

Habits and behaviors of students at lunch and factors affecting student's satisfaction for the canteen service: the case of University of Ferrara

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Abstract

In 2012 a survey on the quality of life of students of University of Ferrara inspired to Eurostudent was performed by the Center for Modeling, Computation and Simulation (CMCS) of this University. The questionnaire was designed according to a division into several sections related to different aspects considered crucial for an exhaustive knowledge of students' behaviors and habits.

The present paper focus on habits and behaviors of students at lunch, their level of use and satisfaction for some aspects of the canteen service of the University. Some descriptive statistics and an inferential analysis aimed at identifying the main factors affecting the students' satisfaction for the canteen service through the application of the ANOVA method are considered.

Key Words: Customer satisfaction, ANOVA, University evaluation, Quality of services

1. Introduction

The attractiveness of University, is a crucial factor also and especially for the system in which it is immersed, and for a University to be competitive it is necessary to analyze not only the training program, which is certainly basic, but also the range of services offered by the University.

For this reason it becomes important, for the University, as service provider, the evaluation of its customers-users, the students, and the implementation of a good quality control system to monitor and improve the quality and customize the offer to the users' needs (including the possibility of job opportunities, research opportunities, improvements in teaching), but also aiming to diversify.

Specifically, in order to make an analysis of the competitiveness of a university and of the socio-economic framework of the city where the University is located, a qualitative research on students' life and studying conditions should be critical to enhance the appeal of the University, but also to know the habits, the reasons for satisfaction and in general the opinions of the students enrolled.

Investigations on the quality of life of italian university students and the economic impact of their presence are still quite rare. Magni (1994) proposess a first study on the impact a university in the city context in which it is placed. The survey refers to the University of

Pavia in 1990 and was no longer updated. Previously, Valussi (1988) and Hamende (1990) have dealt with the socio-Economic impact of particular university or para-university structures, but not a University as a whole. More recently, Moretti (2002) discussed the economic impact of the University of Udine but from a general point of view, without a focus on the students. We also mention the contribute of Monetti (2000) on the Athenaeum of Padova which offer some insights into the life band studying conditions of students.

Eurostudent is a survey designed and performed periodically by the University of Camerino (Italy) in collaboration with the Rui Foundation and other Italian universities, carried out for the first time in 1994. This survey belongs to a wide European project which represents an important contribution to comparative research on European higher education (Orr. et al., 2012). The study is related to social and economic conditions of students from 24 countries. The covered topics investigated by the survey range from the transition routes into higher education to the students' assessment of their studies and future plans, considering also characteristics and the social make-up of national student population, types and modes of study, time budget for studies and employment, levels and sources for financial resources, patterns of living expenses and student spending, types of accommodation and students mobility.

In 2012 a survey on the quality of life of students of University of Ferrara inspired to Eurostudent was performed by the Center for Modeling, Computation and Simulation (CMCS) of this University. The questionnaire was designed according to a division into several sections related to different aspects considered crucial for an exhaustive knowledge of students' behaviors and habits.

A part of the survey is devoted to the analysis of aspects related to the daily life of the university, the living conditions, the consumption habits regarding the meals but also the use of private or public transportation means and the frequency of attendance of lectures, considering services not only from the quantitative point of view but also from the qualitative point of view. In this part also the issue of financial aids, the degree of their utilization and their usefulness to the needs of students are investigated.

Another section aims to analyze the activities that students do in their spare time, such as sports activities, the attendance of non-university libraries, cinemas, theaters and concerts, but also exhibitions, museums and cultural initiatives in general, the habits related to dinner and after-dinner, analyzing also their level of satisfaction for some public or private facilities and services.

Another part of the questionnaire is dedicated to the economic and working condition of the students, to the major items of expenditure for students and their sources of income. The final section of the interview consider the international mobility of university students, their propensity to travel abroad and the reasons and the occasions of previous travels abroad.

