Quality in Brazilian Academic Libraries: Proposal of Indicators from the Customers' Point of View

Waldomiro Vergueiro and Telma de Carvalho

University of São Paulo

Abstract

The management of quality in academic libraries, as a management method that allows the improvement of performance, has been the object of interest for the managers of these services. In this context, the identification of indicators that may take into account the social-economical and political context that permeate the reality of the information services is essential to better adequate the quality proposals. A search aiming to identify and validate proper indicators for academic libraries in developing countries was developed by a group of researches and professionals involved with many teaching units of São Paulo Academic. Based on a bibliographic survey about the application of quality on information services, the research aimed to validate 16 indicators appointed in the literature and considered, by the research staff, as belonging to Brazilian reality (communication, access, reliability, courtesy, effectiveness/ efficiency, quality, response, tangible, reliability, security, extension, warranty, external customer satisfaction, cost/benefit and response time). From the data collection performed with 7 academic libraries in the Dentistry field, that served as environment to apply and validate the indicators, a proposal for its adequacy to the characteristics of the Brazilian academic environment was elaborated. It was concluded that the indicators tested in the dentistry libraries made possible the identification and characterization of the main elements that must be present during the evaluation of the quality of an information service of academic nature, and may be adapted and seen in the context of other environments, as well as to be used to permanently monitor the information services inserted in the Brazilian context.

1. Introduction

Traditionally, information services are preoccupied with the improvement of the quality of the products and services that they make available. This was translated at first by the physical and structural organization of the work, aiming an organizational flow that could respond to the service objectives. In a way, the search for quality has been based more on the vision professionals had about the services and on their own criteria, than on the opinion of the users for whom the services were made available.

Among others, technological factors– such as the virtual library (Seiler, Surprenant, 1993) – and economical factors– such as the price of printed materials and the search for more efficiency in information services (NEWELL, 1993, p.102), as well as the establishment of institutional covenants and consortia that aim to decrease the cost of providing access to electronic publications (KRZYZANOWSKI, TARUHN, 1998) – are factors that lead information services to question themselves about the benefits that they could bring to their customers' life. As the information products market becomes more competitive, the organizations that act in the area of information providing, such as libraries and documentation centers in general, are required to change their passive posture regarding their customers and adopt a pro-active positioning for their services, being conscious that information has transformed itself into " an essential area for the international political debate" (SANTUCCI, 1994, p. 237). With this picture, the academic libraries become more relevant as elements for the social development of the country. These organizations should develop work practices and managerial methods that respond in a quick and efficient manner both to societal demands, as well as to the characteristics and specific needs of their customers. The identification and application of quality indicators to the services and products of the academic libraries may help to reach such an objective.

This paper will discuss this question, presenting research results to identify these quality indicators in Brazilian academic libraries, on an specific knowledge area,

approaching them from the point of view of the customers, representing the continuity of a prior text that emphasized this matter from the point of view of the services managers (Vergueiro et al 1999).

2. Information Services and the Application of Quality Programs

According to Jurow, Barnard (1993), despite the existence of a great number of books, articles, folders and manuals about the quality theme, just few of them are directly or indirectly related to libraries, which is also confirmed by Fitch, Thomason, Wells (1993). The first books to focus on libraries were published in 1995 and the following years (Brophy, Coulling, 1996; Hernon, Altman, 1995; St. Clair, 1995, 1996). It is also important to note a progressive interest in the matter in the librarianship literature, with journal issues totally dedicated to quality problems (Journal of Library Administration, 1993, Information Science, 1994; Library Trends, 1996). The first literature reviews on the area may already be found (Boelke, 1995; Riggs, 1992; Valls, Vergueiro, 1998).

The analogy between the library services and the retail sales services in a store, moving the quality attention focus, or rather, passing it from the processes to the beneficiary of the services, is made by Taylor, Wilson (1990). Shaughnessy (1987) follows the same line of reasoning, pointing out the main requisites for the quality of an information service: the understanding of the needs and expectancies of the users: the security (including the reliability); the courtesy and communicability; the adoption of an adequate language by the information professionals (including their body posture and the distribution means/channels); and an adequate physical environment.

Other reports of the implementation of quality management in libraries and information services may be also found in the works of Asser (1993), Boekhorst (1995); Caldeira (1994); Costa, Lima (1994); Desirey et al. (1988); Fitch, Thomason, Wells (1993), Fredenburg (1988), Kinnel (1995), Mackey,Mackey (1992), Martin(1993), Pinto (1993); Rocha, Gomes (1993); Shedlock (1988); Silva, Almeida, Belluzzo (1994); Stuart, Drake (1993); and White, Abels (1995), among others.

