ITACOSM 2019 - SURVEY AND DATA SCIENCE

ITACOSM 2019
FLORENCE 5-7 June 2019 | 6th ITAlian COnference on Survey Methodology

Passengers' Perceptions of Airport Service Quality
A Case Study of Airports of Puglia

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The aim

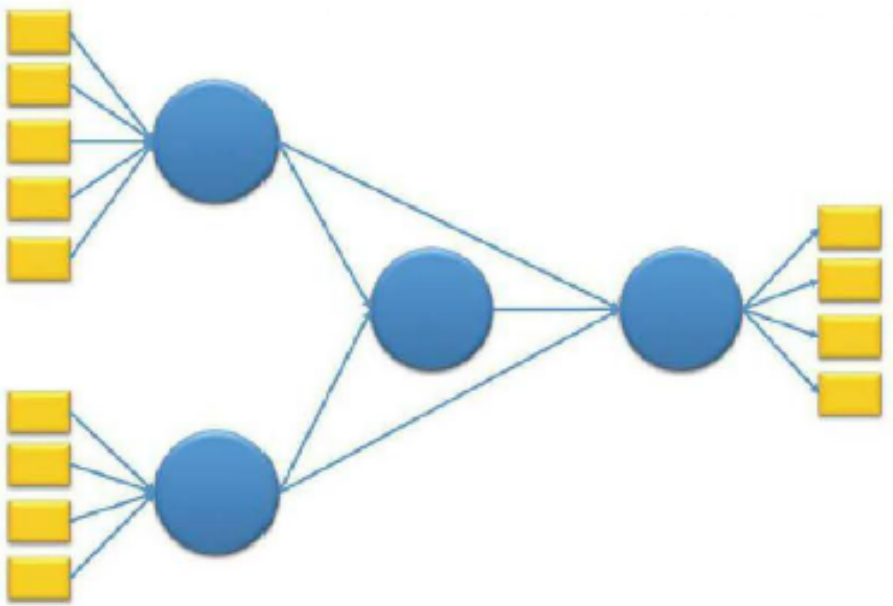
Customer satisfaction is a key issue for every company wishing to increase customer loyalty and thereby create a better business performance.

In this work, the effects of different services offered at the airports on airport passenger's overall satisfaction and loyalty are investigate.

The research covers the pre-flight passenger travel experience, focusing on passengers' perceptions of airport service quality of airports of Puglia.

The statistical instrument

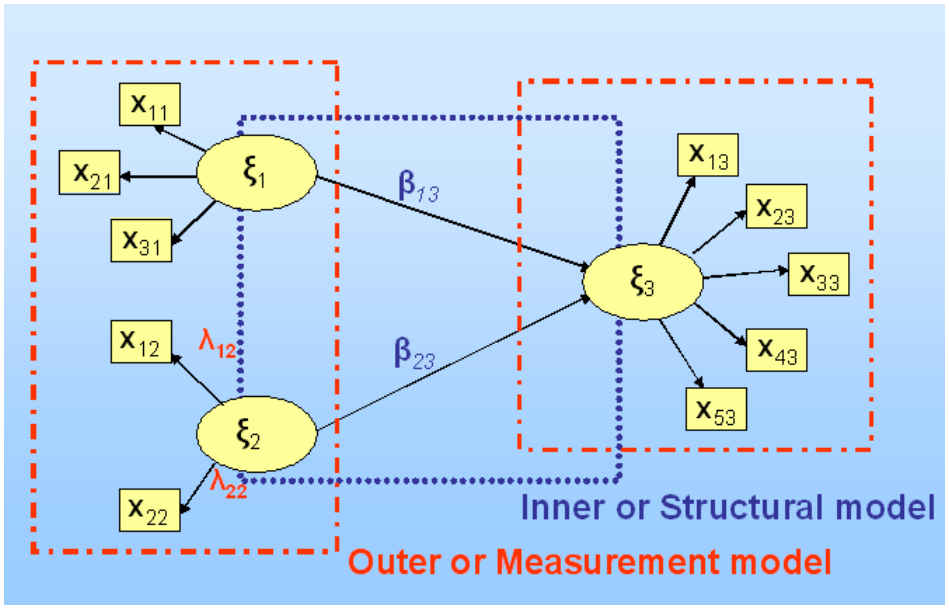
To test the relationships between the various aspects of satisfaction and to create a Satisfaction Index, the Structural Equation Modeling (SEM), specifically Partial Least Squares-Path Modeling (PLS-PM), is used.



