

Statistical methods to evaluate the quality of the Messina University service

*Metodi Statistici Per La Valutazione Della Qualità Del Servizio
Universitario Messinese*

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Riassunto: nel presente articolo l'attenzione è rivolta alla valutazione statistica della qualità del servizio universitario dell'Ateneo messinese. Per valutare, infatti, la qualità percepita dagli studenti è auspicabile ricorrere ad un approccio di tipo customer satisfaction, basato sull'individuazione di quegli elementi che possono influenzare la loro soddisfazione. Tale giudizio è strettamente connesso alla propria esperienza universitaria, che presenta, dunque, caratteristiche di soggettività ed individualità. Alla luce di quanto detto, l'obiettivo del presente lavoro è quello di individuare le variabili socio-demografiche maggiormente esplicative della soddisfazione espressa dagli studenti.

Keywords: University service, Multilevel model, Quality, logit.

1. Introduction

A quality measure of University service is attained by a Profiles and Satisfaction Analysis of University students. This measure could be important to improve the quality of University structures.

2. Description of data and Multilevel Model

We have brought off a survey about satisfaction level of Messina University students. We have recorded opinions of 5068 students which attended the 64 study courses of the 11 Faculties of Messina University. This survey was about Global Courses Organization and Teaching quality and it has been performed through a questionnaire delivered during exam sessions from 2004 to 2005. Response variable has been planned for two levels in according to the answer of the interviewed student. The answer was "Yes" if the student was satisfied, else the answer was "No". We have planned a Logit Multilevel model with 3 levels where the predictors were students' social-demographic variables (age, sex, residence) and variables about their Secondary-School Education. The nested structure of this kind of data has allowed the use of a multilevel model (Goldstein, 1999). The aim of this one is to study the relationship between the single student, that is the first level unit (micro); the study courses context variable, that is the second level unit (macro); and the Faculty, that is the third level unit (macro). The choice of explanatory variables has been swayed by a preliminary cluster variables analysis. Age,

sex, kind of secondary school, residence, regular academic performances, time to reach lecture halls, academic years, kind of work, regular attending of lessons are considered first level covariates. The second level covariate is the planned access at the course, while the third level one is specified by the level of proximity between student residence and University centre. We have estimated a random intercept model with fixed slopes. Response variable has a Binomial form and we use logit as link function. The results of the model are showed in Figure 1.

$$\begin{aligned}
 & \left. \begin{aligned} \text{Giudizio}_{ijk} &\sim \text{Binomial}(\text{denom}_{ijk}, \pi_{ijk}) \\ \text{Giudizio}_{ijk} &= \pi_{ijk} + e_{0ijk} \text{bcost}^* \end{aligned} \right\} \\
 & \text{logit}(\pi_{ijk}) = \beta_{1j} \text{cost} + 0.001(0.012) \text{eta}_{ijk} + -0.187(0.064) \text{sess}_{ijk} + 0.026(0.014) \text{istituto}_{ijk} + -0.030(0.033) \text{dimora}_{ijk} + \\
 & \quad 0.470(0.068) \text{regola}_{ijk} + -0.278(0.056) \text{tempo}_{ijk} + 0.092(0.023) \text{anno}_{ijk} + 0.082(0.104) \text{lavora}_{ijk} + \\
 & \quad 0.294(0.130) \text{frequenta}_{ijk} + -0.205(0.110) \text{accesso}_{ijk} + -0.127(0.120) \text{Terzolivello}_k \\
 & \beta_{1j} = 0.288(0.322) + u_{1jk} \\
 & [u_{1jk}] \sim N(0, \Omega_u) : \Omega_u = [0.425(0.069)] \\
 & \text{bcost}^* = \text{bcost}[\pi_{ijk}(1 - \pi_{ijk})/\text{denom}_{ijk}]^{0.5} \\
 & [e_{0ijk}] \sim (0, \Omega_e) : \Omega_e = [1.000(0.000)]
 \end{aligned}$$

Figure 1: Multilevel Model MLWin Output

In according to the Wald test, the explanatory micro variables which assert a positive significant effect on satisfaction of students about Global Courses Organization are sex, regular academic performances, time to reach lecture halls, academic years, regular attending of lessons. Instead, the second level variable coefficient involves a negative significant effect. The third level variable effect is insignificant on students opinion about Global Courses Organization.

4. Conclusions

The results underline an important micro effect for evaluation the quality of Messina University Service. Instead, the macro effect is only due to the second level variable. Further, Multilevel Analysis highlights the strong variability due to the second level effect. For this reason, the kind of access to University courses is more important for students than proximity of University centre. Finally, variables referred to the regular academic performances of students and their regular attending of lessons carry the most significant effects on the students level of satisfaction.

References

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