The present paper is dedicated to habits and behaviors of students at lunch and to their level of use and the satisfaction for some aspects of the canteen service of the University. In the second section some descriptive statistics related to the survey performed in Ferrara are reported. The third section concerns an inferential analysis aimed at identifying the main factors affecting the students' satisfaction for the canteen service of the University, through the application of the ANOVA method. The fourth section is dedicated to final remarks.

2. Descriptive analysis

The survey on the “Life and Study conditions of students of University of Ferrara (Italy) 2013” was performed from march and july 2012 in Ferrara by the Center for Modeling, Computation and Simulation (CMCS). A questionnaire was submitted to a sample of students through the CATI method (Computer-Assisted Telephone Interviewing), hence the interviewers, using the telephone, read the questions to the interviewees and recorded the responses directly on the computer.

The sample was composed of 998 students and the respondents were 747 (response rate equal to 74.85%). The sample was randomly drawn with the stratification method and the units were selected with the systematic method. The stratification factors were gender and type of enrollment (freshmen, other undergraduate students, post-graduate students) and the composition of the sample according to the faculties was the same of the whole population of students. The sample represents the 4.20% of the total population which counts almost 18000 students.

One of the factor that could affect habits and behaviors of students is represented by the housing conditions. According to this factor we can distinguish four categories of students: residents (in Ferrara), offsite (non-residents who decide to live in Ferrara for studying reasons), commuters (non-residents who daily or almost daily moves to Ferrara for studying reasons) and non-attending students (non-residents who rarely goes to Ferrara for studying reasons). All the four groups are well represented in the sample (see Figure 1). The biggest group is the one of offsite students (38%) and the smaller is the one of residents (16%). This is due to the big attractiveness of the University of Ferrara for students who live in the near cities and towns.

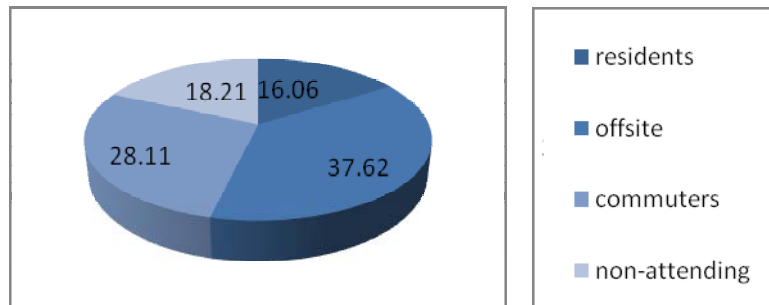


Figure 1: percentage distribution of housing condition.

Considering the main stratification factor, type of enrollment, the sample is composed by a 16% of freshmen, a 74% of under graduate students (the biggest group) and a 10% of post graduate students. About the other stratification factor, males and females are almost equally represented in the sample (47% and 53% respectively), hence the sample (and the population) is balanced according to gender.