Principles of PLS-PM

PLS-PM is a statistical approach for modeling complex multivariable relationships among observed and latent variables.

Two very important review papers on PLS approach to SEM are Chin (1998, more application oriented) and Tenenhaus et al. (2005, more theory oriented).



Advantages of PLS-PM

With PLS-PM approach, we have the possibility:

- of analyzing the impacts of each dimensions on target dimension;
- of obtaining, simultaneously and coherently with the estimation method, a ranking of individuals for specific indicators;
- of comparing systemic indicators in space and in time;
- of analyzing the strengths, weaknesses, opportunities, and threats of constructs, with Importance-Performance Analysis;
- of identifying different groups, and estimates the PLS model for each group.

Sampling and Survey

The data refer to the years 2015, 2016, 2017, examined twice a year (in summer and in winter).

The target population consists of the passengers departing from "Aeroporti di Puglia" (Bari and Brindisi).

The analysis on collected data was carried out by analyzing each indicator provided in the Service Charter.

4600 interviews were collected.

Questionnaire

The questionnaire consists of 9 thematic sections and 32 questions in all:

1. Personal Data → 6 questions
2. Security Services → 2 questions
3. Cleaning and Hygiene → 2 questions
4. Comforts → 4 questions
5. Additional Services Data → 6 questions
6. Information Services → 5 questions
7. Counter/Gate Services → 3 questions
8. Transport Network → 2 questions
9. Final Considerations → 2 questions

Profile of Respondents

Years
2015 - 38%
2016 - 32%
2017 – 30%

N= 4311

TRAVEL PURPOSE
Business - 40%
Leisure - 60%

SEASON
Summer - 48%
Winter - 52%

AIRPORTS
Bari - 53%
Brindisi- 47%

SEX
Male - 55%
Female - 45%

AGE
0 - 11 - 1%
12 - 18 - 4%
18 - 30 - 30%
30 - 45 - 34%
45 - 60 - 23%
Over 60 - 8 %

EDUCATION
Elementary School -1%
Middle School - 9%
High School - 41%
Bachelor's Degree - 17%
Master Degree - 27%
PhD- 5%

Profile of Respondents

Security Service

Evaluation on
(1 Min; 10 Max)

	Avarage
Carry-on luggage screening service	7,36
Personal safety and property pretection in the airport	7,53

Cleaning and Hygiene

Evaluation on
(1 Min; 10 Max)

	Avarage
Toilets cleanliness and functionality	7,30
Cleanliness of the airport	7,76

Comforts

Evaluation on
(1 Min; 10 Max)

	Avarage
Luggage trollet availability	7,25
Efficiency of system transfer passengers (left, treadmills, escalator)	7,53
Efficiency of air conditionating system	7,81
Perception of the overall comfort	7,67

Profile of Respondents

Information Services

Evaluation on
(1 Min; 10 Max)

	Avarage
Effectiveness of the information points	7,01
Clarity, comprehensibility of the route indications within the airport	7,31
Professional skills of the airport staff	7,40
Updates and friendly use of the webpage	7,13
Overall perception of the effectiveness and accessibility of information services to the public	7,22

Counter/ Gate Services

Evaluation on
(1 Min; 10 Max)

