Advancing an Academic Library’s services through application of Soft Systems Methodology

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Abstract

The Master thesis focuses on the application of Information Systems in the field of Library and Information Science. Within the context of organizational learning, a collaborative user-centered approach is used to produce desired system characteristics and future research suggestions.

More specifically, this research study explores the library users’ and academic librarians’ perceptions of the current library discovery and access services as mediated through the Online Public Access Catalogue (OPAC) of the Academic Library of the School of Philosophy at Athens University in Greece. Additionally, it explores their desired characteristics for the ‘public facing’ Integrated Library System (ILS), of which the OPAC constitutes a module, in order to generate recommendations that guide the Academic Library staff members’ collaborative design of a more user-centered library information system.

The study is built upon the systems thinking framework of Checkland’s Soft Systems Methodology (SSM). Applied theories and design processes guide research processes aimed at advancing both inclusive social learning and system improvements.

Keywords

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List of Abbreviations

FMA  Framework of Ideas – Methodology - Area of Concern
ICT  Information and Communication Technology
ILS  Integrated Library System
IS  Information Systems
IT  Information Technology
LIS  Library and Information Science
NSRF  National Strategic Reference Framework
OPAC  Online Public Access Catalogue
RD  Root Definition
RP  Rich Pictures
SSM  Soft Systems Methodology
UCD  User Centered Design
UCSD  User Centered Systems Design
Chapter 1
Introduction

Chapter 1 constitutes an introduction to the research study. Firstly, the research setting is presented. The topic background is provided and the problem is stated. After that, the purpose and the aims of the research, along with the research questions, are stated. The limitations of the research study are discussed. The chapter concludes with the justification of the topic under study and a presentation of its disposition.

1.1 Introduction and Research Setting

The deep financial crisis in Greece during the last four years gave rise to serious problems in Greek academic libraries such as reductions in human, technological and financial resources (Arghyrou and Tsoukalas, 2010; Konstandinidis, 2014). Likewise, the future of the Academic Library of the School of Philosophy at Athens University in Greece (thereafter Academic Library) is at risk. Despite these problems, the new economic conditions may be regarded as an opportunity for the academic libraries, which are required not only to survive but also to contribute to Greek higher education. The economic crisis has not reduced the multidimensional need for and role of academic libraries. In fact, increased demand for library services by users has been observed and documented (Kostagiolas et al., 2012; MOPAV, 2012; UOA.LCC, 2001-2012). While the crisis deepens, the users of libraries are increasing because library users, as victims of the economic crisis, are turning to libraries in order to satisfy their educational, informational and research needs by using the available library material and the existing infrastructure (Goulding, 2009 cited in Vazaiou and Kostagiolas, 2013).

The provision of improved library services could appreciably determine the future of the Greek academic libraries. Academic libraries would especially benefit from the provision of high-quality user services which employ technology-based information systems in order to satisfy ever-changing and evolving user expectations and requirements (Issa et al., 2011). Hence, the Academic Library could advance its user services through employing technology in new ways, reflective of a paradigm shift in library information systems from a system-centered to user-centered focus (Dervin and Nilan, 1986; Wilson, 1981; Foster et al., 2011). Placing user experience at the center of library services requires involving library users in the design process for improving existing library information systems, adding new features and functions or designing new ones. The approach acknowledges the value of users’ participation in developing and advancing services, spaces and tools (Foster et al., 2011).

The Academic Library of the School of Philosophy at Athens University in Greece has used an Integrated Library System (ILS) since 1998 for the automation of the main librarianship duties, such as books and serials purchase, acquisitions, cataloguing, classification, subject indexing, circulation, and the online public access catalogue
(OPAC) (LCC_UOA, 1999-2011). Although the ILS is focused on the traditional librarianship duties and their adequate execution, it lacks user-centered functionality. Given the aforementioned circumstances created by the economic crisis, the Academic Library has to respond to the challenges and seize the opportunities by strengthening its services and their impact. This requires exploration with and for users to find ‘solutions’, which include improving the Online Public Access Catalogue (OPAC) interface features and functions, with the aim of fortifying the library’s presence on campus and thereby furthering its efforts to emerge from crisis.