Whitehall (1992) makes a bibliographic selective review about Quality in Libraries and Information Services, making some comments about the indicators of customers' satisfaction. He emphasizes the adequacy of the sources for the users interest area; the relevance for the user; the speed of access and the information supplying, the users' evaluation of the services, and the facility available to use the services and products offered.

One may conclude that one of the fundamental factors for the quality management of information services is the **focus on the customer**. As knowledge about the dimension of the customer services increases, one may know the criteria that they use as judgement, reaching the remaining of the requisites indicated by Shaughnessy (1987).

3. Quality Indicators in Brazilian Academic Libraries

More and more, academic libraries have to expand their horizons and abandon the belief that they act on a captive environment: " the absence of a direct competitor does not mean that customers automatically will develop loyalty for the library" (Wehmeyer, Auchter, Hirshon, 1996, p. 173). So, to develop initiatives to gain a reputation of efficiency and worth with the customers is an important initiative to grant the institutional recognition.

This implies developing new products and services, using the most advanced information technology, as well as incorporating the vision of the customers and the constantly evaluating what was offered to them. In function of the rhythm imposed to changes and innovations at this end of century, those administrators with visions for the future are realizing the need to assume a more progressive posture in order to grant the permanence and the viability of the library institution. The quality of library service for academic areas needs, among other things, the search for indicators that allow for the evaluation of these services. Some performance measures provide information about the quality, as, for example, the accessibility, response time, collection coverage and relevancy of stock (Whitehall, 1992). They may be used for the quality control in libraries, but indicators are also needed to optimize the comprehensive criteria. These

indicators are an essential part of the quality process and may be applied to introduce the quality management. Initially, they were viewed as numbering targets or quantitative guides to evaluate a specific service; but, more recently, they are viewed in a diverse manner, or to say, as general criteria of excellence for all the aspects of the services and products made available for customers (Cullen, Calvert, 1996).

3.1 Implication of the Brazilian reality

The scientific research on Brazil is influenced by different factors, such as geographic distance and budget limitations. Many times these factors are almost impossible to surpass, directly influencing the results that may be reached. So, the search for quality indicators in academic libraries must necessarily start with a specific area of knowledge. From this point of view, the work on indicator identification presented here opted to concentrate research efforts on the libraries of the Dentistry field in public universities of the state of São Paulo, Brazil. This choice seems to be justified due to the characteristics of the information services on the Dentistry environment, where the demands for specialized information require an active positioning from the professional in order to respond in a proper manner to the needs and requisites of their customers. Taking into account these principles, the population target was constituted by 7 Dentistry libraries from the following universities:

- Universidade de São Paulo - USP (School of Dentistry – cities of Bauru, São Paulo and Ribeirão Preto);

- Universidade de Campinas – UNICAMP (School of Dentistry – city of Piracicaba) and

- Universidade Estadual Paulista "Julio de Mesquita Filho" – UNESP (School of Dentistry – cities of São José dos Campos, Araraquara and Araçatuba).

3.2 The objective of the research and methodological steps

The research aimed to **identify quality indicators appropriate to Brazilian academic libraries**. For this, a bibliographic retrospective search on database ISA

(Information Science Abstracts) was made, for the period from 1996 to 1997). The search was made in accordance to internal criteria defined for selecting the pertinent articles, as described in prior results (Vergueiro et al, 1999). Reading the articles made possible the elaboration of a list with 16 indicators, that, afterwards, served as base to elaborate the research instrument, described below:

Communication: Keeping customers informed in a language they can understand and listening to them (Trzan-Herman, Kiauta, 1996; White, Abels, 1995).

Access: The external customer must have easy access to the services (convenient location, good telecom connections, and other information technology) (Trzan-Herman, Kiauta, 1996); approachability and ease of contact (White, Abels, 1995).

Reliability: the ability to perform dependably, accurately, and consistently to carry out what was promised to the customer: performance must be dependable and accurate, and must exclude errors (Humphries, Naisawald, 1991; Trzan-Herman, Kiauta, 1996; White, Abels, 1995).

Courtesy: Each employee must be polite, respectful and friendly to the external customer (Trzan-Herman, Kiauta, 1996; White, Abels, 1995).

Effectiveness: Proportion in that the organization fills the established objectives and proposals (Hernon, 1996).

