

# Innovation as a strategy for academic libraries to survive change

*Maria Ana Cosmelli Carvalho*

Serviços de Documentação da

Universidade de Lisboa

1649-004 Lisboa

E-mail: cosmelli@reitoria.ul.pt

## ABSTRACT

Innovation is a strategy that has allowed organizations to survive in a context of changes, many of them disruptive. To evaluate the current most important innovations in academic libraries and aiming to understand if the organizational culture type present in academic libraries promotes innovation, a global Delphi study was undertaken. This technique allows identifying consensus based on the judgement of well-informed individuals. The results of the study were analyzed at the light of CHRISTENSEN's (2006) innovation types and the CAMERON e QUINN's (1999) organizational culture frameworks Competing Values Framework (CVF) and Organizational Culture Assessment Instrument (OCAI). The study allowed identifying that the innovations with higher impact in academic libraries have a technological character and are in their essence mainly sustaining. The disruptive innovations identified were the Open access movement and the Web 2.0. The first was considered by the participants of the study as more important than the second. The data obtained showed that the clan's was the most valued organizational culture type, while the adhocracy type, the one more related with innovation, was the less valued by the academic libraries. It is possible to conclude that despite the type and the degree of the changes that surround academic libraries, they are still not focused in innovation as a strategy. They still tend to incorporate innovations maintaining their culture.

**KEYWORDS:** Innovation, Change, Organizational change, Academic libraries, OCAI, CVF, Delphi

## RESUMO

A Inovação é uma estratégia que tem permitido às organizações sobreviverem num contexto de mudanças, muitas delas disruptivas. Para avaliar as inovações mais importantes na actualidade e tendo como objectivo compreender se o tipo de cultura organizacional nas bibliotecas universitárias promove a inovação, realizou-se um estudo Delphi a nível global. Esta técnica permite identificar consensos com base no julgamento de indivíduos bem informados. Os resultados do estudo foram analisados à luz dos tipos de inovação de CHRISTENSEN (2006) e das ferramentas de análise da cultura organizacional de CAMERON e QUINN (1999),

Competing Values Framework (CVF) e Organizational Culture Assessment Instrument (OCAI). O estudo permitiu verificar que as inovações com maior impacto nas bibliotecas universitárias são tecnológicas e com um forte carácter de continuidade. Por outro lado, as inovações disruptivas identificadas como mais importantes foram o Movimento de Acesso livre e a Web 2.0. A primeira foi considerada pelos participantes do estudo como bastante mais importante que a segunda. Os dados obtidos no estudo permitem concluir que a cultura organizacional de tipo clã é muito valorizada, enquanto que a de tipo adocracia, o que está associado à inovação, tem muito baixa representatividade. Conclui-se que, apesar do grau e do tipo de mudanças a que as bibliotecas universitárias estão sujeitas, de um modo geral, estas ainda não estão focadas na inovação como estratégia. Ainda incorporam as inovações mantendo a sua cultura.

**PALAVRAS-CHAVE:** Inovação, Mudança, Cultura Organizacional, Bibliotecas Universitárias, OCAI, CVF, Delphi

## INTRODUCTION

Libraries are at the edge of a very deep change. Until some years ago, libraries were sought to get content, to study, to meet other people. Libraries had no competition. They were the primary guides to the academic and scientific information that was selected and which they provided with a context. Users needed libraries to get enough information to learn and research.

The fact that vast amounts of digital information are now available via the Web in any computer with an Internet connection, anytime, had a huge impact in libraries. Users stopped requiring a library to get information. The development of online services and the availability of digital content were an answer to this shift. Online catalogues and portals were developed. Later the repositories came as an answer to the Open access movement and the changes in the scholarly communication system. But outside the libraries world, search engines were being developed to get information from many different sources in many formats. They do not provide the content, but they do let people find it wherever it is available. Search engines are easy to use and perfect resource discovery tools. The fact that they are increasingly precise and let users get anywhere rapidly and easily, without many ulterior tasks is

unbeatable. Indeed, libraries provide quality services and catalogues, but are not as easy and integrated as search engines. They provide access to a limited universe of resources and they require a certain degree of expertise to be used. Search engines seem to provide an infinite access to resources.

More recently the Web evolved into the Web 2.0. In addition to searching, now everyone can be a content provider. Free, quality, scientific information is now available within communities. And all this is being done outside the libraries. The communities provide the context that used to be provided by libraries.

The mission, the culture and the structure of the academic library has not changed much, although the services, the contents, the users and the context have changed deeply. In terms of organization and management, academic libraries are very self-centred and too rooted in the organization where they are integrated: the Universities. Universities are organizations that have been managed in a very similar way for a long time. They are very hierarchical and formal organizations. And within them, academic libraries are not independent, but mirrors of this structure and culture. Even though libraries may want to change and embrace innovative models of management and develop innovative strategies, they still need the support of the University.

Libraries should start to look at corporate models. How do companies manage change? Many have been the authors that have analysed failure and success cases. Succeeding in a deeply changing environment filled with disruptive change seems to be related to the ability of innovating and creating an innovation culture. Innovation is a concept that being already important for decades, has gained greater importance in this rapidly changing, highly competitive and global environment. As DRUCKER (1994, 28) claims, innovation does not have to be technical, does not have to be a thing. Social innovation is the most difficult innovation to achieve, technology can be cheaply imported with a minimum of cultural risk, but institutions, on the contrary, need cultural roots to grow and to prosper.

KIM e MAUBORGNE (1999, 42) studied companies with sustained high growth and profit and concluded that regardless their size, years of operation, industry conditions or country of origin, the determinant factor of success was their management strategy. More than the size, services, technologies or country, what will really determine the future of academic libraries is its managerial strategy.

#### **CHANGE TYPES**

Clayton M. Christensen in his revolutionary book, *The Innovator's dilemma*, described the reasons that caused good companies to fail. Christensen's analysis brought to light a distinction between two types of change: sustaining and disruptive. Good management practices were the main reason for the failure of leading companies. The principles these companies applied were appropriate to a situation of sustaining change and failed because they did not consider what CHRISTENSEN (2006, xv) called the Principles of

disruptive innovation.