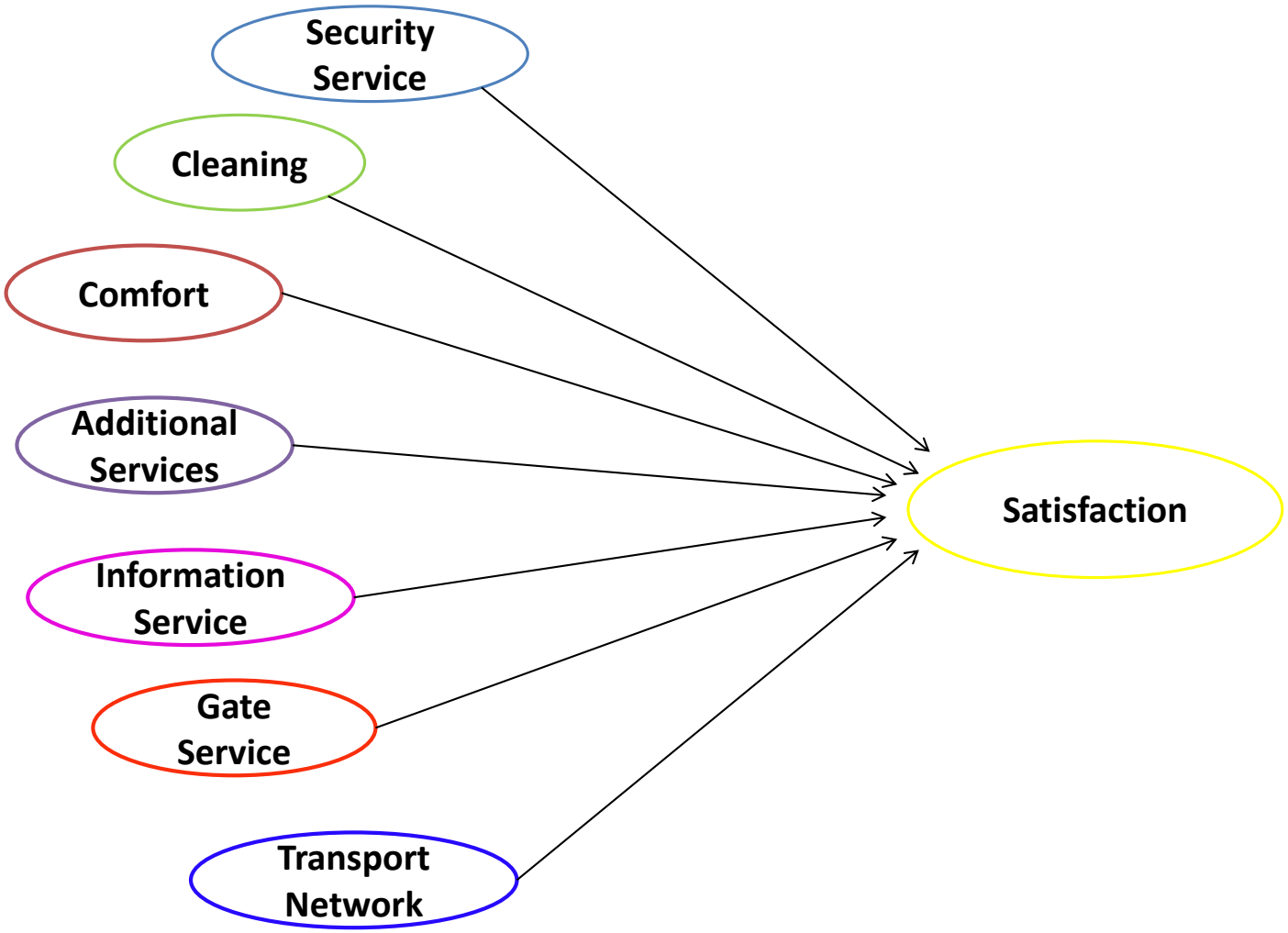
	Avarage
Ticket service	7,31
Queuing time at the check-in desk	7,35
Queuing time at the security control	7,50

Transport Network

Evaluation on
(1 Min; 10 Max)

	Avarage
Clarity and comprehensibility of road signage around the airport	7,50
Evaluation of connections (bus, taxi, train)	7,03

The conceptual model



Analysis and Results

Block Unidimensionality

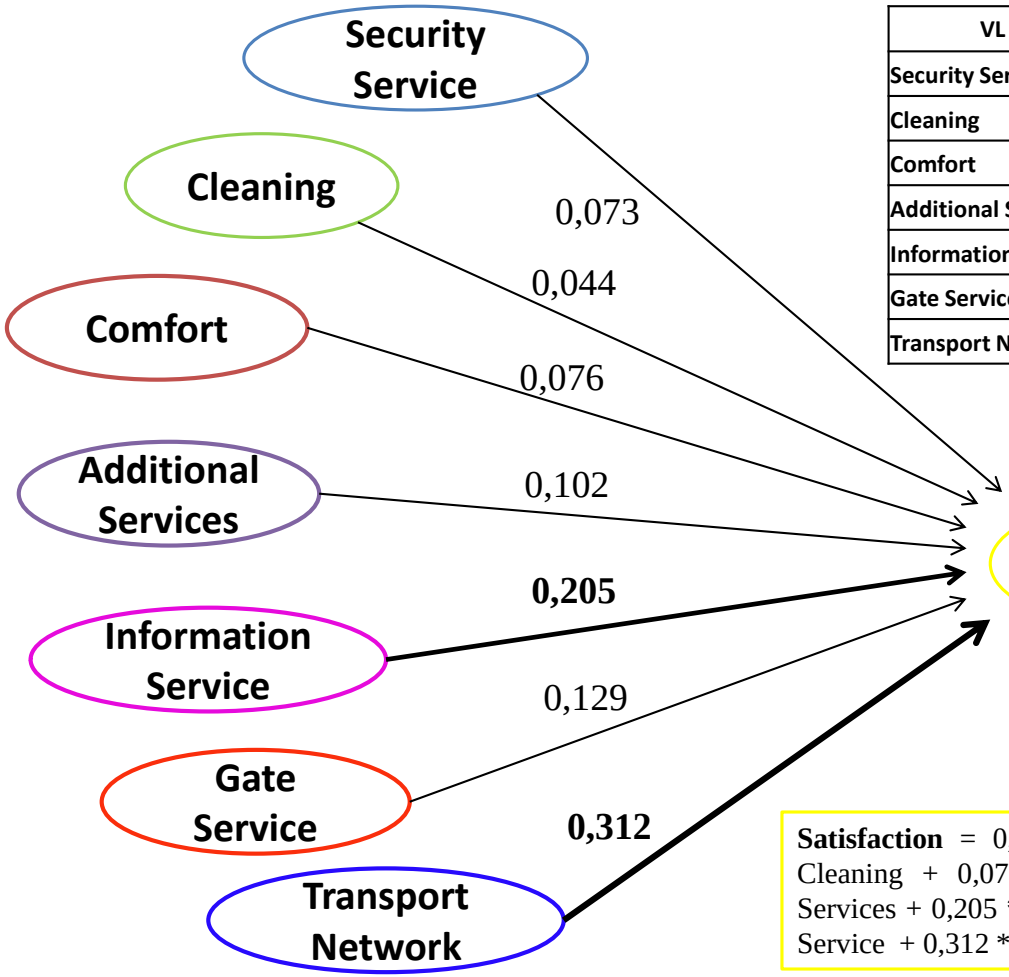
	Mode	MVs	C,alpha	DG,rho	Eig,1st	Eig,2nd
Security	A	2	0,899	0,952	1,82	0,18
Cleaning	A	2	0,843	0,927	1,73	0,27
Comfort	A	4	0,882	0,919	2,96	0,48
Additional Services	A	6	0,913	0,928	6,03	1,02
Information Service	A	5	0,928	0,945	3,88	0,38
Gate Service	A	3	0,896	0,935	2,48	0,28
Transport Network	A	2	0,858	0,905	2,82	0,62
Satisfaction	A	2	0,794	0,907	1,66	0,34

Summary Inner Model

	Type	R^2	Block Communality	Mean Redundancy
Security	Exogenous		0,916	
Cleaning	Exogenous		0,892	
Comfort	Exogenous		0,765	
Additional Services	Exogenous		0,616	
Information Service	Exogenous		0,795	
Gate Service	Exogenous		0,848	
Transport Network	Exogenous		0,735	
Satisfaction	Endogenous	0,715	0,835	0,514

