The drivers of customer satisfaction for academic library services: managerial hints from an empirical study on two Italian university libraries using the Kano model

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Abstract: The intent of this qualitative research is to investigate and understand the requisites of customer satisfaction for academic libraries' users and to give managerial hints for the implementation of user centred academic library services. To this aim, we analyse the library services of two Italian Universities (the Faculty of Economics of University of Palermo and the Central Library of the University of Salerno) to find relations and congruencies and to evaluate the perceived relevance of the tangible and intangible aspects of these services. In the preliminary phase of the research, we conducted both focus groups and individual interviews involving students or researchers who regularly use the library services. This study supplies a significant analysis of qualitative data that can be functional for researchers and for university managers to plan strategic and operative activities in order to improve academic library services.

Keywords: customer satisfaction; management in education; academic library services; library management; Kano model; service quality; user satisfaction.

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1 Introduction

In order to adapt to the new competitive scenario, Italian universities are undergoing a process of change towards a managerial approach based on client/student satisfaction, according to which universities should focus on improving the quality of their services and teaching. This will make them more attractive not only towards local residents, but also towards other regions or countries. If in many cases Italian universities operate in a monopolistic position within their reference province, being able to attract human resources on a global scale is now paramount, in order to boost competitiveness and to offset the brain drain phenomenon. It is therefore necessary to combine local specificities of our higher education system with the capacity to attract students through a managerial approach that takes into account student/user satisfaction. The education system must therefore become a service system in which students become co-creators of a competitive and satisfactory offer (Petruzzellis et al., 2006).

Both teaching and support services should therefore be reformed to meet the users' needs. One of the most important support services is that provided by libraries. This paper aims to identify the main drivers of customer satisfaction in relation to academic library services. For this purpose we used two Italian academic libraries as samples (the Faculty of BA and Economics in Palermo and the central library of the University of Salerno) using the model by Kano et al. (1984) for the determination and characterisation of the attributes of the services offered. The analysis of qualitative data gives indications to researchers and managers as how to plan strategies and operative actions aimed at improving academic library services.

2 Theoretical framework

2.1 Customer satisfaction and voice of customer (VOC)

In the last two decades the notion of service has increasingly dominated that of product, particularly in marketing studies. This has led to the development, both conceptual and relational, of the notion of product into that of service, with a simultaneous re-thinking of the relationship linking the company to the potential customer/user (Parasuraman et al., 1985).

Such developments have stressed the key role played by the consumer and the importance of the conditions at the basis of value co-production processes, in which the user participates in the creation of the product/service (Dominici and Guzzo, 2010).

Nowadays any measurement merely based on resource availability is not sufficient to evaluate the effectiveness of library services. The focus should therefore shift from quantity to quality (Hernon and McClure, 1990; Nitecki, 1996). It has been long since Lickhder (1965) wrote about the evolution of libraries both in terms of the approach to new information management tools and of the opportunity to incorporate feedback from users regarding the services offered.

Kyrillidou and Giersch (2005) noticed that library assessment nowadays is much more complicated due to the integration of teaching, learning and research with library services and resources.

Research in the field has taken the notion of market into account only for the past two decades, in relation to the survival of libraries (Borgman, 1999). Nitecki and Hernon (2000) noticed that the evaluation of the effectiveness of library services has been shifting towards marketing, as the latter considers expectations and quality perception as expressed by users. These studies showed the importance of verifying the consistency of what is offered with users' expectations and the need to evaluate the service in terms of attributes that users themselves consider essential in the selection and/or appreciation of libraries.

Customer satisfaction has become a priority of both public and private sectors in the past couple of decades. Oliver (1997) defined it as "*Satisfaction is the consumer's fulfilment response. It is a judgment that a product or service feature, or the product or service itself, provided (or is providing) a pleasurable level of consumption-related fulfilment, including levels of under-fulfilment or over-fulfilment*". (p.13). Customer

satisfaction is a judgement deriving from a multidimensional process which is difficult to quantify. Therefore, the concept of customer satisfaction needs to be operationalised in a model framework in order to be measured. For this reason, many researchers have operationalised customer satisfaction using multiple item scales. Erevelles and Leavitt (1992) classified models of customer satisfaction measurement in seven different groups. Each of these models (a) Expectations Disconfirmation Model; (b) Perceived Performance Model; (c) Norms Models; (d) Multiple Process Models; (e) Attribution Models; (f) Affective Models and (g) Equity Models) differs for the factors considered to determine attribution's effect in satisfaction (i.e. expectations, standard performance, equity ratio and social comparison).

Therefore our research is based on the too often underrated notion that service quality is indeed important to library users (Cook and Thompson, 2001) however, 'intrinsic service quality' is not sufficient to achieve customer satisfaction. In order to meet the expectations and needs of the customers, there is the need to analyse the 'perceived service quality' through a model that gives Voice to the Consumer (VOC).

2.2 Customer satisfaction in library management

For the aims of this paper we decided not to consider the literature addressing libraries in general since we think these are not fully relevant for academic libraries because their services are directed to a different target of users than a general library.

