	-5.35%	-19.87%	-3.77%
Industrial engineering	-20.34%	-19.58%	-20.55%	-11.15%	-16.68%	-8.10%
Mathematics/ Computer sciences	-20.17%	-15.65%	-13.90%	-9.66%	-14.28%	-15.14%
Psychology	-%	-0.55%	-%	-7.27%	-14.44%	-6.53%
Foreign languages	-13.33%	-11.15%	-13.82%	-6.43%	-11.64%	-4.96%

Conclusions and Future Research

- Electus research was presented in order to detect entrepreneurs' preferences and obtain ideal profiles using part-worth utilities from CA
- Existence of different kind of attributes: *Field of Study* proves to be the more relevant
- New proposal of an economic Index of Re-valuation applied on Gross Annual Salary (GAS)
- Relevant differences about wages are present and their measurement is possible using MI_{ij} and V_{ij} coefficients

Future Research

- Other stratification factors considering firm size
- PETERE research on the expectations of graduates for Labour Market.