Analysis and Results

The Estimated Model

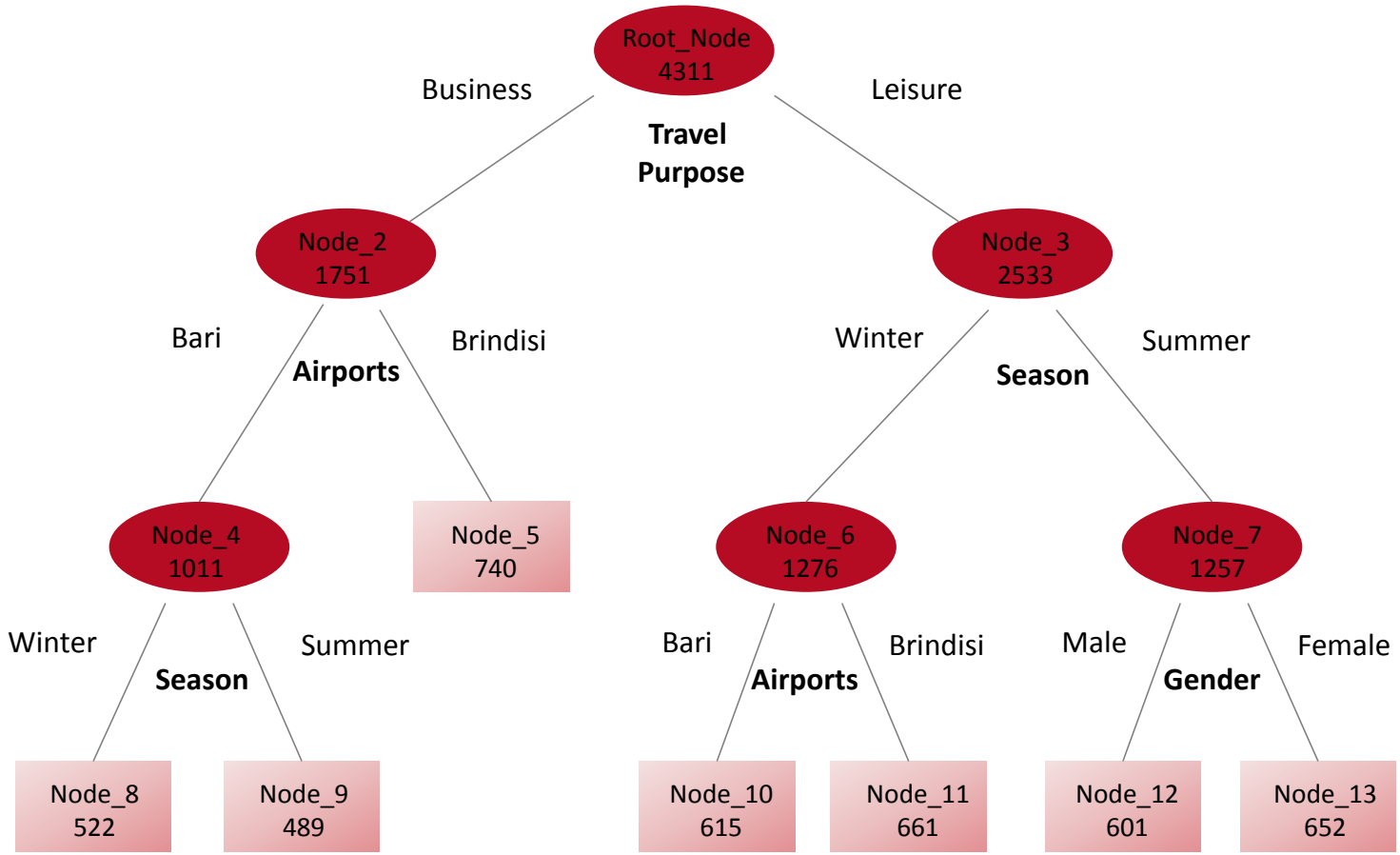


VL	Estimate	Std. Error	t value	Pr(>|t|)
Security Service	0,0735	0,0130	5,6400	0,0000
Cleaning	0,0444	0,0138	3,2100	0,0014
Comfort	0,0758	0,0160	4,7400	0,0000
Additional Services	0,1020	0,0164	6,2500	0,0000
Information Service	0,2050	0,0185	11,1000	0,0000
Gate Service	0,1290	0,0152	8,4800	0,0000
Transport Network	0,3120	0,0133	23,4000	0,0000

Satisfaction = 0,073 * Security Service + 0,044 * Cleaning + 0,076 * Comfort + 0,102 *Additional Services + 0,205 ***Information Service** + 0,129* Gate Service + 0,312 * **Transport Network**

