200621 - TQM - Quantitative Marketing Techniques

Coordinating unit: 200 - FME - School of Mathematics and Statistics
Teaching unit: 715 - EIO - Department of Statistics and Operations Research
Academic year: 2018
Degree: MASTER'S DEGREE IN STATISTICS AND OPERATIONS RESEARCH (Syllabus 2013). (Teaching unit Optional)
ECTS credits: 5

Teaching languages: Spanish

Teaching staff

Coordinator: ROSER RIUS CARRASCO
Others: Segon quadrimestre:
MONICA M. BECUE BERTAUT - A
JORDI CORTÈS MARTÍNEZ - A
ROSER RIUS CARRASCO - A

Prior skills

Prior skills
The course assumes basic levels of statistics. Students should be familiar with techniques of multivariate statistics such as principal component analysis and clustering. Concepts relative to hypothesis testing and statistical significance, as well as good knowledge of analysis of variance will be appreciated. The main concepts necessary to follow the course can be found, for example, in the text "Exploratory Multivariate Analysis by Example Using R" described on FactoMiner Package website (http://factominer.free.fr/)
The course assumes a good knowledge of the R programming language.

Degree competences to which the subject contributes

Specific:
5. CE-2. Ability to master the proper terminology in a field that is necessary to apply statistical or operations research models and methods to solve real problems.
6. CE-3. Ability to formulate, analyze and validate models applicable to practical problems. Ability to select the method and / or statistical or operations research technique more appropriate to apply this model to the situation or problem.
7. CE-5. Ability to formulate and solve real problems of decision-making in different application areas being able to choose the statistical method and the optimization algorithm more suitable in every occasion.

Translate to english

Transversal:
1. SUSTAINABILITY AND SOCIAL COMMITMENT: Being aware of and understanding the complexity of the economic and social phenomena typical of a welfare society, and being able to relate social welfare to globalisation and sustainability and to use technique, technology, economics and sustainability in a balanced and compatible manner.
2. TEAMWORK: Being able to work in an interdisciplinary team, whether as a member or as a leader, with the aim of contributing to projects pragmatically and responsibly and making commitments in view of the resources that are available.
3. EFFECTIVE USE OF INFORMATION RESOURCES: Managing the acquisition, structuring, analysis and display of data and information in the chosen area of specialisation and critically assessing the results obtained.
4. FOREIGN LANGUAGE: Achieving a level of spoken and written proficiency in a foreign language, preferably English, that meets the needs of the profession and the labour market.
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Teaching methodology

Learning is based on real experiments, using professional statistical tools. Combining theoretical discussion sessions with practical sessions is favored. Writing of executive reports of the practices is one of the skills that is developed.

Learning objectives of the subject

Understanding the main marketing problematics: how to capture liking, disliking and preferences of the customers or consumers as well as to identify the drivers of acceptance.
Role of the management techniques and extraction information from data in decision making process.
Advanced knowledge relative to statistical methods in marketing
Specific methods for data collection.
Contributions of statistical and computer techniques.
Developing a critical approach to the results.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 125h</th>
<th>Hours large group:</th>
<th>30h</th>
<th>24.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group:</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Hours small group:</td>
<td>15h</td>
<td>12.00%</td>
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<tr>
<td></td>
<td>Guided activities:</td>
<td>0h</td>
<td>0.00%</td>
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<tr>
<td></td>
<td>Self study:</td>
<td>80h</td>
<td>64.00%</td>
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</table>
### Content

<table>
<thead>
<tr>
<th>Topic 1: Structural analysis of survey data</th>
<th>Learning time: 11h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 4h 30m</td>
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<tr>
<td></td>
<td>Guided activities: 4h 30m</td>
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<td>Self study : 2h</td>
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**Description:**
Dealing with survey data requires a methodology to capture the multidimensionality of this type of data that also facilitates an easily understandable synthesis. This leads to favor a strategy combining factorial and classification methods.

<table>
<thead>
<tr>
<th>Topic 2: Survey data modelling</th>
<th>Learning time: 11h</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 4h 30m</td>
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<tr>
<td></td>
<td>Guided activities: 4h 30m</td>
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<td></td>
<td>Self study : 2h</td>
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**Description:**
Some surveys aim at verifying hypotheses, validating and confirming behaviors or taking decisions. In this case, the questionnaire is short, with strongly structured questions. Hypotheses have to be validated as integrated into a model.

<table>
<thead>
<tr>
<th>Topic 3: Open-ended questions and free comments: a tool for studying costumer’s preferences. Data collection and statistical analysis</th>
<th>Learning time: 11h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 4h 30m</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 4h 30m</td>
</tr>
<tr>
<td></td>
<td>Self study : 2h</td>
</tr>
</tbody>
</table>

**Description:**
Open-ended questions and free comments are increasingly used to capture the views of the consumers. They are analyzed by multidimensional methods such as correspondence analysis, multiple factor analysis and clustering. Canonical correspondence analysis like methods allow for introducing models in the analysis of open-ended questions.
### Topic 4: Design of new products. Conjoint analysis (Conjoint analysis)

**Learning time:** 7h  
- Theory classes: 3h  
- Guided activities: 3h  
- Self study: 1h

**Description:**  
Conjoint analysis is a powerful tool to study the valuation of a product by the consumers. It allows for estimating the importance of each attribute, separately, starting from a global valuation. Conjoint analysis applies methods issued from experiments design and regression. This tool allows for predicting the reception of a new product on the market as compared to products already present.

### Topic 5: Sensory evaluation of products. Experience design and data analysis.

**Learning time:** 8h  
- Theory classes: 3h  
- Guided activities: 3h  
- Self study: 2h

**Description:**  
The sensory evaluation of products is a strategic tool in business across many industries. However, these methods were born in food industry. They aim at characterizing the products from both the sensory point of view (sight, touch, taste, nose, hearing) and from the point of view of consumer preferences. Sensory evaluations lead to voluminous data and to multiple tables. Statistics is a prime tool for the design and analysis of such data.

### Topic 6: Holistic methods for product comparison

**Learning time:** 4h  
- Theory classes: 1h 30m  
- Guided activities: 1h 30m  
- Self study: 1h

**Description:**  
The holistic methods allow for comparing a series of products from a global viewpoint. They are easily used with consumers. Napping and Free Sorting Task are the more representative of this type of methods.

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**Qualification system**

The evaluation will be based on the practical works and presentation of reports.
Bibliography

Basic:


Husson, François ; Lê, Sébastien ; Pagès, Jérôme. Exploratory multivariate analysis by example using R. Chapman and Hall/CRC, 2011.

Complementary: