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## Methodology for survey analysis: the case of an undergraduate students' opinion survey

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# Outline

- Overview of multivariate analysis techniques for interdependencies between variables.
- Aim of the study
- Data: survey and questions proposed
- Measurement scales assessment: Cronbach's Alpha
- Descriptive analysis of the sample
- Tests for factorial and principal component analysis: KMO and Bartlett's tests
- Motivations. Principal component analysis. Interpreting the factors: give a label
- Job positions in the Tourism sector.
- Conclusions



# Which technique should we choose?

Before choosing which is the most appropriate technique, we have to answer these questions (Uriel Jiménez and Aldás Manzano, 2005):

1. Our research, is it a problem of **dependency or interdependency between variables**?
2. The **variables** involved, are they **quantitative or qualitative**?
3. If we are in a dependency problem, **how many relationships** there are between dependent and independent variables? How many dependent variables exist?



# Multivariate analysis techniques

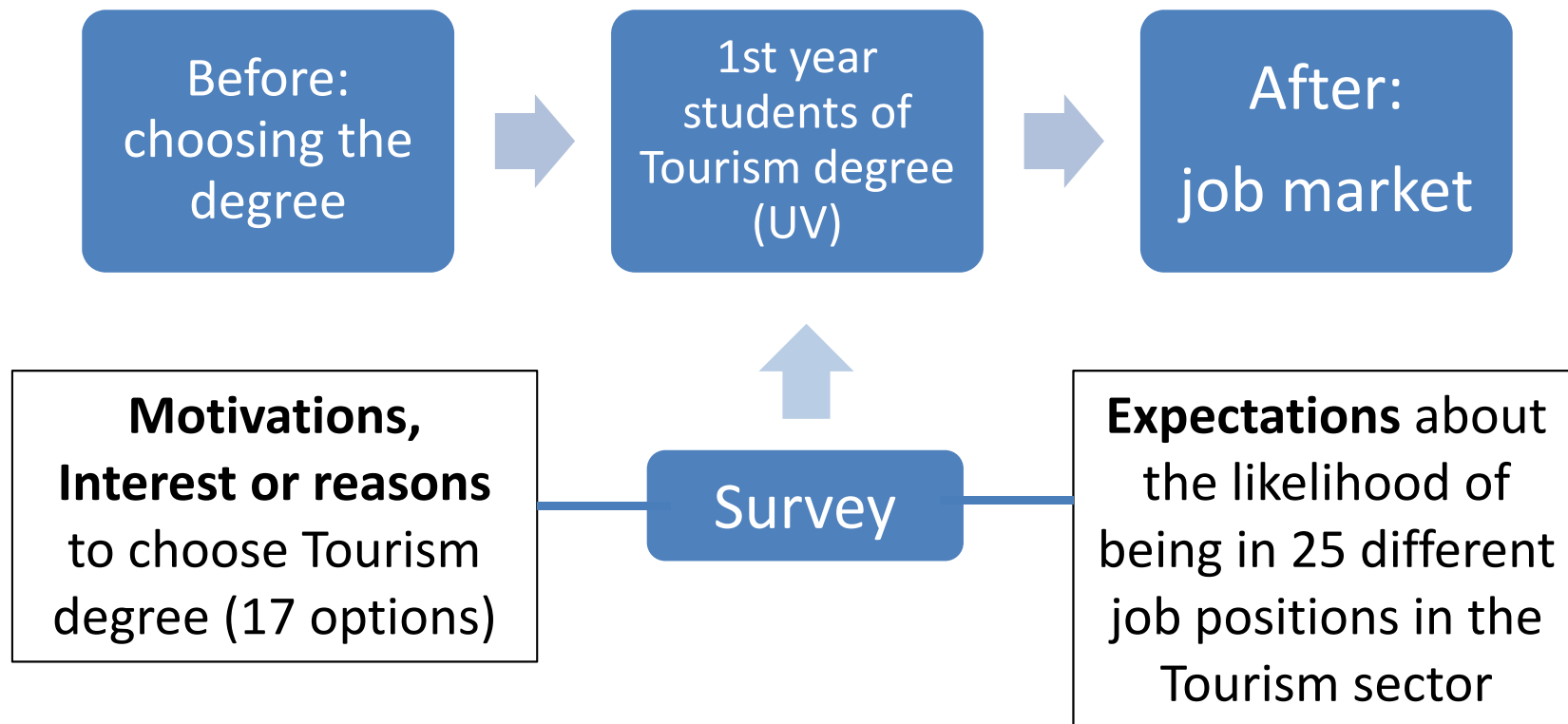
**Table 1.** Multivariate analysis techniques for interdependencies between variables

