

The effect of the firm size in the selection of recruitment for new graduates

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- 2 **Methodology**: The use of utility scores in Conjoint Analysis combined with a re-valuation economic index
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The ELECTUS project

- ELECTUS (Education-for-Labor Elicitation from Companies' Attitudes towards University Studies) is a multi-centre research conceived and designed at the University of Padua.
- The survey is pointed to companies expressing their preferences about the possibility to hire new graduates. Our case is restricted to the University of Milano-Bicocca.

Objectives of the research:

- to identify an ideal graduate profile for several job positions
- to detect some across the-board skills, universally recognized as "best practices" for a graduate
- to achieve differences and valuations between wage and competencies for new graduates.

Human Resources Assistant

- Substantiates applicants' skills by administering and scoring tests
- Schedules examinations by coordinating appointments
- Welcomes new employees to the organization by conducting orientation
- Provides payroll information by collecting time and attendance records
- Submits employee data reports by assembling, preparing, and analyzing data

List of attributes and respective levels

Employees' characteristics, as described in new graduates curriculum vitae, consisted of the attributes, and their respective levels.

Attributes	Levels
Major	Education Sciences Political Sciences/Sociology Economics Law Statistics Industrial engineering Mathematics/Computer Sciences Psychology Foreign Languages
Degree level	Bachelor Master

Attributes	Levels
Final grade	Low Average High
English knowledge	Suitable to communicate with foreigners Inadequate to communicate with foreigners
Work experience	None Internship during or after university Discontinuous work during university One year or more of work experience
Willingness to travel	Willing to travel for long periods of time Willing to travel for short periods of time Not willing to travel

Possible profiles obtained from combining every level in a full factorial scenario were so numerous, so it was necessary to apply an ad-hoc fractional factorial design. This experimental final design results both orthogonal and balanced.

Conjoint Analysis

Conjoint analysis (CA) is a technique widely used to investigate consumer choice behaviour. In particular, in this study CA refers to the stated preference model used to obtain part-worth utilities. The aim of this model consists in estimating a utility function U_k for the characteristics describing several profiles. The U_k is defined as follow:

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

where x_{0k} is equal to 1 and n is the number of all level of attributes which define the combination of a given profile, x_{sk} is the dummy variable that refers to the specific attribute level. As a result, the utility associated with k alternatives (U_k) is obtained by summing the terms $\beta_s x_{sk}$ over all attribute levels, where β_s is the partial change in U_k for the presence of the attribute level s , holding all other variable constants.

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:

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

Data

- Our choice-based experiment was run in the framework of Electus.
- As far as the Milano-Bicocca research unit is concerned, interviewees were representatives of companies registered on the Portal of AlmaLaurea for recruitment and linkage.
- Final respondents were 471.
- Companies are classified on the basis of the number of employees.

Official classification (EC,2003)

Sample classification

Size	Employees	Turnover
Micro	≤ 10	$\leq 2\text{mln}\text{€}$
Small	11 – 49	$\leq 10\text{mln}\text{€}$
Medium	50 – 249	$\leq 50\text{mln}\text{€}$
Big	≥ 250	$> 50\text{mln}\text{€}$

Employees	Composition (%)
≤ 19	37.6
20 – 49	14.3
50 – 249	25.6
≥ 250	22.4

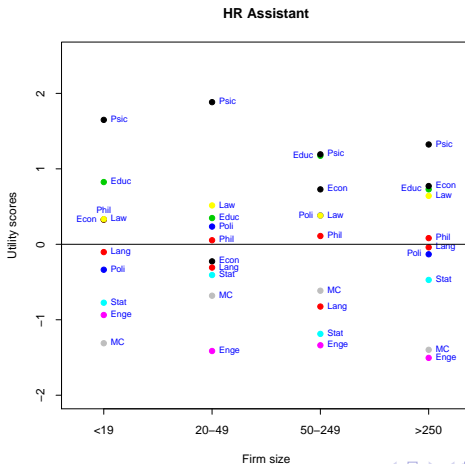
Ideal profile for new graduates

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

Job Position	HR Assistant			
Attributes \ Firm Size	≤ 19	20-49	50-249	≥ 250
Field of Study	56.7%	64.3%	54.1%	53.3%
Degree level	0.4%	1.8%	0.5%	1.6%
Degree Mark	7.4%	7.5%	6.0%	13.5%
English Knowledge	13.4%	12.3%	20.8%	7.3%
Relevant work experience	9.7%	4.2%	7.9%	9.4%
Willingness to travel	12.4%	10.0%	10.7%	14.9%

Part-worth utilities for firm size and Field of study

Part-worth utilities for Field of Study attribute are displayed for the job position. Psychology represents the best profile for HR Assistant.



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 \ Firm Size	HR Assistant			
	≤ 19	20-49	50-249	≥ 250
Philosophy and literature	-9.67%	-15.51%	-8.30%	-9.11%
Educational sciences	-6.03%	-13.01%	-0.15%	-4.37%
Political science/ Sociology	-14.53%	-13.97%	-6.21%	-10.68%
Economics	-9.67%	-17.88%	-3.56%	-4.05%
Law	-9.63%	-11.6%	-6.22%	-6.92%
Statistics	-17.73%	-19.41%	-18.25%	-13.18%
Industrial engineering	-18.92%	-27.94%	-19.41%	-20.76%
Mathematics/ Computer sciences	-21.66%	-21.73%	-13.86%	-19.98%
Psychology	-0%	-0%	-0%	-0%
Foreign languages	-12.82%	-18.57%	-15.47%	-10.01%

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 economic sectors
- PETERE research on the expectations of graduates for Labour Market.