Efficiency: Economy of resources and adequacy (Hernon,1996)

Quality: Reduction of distance between customer expectancies and the delivered services (Hernon, 1996).

Responsiveness: The willingness to provide prompt service and to help; the employee must offer services in the shortest possible time (Humpries, Naisawald, 1991; Trza-Herman, Kiauta, 1996).

Tangibles: Physical facilities (building), equipment, repair/fixing of materials, appearance of personnel (Humpries, Naisawald, 1991; Trzan-Herman, Kiauta, 1996; Cullen, Calvert, 1996; White, Abels, 1995).

Credibility: Performance must provide the external customer with the most suitable services (Trzan-Herman, Kiauta, 1996).

Security: Services must ensure physical and financial security and secure the confidential material (Trzan-Herman, Kiauta, 1996; White, Abels, 1995).

Extension: Amount of delivered services related to the served population size. (Hernon, 1996).

Assurance: Evidence of employees' knowledge of the product, courtesy and ability to convey trust and confidence (Humphries, Naisawald, 1991; White, Abels, 1995).

User satisfaction: satisfaction with services rendered; number of user activities in library; percentage of items in collection as listed in some checklist; percentage of items in collection by type of material (books, serials, reports, etc.); percentage of items in collection by type of material compared to various classes of users; quality-value of items in collection based on expert opinion; ratio of documents used to materials requested (Evans, Borko, Ferguson, 1972).

Cost/benefit ratio: Ratio of the services provided to total cost; ratio of total service expenditures to users (actual and/or potential); ratio of item cost to item value or utility; ratio of a given service (including

overhead cost) to response time cost (Evans, Borko, Ferguson, 1972).

Response time: Speed of services; ratio of number of services offered to average response time for all services; ratio of response time (to secure document) to total time document is of value; ratio of holdings to response time (Evans, Borko, Fergusom, 1972).

3.3 Data collection tools

The elaboration of the questionnaires to collect the data was based on work done by Cullen, Calvert (1996) on the academic libraries of New Zealand. At the beginning of the project, a specific instrument was sent to library managers, changing the specifications used by the New Zealand authors, who established differences between the data collected from the managers and the data collected from the librarians attending the customers. In the present research, it was understood that the physical dimensions and characteristics of the Dentistry information services allowed the managers to keep in closer contact with their public. The result of this first research step was disseminated on a paper presented to INFO99 –   International Congress of Information (Vergueiro et al, 1999).

During the second step of this research, the objective was to listen to the external customers about the selected indicators. For that, a questionnaire composed by 29 open and/or closed questions derived from the indicators was elaborated, also based on the work by Cullen, Calvert (1996). The questionnaires were sent directly to the library managers by mail, asking them to submit them to the external customers, divided by students (undergraduates and graduates) and faculty members. The sample of external customers selected was established as 2% of the universe of each school, from a total of 13 faculty members and 63 students, distributed as below:

- USP/School of Dentistry/Bauru – 2 faculty members and 8 students

- USP/School of Dentistry/São Paulo – 3 faculty members and 21 students

- USP/School of Dentistry/Ribeirão Preto – 3 faculty members and 10 students

- UNICAMP/School of Dentistry/Piracicaba – 1 faculty member and 9 students

- UNESP/School of Dentistry/São José dos Campos – 2 faculty members and 4 students

- UNESP/School of Dentistry/Araraquara – 1 faculty member and 4 students

- UNESP/School of Dentistry/Araçatuba – 1 faculty member and 7 students

<>

4.1 Presenting the results

The analysis of the external customers' answers made it possible to understand how the indicators proposed by the literature apply to the Brazilian reality of the Dentistry field. The analysis of each indicator follows:

Communication: There is an outstanding difference between the knowledge of the students and the of the faculty members about the library policies. The formers do not know them. The latter declare to know them. The students know more about the rules, and the faculty members go more deeply into the regulations, which seems to be consistent in relation to the needs of each of these external groups. The knowledge of the policies occur, in the case of the students, by folders or panel. For the faculty members, only 38% revealed how they knew about the policies, emphasizing the direct consultations with the library. About the participation on the decisions, it seems that students have a complete lack of knowledge regarding how the academic management defines their participation, or rather, allowing the students representation on many committees (academic, congregations, departmental, under graduate/graduate committees, research, library, etc.). We may conclude that this explains why the majority of the students maintain that they do not participate on the decisions. The majority of students do not receive notification about their suggestions to the collection; of those who said they were notified, only 4 declared the way they receive it - by personal communication and library dissemination bulletin. The