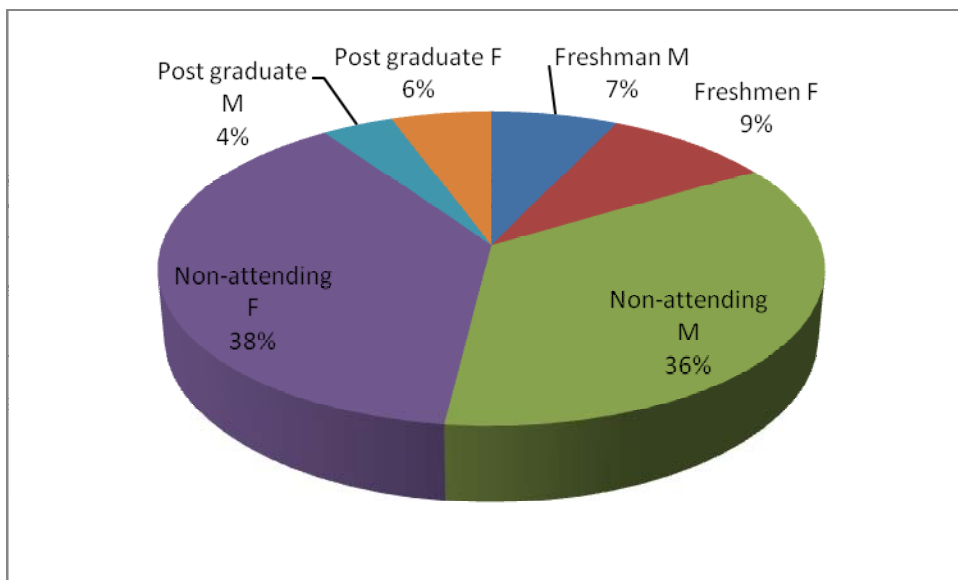


Figure 2: percentage joint distribution of type of enrollment and gender.

2.1 Place of lunch

With regard to the place of lunch, 9% of students never eat at home. A quarter of students have lunch at home once or twice a week, the majority (over 40%) do it three to five times a week, while about 20 % is usual do it every day or almost every day (see Figure 3). So on average this habit is held with a frequency ranging from three to four times a week. Postgraduate students are distinguished because they use to dine in their accommodation less frequently than others: on average about two to three times a week. One quarter of them do not have this habit. The behaviors in this case are more heterogeneous than for other students. From the point of view of housing conditions the commuters show a different behavior as they tend to eat lunch in their accommodation less frequently than other students (mainly two or three times a week).

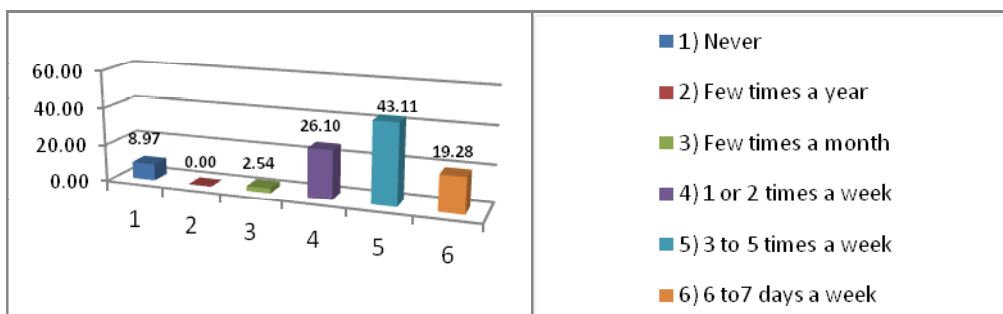


Figure 3: frequency of lunch at home.

The habit to dine in a bar or restaurant in Ferrara presents greater heterogeneity of responses compared to the habit to have lunch at home. About 40% of the students never choose this solution for lunch while the predominant behavior (with a percentage greater than 20%) is equal to once or twice a week. Comparing females and males there are not evident differences, maybe there is just a greater uniformity in the responses of males. Freshmen and post-graduate students, probably for different reasons, have a similar percentage of people who do not ever dine in a bar or restaurant of Ferrara, amounting to about 30% , while for under-graduate students that choice is made by a percentage slightly less than 40%. Commuter students, as expected, consume more often than others their own lunch in a public place (27% of commuters do it from three to five times per week compared with 15% of students in general who makes this choice), while non-attending students are not inclined to this custom: 50% never do, and among the remaining the most popular choice (21%) is to dine in the bar or restaurant only a few times per month.