Analysis and Results

Treating the Heterogeneity



Analysis and Results

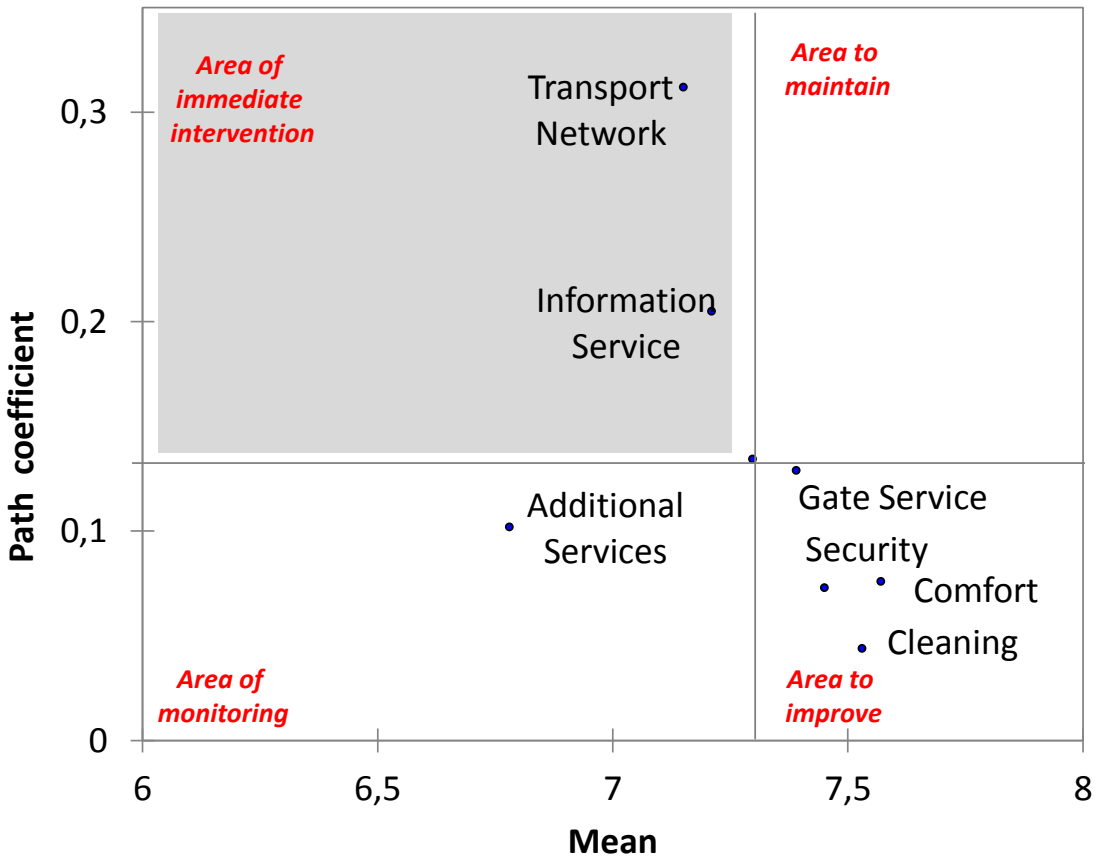
Treating the Heterogeneity

	Root_Node	Node_5	Node_8	Node_9	Node_10	Node_11	Node_12	Node_13
Security	0,074	0,040	0,090	0,178	0,211	0,247	0,195	0,186
Cleaning	0,044	0,072	0,064	0,092	0,226	0,175	0,203	0,289
Comfort	0,076	0,105	0,117	0,162	0,027	0,043	0,171	0,195
Additional Services	0,102	0,074	0,095	0,064	0,149	0,161	0,131	0,160
Information	0,205	0,250	0,329	0,218	0,185	0,143	0,130	0,119
Gate Service	0,129	0,260	0,240	0,243	0,113	0,127	0,118	0,101
Transport Network	0,312	0,300	0,220	0,136	0,298	0,376	0,222	0,234

Node_5 People who travel for business from Brindisi;