There are several studies that explore the level of service quality offered by academic libraries services. Calvert and Hernon (1997) analysed the level of service quality provided by seven university libraries of New Zealand developing a conceptual framework for understanding and measuring service quality in academic libraries. Nitecki and Hernon (2000) proposed a new approach to measure service quality in Yale University's Libraries. Quinn (1997) discussed how to adapt service quality models to the non-commercial environment of the academic libraries. Some studies focused in particular on the reliability of SERVQUAL model in the research library context and give some suggestions about the possible evolution of the model (Nitecki, 1996; Cook and Thompson, 2000).

Other studies have explored the extent of academic libraries service quality and possible ways to increase it based on the expectations and perceptions of their users:

- Calvert (1998) tested an instrument for Measuring Service Quality in Singapore's Polytechnic Libraries, based on data collected through different focus groups of academic librarians.
- Pinto et al. (2010) conducted a case study in the Science and Technology Area in Spain and analysed faculty and researchers' with the specially designed BiQual tool.
- Chen and Chou (2011), after having examined through questionnaires reader needs and satisfaction degrees, applied Grey Relational Analysis (GRA) to Quality Function Deployment (QFD) to identify service improvement techniques for an academic library.

Moreover a number of quantitative studies focused on the measurement of customer satisfaction of academic libraries users rather than service quality (Cullen, 2001; Martensen and Grønholdt, 2003; Xia, 2003; Kani-Zabihi et al., 2006; Schryer, 2006; Mengel and Lewis, 2012; Che et al., 2013; Tan et al., 2013).

The above mentioned studies do not always clearly address the way customer satisfaction requirements can be implemented to foster appropriate technical and managerial improvements to library management. Indeed, we believe it is pivotal to translate customer satisfaction requirements into proper managerial actions.

One attempt in this sense is the research of Danjuma, and Rasli (2012) that use a qualitative enquiry to assess some managerial implications with regards to service quality dimensions of academic libraries in of the central academic library in a Nigerian technological university. However this study didn't apply the Kano model.

The Kano model can be considered as a model of customer satisfaction measurement based on expectations and on the multidimensionality of the satisfaction construct. As noted by Mackoy and Spreng (1995), customer satisfaction can have two coexisting dimensions, satisfaction and dissatisfaction for the same individual and the same consumption experience (Hom, 2000).

Moreover the application of the Kano model offers useful insights to the improvement of specific actions for library management. Despite its utility, the Kano model has not yet been much considered to the purpose of implementing library management.

In fact, it has been adopted to evaluate quality and customer satisfaction in relation to many different products and services (Tontini, 2007; Bennur and Byoungho, 2012; Dominici and Palumbo 2013a; Dominici and Palumbo, 2013b), but very rarely to libraries.

The only exception found in the literature (using the Science Direct database) is that of Garibay et al. (2010) which apply the Kano model, together with the QFD, to the digital library of the University of Guadalajara (Mexico) and not to the entire library service.

We believe that the Kano model can be useful in the assessment of VOC for the whole range of academic library services and to give precise and effective managerial hints for the improvement of these services. With the present research we intend to fill the gap existing in the current literature in order to provide input for future research and to support managers in the assessment and resulting improvement of such services.

3 The Kano model

3.1 About trustworthiness and rigor of the research method

The model developed in 1984 by Noriaki Kano, a professor emeritus at the University of Tokyo and an expert in Total Quality Management, is used to find and estimate the quality perceived by customers/users of a product/service and the consequent satisfaction/dissatisfaction resulting from the discrepancy between perceived and expected quality.

The Kano model is a qualitative, interpretive, non-linear and grounded method. Unlike quantitative methods applied to customer satisfaction assessment who seek causal determination, prediction and generalisation of findings, the Kano model, as a qualitative method, seeks instead illumination, understanding and extrapolation to similar situations. In any qualitative research, the aim is to engage in research that probes for deeper understanding rather than measuring features (Johnson, 1997). In qualitative methods validity and reliability are usually conceptualised as trustworthiness and methodological rigor. While the credibility in quantitative research depends on instrument of measurement, in qualitative research it depends by the researcher and his/her interactions with the object of analysis (Patton, 2002)

There are several methods to assess the rigor and trustworthiness of qualitative research (Guba, 1981; Lincoln and Guba, 1985; Wallendorf and Belk, 1989; Johnson, 1997; Fournier, 1998; Seale, 1999; Creswell and Miller, 2000; Healy and Perry, 2000; Mishler, 2000; Stenbacka, 2001; Davies and Dodd, 2002; Golafshani, 2003).

Among these methods 'member check' is the process of verifying information with the targeted group. It allows the participants to amend errors of interpretation of the researchers thus increasing the validity of the observer's interpretation of qualitative observations. Throughout the member check process, the researchers ask participants to evaluate the truthfulness of researchers' analytic categories and interpretations and to provide feedback.

In the case of the Kano model the rigor comes by how the research is conducted and the trustworthiness by the coexistence of different perspectives in the focus group and repeated in depth qualitative interviews to experts for the construction of the questionnaire's categories coming out as the result of different perspectives. Indeed, it is the interaction among the members of the group, with their different visions and perspectives and with the researchers that makes the trustworthiness of the analysis.