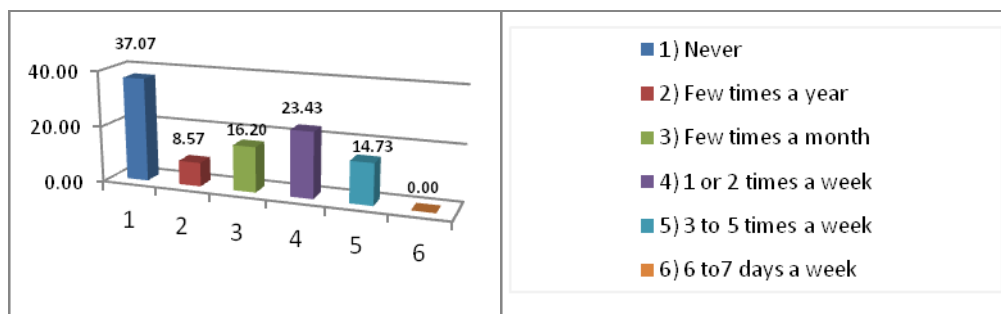


Figure 4: frequency of lunch in a bar or restaurant in Ferrara

Dining in the classroom or in a office of university is rare among students, although about 10% do it more than three times a week. The majority of students (68% of them) do not have this habit (see Figure 5). Even if there are no relevant differences between groups of students according to the type of enrollment, freshmen tend to make that choice a little more often than the others. Considering the housing situation, having lunch in the classroom or office is chosen mostly by commuters: only 57% do not ever opt for this solution while a relevant 17% do it from three to five days a week. Even in this case, non-attending students choose this location for the lunch less often than the other students.

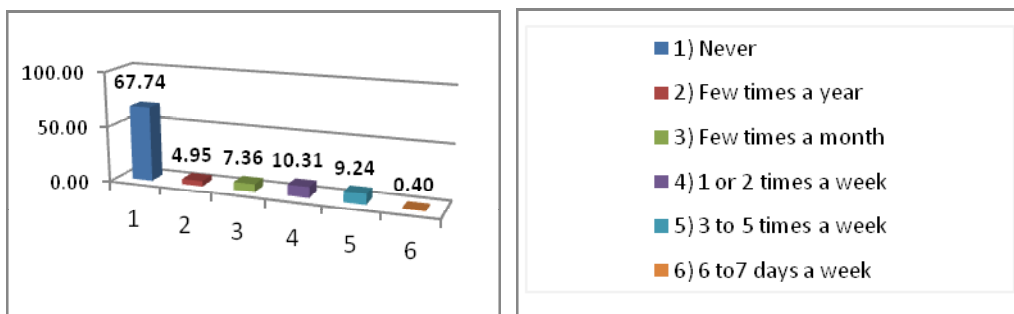


Figure 5: frequency of lunch in the classroom or in a office of university

Lunch in the university cafeteria or canteen is even less common than lunch in the classroom or office (see Figure 6). Three quarters of students never make this choice. Contrary to what happens for lunch in the classroom or office, more males than females opt for this option. The differences between groups are more evident according to the type of enrollment: the freshmen use the university canteen more often than other undergraduate students who make this choice more often than post-graduate students. Once again commuters opt for this choice more often than students with different housing conditions: only 67% do not ever have lunch in the canteen. 74% of offsite students and 78 % of residents never eat lunch in the cafeteria, and again the non-attending students are less usual than all the other groups to this behavior: 85% never goes to the canteen.

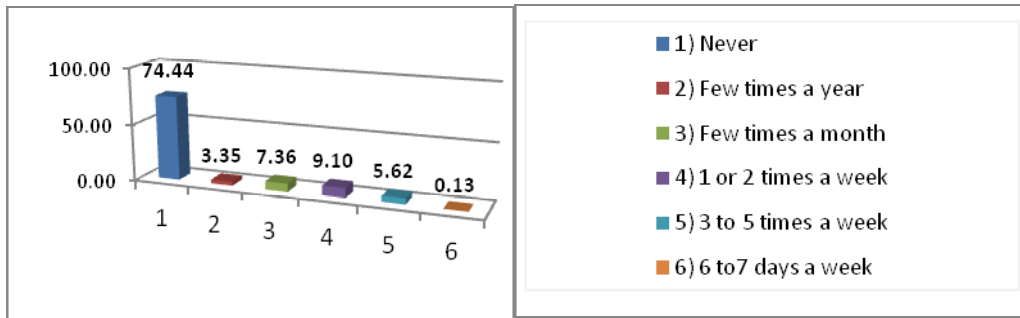


Figure 6: frequency of lunch in the canteen of university

2.2 Satisfaction for the canteen service

Students' satisfaction for the canteen service (for those who have ever used it) on a 1-10 scale (where votes greater than or equal to 6 represent satisfaction and votes less than 6 dissatisfaction) is generally good. Usually the mean vote is around 7 or more and the percentage of sufficient votes is around 90% or more.