A thorough review of the professional and library and information science (LIS) literature confirms that while new technology provides academic libraries with the opportunity to advance futuristic services (Wang, 2007; Siriprasoetsin and Tuamsuk, 2011; Chen and Popovich, 2003, Research Information Network, 2010; Wells, Fuerst and Choobineh, 1999), only traditional library information systems have been implemented in Greek academic libraries. These systems lack user-centered functionality that could capture and analyze user trends, as well as anticipate needs and behaviors. Because no such system has been implemented in the Academic Library, and none has been the outcome of Soft Systems Methodology (SSM) research, a user-centered focus and SSM tools guide this Master’s thesis.

1.2 Purpose Statement and Research Questions
This research will focus on library users’ and academic librarians’ perspectives on the current library services provided by the existing Integrated Library System (ILS) and their desired characteristics of an improved ‘public facing’ Integrated Library System (ILS). The aim will be to explore and acquire knowledge about the existing situation and recommend improvements that could, subsequently, produce changes in a technology-mediated library system.

The latter goal of this academic research study will be to establish sustainable communication and interactive evaluation with both library users and academic library staff, which would assess the value of any changes and thereby inform further changes. However, achievement of this implementation aspiration is outside the scope of this study.

Conduct of this study assumes that the Academic Library’s users will participate willingly in the research – and they did so, so I could collect necessary data. Analysis in turn enabled me to obtain a deeper understanding of the existing situation and, subsequently, to apply the different stages of Soft Systems Methodology (SSM) to generate characteristics of an improved system. The resultant recommendations propose user-centered information system modifications that better meet the needs and requirements of the Academic Library’s users and can, consequently, advance the organization’s delivery of library services.
Therefore, the Soft Systems Methodology (SSM) research study employs an interpretive qualitative approach to both explore the library users’ and academic librarians’ perceptions of the current library discovery and access services as mediated through the Online Public Access Catalogue (OPAC) and also to identify their desired characteristics of the ‘public facing’ Integrated Library System (ILS). The recommendations can guide the Academic Library’s near term modification of the OPAC environment. In addition, the research approach can sustain a long-term collaborative design initiative focused on incrementally building a continuously improved user-centered library information system. However, implementation is not within the scope of this study.

The research questions that need to be explored are:

1. How do library users and academic librarians perceive the current library discovery and access services as mediated through the Online Public Access Catalogue (OPAC)?

2. How do library users and academic librarians describe their desired characteristics of the ‘public facing’ Integrated Library System (ILS)?

1.3 Topic Justification

The importance of the topic derives from the fact that academic libraries must increasingly demonstrate their pivotal role in education and research, through provision of academic services, to the academic community (Germano, 2011). As evidence that academic libraries serve as the core of universities and contribute actively in the support of teaching, learning, research and science appliance (RIN, 2010), despite the economic crisis, increased demand for multidimensional academic library services has been observed and documented (Kostagiolas et al., 2012). In fact, as the economic crisis deepens, the number of users in academic libraries is increasing (Goulding, 2009 cited in Vazaiou and Kostagiolas, 2013; Kostagiolas et al., 2012; MOPAV, 2012; UOA.LCC, 2001-2012). To continue their vital role in higher education, academic libraries must continue to refine high-quality user services that benefit from the use of technology-based information systems in order to anticipate changing needs, requirements and expectations (Issa et al., 2011).