3.2 Description and characteristics of the Kano model

Kano provides a useful and practical approach for categorising product or service attributes according to the customers' perception and the impact on customer satisfaction. The main differences between the Kano Model and other models of customer satisfaction widely used in literature – such as SERVQUAL (Parasuraman et al., 1988) and the Critical Incident Approach (Hayes, 2008; Dominici and Guzzo, 2010) – are that the Kano model:

- Overturns the conviction that there is a linear relationship between a certain feature in a product/service and the degree of customer satisfaction. Kano noticed that customer requirements are not equivalent: some requirements, in fact, are capable of generating more satisfaction than others. Moreover, customer satisfaction is not always proportional to the functionality of the product or service, implying that higher quality does not necessarily lead to higher satisfaction.
- Provides a categorisation of attributes.
- Identifies priorities with relation to certain attributes affecting users' choices.
- Highlights the importance of attributes and the different ways in which they affect consumer satisfaction (Witell and Lögfren, 2007).

- Provides indications that can either be used at the planning stage (in order to design the customer's ideal product or service) or when improving an already existing product/service (in order to evaluate the customer satisfaction). As Chaudha et al. (2011) have indicated, the Kano Model is a useful tool for identifying customer needs and transforming these into design requirements, engineering specifications and ultimately production details.
- Provides easy-to-read results containing key strategic and operative information for the management.

However, despite these advantages, the Kano model can have the following disadvantages:

- The questionnaire proposed by Kano is very complex and often unwieldy for customers. Hence, this can lead to a low rate of validity of the questionnaires. To avoid this problem, interviewers should assist the respondents while filling out the questionnaire or administer it orally.
- In the first phase of Kano model (identification of customers' needs and expectations), through the focus groups and individual interviews, may emerge too many requirements very similar to each other. This can increase the length of the questionnaire and the complexity of data analysis. As a consequence, the application of factor analysis, in these cases, is strongly recommended in order to reduce the number of variables.
- The risk of paying attention to details not related to the operational level of intervention.
- Since the whole model is based on subjective data collected from actual or potential users, it is important to adopt a good sampling technique in order to draw to generalisable conclusions.

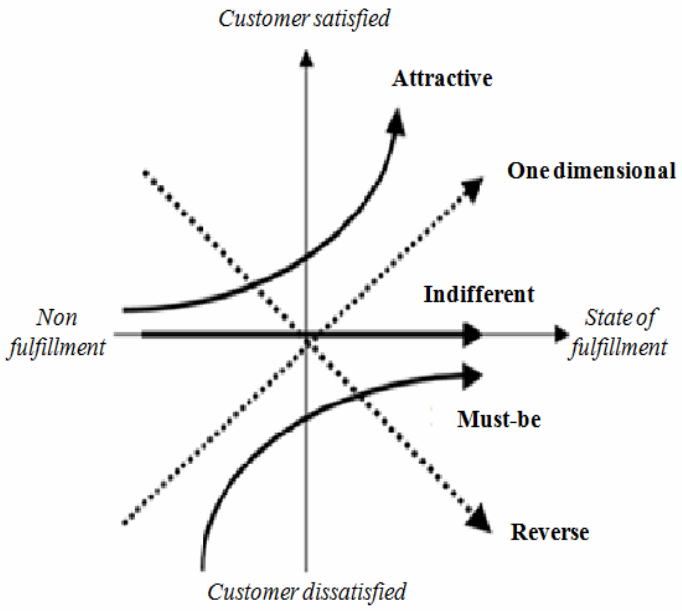
On the basis of the assumption that there is not always a linear relationship between the presence of a feature and the degree of customer satisfaction, the Kano model lists the attributes of a product/service in three main categories, depending on the quality perceived by customers/users and the capacity to meet their expectations:

- *Must-be requirements*: they refer to the characteristics that a product/service must have to meet the basic needs of the user. The presence of this type of features does not increase user satisfaction, while its absence causes a high level of dissatisfaction;
- *One-dimensional requirements*: requirements that belong to this category are linear and symmetric with relation to customer satisfaction, therefore their presence determines satisfaction while their absence causes dissatisfaction;
- *Attractive requirements*: they are features whose absence does not affect the functionality of the product, but if present they are able to exert a high force of attraction towards the customer/user. They are essential to differentiate the product/service with relation to its competitors. Their presence has a more than proportional effect on the customer's/user's degree of satisfaction, which helps to strengthen the competitive advantage of the product or service to which the customer gives a higher appreciation score;

- Kano also identified two other sub-categories that refer to characteristics of the products/services that are perceived by users as indifferent or even contrary to their needs:
- *Indifferent requirements*: requirements whose presence generates neither satisfaction nor dissatisfaction, so any company effort aimed at designing this type of feature is completely pointless;
- *Reverse requirements*: features that belong to this category are characterised by being proportional to the degree of dissatisfaction with the customer/user. Therefore they are the opposite of one-dimensional requirements: their presence creates dissatisfaction while their absence results in satisfaction.