Sustaining technologies improve product performance of established products, along the dimensions of performance that mainstream customers in major markets have historically valued and rarely precipitate the failure of leading firms (CHRISTENSEN, 2006, xviii). LEWIS (2004, 4) gives examples of sustaining changes in academic libraries: electronic journals, especially when offered by established publishers or in collections such as JSTOR; the centralized catalogue with authority control and Boolean searching.

On the other hand, disruptive technologies bring to market a very different value proposition. They generally underperform in an early phase when compared with established products in mainstream markets, but have other features that a few fringe customers value. They are typically cheaper, simpler, smaller and frequently more convenient to use (CHRISTENSEN, 2006, xviii). They also improve at a faster rate than established technologies. This is what makes them dangerous to established organizations. As disruptive changes in academic libraries, LEWIS (2004, 4) refers the new standards like the Open Archives Initiative's; the protocol for Metadata Harvesting; repositories of e-prints, images, and other documents; search engines and algorithmic retrieval.

The importance of Christensen's work is related to the fact that academic libraries are increasingly surrounded by disruptive change that cannot be managed with good traditional management principles, and also to the fact that most academic libraries are established organizations in higher education institutions, with organizational cultures and structures that do not promote creativity and innovation.

#### **ORGANIZATIONAL CULTURE**

Becoming innovative requires an organizational culture that nurtures innovation and encourages creativity. Indeed, organizational culture is a primary determinant of innovation (PIENAAR, 1999; AHMED, 1998, 30; LEMON e SAHOTA, 2004, 483). Organizational culture is defined by MARTINS e TERBLANCHE (2003) as the deeply seated values and beliefs shared by the staff in an organization. It refers to a set of basic assumptions that worked so well in the past that they are accepted as valid assumptions within the organization. Its components are the routine behaviour, norms, values, philosophy, rules of the game and feelings. It is the organizational culture that gives identity, provides collective commitment, builds social system stability and allows people to make sense of the organization (SHEPSTONE e CURRIE, 2008, 358). The dimensions of culture include the mission and vision, the external environment, the means to achieve objectives, the image of the organization, management processes, staff needs and objectives, interpersonal relationships and leadership (MARTINS e TERBLANCHE, 2003).

By understanding both the current and the preferred culture of the library and by observing the areas of greatest discrepancy between them, it is possible to develop a strategy for change. SHEPSTONE e CURRIE (2008, 359) refer two tools to assess the culture and manage an organizational change: the CVF and the

OCAI.

The CVF proposes that organizations reflect one or more of four cultural types:

- Clan
- Adhocracy
- Market
- Hierarchy

Through the use of OCAI, an organizational culture profile can be drawn by establishing the organization's dominant culture (BERRIO, 2007) and the preferred culture types. In addition, the OCAI provides the means to assess the skills of library leaders and managers who plan a culture change, and if necessary, it provides staff development and training to facilitate success (KAARST-BROWN *et al.*, 2004).

Academic libraries as part of universities reflected some of their organizational characteristics, i.e., formality and hierarchy (KAARST-BROWN *et al.*, 2004). Traditionally, academic libraries had a tendency to be heavily structured. Their primary mission was to ensure that the needs of the students and faculty were met. Therefore, exploration of new services and the development of existing services was limited by the library's responsibility to the academic community. KAARST-BROWN *et al.* (2004) affirm that change happened slowly because of the academic environment and the resistance from faculty. They also say that the academic library of the past, valued stability and control, and had an internal focus. This management style was appropriate with sustaining change. However, with disruptive change, new practices must and are now starting to be implemented in many libraries. Academic libraries are looking for new organizational cultures and models that encourage values that promote innovation and creativity.

#### **DELPHI STUDY METHODOLOGY**

This research used the Delphi method. For HOWZE e DALRYMPLE (2004, 174) "the Delphi method is an effective means of consensus building, without all the meetings". Delphi is a method for combining the judgements of well-informed individuals. It is relevant when there is no well established theory available, as it was the case, but some individuals (called experts) have relevant information about the topic of concern. It is a procedure for aggregating information known to the panel (DALKEY, s.d.).

The method was formulated in the early 1950's at the Rand Corporation by Olaf Helmer and Norman C. Dalkey. It was developed as a forecast method, but since then it has been applied in investigations all over the world, proving to be a practical and efficient way to obtain "best estimate" in uncertain contexts.

The Delphi study was conducted from April to June 2009. This research was partly based on ANDERSON e SCHNEIDER (1993) who conducted a study using the Delphi technique to identify innovations in management in the Recreation area. This study also followed HOWZE e DALRYMPLE's study (2004) to the design of the second round.

A Delphi study should consist of three or four rounds that evolve from a loose and unstructured question to a

more precise and structured exploration of the important issues (CAPE, 2004, 37). Because of the time limit, the study consisted only of two rounds, which is the minimum to conduct this type of study. Participants needed enough time to answer each round, and the researcher required time to analyse the data collected. According to CAPE (2004, 37), a well-designed two round Delphi study could still produce good results, and minimised what it is often called the "Delphi fatigue".

The first round was divided in two parts and consisted of two open-ended questions. The second round questionnaire consisted of closed questions. In this round, the results of the previous round were organized in two series of categories that the participants had to rate.

A total of 19 librarians received the first questionnaire. After two follow-ups, 6 (32%) returned the first question of the first round. The second question of the first round was answered by the 19 participants (100%). The second round was e-mailed to a total of 32 participants. Again, after two follow-ups, 20 (63%) completed and returned the questionnaire.

#### **Round 1 - Part 1**

Participants were asked to tell a story: *Please relate a positive experience in which you have participated or know of, in an academic library, that you consider innovative and non-traditional. Describe briefly the experience, the most positive impacts on staff, on users and on the library as an organization.*

After receiving the 6 responses, it was found that 3 were related with cooperation projects, 1 with the development of an e-information strategy and 2 with the organization of an event outside the ordinary routines of the library, but performed by librarians.

The stories reveal that the academic librarians are not only performing more traditional and technical tasks (e.g., defining policies of indexing, cataloguing, collections, acquisitions, etc.), sometimes outside their working places, for example in cooperation projects with other libraries, but they are also carrying out technological tasks (portal and website development) and other activities involving the organization of events, training sessions, presentations, etc. All these tasks involved meetings and team work. Brainstorming was also a procedure mentioned. Information and Communication Technologies (ICTs) were usually involved as communication media, but also as working tools. E-mail was referred by all the panellists. Other technologies used were blogs, wikis, Web-based videoconferencing, Intranets. Reporting and extracting statistics were also mentioned as techniques used to support management.