The fact that the Academic Library has struggled to survive over the last two years due to lack of resources caused by the economic crisis in Greece, while its users are increasing (Newspaper of the Greek Government, issue nr.1914/2013), strongly motivated this study. I wanted to conduct useful research, which would contribute to library sustainability by proposing a realistic approach to enhanced services. The Online Public Access Catalogue (OPAC) represents the means by which the end users (faculty members and students) communicate with the library’s technology system, which serves as a portal to library resources. In other words, the Online Public Access Catalogue (OPAC) represents the ‘users’ interface’. According to Somerville et al. (2007), Soft
Systems Methodology (SSM) can be productively used to clarify library users’ expectations and requirements for library systems and associated services.

Additionally, I wanted to use Soft Systems Methodology (SSM) as a research approach because it is not a well-known approach in the Greek Library Information Systems field. Having read about several cases where Soft Systems Methodology (SSM) was successfully applied in Sweden and other places, I believed that through my research, I too could use this learning approach to collaboratively generate recommendations regarding the characteristics of a modern user-centered Information System (IS) for the benefit of the Academic Library.

Guiding research methodology will be provided by Checkland and Poulter (2006), who state that everyday life is composed of complex interrelated situations where humans are trying to act purposefully in order to improve the ‘problematical situation’. Checkland and Poulter (2006) use the term ‘problematical situation’ rather than problem situation to convey the complexity in the solution of these situations. In this research study, Soft Systems Methodology (SSM) will provide the ‘tools’ for guiding exploration of the problematical situation, to see what emerged and to generate fruitful recommendations. This learning process (Checkland and Poulter, 2006) will support collaborative creation of a user-centered information system. Hence, it builds upon theories and techniques, which, through social learning systemic processes, promote “learning the way” (Mirihamidotter, 2010).

An additional benefit of this research proposal suggests that the Academic Library can survive not only by cost-cutting, as is the trend in the current economic crisis in Greece, but also by offering higher-quality services through a more user-centered information system.

1.4 Scope and Limitations
The research will involve postgraduate students who are enrolled in the School of Philosophy at Athens University, and are also registered and active members of the Academic Library, because their needs for high-quality library services are increased due to the level of their studies. Additionally, the research will engage Faculty members who are also registered active members of the Academic Library, as well as the librarians working in the Academic Library.

The research will be conducted in the Greek language. Since the thesis will be written in English, I have to be very careful during the verbatim transcriptions and the translation from the Greek to the English language not to lose or misinterpret the empirical data.

Lastly, the relationship between the researcher and the institution has to be taken into account, as I am a current employee in the institution where the study will be conducted. Therefore, I have to be careful during the research to maintain a professional relationship and treat the collected information with respect.
There is considerable variety among academic libraries, depending on the specific institutional histories and circumstances of which it is a part. Therefore, generalizations from the research results cannot be made about the library services of all academic libraries, nor even all Greek academic libraries; but, the research results could be applied to academic libraries with similar context, regulations and cultural backgrounds (Alvesson and Sköldberg, 2009).

1.5 Thesis Organization

The Master thesis is organized in six (6) main chapters. Therefore, the rest of the thesis is structured as follows: Chapter 2 provides a literature review on the main topics of the Master thesis, in this way creating a contextual framework around Academic Libraries, Greek Academic Libraries, the economic crisis and its consequences on libraries, and specific library and library services and systems, user-centered design, and Soft System Methodology (SSM). This section also includes illustrations of Soft Systems Methodology in order to elucidate the elements of the chosen methodology. Moving on, Chapter 3 presents the methodology. The methodological tradition is discussed, along with the methodological approach, the methods for data collection and the modes of analysis, and issues inherent in design choices, such as reliability, validity and reflexivity, and ethical considerations. Following this, the findings are presented and analyzed. Chapter 4 provides an explanation of how the Soft Systems Methodology (SSM) was applied in the research study. The last two chapters are a reflection upon the findings of the research, the strengths and limitations of the study, and the lessons learned. The last chapter, Chapter 6, offers suggestions for future research. Figure 1 offers a visual depiction of the thesis organization.
Figure 1: Master Thesis Organization
Chapter 2
Review of the Literature

Chapter 2 constitutes a review of the literature that is used in this research study. The Soft Systems Methodology Framework of Ideas - Methodology - Area of Concern (FMA) framework is presented and its main components are discussed in order to present a solid and understandable contextual framework to the readers.