Figure 1 shows the relationship existing between attributes of quality and the customer's degree of satisfaction. We can say that the presence of each category of features (must-be, one-dimensional, attractive, indifferent and reverse) has a different impact on the degree of customer satisfaction. The classification of attributes by the Kano model according to their impact on customer satisfaction allows the identification of the levers managers can activate in order to improve the quality of the product or service on offer.

Figure 1 The Kano model



Source: Kano et al. (1984)

3.3 *Implementation of the Kano model*

The implementation process of the Kano model is composed of four basic steps:

1 Identification of customers' needs and expectations.

2 Questionnaire design.

3 Questionnaire distribution.

4 Interpretation and evaluation of results.

The first stage is about finding what the main features of the product/service the customer expects or wants are. Their impact on customer satisfaction will then have to be thoroughly assessed. The research can be carried out through individual interviews or, preferably, focus groups. Although individual interviews allow saving time and money, focus groups are more effective as dynamic interaction within the group can bring out not only explicit needs, but also latent ones. Typically, individual interviews allow the identification of *one-dimensional* requirements, while group interviews bring out *attractive* features as well. Shiba et al. (1993) identified some questions useful to elicit consumers' needs during the interviews:

- What sensation do you feel while using the product/service 'X'?
- What problems or faults do you associate to the product/service 'X'?
- What criteria do you take into consideration when purchasing the product/service 'X'?
- What new features of the product/service 'X' would meet your expectations?
- What would you change in the product/service 'X'?

Having identified consumers' needs and ideal features of the product/service in question, it is then possible to lay down the questionnaire.

The one proposed by Kano is characterised by the presence of two questions for each requirement identified in the previous phase and that needs to be investigated:

- How would you feel if the product had feature 'Y'? (Functional question).
- How would you feel if the product did NOT have feature 'Y'? (Dysfunctional question).

For each question proposed, either functional or dysfunctional, the consumer can choose from five answers related to different levels of satisfaction:

1 I would love to

2 I would only be happy in this case

3 It would leave me indifferent

4 I would expect that

5 I would not like it at all

Crossing the answers given to functional and dysfunctional questions it is possible to find out, through the evaluation matrix of Kano (Table 1), in which of the five categories proposed the interviewee places the requirement in question (M: *must-be*; O: *one-dimensional*; A: *attractive*; I: *indifferent*; R: *reverse*; Q: *questionable* results or answers that are inconsistent and therefore invalid).

After laying down the Kano questionnaire, it is necessary to identify the way in which it should be administered (online, on paper and orally) and the relevant sample.

Table 1 Kano evaluation matrix

		Dysfunctional question: How would you feel if the product had feature 'Y'?				
		I would love to	*I would only be happy in this case*	*It would leave me indifferent*	*I would expect that*	*I would not like it at all*
Functional Question: How would you feel if the product did NOT have feature 'Y'?	*I would love to*	Q	A	A	A	O
	I would only be happy in this case	R	I	I	I	M
	It would leave me indifferent	R	I	I	I	M
	I would expect that	R	I	I	I	M
	I would not like it at all	R	R	R	R	Q

Results	
M - must-be requirement	I - indifferent requirement
O - one dimensional requirement	R - reverse requirement
A - attractive requirement	Q - questionable requirement

Source: Kano et al. (1984)

Finally, after administering the questionnaires and collecting the data, it is possible to move on to the interpretation and evaluation of results, following the main methods described by Kano et al. (1984):

1 Assessment according to frequencies: from the results obtained through the Kano evaluation matrix, referring to the frequency of answers given by all interviewees on each requirement, the category associated to it is identified by the highest frequency of answers.

2 The M>O>A>I rule: this rule is very useful when it is not possible to evaluate features according to frequency as the relevant data are ambiguous (for example when there is not a marked difference between the frequencies of two or more categories and therefore it is not possible to identify clearly and unambiguously where the requirement in question can be placed). The M>O>A>I rule identifies a hierarchy among the requirements the product/service examined must fulfil: *must-be* requirements are at the top of the list, followed by *one-dimensional* requirements, then *attractive* and finally by *indifferent* requirements, whose impact on customer satisfaction is not significant.

Having identified the categories the analysed requirements belong to, the company obtains detailed information on how to shape its offer in order to maximise customer satisfaction. The strategic implications of the Kano model are in fact: to ensure the presence of all *must-be* requirements, to be competitive with relation to *one-dimensional* requirements, to excel and stand out from other competitors with relation to *attractive* requirements, not to invest time and money to develop requirements that are perceived as *indifferent* or even as *reverse*.

4 Application of the Kano model to university library services

In this study, the Kano model is applied to the evaluation of the requirements affecting customer satisfaction with relation to academic library services.

We aim to reply to the following research questions:

- What are the explicit and latent needs of academic library services users?
- How should the academic library service be designed in order to satisfy users' needs and improve the universities and/or faculties competitiveness?

The Kano model was chosen on the basis of its suitability to highlight the way library users' satisfaction requirements can be implemented to promote appropriate managerial improvements to library management by allowing management to turn these requirements into apposite managerial deeds. Indeed, compared to other models of customer satisfaction the Kano model allows us, not only to evaluate the actual level of customer satisfaction of library users, but also to define a clear strategy of improvement of the service. In addition, thanks to the M>O>A>I rule applied to Kano model results, we are also able to identify a hierarchical order to follow in case of financial constraints.