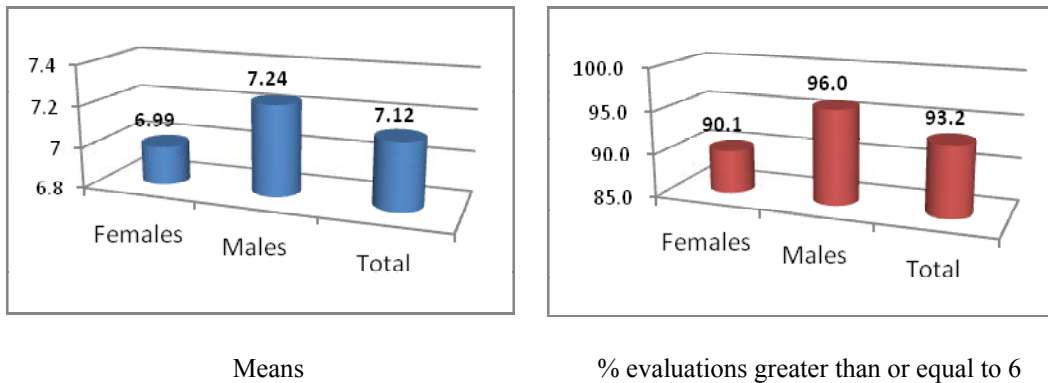


Figure 7: students' satisfaction for the food quality in the canteen

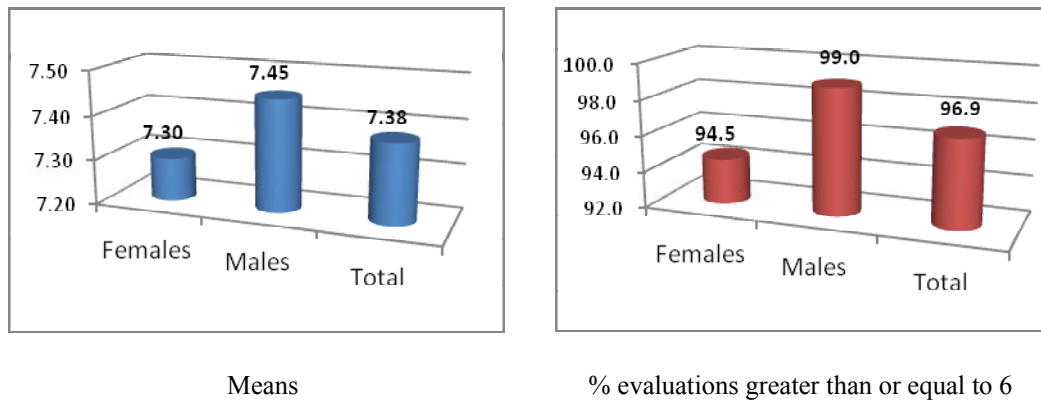


Figure 8: students' satisfaction for the variety of dishes in the canteen

In ascending order of the average ratings on different aspects monitored amounted to 7.12 (food quality), 7.28 (waiting time), 7.38 (variety of dishes), 7.41 (prices), 7.73 (cleaning of premises) and 7.92 (ease of achievement). See Figures 7-12.