#### **Round 1 - Part 2**

The second part of the first round of the study was sent to all the experts that had agreed to participate in round 1. This part comprised 1 question. The experts were asked to reply to: *From your point of view, what management innovations, developed in the past 20 years, have really improved academic libraries' management?*

The panellists were allowed to provide an unlimited

number of responses for the question. The responses were placed in categories and compiled for similarity, clarity, and lack of repetition. The researcher decided to aggregate similar items in more general categories, for example, Internet, E-mail, Skype and New technologies were all aggregated in a category called New information and communication technologies (Internet, e-mail, Skype, etc.).

The responses completed a total of 63 categories that were divided in two different types of innovations and were thus divided in two sets that required different approaches and analysis: Management innovations and Innovations with impact in academic libraries. Based on the frequency of responses and on the literature, the most significant responses of the two open questions of the first round were considered for further analysis, which resulted in 22 categories in Management innovations (table 1) and 14 categories in Innovations with impact in academic libraries (table 2).

Management innovations	Frequency	%
Integrated Library Management Systems	11	16.9
Consortia, resource sharing and cooperation	6	9.2
Staff's new competencies and skills (digital, management, training)	6	9.2
Team work, small task forces and focus groups	5	7.7
Collection and analysis of statistical data to support decisions	4	6.2
Benchmarking	3	4.6
Brainstorming	3	4.6
Library performance evaluation systems (LibQUAL, Priority Search, etc.)	3	4.6
Library staff continuous training	3	4.6
Project development and management (internal, external and international projects)	3	4.6
Quality management systems (TQM, ISO 9001, etc.)	3	4.6
Staff's performance evaluation	3	4.6
Meetings	2	3.1
User-centred management	2	3.1
Library managers close to organisation leaders	1	1.5
Management by objectives	1	1.5
Management with Balanced Scorecard	1	1.5
Marketing culture	1	1.5
Models of staff management following some solutions from industrial and marketing enterprises	1	1.5
Strategic planning	1	1.5
Users' studies	1	1.5
Work by processes	1	1.5
<b>Total</b>	<b>65</b>	<b>100.0</b>

**Table 1 – Management innovations**

The category with the highest frequency in Management innovations was the Integrated Library Management Systems with 16.9%, followed by Consortia, resource sharing and cooperation and Staff's new competencies and skills (digital, management,

Innovations with impact in academic libraries	Frequency	%
New information and communication technologies (Internet, e-mail, Skype, etc.)	10	18.9
Online catalogues, databases and electronic collections	9	17.0
Automation of library services (cataloguing, loan, etc.)	7	13.2
Computer hardware (scanners, web-cams, etc.)	5	9.4
Online library services	4	7.5
Web 2.0	4	7.5
Adoption of international cataloguing and open archives standards (MARC, Dublin Core, OAI-PMH, etc.)	2	3.8
Computer software non-library specific (MSOffice, etc.)	2	3.8
Digitization	2	3.8
E-learning platforms	2	3.8
Open access movement (Institutional repositories, open archives, etc.)	2	3.8
Library building designed to be libraries	2	3.8
Search tools (federated search, search engines, etc.)	1	1.9
Literacy instruction projects developed by library staff	1	1.9
<b>Total</b>	<b>53</b>	<b>100.0</b>

training), both with 9.2%.

**Table 2 – Innovations with impact in academic libraries**

In the Innovations with impact in academic libraries, the category with the highest frequency was New information and communication technologies (Internet,

e-mail, Skype, etc.) with 18.9%, followed by Online catalogues, databases and electronic collections with 17% and Automation of library services (cataloguing, loan, etc.) with 13.2%.

## Round 2

The responses from the first round questionnaires were consolidated into categories by emerging themes and randomly listed in two Likert scale surveys, one for each list. The surveys used a five point rating scale. The rating scale was as follows: 1 = very important, 2 = important, 3 = moderately important, 4 = of little importance and 5 = unimportant. Each panellist's response was recorded and the frequency distribution for each list was determined.

The arithmetic mean, the mode, the median, the standard deviation, were calculated. High consensus was attributed to items that gathered more than 75% of the votes in one Likert point and medium consensus for items between 60% and 75%.

The results in table 3 show that 6 Management innovations reached high consensus and 8 medium consensus.

High consensus	%	Likert point
Staff's new competencies and skills (digital, management, training)	83	Very important
Strategic planning	83	Very important
Team work, small task forces and focus groups	83	Very important
Integrated Library Management Systems	78	Very important
Marketing culture	78	Important
User-centred management	78	Very important
Medium consensus		
Consortia, resource sharing and cooperation	72	Very important
Work by processes	72	Important
Benchmarking	67	Important
Staff's performance evaluation	67	Important
Brainstorming	61	Important
Collection and analysis of statistical data to support decisions	61	Very important
Library managers close to organisation leaders	61	Very important
Meetings	61	Important

**Table 3 – Management innovations – Categories that reached consensus**

The high consensuses for the Management innovations were all obtained in the positive points of the Likert scale. Only one category was rated Important and all the other 5 categories Very important. The medium consensuses were also obtained in the positive side of the scale, although 3 were rated Very important and 5 Important. 3 categories (Staff's new competencies and skills (digital, management, training; Strategic planning; and Team work, small task forces and focus groups) obtained 83% and other 3 (Integrated Library Management Systems; Marketing culture; and User-centred management) obtained 78%. Consortia, resource sharing and cooperation and Work by processes achieved 72%.

The results in table 4 show that 6 categories reached high consensus, and 1 medium consensus in the Innovations with impact in academic libraries.

High consensus	%	Likert point
Open access movement (Institutional repositories, open archives, etc.)	94	Very important
Online catalogues, databases and electronic collections	94	Very important
Automation of library services (cataloguing, loan, etc.)	89	Very important
Online library services	83	Very important
Adoption of international cataloguing and open archives standards (MARC, Dublin Core, OAI-PMH, etc.)	78	Very important
Search tools (federated search, search engines, etc.)	78	Very important
Medium consensus		
New information and communication technologies (Internet, e-mail, Skype, etc.)	67	Very important

**Table 4 – Innovations with impact in academic libraries – Categories that reached consensus**

All the consensus were rated Very important. 6 categories got high consensus. 3 of these categories (Open access movement (Institutional repositories, open archives, etc.); Online catalogues, databases and electronic collections; and Automation of library services (cataloguing, loan, etc.)) reached higher percentages of consensus than any of the Management innovations. Only one category received medium consensus.