The four steps along which the present research was carried out mirror those laid down by Noriaki Kano.

4.1 Identification of the needs and expectations of users of library services

In order to identify the requirements at the basis of our analysis, both focus groups (three groups of seven people in each) and individual interviews (ten in total) were carried out. The in dept interviews have been conducted towards, students who often use the library services, library operators and library managers and repeated through time to assert the trustworthiness of the questionnaire's categories of the people interviewed are either students or researchers who regularly use the library services of the Faculty of Economics, University of Palermo and of the University of Salerno. Moreover, about 70% of the interviewees had used services of other libraries, either academic or not. This aspect was of paramount importance to better identify strengths and weaknesses of the libraries examined and to bring out latent needs. During the interviews we asked the questions prepared by Shiba et al. (1993) in order to stimulate debate, such as 'What associations do you make when using the academic library service?', 'Which problems, defects of complaints do you associate with the academic library service?', 'What would you change in the library service?'. It was thus possible to identify no less than 20 requirements, grouped in five macro-classes that express users' needs and the ideal features of library services (Table 2):

Table 2 Academic libraries' requirements identified by users

Access and opening times	1:	Mandatory registration and admission via badge
	2:	Opening at lunch time
	3:	Opening in the evening on weekdays
	4:	Opening in the morning on Saturdays
Consultation service	5:	Multimedia access
	6:	Full online access to the library catalogue
	7:	Online consultation of theses and dissertations
	8:	Home access to digital resources

Table 2 Academic libraries' requirements identified by users (continued)

Loan service	9: Interlibrary loan system
	10: Penalty system for late returns
	11: Loan of e-books and e-book readers
Study rooms	12: Existence of a silence policy
	13: Natural lighting
	14: Distinction between study rooms for individuals and groups
	15: Advance booking system for seats in study rooms
Additional services	16: Bibliographic advice and expert searching assistance
	17: Dedicated section for business newspapers and magazines
	18: Internet stations
	19: Different options for the acquisition of texts and materials by students
	20: Photocopy service

4.2 Layout of the Kano questionnaire

After identifying the requirements we want to investigate, it was possible to prepare the questionnaire. Ours is composed of two parts:

- The first part deals with the interviewee's personal information (gender, age, place of residence, University, Faculty, degree course, year), the reason for using the library (individual study, group study, consultation, loan, request of bibliographic information, surfing the Internet, reading magazines/newspapers, reading his/her own books, writing the graduation thesis, etc.) and the attendance record.
- The second part consists of 40 questions, a functional and a dysfunctional one for each of the 20 requirements examined. The questions were grouped by macro-class and requirement, in order to facilitate questionnaire comprehension.

4.3 Questionnaire distribution and characteristics of the sample

For the purpose of our study 400 questionnaires were administered to users of the libraries examined. The questionnaires were printed on paper and distributed at the entrance of the University libraries of Palermo and Salerno. A total of 400 questionnaires were administered, 295 of which were considered valid (74% response rate).

The interviewed sample was composed of 154 users of the library at the Faculty of Economics of the University of Palermo and of 141 users of the central library of the University of Salerno.

19% of members of the first group were enrolled on degree courses at other faculties (Architecture, Engineering, Medicine, Humanities, Pedagogy, Physical Education and Agricultural Disciplines), while only 12.5% of members of the second group was registered at other Faculties (Economics and Engineering).

The total sample was composed of students who had used the library at least once.

55% of sample members were females, the remaining 45% males. On average, sample members' age was 23 and they had been enrolled on their university course for more than three years.

Sample members said they were using the university library service for the following activities: individual study (25%), book loans (21%), group study (20%), consultation (19%), Internet browsing (4%), writing their theses (4%), looking for bibliographic information (3%), reading their own books (3%), reading newspapers and magazines (1%).

35% of sample members had been using the library several times a week, 24% several times a month, 18% every day, 6% once a week, 4% once a month and 14% several times a year.

5 Interpretation of results

Having administered the questionnaires and collected the data, the relevant requirements were grouped in the interpretation and evaluation stage. This procedure aims at establishing a hierarchy to be used to redesign the priorities in offering library services, in order to maximise customer satisfaction.

For each requirement the total number of answers and the relevant category were determined and the results displayed in a Kano evaluation matrix (Table 1).

You can see that the Q category (*questionable results*) shows very low figures, indicating that there were no particular problems in understanding the questions asked and this validates the results obtained.

5.1 Assessment according to frequencies

Applying the method of assessment according to frequencies, it was possible to determine the classifying category for each requirement on the basis of the maximum frequency obtained (Table 3).