2.1 Academic Libraries and Economic Crisis

The literature review requires thorough investigation in scholarly peer reviewed monographs, scientific journals and other dissertations on the main topics of the Master thesis. Search terms include Academic Libraries, Greek Academic Libraries, the economic crisis and its consequences on libraries, and specific library and library services and systems, user-centered design, and Soft System Methodology (SSM), in order to create a contextual framework or, according to Checkland and Holwell (1998, p. 14), an FMA framework. The authors claim that

“in keeping the intellectual bearings in a changing situation in which the adequacy of F (framework of ideas) and M (methodology) and the appropriateness of A (area of concern) are likely to be tested, it is essential to declare in advance the elements F, M, A”.

So, in this study the framework of ideas is built upon an iterative interpretivistic user-centered system design approach. More specifically, the area of concern is Academic Libraries and their services, given a more user-centered approach, while the Soft Systems Methodology (SSM) and its applied theories and processes guides the researcher’s attention to the most important issues and considerations, given the phenomenon focus.

In recent years, the economic crisis has affected the academic libraries in several countries of Europe and United States of America with long histories and national progress in the science of Librarianship and Information Science (Charleston Observatory, 2009; American Library Association, 2011). An international survey conducted in October 2009 by the Charleston Observatory engaged 835 participating libraries in 61 countries around the world (Charleston Observatory, 2009). Results demonstrated that the fiscal reductions in various areas of libraries started to become visible in 2009 and were projected to increase in 2010 and 2011 (Charleston Observatory, 2009). Specifically 37.4% of the institutions expected cuts in informational sources in 2010 and 2011, 8.3% of them expected staff reductions and 18.1% expected reductions in library services. According to the aforementioned survey, academic libraries would be affected to a greater extent than other parts of higher education due to
cuts in funding institutions (Charleston Observatory, 2009). Current trends and future projections corroborate these forecasts (Long and Schonfeld, 2014).

The economic crisis which originated in Greek society in 2009 is associated with the indebtedness of the Greek public sector and the country's inability to manage this situation (Arghyrou & Tsoukalas, 2010; Konstandinidis, 2014). The impact of the five years of economic recession has affected almost every aspect of private and public life in Greece, leading to a decline in the living standards for the majority of citizens and strengthening the sense of uncertainty about the future (International Labour Office, 2011). While, in the Greek public sector, most of the public educational institutions and, therefore, their academic libraries were rapidly expanding before the crisis, this trend has now reversed. Until 2009 the academic libraries’ growth was mainly due to funded programmes by the European Union, which allowed increases in personnel, technical equipment and users’ services (Special Service of EPEAEK Management, 2003).

Now, however, the impact of the financial crisis on Greek academic institutions is directly felt in all academic libraries in the country. In the last three years, the budget of academic libraries has been reduced year after year, producing many concerns regarding their management, sustainability, progress and development, and users’ services (M.O.P.A.B., 2010; M.O.P.A.B., 2011; M.O.P.A.B., 2012). A recent survey conducted by Vazaiou and Kostagiolas (2013), based on previous research of the author (Kostagiolas et al., 2012) and on a survey conducted by the University College of London (Charleston Observatory, 2009), aimed to capture the views of the Greek academic libraries’ directors about the effects of this economic crisis on the academic libraries. Results showed that it was unlikely that academic libraries would experience economic recovery due to difficulties arising from the overall political, social and economic situation in Greece. The continuous cuts in financial, human and technological resources confound all library administrators throughout the Greek librarian community and, since the likelihood of further reductions and cuts is imminent, the fear of mergers and shutting-down of academic libraries only increases (Vazaiou and Kostagiolas, 2013).