All the categories that reached consensus got the same value for the mode and the median, i.e., the value that establishes the central tendency (the median) was also the value more rated (the mode). For these statistics, the most common rating was Very important at 8 Management innovations and at all Innovations with impact in academic libraries. The majority of the categories got equal or very close values for the mode and the median. The central tendency of the categories lie on the positive points of the Likert scale: Very important and Important. The only exception was Management with Balanced Scorecard that got a median of 3: Moderately Important.

The levels of dispersion were relatively low. For the categories that reached consensus, it can be said that, generally, the lowest standard deviations were obtained at the highest percentage of consensus. The lowest standard deviation obtained for the consensual Management innovations was 0.43 for Team work, small task forces and focus groups and the highest standard deviation was achieved by Marketing culture with 0.92. This value is relatively high, meaning that even though a consensus was identified, not all participants agreed: 4 panellists rated it as Very important, 14 as Important, 1 as Of little importance and 1 as Unimportant. For the Innovations with impact in academic libraries, the lowest standard deviation obtained for the consensual categories was 0.36 for Open access movement (Institutional repositories, open archives, etc.), which was the category with the highest consensus, and the highest standard deviation was achieved by Automation of library services (cataloguing, loan, etc.) with 0.91.

The standard deviation allowed correcting the consensus. For example, Automation of library services (cataloguing, loan, etc.) with a standard

deviation of 0.91 exemplifies that even though a high value of consensus is attributed, this consensus is not totally real, as there is a high dispersion: 16 panellists agreed that it was a Very important category, 3 Important, but 1 considered it Unimportant. Of all the categories, the one with the highest dispersion in the Management innovations list was Management with Balanced Scorecard that got a standard deviation of 1.12 and did not reach consensus. The Innovations with impact in academic libraries got higher dispersion values, being the highest Computer hardware (scanners, web-cams, etc.) that got a standard deviation of 1.08 and also did not reach consensus.

Finally, a top ten ranking for each list was made, based on the mean (tables 5 and 6). The first position was attributed to Team work, small task forces and focus groups, which was the category with the lowest mean. The lower the means, the higher the importance attributed to the items. This result supports the findings in Round 1 - Part 1, where Team work was referred by all panellists as a positive and important working practice.

1	Team work, small task forces and focus groups
2	Staff's new competencies and skills (digital, management, training)
3	Strategic planning
4	Consortia, resource sharing and cooperation
5	User-centred management
6	Integrated Library Management Systems
7	Collection and analysis of statistical data to support decisions
8	Library managers close to organisation leaders
9	Users' studies
10	Library staff continuous training

**Table 5 – Management innovations – Top ten ranking**

1	Open access movement (Institutional repositories, open archives, etc.)
2	Online catalogues, databases and electronic collections
3	Online library services
4	Automation of library services (cataloguing, loan, etc.)
5	Adoption of international cataloguing and open archives standards (MARC, Dublin Core, OAI-PMH, etc.)
6	New information and communication technologies (Internet, e-mail, Skype, etc.)
7	Search tools (federated search, search engines, etc.)
8	Web 2.0
9	Literacy instruction projects developed by library staff
10	Library buildings designed to be libraries

**Table 6 – Innovations with impact in academic libraries – Top ten ranking**

These categories reflect the average degree of importance that was attributed by all participants in the study to the innovations they had to rate. The top tens show the 10 Management innovations with higher impact in academic libraries management and the 10 Innovations with higher impact in academic libraries.

The categories in the rankings were compared with the categories that having got census were also rated Very important. Tables 7 and 8 show that the ranking based on the mean and a list obtained by organizing the categories by decreasing percentage of consensus result in a list with the same items. For this research, what matters the most is the identification of innovations

with positive impact in academic libraries and not the precise position in the ranking. This similarity between lists obtained by the two different processes seems to validate the results obtained, although there is some variation in certain positions.

	Categories by ranking	Categories by % consensus rated as <i>Very important</i>	% of consensus
1	Team work, small task forces and focus groups	Team work, small task forces and focus groups	83
2	Staff's new competencies and skills (digital, management, training)	Staff's new competencies and skills (digital, management, training)	83
3	Strategic planning	Strategic planning	83
4	Consortia, resource sharing and cooperation	Integrated Library Management Systems	78
5	User-centred management	User-centred management	78
6	Integrated Library Management Systems	Consortia, resource sharing and cooperation	72
7	Collection and analysis of statistical data to support decisions	Collection and analysis of statistical data to support decisions	61
8	Library managers close to organisation leaders	Library managers close to organisation leaders	61
9	Users' studies		
10	Library staff continuous training		

**Table 7 – Management innovations – Ranking vs. percentage of consensus**

	Categories by ranking	Categories by % consensus rated as <i>Very important</i>	% of consensus
1	Open access movement (Institutional repositories, open archives, etc.)	Open access movement (Institutional repositories, open archives, etc.)	94
2	Online catalogues, databases and electronic collections	Online catalogues, databases and electronic collections	94
3	Online library services	Automation of library services (cataloguing, loan, etc.)	89
4	Automation of library services (cataloguing, loan, etc.)	Online library services	83
5	Adoption of international cataloguing and open archives standards (MARC, Dublin Core, OAI-PMH, etc.)	Adoption of international cataloguing and open archives standards (MARC, Dublin Core, OAI-PMH, etc.)	78
6	New information and communication technologies (Internet, e-mail, Skype, etc.)	Search tools (federated search, search engines, etc.)	78
7	Search tools (federated search, search engines, etc.)	New information and communication technologies (Internet, e-mail, Skype, etc.)	67
8	Web 2.0		
9	Literacy instruction projects developed by library staff		
10	Library buildings designed to be libraries		

**Table 8 – Innovations with impact in academic libraries – Ranking vs. percentage of consensus**

## DISCUSSION

Using the Delphi approach, the thoughts and opinions of key players were collected. It was possible to gather two different types of innovations: Innovations with impact in academic libraries and Management innovations.