faculty members receive notification about the suggestions they send, which may occur due to a greater opportunity to acquire the bibliographic material destined to this category, normally preferred by agencies for support to research. Concerning the location of bibliographic materials in the collection, both the students and the faculty members declared not to have difficulties to finding materials, which allows us to conclude that the visual communication at the libraries is satisfactory. Regarding the performance of the attendants of reference questions, 46% of the students declared to be satisfied " all the time" and the same answer was given by 53% of the faculty members. Considering the answer rate for " a degree over 50%" (47% students, 23% faculty members), the faculty members showed a higher satisfaction response rate from the reference attendants, which perhaps may indicate a preference for these professionals. With reference to the formal mechanisms of communication to better use the library, they seem to be efficient both for the students and for the faculty members, as their majority said to have learned to use the services with the guide of the attendants and guided visits. The library catalogs were considered easy for use, both by faculty members and students; however, almost half of the students and more than a half of the faculty members yet prefer to use only printed catalogs. This may indicate the advisability of divulging the on-line catalog to the library users; it is presently restricted only to 44% of the students and 30% of the faculty members.

Access: This indicator concerns the acquisition and shelving of the collection information material, besides infrastructure/equipment items and use of the different services.

As above mentioned, the collection is conveniently located for both categories. However, a high rate of materials that were not available for borrowing was also obtained: both students and faculty members (respectively, 66 and 46%) declare that only " sometimes" the desired material is available for borrowing, which is a surprisingly rate, even considering the percentage that affirm " always" to get the materials (30% of students, 38% of faculty members). In the matter of local

use, the students' answers correspond to those given for the external use: 57% answered that they find the available materials only "sometimes" and 41% say "always". The faculty members present an inverse relationship on the item availability for local use, with rates of 53% for the answer "always" and 23% for "sometimes". This difference seems to not have any relationship with the time needed for replacing the materials on the bookshelves - both categories affirm that such activity is made at a satisfactory time. Perhaps it would not be wrong to assume that there is little knowledge about the collection; for example, the number of students and faculty members who know of the existence of printed journal indexes in the collection is greater than those that know about them in electronic format, or rather, in CD-ROM (74 to 42%, in the case of the students and 69 to 46% of the faculty members). Similar relationship may be found on the use of the printed and on-line catalogs: 49% of the students and 61% of the faculty members still prefer to use the printed catalogs instead of the on-line.

Many aspects of the infrastructure are linked to the question of access. The answers regarding cabins for private study are prominent, as they are considered sufficiently available by both categories; there are divergences between faculty members and students about cabins for group study (in its majority, the first consider them to be in enough number, while the students have the opposite opinion). The existing access for people who has physical disabilites is unknown for most of faculty members and students (despite their existence, at least in some of the evaluated libraries). This does not occur in questions regarding to computer availability, the existence of which is known by most of the faculty members and students; the same, however, cannot be affirmed regarding to the use of microforms, as 80% of the students do not know about their existence. Regarding the access to the services delivered by the libraries, we may emphasize, for the students, the on-line search, serials index in CD-ROM, printed indexes and document delivery. For the faculty members, we may emphasize the serials index in CD-ROM, document delivery, on-line search and interlibrary loan.

One last element that may be considered as a factor for the access is the time the academic libraries are opened for use: in this study, most of the students and faculty members agree with it, despite significant rates of disagreement that was also evident in both categories (34 and 30%, respectively).

Reliability: Elements related with this indicator are the policies and the decision making of the libraries, the acquisition and shelving of the information material on the collection and the infrastructure.

About the policies, most of the students seem to fix on only the rules, maybe because these are much more easily available to them on the folders and panels; the faculty members have more interest in the internal regulations. 27% of the students do not participate in decision making, while 22% participate by suggestions and criticism of the services. The rate of faculty members that do not participate in the decisions is superior to that of the students, reaching 29%; however, the participation of the faculty members seems to occur in a more effective way, such as participating in committees and providing suggestions and criticism, both with rates of 23%. Regarding the acquisition and shelving of the information material in the collection, the majority of students, do not receive notification about their suggestions. Of the few students that have been notified, only four described the manner in which it occurs: personal communication and dissemination bulletin of the library. These kind of notifications are also valid for the faculty members. The time needed for shelving the materials does not seem to represent a problem for the students or the faculty members; both the categories do not think that it is difficult to find the materials on the bookshelves, despite the fact that sometimes the desired materials are not available for borrowing. Most of the students (57%) seems to not have sufficient trust on the collection for local use. The faculty members invert this relation, presenting a rate of 53% that " always" find the material available. The maintenance of the material was considered satisfactory by both students and faculty members. One of the most important elements to establish reliability is the way in which services are delivered to the customers in academic libraries. In this sense, there