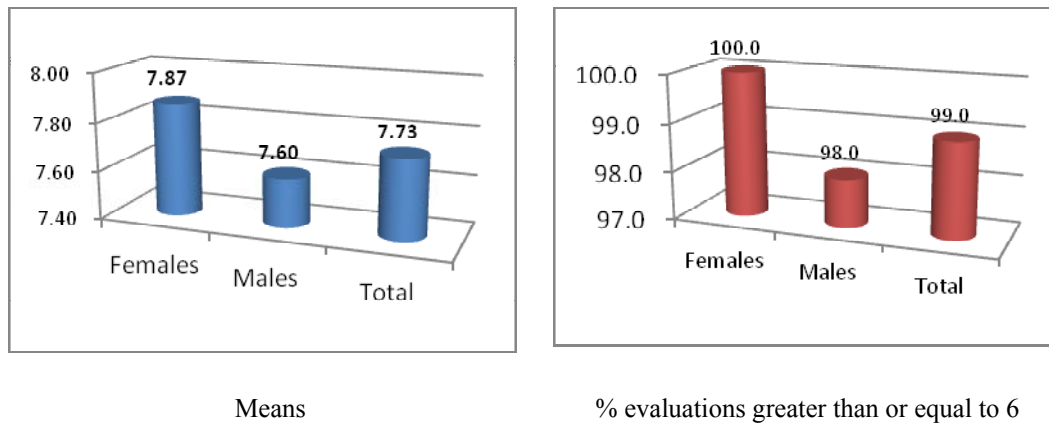


Figure 9: students' satisfaction for the cleaning of premises in the canteen

The cleaning of the premises is the aspect that has reached the highest percentage of votes sufficient (99%) while the lowest percentage correspond to the prices (88%). The mean satisfaction of females is greater than that of males for the cleaning of the premises and for the prices while for the other aspects the evaluations of the males are greater.

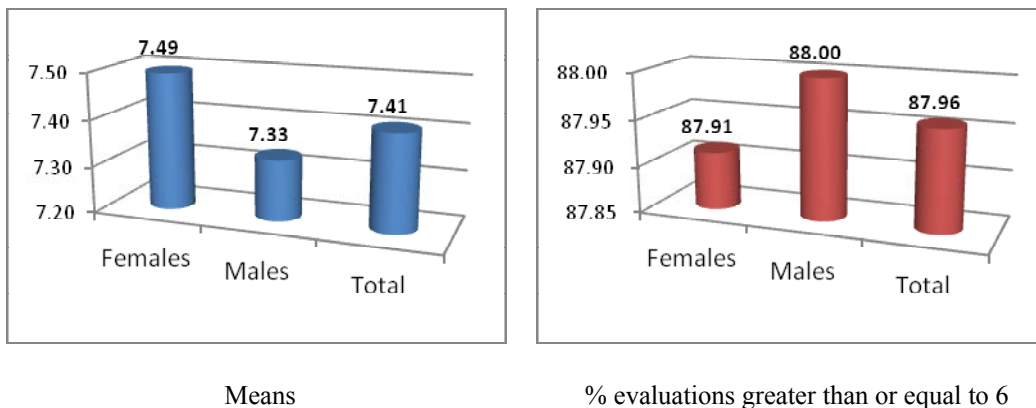


Figure 10: students' satisfaction for the prices of the canteen

The students of post-graduate courses express the greatest average rating about the variety of dishes while under-graduate students are the most satisfied about the waiting time. For all other respects, the average scores of the freshmen are higher than the others.

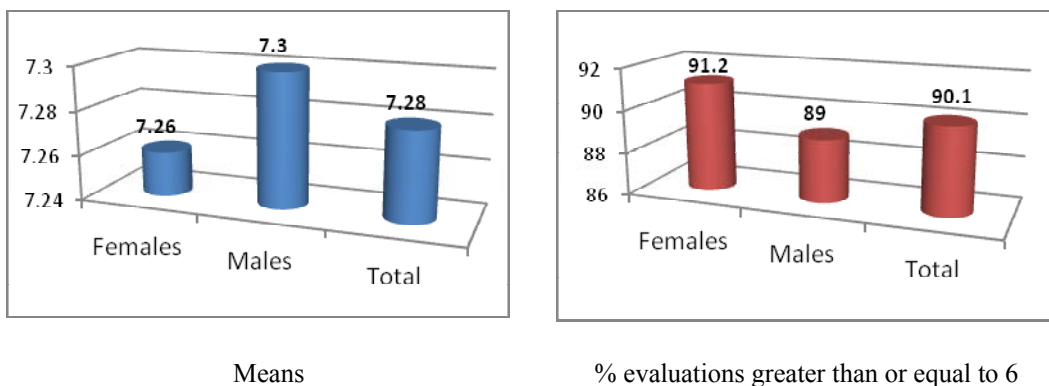


Figure 11: students' satisfaction for the waiting time in the canteen

Comparing the satisfaction of different groups of students according to the housing condition we can notice a very diversified depending on the considered aspect. The commuters, who are the main users of the service, are the most satisfied about the cleanliness of the premises and the ease of achievement.