Two lists were made with the two types of innovation. Both lists reached consensus at least for half of the categories. Management innovations got consensus for 14 categories (64%) and Innovations with impact in academic libraries got consensus for 7 categories (50%). This shows that even though at least half of the

categories can be considered consolidated, it would have been necessary to continue the Delphi study for at least one additional round to explore and analyse more deeply the non-consensual categories.

There is a certain bias on the ratings attributed to the categories by the panellists. As on Round 1 the participants were asked to tell innovations that improved management, naturally, the innovations referred had a positive value and were considered important by the participants. This is confirmed by the positive ratings obtained.

This discussion presents two different analyses for each innovation type. The innovations with impact in academic libraries were considered at the light of CHRISTENSEN (2006) and LEWIS (2004) ideas, but the management innovations were viewed at the light of the CVF and OCAI frameworks (CAMERON e QUINN, 1999; SHEPSTONE e CURRIE, 2008; KAARST-BROWN *et al.*, 2004).

### Disruptive and sustaining innovations in academic libraries

The objective of this analysis was to understand whether the innovations mentioned are sustaining or disruptive and the degree of importance given to them by the Delphi study participants.

From the 14 Innovations with impact in academic libraries obtained, 12 are technological and 2 (Library buildings designed to be libraries and Literacy instruction projects developed by library staff) are not. These 2 innovations did not reach consensus and got respectively the 10th and the 9th place of the ranking, with a median of 2 (Important) and 1.5 (a value between Very important and Important). It is significant that 2 non-technological innovations are viewed as less important than 8 technological innovations. Not only innovation appears to have a very technological meaning, but also technologies are perceived by the panellists as having a very important position in libraries.

The other 4 categories that got the subsequent places in the ranking (11-14) were E-learning platforms, Digitization, Computer hardware (scanners, web-cams, etc.), Computer software non-library specific (MSOffice, etc.). These categories, even though being technological, did not reach consensus and all got a median of 2 (Important). These were the innovations considered less important in academic libraries.

The results obtained in the ranking are consistent with the ones obtained in the list of consensus; therefore, it is possible to create a list of Very important innovations, all technological, in academic libraries. The first conclusion to withdraw from the study is that it is the opinion of the experts that participated in the study that the most important innovations with impact in academic libraries are technological although with a very strong sustaining facet. Indeed, this confirms DRAKE's (2000, 53) opinion that says that what is driving change is the technologies. The list of the 8 most important innovations are presented in table 9, including a classification of the type of change.

Rank position	Innovation	Change type (Christensen, 2006, p. xviii; Lewis, 2004, p. 4)
1	Open access movement (Institutional repositories, open archives, etc.)	Disruptive
2	Online catalogues, databases and electronic collections	Sustaining
3	Online library services	Sustaining
4	Automation of library services (cataloguing, loan, etc.)	Sustaining
5	Adoption of international cataloguing and open archives standards (MARC, Dublin Core, OAI-PMH, etc.)	Sustaining (except the OAI-PMH standard (Lewis, 2004, p. 4))
6	New information and communication technologies (Internet, e-mail, Skype, etc.)	Disruptive
7	Search tools (federated search, search engines, etc.)	Disruptive
8	Web 2.0	Disruptive

**Table 9 – The 8 more important innovations with impact in academic libraries**

The last category on the list and the only one that did not reach consensus was Web 2.0, with a median of 1.5 (between Very important and Important). This may be due to the fact that this is the most recent disruptive change to have entered in the libraries world (WILSON, 2006) and even though it is starting to have huge impacts in libraries, it is still starting to be incorporated and understood. Nevertheless, results of Round 1 – Part 1, showed that the panellists are starting to use Web 2.0 tools, such as blogs and wikis.

Looking at the first positions of the ranking, Online catalogues, databases and electronic collections, Online library services and Automation of library services (cataloguing, loan, etc.) all sustaining innovations with a bibliographic facet, got respectively the 2nd, 3rd and 4th and were viewed as the most important innovations with impact in academic libraries. The only exception is the first position of the ranking that is occupied by the Open access movement (Institutional repositories, open archives, etc.), which was the innovation with the highest consensus and the lowest dispersion. The reason for this may lie on the fact that this is indeed a disruptive change whose nature really had an impact that forced changing accepted paradigms and also because it already has some years of integration in academic libraries.

Round 1 – Part 1, also support these results. From the tasks mentioned in Part 1 were included several bibliographic tasks, for example, developing policies for indexing, cataloguing, collections, and acquisitions.

The librarians that participated in the study are still very much occupied with traditional tasks, mostly based on sustaining technologies. Considering the results of both Delphi rounds and the Buckland's three phases of library development (LEWIS, 2004, 3), it is possible to conclude that this study puts academic libraries still in the transition of the automated library to the electronic library. This seems to confirm LEWIS (2004, 3) that considers that the second transition of academic libraries that started at the beginning of the 1990s with the development of full-text databases, the Internet and the Web, is still evolving.

### Organizational culture type in academic libraries

The objective of this analysis was to relate the results obtained for the Management innovations with the work cultures that form the CVF and OCAI frameworks (CAMERON e QUINN, 1999; KAARST-BROWN *et al.*, 2004; SHEPSTONE e CURRIE, 2008, 365). The idea is to link each of the 10 most important management innovations found in the Delphi study with a culture type. Ultimately, it is the intention of this evaluation to understand if the librarians that responded to the Delphi study consider management practices that promote innovation important.

Based on table 1 a culture type was attributed to each of the 10 most important management innovations obtained in the ranking of the Delphi Round 2. The result is presented in table 10.