is reason to believe that the institutions satisfy reliability for their customers, as both students and faculty members (90 and 84%, respectively) believe to always find employees available to attend them, when they are needed. This also seems to occur on the response to reference questions: 93% of the students and 76% of the faculty members declare that between 50 and 100% of their questions are satisfactorily answered. This high level of satisfaction may be extended to general attendance in the academic libraries, about which 69% of both categories declare to be satisfied. The use of the libraries normally occurs under the orientation of the librarians, as we may assume from the answers.

The indicator " reliability" also does not seem to be much affected by the time libraries are opened for use.

Courtesy: This indicator maay be exemplified by the response to reference questions, the use of the library and the good attendance, already evaluated on the previous item. All of them were considered very satisfactory by students and faculty members.

Effectiveness/ efficiency: This indicator appears mainly in questions related to policies, shelving and acquisition of information materials for the collection, availability of employees, answers to reference questions, use of the library, attendance, infrastructure/equipments and the use of different services.

About the policies, we can emphasize the fact that they are more known by faculty members than by students, which is logical, when we consider that the faculty members have a more constant link with the institutions. The libraries, on the other hand, seem worried to make their policies known by students and faculty members through folders and panels. However, we cannot affirm that the same reasoning can be applied to the notification about the students' suggestions to the collection, as they declare " rarely" receive any of them.

With regards to the collection, the effectiveness/efficiency must be demonstrated by the shelving of the materials, a matter about which both students and faculty members seems to be satisfied. With regards to borrowing, it is not possible to say the same, as the availability of desired materials, in most of the answers,

occurs only " sometimes" . For the students, this also applies to the local use (57%), while for the faculty members the rate is lower (23%). The currency of the materials on the bookshelves, as already mentioned, also does not cause dissatisfaction. The same may be said with reference to the maintenance of the materials.

Another aspect regarding the " effectiveness/ efficiency" of the academic libraries in the opinion of external customers is the availability of employees for attending them and the satisfaction with the response to reference questions, demonstrated by a percentage of 93% of the students and 76% of the faculty members. The good attendance by the staff also was considered satisfactory (69%). The librarians also seem to have importance for the orientation of the customers in the use of the library, as was pointed out by most of the students and faculty members. About the catalogs, 68% of the students and 69% of the faculty members consider them of easy use.

Infrastructure aspects, such as equipment used to facilitate the activities are known by a large majority of the sample. However, 80% of the students do not know about the existence of microform readers in the libraries, versus 69% of faculty members who are used to them. The computers are machines of general knowledge.

About services to users, such as those for bibliographic on-line were considered " good" by 42% of the students and 53% of the faculty members. The " regular" answer received a rate of 42% from students and 7% from faculty members. The availability of printed serials had the rate of 74% from students and 69% from faculty members. For 42% of the students and 46% of faculty members, the CD-ROM serials index are available for use, but is interesting to emphasize that 20% of students and 23% of faculty members do not know this type of index.

60% of the students and 53% of the faculty members agree with the opening time of the libraries, despite some requests for extending the hours.

Quality: Again aspects of this indicator are related to: library policies, infrastructure/equipment, collection, attendance, answers to reference questions and the use of the services.

The existence of formal policies represents a quality factor. But it seems that they need to be better publicized. Most of the students know the service rules while the faculty members know the internal regulations. The participation in decision making is another factor that deserves more attention on the indicator "quality". Even the faculty members participate only in committees. Other question that shows a failing in the quality indicator is the notification about suggestions for the collection; it occurs mainly with the students. The same does not happen with the existing penalties, which seem to be fairly used.

The infrastructure quality, from the students point of view, is not very high regarding the cabins for group studies, contrary to the faculty members' thinking. However, this difference may be explained by the characteristics of the library use by both categories. New technologies, such as computers, are more popular than older technologies, such as the microform readers, which most of the students ignore.

The shelving of the materials in the collection occurs in a satisfactory manner, perhaps due to visual communication. The availability of the material for borrowing is limited, as both students and faculty members inform to find materials only "sometimes". This agreement does not repeat itself with respect to the availability of materials for local use – the students overlap the faculty members with 34% of difference (57% against 23%), but it repeats itself in relation to the materials maintenance, 57% of the students and 69% of the faculty members considered them "good". The time to replace the materials in the collection was considered satisfactory.