Node_8 People who travel for business from Bari airport in the winter;
Node_9 People who travel for business from Bari airport in the summer;
Node_10 People who travel for leisure in the winter from Bari airport;
Node_11 People who travel for leisure in the winter from Brindisi airport;
Node_12 Male who travel for leisure in the summer;
Node_13 Female who travel for leisure in the summer

Analysis and Results

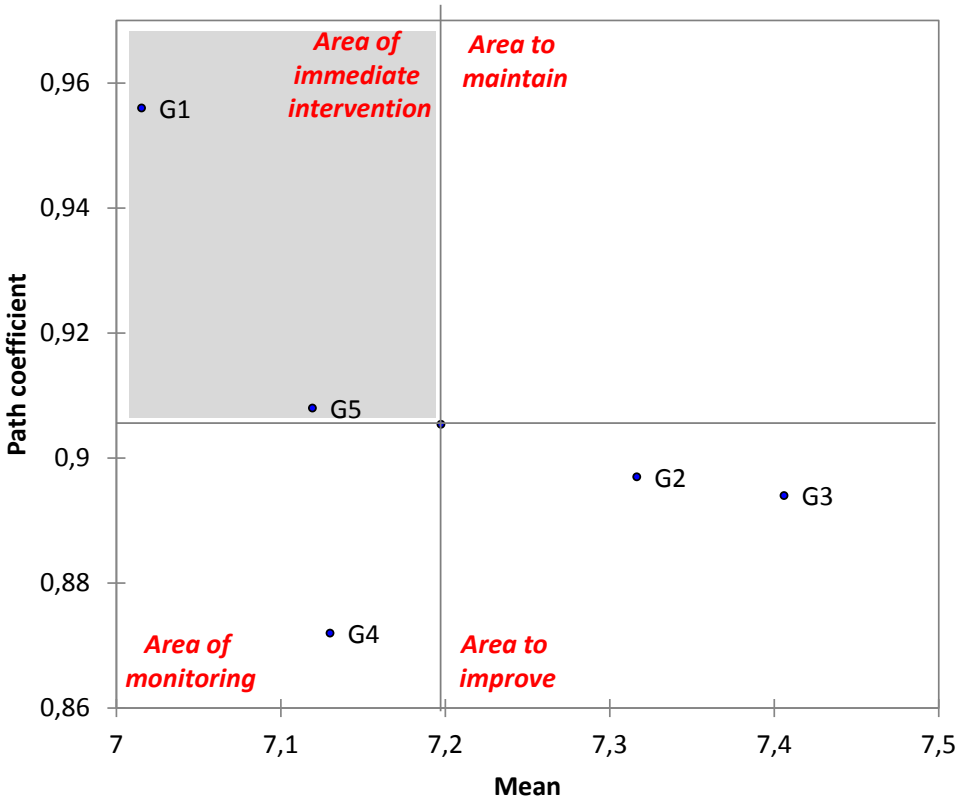
Importance Performance Matrix



VL	Path coefficient	Mean
Security	0,07	7,45
Cleaning	0,04	7,53
Comfort	0,07	7,57
Additional Services	0,10	6,78
Information Service	0,20	7,21
Gate Service	0,13	7,39
Transport Network	0,31	7,15