	Management innovations	Culture type
1	Team work, small task forces and focus groups	Clan
2	Staff's new competencies and skills (digital, management, training)	Clan
3	Strategic planning	Adhocracy
4	Consortia, resource sharing and cooperation	Hierarchy
5	User-centred management	Market
6	Integrated Library Management Systems	Hierarchy
7	Collection and analysis of statistical data to support decisions	Hierarchy
8	Library managers close to organisation leaders	Clan
9	Users' studies	Market
10	Library staff continuous training	Clan

**Table 10 – The 10 more important management innovations**

The results obtained in the Delphi Round 1 – Part 1 were also organized according to the culture type:

#### Hierarchy

- increase the efficiency of human efforts and material resources
- central coordination
- common policies
- cooperation between libraries
- Cooperation between libraries and computing services
- ISO 11620 library performance indicators
- reporting
- retrieval and analysis of statistics

#### Clan

- exchange experiences
- training for staff and users
- task and delegation of powers
- meetings
- team work

#### Market

- training sessions
- presentations
- contests of knowledge how to use library

- workshops for the staff, students and PhD students

#### Adhocracy

- evaluation methods continuous evaluation and change as environment changes
- brainstorming

In the 10 most important management innovations, 4 are clan type, having the first 2 positions. 3 innovations are hierarchy, in the 4th, 6th and 7th positions. Nevertheless, the other 2 cultures are also present. Only one innovation is Adhocracy, and it occupies the 3rd position. 2 innovations are Market, in the 5th and 9th positions.

What these data show is that the most valued culture is the clan's. Panellists feel "involved, more needed, they have more fun" and they believe these activities have enormous "impact on staff's attitude towards the library as a working place". But they also seem to value hierarchy, with all the control, efficiency measures based on statistics, coordination and cooperation. This confirms KAARST-BROWN *et al.* (2004) that affirms that the academic library of the past, valued stability and control, and had an internal focus. The fact is that in the present it still defends some of these principles, although some market and adhocracy values are also present. None of the adhocracy characteristics mentioned by KAARST-BROWN *et al.* (2004) and SHEPSTONE e CURRIE (2008, 364) of risk taking, innovation and entrepreneurship or the examples referred by QUINN (2000, 257) of the creation of a system of evaluation and incentives that rewards librarians for innovation were found in the Delphi study.

Even though more research would be necessary to measure the culture types and sub-types present in libraries, it is possible to rank the participants of this study preferred culture types:

1. Clan
2. Hierarchy
3. Market
4. Adhocracy

Considering all that has been previously said, though considering the small scale of this study, it may be said that, generally, academic libraries still are not focused in promoting innovation. The clan culture is present in academic libraries and it is already much valued, but it is still necessary to increase the adhocracy type, especially when considering KAARST-BROWN *et al.* (2004) and SHEPSTONE e CURRIE (2008, 362) that consider that combining the adhocracy with clan framework, would result in a workplace more dynamic and more able to respond to rapid change.

#### CONCLUSIONS

The first conclusion that was possible to withdraw from this study was that the innovations considered more important by the study panellists, even though with a strong technological character, were essentially sustaining. The most important disruptive innovations in academic libraries identified were the Open access

movement and the Web 2.0. While the first was highly regarded and was considered the most important innovation with impact in academic libraries, the Web 2.0 was regarded as much less important. The reason for this difference may lie on the fact that Open access appeared first and libraries already had some time to assimilate it. On the other hand, Web 2.0 still has to be understood and incorporated in libraries.

Even though academic libraries have started to integrate disruptive innovations, this does not imply that they are good at managing disruptive change. CAMERON e QUINN (1999, 7) say that organizational culture is very important as many change approaches attempted by organizations, e.g., reengineering, TQM and downsizing, failed whenever the culture of the organization remained the same. The Management innovations were analysed considering each of the four CVF culture types. KAARST-BROWN *et al.* (2004) and SHEPSTONE e CURRIE (2008, 362) say that combining the adhocracy with clan framework, would result in a workplace more dynamic and more able to respond to rapid change. The clan culture was found and was already much valued, but the adhocracy still has to be developed, in order to invert the tendency of the results that, generally and considering the small scale of the study, show that academic libraries still are not innovative.

Based on the results of the research and on the literature, the following principles to build an academic library for the future are proposed:

1. Accept the norm of continuous change, incorporating the concept of continuous innovation (COLE, 2002, 1056). Academic libraries need to recognise the need to develop a strategy of innovation that includes a culture and structure change, building a culture of innovation, which includes, according to DENNING (2004), organizational processes, such as management values, rewards, prohibitions, and encouragement of new ideas, risk-taking and personal processes.
2. Accept the need to change the mission of the academic library, adapting it to the current context: competition (YEE, 2004); disruptive change (CHRISTENSEN, 2006); and new users with new needs not always passing by the library (OCLC, 2005).
3. Develop values that promote innovation and creativity. Each library needs to identify its own essence and innovate, not imitate (KIM e MAUBORGNE, 1999, 42). QUINN (2000, 260) also agrees that the libraries should become less rigid, less bureaucratized, and less imitative of each other. If academic libraries do not become more innovative, competitors may take the initiative and create new and better ways to meet user needs.
4. Learn from corporate models and strategies. Many answers to the current difficulties and changes may lie outside the libraries world in other organizations that also feel the effects of change and competition. QUINN (2000, 259) says that companies discovered that, in order to survive in an intensely competitive business environment, they increasingly needed to cultivate creativity among employees. Virgin Atlantic Airways is the example of one highly creative and successful



company with no organizational flowchart, traditional company hierarchy, or formal meetings. The more creative a company's environment is, the more likely it will generate new products and services needed to differentiate itself from its competitors in the marketplace. Firms in the private sector regard building a culture of creativity as essential to survival. As the field of higher education becomes more competitive and adopts more of a marketplace emphasis, academic libraries will likely experience additional pressure to come up with new products and services to keep users satisfied. This is not a new idea, for example, ATKINSON (2003, 25) has applied with success a corporate approach to strategic planning to his institution, the University of Glamorgan.

5. Explore and incorporate different innovation philosophies:

- Radical innovation (WIT, DANKBAAR e VISSERS, 2007, 11; HAMEL, 2001, 152), which is viewed by PAASI *et al.* (2008, 2) as the best answer to thrive in a disruptive world. It is defined by GRULKE e SILBER (2002, 37) as a type of innovation that has a creative-destructive matrix. Only radical innovation builds future markets and ensures future relevance;
- Open innovation (CHESBROUGH, 2003, 37; WIT, DANKBAAR e VISSERS, 2007, 17) defined as the act of systematically encouraging and exploring a wide range of internal and external sources for innovation opportunities, consciously integrating that exploration with firm capabilities and resources, and broadly exploiting those opportunities through multiple channels;
- Value innovation (KIM e MAUBORGNE, 1999, 53) sees innovation as a value, not a technology and has a focus on expanding existing markets or creating new ones – not beating the competition.