However, the economic crisis is also an opportunity in terms of demonstrating the value of libraries and their services. The increase of remote and physical users in academic libraries offers very positive evidence for the value of services, especially if services are improved with and for users.

Consequently, the economic crisis has profoundly affected the operation of the Athens University Academic Library. The public funding for the university in the last years was decreased by 40-45% compared with that received before 2010 (Bureau of the Conference of Rectors of Greek universities, 2013). In 2014 there will be an already announced further reduction of 15% of the university’s public funding (Bureau of the Conference of Rectors of Greek universities, 2013). Additionally, in the last four (4) years, an increased number of retirements have occurred within the ranks of the teaching and administrating personnel, and these positions have not been replaced (Bureau of the Conference of Rectors of Greek Universities, 2013). Finally, despite significant underfunding and serious shortages in personnel, the Greek government decided on September 2013 to make a significant number of dismissals of the University’s
administrative staff (Newspaper of the Greek Government, issue nr.1914/2013; Bureau of the Conference of Rectors of Greek Universities, 2013). As a result, 50% of the Academic Library’s librarians were dismissed.

The decision of the Greek government had a huge impact on the Academic Library, which is now forced to reduce or interrupt many of the provided services, and shut some library annexes due to lack of staff. At the same time the viability of many important new services, which have been launched by the ongoing projects of the National Strategic Reference Framework (NSRF), has been compromised, since many of the services offered through NSRF were to be supported by the existing Academic Library staff, whose ranks are now depleted (Bureau of the Conference of Rectors of Greek Universities, 2013). In addition, major cuts have been made in Academic Library material purchases, in the Library’s working hours, in the Library staff numbers and other services due to decreased funding. Despite the overall reductions, a significant and promising phenomenon is the increased demand for library’s services by users. Hence, the Academic Library has a unique opportunity to respond to the increased user demands.

2.2 Information Technology and User-Centered Systems Design

There are several ways that the Academic Library could adapt to the changes and advance its services for users, including integration of newly designed technology-enabled services. In this research, I will study how library users and academic librarians perceive the library services provided by the existing Integrated Library System (ILS) and I will explore how a collaborative design for a more user-centered library information system could help the Academic Library in charting new directions. Bratteteig (2010) defines an information system as a computerized system, which is designed for processing, storing, recalling and delivering information. On the other hand, information systems design, according to Bratteteig (2010), refers to designing information technology artifacts, which, through their use, manage to solve problems.

Löwgren and Stolterman (2005) suggest that the design process is dialectic and begins with an idea, then a designer’s vision, followed by illustrating the vision through sketches (operative images) and, finally, by specifying the images. The operative image is an early form/representation of the solution, which includes not only problem setting, but problem solving as well (Schön, 1983). In a systems design process, some parallel activities occur, such as envisioning, sketching and specification (Stolterman, 1991 cited in Bratteteig, 2010). According to Löwgren and Stolterman (2005), the vision, the operative image and the specification are called levels of abstraction. Therefore, designing a system requires specifying the conceptual vision, translating it into design elements, and, finally, producing it in material form (Bratteteig, 2010).

In information systems design, the problematical situation includes many people with different perspectives that are affected by and, therefore, could be involved in the design process. Therefore, an important aspect of user-centered design (UCD) is identification of the various stakeholders and clarification of their viewpoints on the problematical situation because, in user-centered systems design, it’s important that all the voices are
heard. Collaborative design represents a method that intentionally supports inclusive consideration of this diversity. In collaborative design, designers and future technology users envision, sketch, design and develop information systems (Mörterberg et al., 2010). Mutual understanding establishes the basis for the conversation and collaboration between designers and users.