The availability of librarians was evaluated in a very positive manner by the research participants, as 90% of students and 84% of the faculty members "always" find available employees. Similar rates are obtained by the answers to reference questions. Despite lower rates, the orientation given by the librarians

for the use of the library also reached the consensus of most students and faculty members.

In the use of library services, we can emphasize the online search, CD-ROM and document delivery as the most used by both categories. The catalogs are considered of easy use both by students and faculty members. This agreement is also reached in relation to the rates received by printed serials and CD-ROMs, as well as to the quality of paid bibliographic online search services, considered as "good" by 42% of students and 53% of faculty members.

The library opening times, in a general manner, is satisfactory.

Response: This indicator is characterized mainly by the answers related to the use and shelving of the material in the collection, as well as the response to reference questions.

Students and faculty members easily find the materials on the bookshelves. However, the availability of materials to borrow is not satisfactory, as 66% of students and 46% of faculty members affirm to find materials available only "sometimes". Regarding local use, 57% of students say that the materials that they need are "sometimes" available, and 41% of faculty members say "always". The time to return the material to the collection was considered satisfactory by both categories.

For 93% of the students and 76% of the faculty members, 50 to 100% of the reference questions are answered satisfactorily.

Tangibles: Tangibles elements are, basically, infrastructure/equipment and the collection. Elements of infrastructure that were evaluated were the cabins for group and individual study. The first were considered not sufficient in number only by the students and the latter are available in sufficient number for both categories.

Special access for individuals with disabilites are not known by faculty members and students. Both researched groups confirmed the existence of bar services nearby, during the library functioning time. The library buildings were considered comfortable and attractive by students and faculty members. Micro-sheet and

microfilm readers are unknown by students but known by faculty members. The collection maintenance is considered as good.

Credibility: In this indicator, there were questions involving library policies, the participation in decision making, the acquisition and shelving of information materials in the collection, the services, the public services, the response to reference questions and infrastructure/equipments.

An important element on the evaluation of credibility is the institutional transparency. In this sense, the existence and dissemination, for public knowledge, of the used policies appears naturally as an element to be emphasized. In the case of the present research, most of the students declared that they do not know the policies; however, at the same time they have they affirmed to know the library rules. The faculty members, besides saying that they know the policies, demonstrate more familiarity with the internal regulations. The dissemination of these policies is made by folders and panels, in the case of the students; and by direct consultation with library employees, guidance and announcements on the tables, in the case of the faculty members. A specific aspect of the policies, the penalties, found general consensus, as being considered fair.

Since credibility, in great part, is also related to the participation in the decisions, it was important to verify how both customer categories saw the subject. It was realized that most of the students do not participate on the decisions, while the faculty members have a small amount of participation in committees.

The students stated that they do not receive notification about their suggestions for the collection, while the faculty members presented a different opinion. About the borrowing of materials, only 33% of the students and 38% of the faculty members inform "always" finding the desired materials, finding them easily on the bookshelves. On the other hand, they did not seem so unhappy in what regards to the time to replace the materials on the bookshelves, which was considered as satisfactory. But as to local use, the data show some divergence between both categories: 57% of the students and 23% of the faculty members find the

material only "sometimes". The maintenance of materials, although in general considered "good" by students and faculty members, present some difference about the classification "regular", where the opinion of the students surpass that of the faculty members (41 and 15%, respectively). This may occur as a result of the objectives of the collection use. The use of the printed catalog predominate in both categories, but it is possible to note an increase in the use of on-line catalogs by the students.

From the point of view of credibility, the paid on-line bibliographic search services are considered good, but those appointed as the most used by both categories are the CD-ROM serials, document delivery and on-line search. Both categories also appoint the librarians' guidance as the element which made possible their apprenticeship in the use of the library. This information seems to be consistent with the response to reference questions, in that almost all of the persons placed the answer rate between 50 and 100%.

The opening time of the libraries was also revealed as a possible factor to judge their credibility. At the present research, this question do not seems to be sufficiently answered: despite most of the students and faculty members affirm that it is convenient, a significant parcel do not agree with this opinion (34% of the students and 30% of the faculty members).

Security: The security questions involved the penalties, the special accesses for people with physical disabilities and the materials maintenance. We considered that the penalties involve the collection security and the shelving of the lost bibliographic material, preserving the patrimony of the universities, as well as the materials good maintenance. The special access for people with physical disabilities assure their security and well being.