Analysis and Results

Importance Performance Matrix of Information Service



G1 Effectiveness of the information points

G2 Clarity, comprehensibility of the route indications within the airport

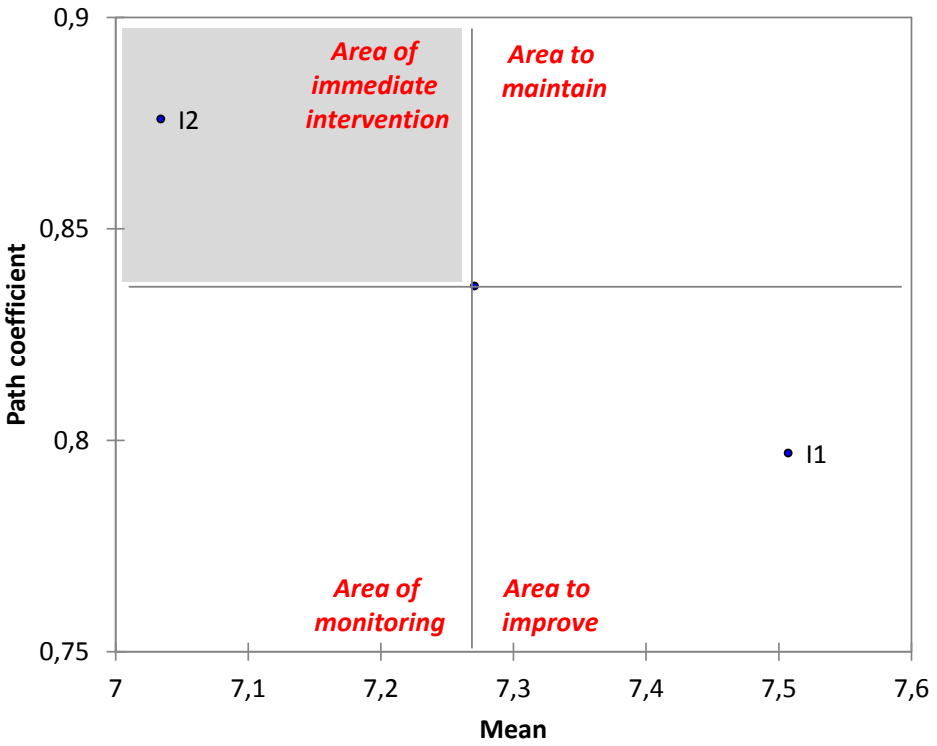
G3 Professional skills of the airport staff

G4 Updates and friendly use of the webpage

G5 Overall perception of the effectiveness and accessibility of information services to the public

Analysis and Results

Importance Performance Matrix of Transport Network



I1 Clarity and comprehensibility of road signage around the airport

I2 Evaluation of connections (bus, taxi, train)

Conclusion and some perspective

The objective of this presentation is to highlight the usefulness of the PLS-PM approach to estimate airports' passenger satisfaction.

Conclusion and some perspective

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The possibility of studying latent variable growth in the SEM framework to estimate growth trajectories.

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Main References


Cataldo, R., Grassia, M.G., Lauro, N. C., Marino, M.:Developments in Higher-Order PLS-PM for the building of a system of Composite Indicators.
Quality & Quantity, 51 (2), 657 - 674 (2017)


Chin, Wynne W: The partial least squares approach to structural equation modeling.
Modern methods for business research, 295, 2, 295 - 336 (1998)


Hair, J. F., Hult, T., Ringle, C. M., Sarstedt, M.: *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, Thousand Oaks, CA: Sage. (2014)


Lohmöller, Jan-Bernd: *Latent variable path modeling with partial least squares.*
In: *Springer Science & Business Media* (2013)


Tenenhaus, M., Esposito, Vinzi, V., Chatelin, Y. M., and Lauro, N. C.: PLS Path Modeling.
Computational Statistics and Data Analysis, 48 (1), 159 - 205 (2005)