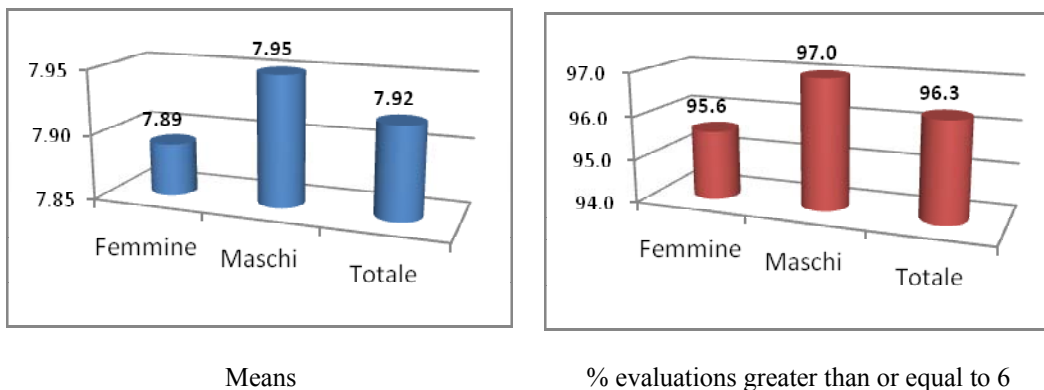


Figure 12: students' satisfaction for the ease of achievement of the canteen

3. Factors affecting the students' satisfaction for the canteen service

For each of the six evaluated aspects we are interested in testing which individual factors mainly affect the satisfaction level of the students for the canteen service. The factors taken into account in this analysis are gender, type of enrollment and housing condition. The results of this analysis could be very useful in improving the quality of the canteen service, making suitable marketing strategies to customize the service according to the needs of the users.

The methodological procedure consists in the application of an Analysis of Variance (ANOVA). Six different analyses, one for each considered aspect, are performed. For each analysis the response variable is represented by the students' evaluation (vote) and the factors are those shown in Table 1.

Table 1: Factors considered in the analysis of variance of students' satisfaction and corresponding levels

Factor	Levels
1. Gender	1: female 2: male
2. Type of enrollment	1: freshmen 2: under-graduate 3: post-graduate
3. Housing condition	1: resident 2: offsite 3: commuter 4: non-attending

Hence we have one factor on two levels (Gender), one factor on three levels (Type of enrollment) and one factor on four levels (Housing conditions). The baseline of the model

is represented by the combination male, post-graduate, non-attending. Hence the constant of the model represents the estimated evaluation of a non-attending post-graduate male student. The other parameters represents the variation of the evaluation due to some changes in the levels of the factors, i.e. the increasing/decreasing of the satisfaction for other groups of students attributable to the main effects of factors or to the interaction effects of couple of factors. The theoretical model is

$$X_{i,gt,h} = \mu + \beta_g + \gamma_t + \delta_h + \beta\gamma_{gt} + \beta\delta_{gh} + \gamma\delta_{th} + \epsilon_{i,gt,h}$$

where $X_{i,gt,h}$ is the evaluation of the i -th student with gender g , type of enrollment t and housing condition h ; μ is the mean evaluation of the group of students in the baseline; β_g , γ_t and δ_h are the main effects of the three factors corresponding to the levels g , t and h respectively; $\beta\gamma_{gt}$, $\beta\delta_{gh}$ and $\gamma\delta_{th}$ are the interaction effects corresponding to the specified combinations of levels; $\epsilon_{i,gt,h}$ is the error term of the model, supposed to be normally distributed and homoschedastic (see Montgomery, 2009), with $g=1$, $t=1,2$ and $h=1,2,3$, considering that the baseline correspond to the combination $(g,t,h)=(2,3,4)$.