Table 3 Requirement classification using the assessment according to frequencies

		O	*M*	*A*	*I*	*R*	*Q*	*Requirement category*
	Access and opening times							
1.	Mandatory registration and admission by badge	51	13	57	139	33	2	Indifferent
2.	Open at lunch time	170	7	56	52	10	0	One dimensional
3.	Open in the evening	80	0	130	64	21	0	Attractive
4.	Open on Saturdays (in the morning)	85	2	73	116	19	0	Indifferent
	Consultation Service							
5.	Consultation of multimedia materials	127	5	82	75	3	3	One dimensional
6.	Online catalogue of library resources	97	5	134	54	5	0	Attractive
7.	Consultation of graduation theses and Ph.D. dissertations	123	11	69	83	9	0	One dimensional
8.	Access to digital resources from home	116	10	73	87	7	2	One dimensional

Table 3 Requirement classification using the assessment according to frequencies (continued)

		O	*M*	*A*	*I*	*R*	*Q*	*Requirement category*
	Loan Service							
9.	Interlibrary Loan	63	11	161	57	3	0	Attractive
10.	Penalty system for late returns	89	23	38	35	108	2	Reverse
11.	Loans of e-books and e-book readers	12	48	153	77	5	0	Attractive
	Study Rooms							
12.	Silence policy	101	115	57	10	12	0	Must-be
13.	Natural lighting	85	7	97	75	28	3	Attractive
14.	Distinction between rooms for individual study and others for group study	163	7	61	57	7	0	One dimensional
15.	Desk reservation in reading rooms	39	0	125	69	62	0	Attractive
	Additional services							
16.	Bibliographic advice and qualified searching assistance	111	21	78	78	7	0	One dimensional
17.	Internet stations	35	194	49	14	3	0	Must-be
18.	Dedicated section for business newspapers and magazines	71	17	115	85	5	2	Attractive
19.	Options for the acquisition of texts and materials by students	92	6	107	78	12	0	Attractive
20.	Photocopy service	69	19	142	57	7	1	Attractive

The results obtained using this assessment method is as follows:

- Two *must-be* requirements: a silence policy, internet stations.
- Six *one-dimensional* requirements: lunch time opening, consultation of multimedia materials, consultation of theses and dissertations, access to digital resources from home, distinction between rooms dedicated to individual study and those dedicated to group study, bibliographic advice and qualified searching assistance.
- Nine *attractive* requirements: evening opening, online catalogue of library resources, interlibrary loan, loans of e-books and e-book readers, natural lighting, desk reservation in reading rooms, dedicated section for business newspapers and magazines, options for the acquisition of texts and materials by students, photocopy service.
- Two *indifferent* requirements: mandatory registration and admission by badge, Saturday opening (mornings).
- One *reverse* requirement: penalty system for late returns.

T-test for analysing mean differences of independent samples was applied to analyse independently the mean of the results of each one of the sub-populations included in this study (users of Palermo's library and users of Salerno's library) (see Table 4). The statistical package used in this study was SPSS. The results of the *t*-test showed that there were absolute no significant differences in attitudes towards university library services between Palermo's and Salerno's users (significance level >0.05).

Table 4 Independent sample test

		Levene's Test for Equality of Variances		*t-test for Equality of Means*							
		F	*Sig.*	*t*	*df*	*Sig. (two-tailed)*	*Mean Difference*	*Std. Error Difference*	*95% Confidence Interval of the Difference*		
									Lower	*Upper*	
Mandatory registration and admission by badge	Equal Variance Assumed	1.282	.258	−.836	293	.404	−.124	.148	−.415	.168	
	Equal Variance Not Assumed			−.838	292.805	.403	−.124	.148	−.415	.167	
Open at lunch time	Equal Variance Assumed	.031	.860	−.737	293	.462	−.115	.156	−.421	.191	
	Equal Variance Not Assumed			−.738	291.368	.461	−.115	.155	−.421	.191	
Open in the evening	Equal Variance Assumed	3.607	.059	−1.150	293	.251	−.168	.146	−.454	.119	
	Equal Variance Not Assumed			−1.153	292.693	.250	−.168	.145	−.453	.118	
Open on Saturdays morning	Equal Variance Assumed	1.077	.300	−1.005	293	.316	−.158	.157	−.466	.151	
	Equal Variance Not Assumed			−1.006	292.111	.315	−.158	.157	−.466	.151	
Consultation of multimedia materials	Equal Variance Assumed	.630	.428	.106	293	.916	.017	.157	−.292	.325	
	Equal Variance Not Assumed			.106	288.677	.916	.017	.157	−.292	.326	
Online catalogue of library resources	Equal Variance Assumed	.778	.379	−.250	293	.803	−.034	.137	−.304	.235	
	Equal Variance Not Assumed			−.250	286.283	.803	−.034	.137	−.305	.236	
Consultation of graduation theses and PhD dissertations	Equal Variance Assumed	3.825	.051	.812	293	.418	.128	.158	−.183	.439	
	Equal Variance Not Assumed			.809	285.878	.419	.128	.158	−.184	.440	

Table 4 Independent sample test (continued)