6. Learn and monitor innovative strategies that are being proposed to be implemented in academic libraries. For example:

- The IC2@SJTUL strategy of the Shanghai Jiao Tong University Library (JING e JIN, 2009, 299);
- The E-information strategy of the University of Pretoria Libraries (PIENAAR, 2007);
- The LEWIS (2007, 430) strategy to manage disruptive change, based on Christensen's Principles of disruptive innovation;
- The transformed library of the University of Arizona Libraries (STOFFLE e LEEDER, 2006);
- The development of the Library 2.0, aiming at incorporating the Web 2.0 culture into the culture of libraries. Breaking down barriers between libraries and users is a primary goal of this library transformation (COHEN, 2007, v). MANESS (2006) defines "Library 2.0" as "the application of interactive, collaborative, and multi-media web-based technologies to web-based library services and collections". Library 2.0 is a mashup of traditional library services and innovative Web 2.0 services. It is not about searching, but finding; not about access, but sharing. It is viewed by MANESS (2006) as a library for the 21st century, rich in content, interactivity, and social activity.

One thing is certain: the library of the future is just starting to be shaped, but the future academic library will certainly be based on a culture of innovation, i.e., a

culture built with people with the habit of constantly looking for ways to improve things (DENNING, 2004).

## REFERENCES

- AHMED, P. K. - Culture and climate for innovation. *European Journal of Innovation Management* [Em linha]. Vol. 1: nº 1 (1998), p. 30-43. [Consult. 27 de Agosto 2009]. Disponível em [www: http://www.emeraldinsight.com/10.1108/14601069810199131](http://www.emeraldinsight.com/10.1108/14601069810199131).
- ANDERSON, D. H. e SCHNEIDER, I. E. - Using the Delphi process to identify significant recreation research-based innovations. *JOURNAL OF PARK AND RECREATION ADMINISTRATION*. Vol. 11, nº 1 (1993), p. 25-36.
- ATKINSON, J. - Managing change and embedding innovation in academic libraries and information services. *NEW REVIEW OF ACADEMIC LIBRARIANSHIP*. Vol. 9, nº 1 (2003), p. 25-41.
- BERRIO, A. A. - An organizational culture assessment using the Competing Values Framework: A Profile of Ohio State University Extension. *Journal of extension* [Em linha]. Vol. 41: nº 2 (2003). [Consult. 27 de Agosto 2009]. Disponível em [www: http://www.joe.org/joe/2003april/a3.php](http://www.joe.org/joe/2003april/a3.php).
- CAMERON, K. S. e QUINN, R. E. - Diagnosing and changing organizational culture. Reading: Addison-Wesley, 1999.
- CAPE, B. - Gathering opinion and initiating debate: the success of the Delphi method in purely qualitative research. *LIBRARY AND INFORMATION RESEARCH*. Vol. 28, nº 89 (2004), p. 35-44.
- CARVALHO, M. A. C. - Innovation as a strategy for academic libraries to survive disruptive change. Newcastle: Northumbria University, 2009. Tese de mestrado.
- CHESBROUGH, H. W. - The era of open innovation. *MIT Sloan Management Review* [Em linha]. Vol. 44: nº 3 (2003), p. 34-41. [Consult. 18 de Julho 2009]. Disponível em [www: http://sloanreview.mit.edu/the-magazine/files/pdfs/4435SxW.pdf](http://sloanreview.mit.edu/the-magazine/files/pdfs/4435SxW.pdf).
- CHRISTENSEN, C. - The innovator's dilemma: the revolutionary national bestseller that will change the way you do business. New York: Harper Collins, 2006.
- COHEN, L. B. - Library 2.0 initiatives in academic libraries. Chicago: Association of College and Research Libraries, 2007.
- COLE, R. E. - From continuous improvement to continuous innovation. *TOTAL QUALITY MANAGEMENT & BUSINESS EXCELLENCE*. Vol. 13, nº 8 (2002), p. 1051-1056.
- DALKEY, N. C. (s.d.) - The Delphi methodology. [Em linha]. [Consult. 21 de Abril 2009]. Disponível em [www: http://www.fernuni-hagen.de/ZIFF/v2-ch45a.htm](http://www.fernuni-hagen.de/ZIFF/v2-ch45a.htm).
- DENNING, P. - Building a Culture of Innovation. *Ubiquity* [Em linha]. Vol. 5: nº 8 (2004). [Consult. 28 de Julho 2009]. Disponível em [www: http://www.acm.org/ubiquity/interviews/v5i8\\_denning.html](http://www.acm.org/ubiquity/interviews/v5i8_denning.html).
- DRAKE, M. A. - Technological innovation and organizational change revisited. *THE JOURNAL OF ACADEMIC LIBRARIANSHIP*. Vol. 26, nº 1 (2000), p. 53-59.
- DRUCKER, P. F. - Innovation and entrepreneurship:

- practice and principles. Reprint, Amsterdam: Butterworth-Heinemann, 2007.
- GRULKE, W. e SILBER, G. - Lessons in radical innovation: out of the box, straight to the bottom line. London: Financial Times Prentice Hall, 2002.
- HAMEL, G. - Letter to the editor: revolution vs. evolution: you need both. *HARVARD BUSINESS REVIEW*. Vol. 79, nº 5 (2001), p. 149-161.
- HOWZE, P. C. e DALRYMPLE, C. - Consensus without all the meetings: using the Delphi method to determine course content for library instruction. *Reference Services Review* [Em linha]. Vol. 32: nº 2 (2004), p. 174-184. [Consult. 4 Junho 2009]. Disponível em [www: http://www.emeraldinsight.com/Insight/viewPDF.jsp?contentType=Article&Filename=html/Output/Published/EmeraldFullTextArticle/Pdf/2400320208.pdf](http://www.emeraldinsight.com/Insight/viewPDF.jsp?contentType=Article&Filename=html/Output/Published/EmeraldFullTextArticle/Pdf/2400320208.pdf).
- JING, G. e JIN, C. - The innovative university library: strategic choice, construction practices and development ideas. *Library management* [Em linha]. Vol. 30: nº 4/5 (2009), p. 295-308. [Consult. 27 July 2009]. Disponível em [www: http://www.emeraldinsight.com/10.1108/01435120910957959](http://www.emeraldinsight.com/10.1108/01435120910957959).
- KAARST-BROWN, M., NICHOLSON, S., VON DRAN, G. e STANTON, J. - Organizational cultures of libraries as a strategic resource. *LIBRARY TRENDS*. Vol. 53 (2004), p. 33-53.
- KIM, W. C. e MAUBORGNE, R. - Strategy, value innovation, and the knowledge economy. *SLOAN MANAGEMENT REVIEW*. Spring, (1999), p. 41-54.
- LEMON, M. e SAHOTA, P. S. - Organizational culture as a knowledge repository for increased innovative capacity. *TECHNOVATION*. Vol. 24, nº 6 (2004), p. 483-498.
- LEWIS, D. W. - The innovator's dilemma: disruptive change and academic libraries. *Library Administration & Management* [Em linha]. Vol. 18: nº 2 (2004), p. 68-74. [Consult. 28 de Julho 2009]. Disponível em [www: http://hdl.handle.net/1805/173](http://hdl.handle.net/1805/173).
- LEWIS, D. W. - A strategy for academic libraries in the first quarter of the 21<sup>st</sup> century. *College & Research Libraries* [Em linha]. Vol. 68: nº 5 (2007), p. 418-434. [Consult. 17 de Julho 2009]. Disponível em [www: http://www.lita.org/ala/mgrps/divs/acrl/publications/crljournal/2007/sep/Lewis07.pdf](http://www.lita.org/ala/mgrps/divs/acrl/publications/crljournal/2007/sep/Lewis07.pdf).
- MANESS, J. M. - Library 2.0 theory: Web 2.0 and its implications for libraries. *Webology* [Em linha]. Vol. 3: nº 2 (2006). [Consult. 17 de Junho 2009]. Disponível em [www: http://www.webology.ir/2006/v3n2/a25.html#24](http://www.webology.ir/2006/v3n2/a25.html#24).
- MARTINS, E. C. e TERBLANCHE, F. - Building organisational culture that stimulates creativity and innovation. *European Journal of Innovation Management* [Em linha]. Vol. 6: nº 1 (2003), p. 64-74. [Consult. 29 de Julho 2009]. Disponível em [www: http://www.emeraldinsight.com/Insight/ViewContentServlet?contentType=Article&Filename=Published/EmeraldFullTextArticle/Articles/2200060105.html](http://www.emeraldinsight.com/Insight/ViewContentServlet?contentType=Article&Filename=Published/EmeraldFullTextArticle/Articles/2200060105.html).
- OCLC - Perceptions of Libraries and Information Resources [Em linha]. 2005. [Consult. 27 de Julho 2009]. Disponível em [www: http://www.oclc.org/reports/pdfs/Percept\\_all.pdf](http://www.oclc.org/reports/pdfs/Percept_all.pdf).
- PAASI, J., LUOMA, T., STRONG, R. e ZHOU, R. - Systematic strategic decision support for innovation development [Em linha]. 2008. [Consult. 28 de Julho 2009]. Disponível em [www: http://virtual.vtt.fi/virtual/proj3/innorisk/EuroMOT2008\\_paasi\\_et\\_al.pdf](http://virtual.vtt.fi/virtual/proj3/innorisk/EuroMOT2008_paasi_et_al.pdf).
- PIENAAR, H. - Creativity and innovation in the management of information service organizations [Em linha]. 1999. [Consult. 28 de Julho 2009]. Disponível em [www: http://hagar.up.ac.za/catts/learner/heilap/createlesing/index.htm](http://hagar.up.ac.za/catts/learner/heilap/createlesing/index.htm).
- PIENAAR, H. - Development and implementation of an e-Information Strategy for an academic library. *University of Pretoria in Libraries & Information Management Forum 2008* [Em linha]. Johannesburg, 2007. [Consult. 28 de Julho 2009]. Disponível em [www: http://hdl.handle.net/2263/6721](http://hdl.handle.net/2263/6721).
- QUINN, B. A. - The McDonaldisation of academic libraries? *College & Research Libraries* [Em linha]. Vol. 61: nº 3 (2000), p. 248-261. [Consult. 27 de Julho 2009]. Disponível em [www: http://hdl.handle.net/2346/490](http://hdl.handle.net/2346/490).
- SHEPSTONE, C. e CURRIE, L. - Transforming the academic library: creating an organizational culture that fosters staff success. *The Journal of Academic Librarianship* [Em linha]. Vol. 34: nº 4 (2008), p. 358-368. [Consult. 29 de Julho 2009]. Disponível em [www: http://www.sciencedirect.com/science/article/B6W50-4SWXDGW-1/2/ca0b055849d7f3a1ed3776b5b72ef843](http://www.sciencedirect.com/science/article/B6W50-4SWXDGW-1/2/ca0b055849d7f3a1ed3776b5b72ef843).
- STOFFLE, C. J. e LEEDER, K. - Where next? Library transformation [Em linha]. 2006. [Consult. 28 de Julho 2009]. Disponível em [www: http://www.library.arizona.edu/conferences/ltf/2006/documents/LTF\\_transformation.ppt](http://www.library.arizona.edu/conferences/ltf/2006/documents/LTF_transformation.ppt).
- WILSON, B. - Change and the need for innovation: editorial. *D-Lib Magazine* [Em linha]. Vol. 12: nº 4 (2006). [Consult. 28 de Julho 2009]. Disponível em [www: http://www.dlib.org/dlib/april06/04editorial.html](http://www.dlib.org/dlib/april06/04editorial.html).
- WIT, J. D., DANKBAAR, B. e VISSERS, G. - Open innovation: the new way of knowledge transfer? *Journal of Business Chemistry* [Em linha]. Vol. 4: nº 1 (2007), p. 11-19. [Consult. 18 de Julho 2009]. Disponível em [www: http://repository.ubn.ru.nl/bitstream/2066/35263/1/35263.pdf](http://repository.ubn.ru.nl/bitstream/2066/35263/1/35263.pdf).
- YEE, S. - Re-creating the academic library: the changed organization. *Eastern Michigan University in Symposium for Academic Librarians* [Em linha]. 2004. [Consult. 28 de Julho 2009]. Disponível em [www: http://www.mlaforum.org/volumeIII/issue2/conf1.html](http://www.mlaforum.org/volumeIII/issue2/conf1.html).