Extension: According to what was seen in a prior paper (Vergueiro et al, 1999), all the libraries have a potential student public of not less than 400 (two of them, also, serve to institutions with more than 1000 students in undergraduate and graduate courses). To serve this population, the research with external customers showed a high rate of ignorance about the services and the existence

of specific materials. The majority of students students, for example, ignore the microform reader, although they are used to new electronic equipment, such as the computers. The faculty members are familiar with the readers and the computers.

In general, the collection is "sometimes" available for borrowing and for local use, even if the materials can be easily found by both categories and are replaced on the collection in an appropriate time.

The services most used by students and faculty members are the serials index in CD-ROM, document delivery and on-line search. The response to reference questions surpass 50% of the requests.

Warranty: The above mentioned response rate to reference questions and the service provided by the library staff, that was considered as " good" by both categories, were included in this indicator.

Customer satisfaction: The research instrument indicated, as satisfactory both for students as for faculty members: the individual cabins, the materials shelving, the availability of the employees to attend, the response to reference questions, the public service, the use of the catalogs and the opening time of the libraries. The availability of borrowing bibliographic material is unsatisfactory for both categories.

Different points of view in terms of satisfaction were obtained for the subject of group study cabins (satisfactory only for the faculty members) and the availability of materials for local use (less satisfactory for the students).

Cost-benefit: The answers did not permit to verify the pertinence of this indicator from the point of view of the external customers.

Response time: In this indicator, the easy location and quick shelving of the materials were emphasized, points which reach the consensus of all the participants. The response time for borrowing and for local use may be inferred by the immediate availability of the materials: they did not meet the expectations of the external customers who participated in the research. In the other hand, the reference questions are, in general, satisfactorily answered.

5. Conclusions

As the customers' responses suggest, some indicators show the need for the libraries to look at them with closer attention. Quality, for example, presents deficiency specially in relation to the collection. On other hand, almost all of the indicators include the good service: the employees availability, the response to reference questions and the availability of computers, with the tendency of preference for on-line access by external customers.

The variables "shelving of bibliographic material" and "response to reference questions" are emphasized, each of them, as components of 10 indicators. A possible conclusion is that the reference service again proves its importance as a special element for the quality of the service, from the external customers point of view.

As proposed and validated by the Dentistry libraries (which may be considered, in general, fairly representative of the present Brazilian context of academic information services), the indicators make possible to visualize the existing excellence conditions in the libraries and those that need to be continuously improved in these environments. Although applied to a specific Brazilian reality, they could be adapted for other environments.

References

American Library Association. 1967. *Public Library Association. Minimum Standards for Public Library Systems*: 1966. Chicago : American Library Association. p. 34.

Asser, M. 1993. The demand for quality. *Library Management*, 14: 13-6.

Boekhorst, P. 1995. Measuring quality: the IFLA Guidelines for performance measurement in academic libraries. *IFLA Journal*, 21: 278-81.

Boelke, J. H. 1995. Quality improvement in libraries: total quality management and related approaches. *Advances in Librarianship*, 19: 43-83.

Brophy, P., Coulling, K. 1996. *Quality management for information and library managers*. Aldershot : Gower; Aslib.

Caldeira, P. T. 1994. O sistema de bibliotecas da UFMG na perspectiva da qualidade total. *Revista da Escola de Biblioteconomia da Universidade Federal de Minas Gerais*, 23: 56-64.

Costa, M. F. T. de J. F., Lima, E. B. de. 1994. Implantação da gestão pela qualidade total – GQT – na Seção de Documentação Técnica do Distrito de Explanação do Sudeste (DESUD – PETROBRÁS). In: Congresso Latino-Americano de Biblioteconomia e Documentação, 17, Belo Horizonte, 1994. *Anais...* Belo Horizonte : Associação dos Bibliotecários de Minas Gerais. p. 69-80.

Cullen, R., Calvert, P. New Zealand university libraries effectiveness project: Dimensions and concepts of organizational effectiveness. *Libri* 18: 99-119.

Desirey, J. et al. 1988. The quality circle: catalyst for library change. *Library Journal* 113: 52-3.

Evans, E., Borko, H., Ferguson, P. 1972. Review of criteria used to measure library effectiveness. *Bulletin of the Medical Library Association* 60: 102-110.

Fitch, D. K., Thomason, J., Well, E. C. 1993. Turning the library upside down: reorganization using total quality management principles. *Journal of Academic Librarianship* 19: 294-9.

Fredenburg, A. M. 1988. Quality assurance: establishing a program for special libraries. *Special Libraries* 79: 277-84.