		Levene's Test for Equality of Variances		*t-test for Equality of Means*							
		F	*Sig.*	*t*	*df*	*Sig. (two-tailed)*	*Mean Difference*	*Std. Error Difference*	*95% Confidence Interval of the Difference*		
									Lower	*Upper*
Access to digital resources from home	Equal Variance Assumed	.382	.537	.725	293	.469	.115	.159	−.198	.428
	Equal Variance Not Assumed			.724	289.655	.470	.115	.159	−.198	.428
Interlibrary loan	Equal Variance Assumed	1.211	.272	−1.171	293	.242	−.141	.120	−.378	.096
	Equal Variance Not Assumed			−1.172	291.470	.242	−.141	.120	−.377	.096
Penalty systems for late returns	Equal Variance Assumed	1.041	.309	−.700	293	.485	−.139	.199	−.530	.252
	Equal Variance Not Assumed			−.701	292.231	.484	−.139	.198	−.530	.251
Loans of e-books and e-book readers	Equal Variance Assumed	1.395	.238	.745	293	.457	.070	.094	−.115	.256
	Equal Variance Not Assumed			.745	291.544	.457	.070	.094	−.115	.256
Silence policy	Equal Variance Assumed	.298	.585	−.945	293	.346	−.112	.119	−.346	.122
	Equal Variance Not Assumed			−.947	292.464	.345	−.112	.119	−.346	.121
Natural lighting	Equal Variance Assumed	.089	.765	−.396	293	.692	−.064	.161	−.380	.252
	Equal Variance Not Assumed			−.396	289.907	.692	−.064	.161	−.380	.253

Table 4 Independent sample test (continued)

		Levene's Test for Equality of Variances		*t-test for Equality of Means*							
		F	*Sig.*	*t*	*df*	*Sig. (two-tailed)*	*Mean Difference*	*Std. Error Difference*	*95% Confidence Interval of the Difference*		
									Lower	*Upper*	
Distinction between rooms for individual and group study	Equal Variance Assumed	.045	.832	−.020	293	.984	−.003	.154	−.306	.300	
	Equal Variance Not Assumed			−.020	289.884	.984	−.003	.154	−.306	.300	
Desk reservation in reading rooms	Equal Variance Assumed	.276	.600	−.100	293	.921	−.014	.141	−.291	.263	
	Equal Variance Not Assumed			−.100	292.351	.921	−.014	.141	−.291	.263	
Bibliographic advice and qualified searching assistance	Equal Variance Assumed	2.089	.149	.344	293	.731	.052	.151	−.246	.350	
	Equal Variance Not Assumed			.343	286.555	.732	.052	.152	−.247	.351	
Internet stations	Equal Variance Assumed	.001	.970	.536	293	.592	.046	.086	−.123	.214	
	Equal Variance Not Assumed			.535	287.085	.593	.046	.086	−.123	.215	
Dedicated section for newspapers and magazines	Equal Variance Assumed	.642	.424	−.071	293	.944	−.010	.138	−.282	.262	
	Equal Variance Not Assumed			−.071	292.455	.943	−.010	.138	−.281	.262	
Options for the acquisition of texts and material by students	Equal Variance Assumed	.188	.665	.178	293	.859	.026	.148	−.265	.318	
	Equal Variance Not Assumed			.178	291.518	.859	.026	.148	−.265	.318	
Photocopy service	Equal Variance Assumed	2.839	.093	−.801	293	.424	−.104	.130	−.360	.152	
	Equal Variance Not Assumed			−.804	292.947	.422	−.104	.130	−.359	.151	

6 Discussion and recommendations

Two *must-be* requirements that library users consider as basic needs are the presence of Internet stations and of a silence policy in reading rooms. Lack of these requirements causes great dissatisfaction. The central library of the University of Salerno already has these two requirements, while at the Faculty of Economics, University of Palermo, there have been Internet stations for many years that can be used following registration and presentation of an ID card. The computers, using the University IP, allow students to browse the University database and its digital resources. As for the silence policy, there is currently no form of control and this often causes the violation of this basic rule. The presence of controllers or of some form of sanctioning scheme could be introduced for those who break the rule in reading rooms.

One-dimensional requirements, whose presence/absence is directly proportional to the user's satisfaction/dissatisfaction, include lunch time opening, consultation of multimedia materials such as video tapes, DVDs, CD-ROM, etc., mandatory filing and free consultation of theses and dissertations, home access to digital resources, distinction between rooms dedicated to individual study and those dedicated to group study, bibliographic advice and qualified searching assistance. These requirements are in part already present in the service portfolio of the University of Palermo, although they could be further improved: the library is open at lunch time every day except Friday, when it closes at 13.30 and does not reopen in the afternoon, while the distinction between individual and group study rooms has already been tested, although the small number of seats available is often an obstacle to its implementation. You can also view multimedia materials such as videotapes, DVDs, CDs, etc., while digital resources can be accessed via Virtual Private Network (VPN) and there are professional figures who assist undergraduates and researchers looking for reference sources.

Mandatory filing and subsequent consultation of all theses and doctoral dissertations by Faculty students, which is already present in many other Italian universities, should definitely be implemented since its absence causes dissatisfaction. Meanwhile, the library at the University of Salerno, already guarantees lunch time opening, free consultation of theses and dissertations and professional advice regarding bibliographic research. However, it should also plan the introduction of the other *one-dimensional* requirements not yet available, such as access to multimedia materials (DVDs, CDs, videos, etc.), home access to digital resources and a distinction between rooms dedicated to individual study and those dedicated to group study.