Grouping of...	Variable type	Objective	Multivariate technique
<b>Objects</b>	Quantitative or qualitative	Criteria to consider objects to be similar or different.	Multidimensional scaling
<b>Cases</b>	Quantitative or qualitative	Classification. Group cases or observations.	Cluster analysis
<b>Variables</b>	Quantitative	Reduce data dimension. Only common factors. Explain the variables variance as much as possible with the least number of factors.	Principal component analysis
		Reduce data dimension. Common or specific factors. Identify the factors structure that underlies the original variables.	Factorial analysis
	Qualitative	Obtain a graphic image of contingency tables.	Correspondence analysis



# Aim of the study

- Tourism sector is important in Spain: 11.2% of GDP, 2<sup>nd</sup> country with highest revenue from Tourism (INE, 2016; WTO, 2016).
- Tourism university studies are not well considered in Spain. What are their motivations to study Tourism?





# Data: survey technical specifications

- The survey technical specifications:

Characteristics	Survey
Universe	1 <sup>st</sup> year Tourism students
Sample size	170
Sampling method	No probabilistic sample. Convenience sample
Collecting information method	Online survey (with LimeSurvey)
Fieldwork dates	12-21 of November 2017

- 15 closed questions, in a Likert scale of 10 points
- Anonymous answers





## Survey: questions proposed

- Questions regarding **socio-demographic variables** (age, sex, nationality).
- Questions regarding **studies** (mark to access to university studies, way to access to university studies, if the degree was his/her first option or not).
- Questions regarding **interests, motivations or reasons to choose Tourism university studies.**
- Questions regarding **expectations about how likely they think will be to work in different jobs in the Tourism sector in the future.**



# Measurement scales assessment: Cronbach's Alpha

- It evaluates the items and the reliability of the answers.
- **Cronbach's Alpha:** model of internal consistency based on the average correlations of items. Bounded between 0 and 1. Coefficients higher than 0.7 are acceptable, higher than 0.9 are excellent (George and Mallery, 2003).

**Table 2:** Reliability Statistics for the validation of the questionnaire.

Items section	Cronbach's Alpha
Interests	,752
Expectations about future jobs	,925





# Descriptive analysis of the sample

**Table 3.** Descriptive analysis of the sample.

Variable		Value
Age (in years)	Mean	18.71
	(Standard Deviation)	(1.89)
Mark to access university (over 14 points)	Mean	9.65
	(Standard Deviation)	(1.52)
Access to the degree	High school	94.1%
	Professional training	4.7%
	Access for people older than 25 years	1.2%
Nationality	Spanish	85.3%
	Others	14.7%
Gender	Men	31.8%
	Women	68.2%
Preference order for Tourism degree	1	70.0%
	2	21.8%
	3	4.7%
	4	3.5%
Answers	N	170



## Tests for factorial and principal component analysis

- **KMO test.** To verify that factorial analysis or principal component analysis gives a valid grouping of variables. A measure of global adequacy of the sample. A test:
  - $< 0.5$  means there are no relationships between variables.
  - around  $0.6 - 0.7$  are acceptable values
  - equal to  $0.9$  is an excellent value (Hair et al., 1999).
- **Bartlett's test of sphericity.** It tests the null hypothesis that correlations between variables are zeros. It uses the Chi-square distribution with  $df$  and give a significative level. We use the usual  $5\%$  as the common threshold to reject or not.

**Table 4:** Kaiser-Meyer-Olkin (KMO) test and Bartlett test of factorial analysis.

<b>Kaiser-Meyer-Olkin Measure of Sampling Adequacy</b>		<b>.756</b>
<b>Bartlett's Test of Sphericity</b>	Approx. Chi-Square	788.080
	Degrees of freedom	136
	Significativity	.000



# Motivations: Principal component analysis

**Table 5:** Principal component analysis of interests of Tourism students to enroll the degree.

Factors	Interests	Components					
		1	2	3	4	5	6
<b>1. Internationalization</b>	I2. I will be able to travel and meet people	.842	.118	.016	.041	.171	.029
	I6. I will be able to learn languages	.777	.082	.086	.115	.202	.095
	I10. I will meet new cultures and people from all over the world	.640	.446	.038	.061	.027	.217
	I8. It is an opportunity to work abroad	.466	.440	.013	.324	.099	.309
<b>2. Jobs expectations in the sector</b>	I9. There is a wide job offer	.078	.849	.029	.242	.006	.079
	I11. Salaries are very attractive	.156	.774	.328	.026	.012	.206
<b>3. Entrepreneurship and self-employment</b>	I13. I will be able to create my own firm	.061	.076	.806	.114	.119	.148
	I14. I will contribute to the growth of my country	.043	.284	.651	.333	.095	.015
	I3. I already have a business or work in the sector	.175	.028	.500	.297	.187	.347
	I12. It will allow me to be dynamic and creative	.390	.304	.427	.142	.028	.014
<b>4. Importance of Tourism sector in the Spanish economy</b>	I17. The tourism sector is important in Spanish economy	.015	.029	.202	.849	.071	.026
	I7. It is a growing sector	.364	.320	.044	.646	.108	.027
	I16. It is a well-considered degree	.044	.320	.387	.404	.066	.397
<b>5. Degree</b>	I15. I have no sufficient mark to study my first option in degree studies	.022	.052	.076	.099	.820	.055
	I5. I consider Tourism as an easy degree and it will allow me to have official higher education studies	.067	.353	.150	.196	.561	.425
	I1. I have always liked Tourism or working in Tourism	.513	.052	.129	.220	.522	.248
<b>6. Other interests</b>	I4. I left the degree I started and changed to study Tourism/TADE	.004	.042	.047	.019	.045	.783