Hernon, P. Numbers, numbers, and more numbers (editorial). 1996. *Journal of Academic Librarianship*, 22: 249-50.

Hernon, P., Altman, E. *Service quality in academic libraries*. 1996. Norwood, N. J. : Ablex.

Humphries, A. W., Naisawald, G. V. 1991. Developing a quality assurance program for online services. *Bulletin of the Medical Library Association* 79: 263-70.

Journal of Library Administration 18, 1993.

Jurow, S., Barnard, S. B. 1993. Introduction: TQM fundamentals and overview of contents. *Journal of Library Administration* 18: 1-13.

Kinnell, M. 1995. Quality management and library and information services: competitive advantage for the information revolution. *IFLA Journal* 21: 265-73.

Krzyzanowski, R., Taruhn, R. 1998. Biblioteca eletrônica de revistas científicas internacionais: projeto de consórcio. *Ciência da Informação* 27: 193-7

Library Trends 44, 1996.

Mackey, T., Mackey, K. 1992. Think quality! The Deming approach does work in libraries. *Library Journal* 117: 57-61.

Martin, D. 1993. Towards kaizen: the quest for quality improvement. *Library Management* 14: 4-12.

Newell, A. H. 1993. Access to journal information and the impact of new technologies. In: Cook, B., ed. *The electronic journal: the future of serials-based information*. New York : Haworth Press. p. 45-68.

Pinto, V. B. 1993. Informação: a chave para a qualidade total. *Ciência da Informação* 22: 133-7.

Riggs, D. E. 1992. Strategic quality management in libraries. *Advances in Librarianship* 16: 93-105.

Rocha, E. da C., Gomes, S. H. A. 1993. Gestão da qualidade em unidades de informação. *Ciência da Informação* 22: 142-52.

Santucci, G. 1994. Information highways worldwide: challenges and strategies. *FID News Bulletin* 44: 237-47.

Seiler, L. H., Surprenant, T. T. 1993. The virtual information center: scholars and information in the twenty-first century. In: Lancaster, F. W. *Libraries and the future: essays on the library in the twenty-first century.* New York : Haworth Press. p. 157-80.

Shaughnessy, T. W. 1987. The search for quality. *Journal of Library Administration*, 8: 5-10.

Shedlock, J. 1988. Defining the quality of medical reference service. *Medical Reference Services Quarterly* 7: 49-53.

Silva, A. M. S., Almeida, G. M. B., Belluzzo, R. C. B. 1994. O plano de gestão da qualidade e sua implantação na Rede de Bibliotecas da UNESP: relato de uma

experiência. In: Seminário Nacional de Bibliotecas Universitárias, 8., Campinas, 1994. *Anais.* Campinas : Biblioteca Central/UNICAMP. p. 307-16.

St. Clair, G. 1995. *Customer service in the information environment.* London : Bowker-Saur.

St. Clair, G. 1996. *Total quality management in information sciences.* London : Bowker-Saur.

Stuart, C., Drake, M. A. 1993. TQM in research libraries. *Special Libraries*, 84: 131-6.

Taylor, M. H., Wilson, T. 1990. *Q. A.: quality assurance in libraries – the health care sector.* Ottawa : Canadian Library Association.

Trzan-Herman, N., Kiauta, D. 1996. The organizational map: an important aspect of achieving total quality management in a pharmaceutical and medical library: a Slovenian case. *Libri* 46: 103-19.

Valls, V. M., Vergueiro, W. C. S. A gestão da qualidade em serviços de informação no Brasil: uma revisão de literatura. *Perspectivas em Ciência da Informação* 3: 47-59, jan./jun. 1998.

Vergueiro, W. C. S., Belluzzo, R. C. B., Carvalho, T., Reddy, L. S. K. La calidad en los servicios de información: búsqueda y definición de indicadores en bibliotecas universitarias brasileras. INFO 99. Congreso Internacional de Información, La Habana, Cuba, 4-8 Octubre 1999. *Ponencias.* La Habana : IDICT, 1999.

Wehmeyer, S., Auchter, D., Hirshon, A. 1996. Saying what we will do, and doing what we say: implementing a customer service plan. *Journal of Academic Librarianship* 22: 173-80.

White, M. D., 1995. Abels, E. G. Measuring service quality in special libraries: lessons from service marketing. *Special Libraries*, 86: 36-45.

Whitehall, T. 1992. Quality in library and information service: a review. *Library Management* 13: 23-35.