The presence of as many as nine attractive requirements leaves room for many possibilities for differentiation compared to other Faculties and Universities. Some of these requirements, such as an online catalogue of library resources, a dedicated section for business newspapers and magazines, interlibrary loans and different options for the acquisition of materials and texts by students, have already been implemented by the library at the Faculty of Economics, University of Palermo. The offer could however be further improved by introducing the possibility of booking a place in the reading room on the internet the day before, by extending evening opening hours and introducing a self-service coin-operated copier through which students may photocopy materials of interest without having to take the books out of the library. Since very few Italian university libraries are currently offering e-book services, the introduction of a service for the loan of e-books and e-books readers could represent a valid and innovative element of differentiation. Some of these features would require the implementation of a certain

level of investment, but their presence would be appreciated by library users, who also prefer natural to artificial light and this is a factor that should be taken into account when designing the library layout. Unfortunately, the library at the Faculty of Economics, University of Palermo, is located in a basement, with no natural light.

On the other hand, the central library of the University of Salerno, already meets six out of nine of the *attractive* requirements that were identified. The only ones that have not been implemented yet are evening opening hours, the loan of e-books and e-book readers and desk reservation in reading rooms. From this point of view the library service on offer is very competitive, although it is more important to guarantee the presence of *must-be* and *one-dimensional* requirements first, as suggested by the evaluation rule M>O>A>I.

The two indifferent requirements found are mandatory registration with access to library premises by badge and Saturday morning openings. Since library users are indifferent about them, it is not worth investing resources to provide such requirements, unless mandatory registration is imposed for security reasons or by law. Neither of the Faculties examined currently offers these services.

The only *reverse* requirement found is the presence of a penalty system to sanction the late return of books borrowed. Since it is a *reverse* requirement, it should not be implemented in order to avoid upsetting users. At the same time, it is functional to the proper operation of any library. For this reason, many respondents (89) have considered it as one dimensional requirement. Hence, library managers should devise an alternative and just as effective system, in order to guarantee in most cases a timely return of the books lent. Both libraries have a penalty system in place to sanction delays in returns. For example, the library at the Faculty of Economics, University of Palermo, blocks future loans of books for the number of day equivalent to those of the late return.

6.1 The M>O>A>I rule

The M>O>A>I rule sets out the hierarchy of requirements to be met when providing library services. This is very useful especially in the current climate where financial resources for libraries are scarce and guiding principles to rationalise investments are needed. When designing or re-designing their range of services with an eye on users' needs, managers of university libraries must first make sure that their offer does not lack *must-be* requirements, i.e. an effective silence policy and the presence of internet stations. Then they should invest resources in *one-dimensional* requirements such as lunch time opening, access to multimedia materials and free consultation of all theses and dissertations written by previous students, home access to digital resources, separating the rooms dedicated to individual study from those dedicated to group study and offering bibliographic advice and professional search assistance. The presence of these requirements, together with the *must-be* ones, is essential to ensure an acceptable degree of customer satisfaction.

If there are additional resources to invest, the service portfolio will include some of the many *attractive* requirements found: evening opening, online consultation of the resource catalogue, interlibrary loan, loans of e-books and e-book readers, natural lighting, desk reservation in reading rooms, dedicated section for business newspapers and magazines, options for the acquisition of texts and materials by students, photocopying service.

Investing resources in the implementation of *indifferent* requirements (mandatory registration and admission by badge, Saturday morning opening) and especially in *reverse* ones (penalty system for late returns) must be avoided.

7 Conclusions

With this empirical research we have identified some important elements that can be useful to improve the management of academic library systems. Services, such as the presence of internet points are considered *must-be* and should therefore be seen as very important since their absence generates dissatisfaction. Other services such as the possibility of evening opening, online consultation of the resource catalogue, interlibrary loans, natural lighting, desk reservation in reading rooms, a dedicated section for business newspapers and magazines, text acquisition by students and copying facilities are all *attractive*, therefore generate satisfaction if present. Other services, such as mandatory registration with access to library premises by badge and Saturday morning openings are *indifferent*, so it seems reasonable not to invest in their implementation, channelling resources into other more important services to users' satisfaction. Users do not like penalty system of sanctioning delays in returns (*reverse*), but those are necessary for the operation of the library. It is likely that participating interviewees did not consider the trade-off between the penalties imposed and not finding some books because of other people's delays.

We also realised that there were no significant differences between the answers given in Palermo and in Salerno, which gives greater consistency to the data collected.

These practical indications can be useful in providing and managing library services following business-like standards that take into account users' satisfaction. As with libraries, many other academic services could be designed with an eye to users' satisfaction. If this approach looks highly desirable for auxiliary services it also displays, in our opinion, limits when it comes to education and training, where students' satisfaction could easily translate into 'easy marks', turning universities in nothing more than degree factories. However, taking great care and consideration we think it is possible to adopt a business-like approach also in those cases and we shall try to develop appropriate applications in future studies. The improvement of universities also depends on the availability of a better learning environment and marketing tools can provide a significant contribution in this regard.

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