# Interpreting the factors: giving a label

1. **Internationalization.** This factor includes the interest of students in enrolling a degree in which they consider there is the opportunity of developing activities abroad, being in touch with other cultures, people and languages.
2. **Job expectations in the sector.** This factor join interests related to the job market, regarding the offer of jobs or the salaries in the sector.
3. **Entrepreneurship and self-employment.** This group of interests respond to the entrepreneur view of students and the degree of getting these objectives with this university studies.
4. **Importance of Tourism sector in the Spanish economy.** The factor considers variables related to the weight of sector in the GDP and perspectives regarding the future of the sector.
5. **Degree.** This factor is reflecting the preference of the student for Tourism degree, whether it was his/her first option or not and the vocational level regarding Tourism.
6. **Other interests.** Includes a residual variable.



# Job positions in the Tourism sector

**Table 6.** Mean values of the variables related to the job positions that students consider more likely to get in the future.

Area (ANECA, 2004)	Job positions (UV, 2017)	Mean	Standard Deviation
Tourism products and activities	17- Events manager technician	7.65	2.079
Firm (Accom., Rest., Med., Transp., Log.)	24- Manager of my own firm in the Tourism sector	7.59	2.646
Tourism products and activities	20- MICE marketing and promotion technician	7.53	2.082
Firm (Accom., Rest., Med., Transp., Log.)	1- Assistant manager of a firm in the Tourism sector	7.49	2.004
Tourism products and activities	9- Tourism products contracting technician	7.43	1.842
Public planning of destinations	12- Tourism development program responsible	7.37	2.095
Public planning of destinations	13- Tourism development agent	7.29	2.086
Public planning of destinations	11- Public institution promotion or destination campaign manager	7.27	2.098
Firm (Accom., Rest., Med., Transp., Log.)	4- Public relations technician	6.98	2.327
Firm (Accom., Rest., Med., Transp., Log.)	19- Tourism mediation technician	6.96	2.094
Tourism products and activities	15- Leisure facilities manager technician	6.91	2.113
Public planning of destinations	10- Planning and tourism policy manager technician of a public institution	6.89	2.199
Tourism products and activities	16- Cultural spaces manager technician	6.84	2.138
Firm (Accom., Rest., Med., Transp., Log.)	8- Customer service technician	6.74	2.409
Firm (Accom., Rest., Med., Transp., Log.)	7- Human Resources technician	6.71	2.242
Firm (Accom., Rest., Med., Transp., Log.)	3- Commercial technician	6.64	2.028
Tourism products and activities	21- MICE product technician	6.63	2.156
Firm (Accom., Rest., Med., Transp., Log.)	6- Quality technician	6.57	2.162
Firm (Accom., Rest., Med., Transp., Log.)	5- Product technician	6.48	2.027
Public planning of destinations	14- Manager or technician in a product revitalizing institution	6.46	2.187
Firm (Accom., Rest., Med., Transp., Log.)	2- Management technician	6.41	2.217
Tourism products and activities	18- Sports facilities management technician	6.01	2.690
Training, Research and Consultancy	23- Consultant	5.61	2.404
Training, Research and Consultancy	25- Teacher	5.15	3.223
Firm (Accom., Rest., Med., Transp., Log.)	22- Manager in a vehicle renting office	4.79	2.703





# Conclusions

- 70% of the students answered that Tourism was their first option when choosing university studies.
- **Motivations when choosing Tourism studies.** Principal component analysis: from 17 interests to 6 factors (internationalization, job expectations, entrepreneurship, importance of the sector, degree as the 2<sup>nd</sup> option, residual factor).
- **Expectations regarding jobs in the Tourism sector.** The most interesting profiles are:
  - Events manager technician
  - Manager of his/her own firm in the Tourism sector.
  - MICE marketing and promotion technician.



# Thank you for your attention

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