Table 2 sums up the results of the analysis, in terms of p -values of the tests of significance and estimates of the coefficients. The significance level taken into account is $\alpha=0.10$, thus when the p -values are greater than 0.10 the correspondent parameter is considered non significant (briefly *n.s.*).

It is evident that the considered factors don't affect the evaluation about food quality, variety of dishes and waiting time. For the cleaning of premises no main effects are significant. Only the interaction effect between gender and housing condition is significant and specifically, respect to the baseline, when the combination gender-housing condition moves from males-non attending to female-commuter the mean evaluation increases +0.38.

Prices are the aspect on which factors most influence the evaluations. We have a significant main effect of gender and of housing condition and an interaction effect between type of enrollment and housing condition. When gender moves from male to female we have a variation equal to +0.38 of the mean response; with regard to housing condition the mean satisfaction of commuters is not significantly different than that of non-attending students, while the satisfaction of residents is greater (+0.67) and the one of offsite students is less (-1.29). Moving from post graduate-non attending to freshmen-offsite the evaluation grows (+1.27) and we have a similar interaction effect moving from post graduate-non attending to under graduate-offsite students (+0.88).

The satisfaction for the ease of achievement is affected only by the type on enrollment because freshmen present a greater satisfaction than post-graduate students (+0.52).

Table 2: ANOVA of students' satisfaction for the six considered aspects
Estimates of main effects and interaction effects (p-values in brackets)

<i>Source/Term</i>	<i>Response</i>					
	<i>Food quality</i>	<i>Variety of dishes</i>	<i>Cleaning of the premises</i>	<i>Prices</i>	<i>Waiting time</i>	<i>Ease of achievement</i>
Constant	7.14 (0.000)	7.37 (0.000)	7.61 (0.000)	7.14 (0.000)	7.23 (0.000)	7.72 (0.000)
1. Gender female (β_1)	n.s.	n.s.	n.s.	(0.078) 0.38 (0.078)	n.s.	n.s.
2. Type of enrollment freshmen (γ_1)	n.s.	n.s.	n.s.	n.s.	n.s.	(0.074)
under-graduate (γ_2)						0.52 (0.045)
3. Housing condition resident (δ_1)	n.s.	n.s.	n.s.	(0.006) 0.67 (0.065)	n.s.	n.s.
offsite (δ_2)				-1.29 (0.001)		
commuter (δ_3)				n.s.		
Interactions:						
Gender-Type of en. female-freshmen female-underg.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Gender-Housing c. female-resident female-offsite female-commuter	n.s.	n.s.	(0.075) n.s. n.s. 0.38 (0.009)	n.s.	n.s.	n.s.
Type enr.-Housing c. freshmen-resident freshmen-offsite	n.s.	n.s.	n.s.	(0.076) n.s. 1.27 (0.006)	n.s.	n.s.
freshmen-commuter				n.s.		
underg.-resident				n.s.		
underg.-offsite				0.88 (0.033)		
underg.-commuter				n.s.		

4. Conclusions

Students of University of Ferrara present a relevant level of heterogeneity if we consider the three factors gender, type of enrollment and housing condition. The students manly

have lunch at home and less frequently in a bar or restaurant. They are not usual to the canteen service but who consider this option for the lunch declare to be satisfied of the service. In particular the most appreciated aspects of the service are the cleaning of premises and the ease of achievement. The factors mentioned above don't affect the evaluation about food quality, variety of dishes and waiting time. On the other side the satisfaction about prices can vary significantly according to gender and housing condition of students, while the satisfaction for the ease of achievement is mostly affected by the type of enrollment of students. Of course this type of observations should be taken into account if the university is interested in producing marketing strategies for improving the quality of the canteen service and the user satisfaction in particular.

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