According to ISO 13407-1999, which was later replaced by ISO 9241-210, human or user-centered design (UCD) is described as a multi-disciplinary activity for the development of interactive systems that focus on usability (Jokela et al., 2003). Furthermore, the user-centered approach focuses on humans’ interaction with technology, rather than the technology’s support of humans’ work. The end users’ needs, desires, requirements and limitations are put at the center of attention when designing an IT artifact and the users are actively involved in the process, with the goal to produce an IT artifact with high usability (Gulliksen et al., 2003). Herein lies the importance of UCD, which aims to co-design systems that successfully meet users’ needs.

Among the distinguishing components of user-centered design are a focus on users and their needs. This is typically achieved through active participation, integrated design, usability testing and iterative design. By engaging users from the beginning in the design processes for needs identification and system requirements, UCD furthers systems usability.

Usability is a main goal in integrated design, so relevant tasks have to be identified at early stages in the development of the user interface. In ISO 9241-11 1998, usability is defined as

“The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction, in a specified context of use” (Jokela et al., 2003, p. 54; Gulliksen et al., 2003, p. 407).

Therefore, relevant users’ requirements should be taken into account to inform the product design so that the IT artifact can be easily and enjoyably used by the users.

User testing should be done at all stages of the design process. Common approaches include using prototyping, such as mockups or drawings. These techniques could be combined with use cases in order to keep the designer focused on users’ needs and requirements.

Through iterative application of these various research and development tools throughout the design process, users’ needs and requirements are defined and clarified, despite initial diversity and uncertainty. So, iterative design is an important aspect of user-centered system design (UCSD), as illustrated in the Figure 2 life-cycle. Firstly, the need for a user-centered system design is identified. The context of use is understood and specified through analysis of user needs and requirements. Usability and other components of UCSD, such as a user focus, user testing and redesign, become an iterative process as outcomes are evaluated, and changes are proposed according to the
feedback. The next steps of the design project are planned and the design-cycle starts from the beginning.

Figure 2: User-Centered System Design (UCSD) Process (Adapted from Gulliksen et al., 2003, p. 401)

2.3 Academic Library Services and User-Centered System Design

In the case of the Online Public Access Catalogue (OPAC) of an Integrated Library System (ILS), the OPAC interface to the ILS is the way that users understand the system and interact with it. According to Norman and Draper (1986, p. 61),

“the needs of the users should dominate the design of the interface, and the needs of the interface should dominate the design of the rest of the system”.

So, a system’s interface should be designed in a way suitable for the users’ needs and requirements. This mainly depends on the users’ characteristics and on the context in which the system operates. Despite that, most libraries in the world, and especially European Academic libraries, purchase commercial ‘out of the box’ / ‘turn-key’ Integrated Library Systems with limited ability to customize the user interface (Breeding, 2012; Mi and Weng, 2008).
According to Langefors (1973 cited in Mörtberg, 2013), in order to make sure that the end users’ needs are taken into account, the user-oriented requirements and limitations have to be clarified before any technical constraints are imposed. In a user-centered system design (UCSD) process, some main steps, such as the gathering and specifying of requirements and the design and evaluation of the system, need to be followed. In this study, only the first two activities concerning the understanding of the context of use and the gathering of the requirements will be completed. By following the user-centered approach, I seek to find answers about the users’ perceptions, their needs and desires. Then these findings will inform recommended improvements that will help, at a later stage, to guide decision-making about the design and development of an improved library information system.

Similarly, Cullen (2001) suggests that the only way for academic libraries to survive in this unstable and changeable competitive environment is by focusing on better satisfying the users’ needs. While this is difficult due to the global economic crisis that has caused major reductions in libraries’ budgets (M.O.P.A.B., 2010; M.O.P.A.B., 2011; M.O.P.A.B., 2012; Charleston Observatory, 2009; Kostagiolas and Vazaiou, 2013), especially given increased student enrollments, academic publications and online programs (Siriprasoetsin and Tuamsuk, 2011), the future of academic libraries very much depends on the quality of the services provided for their users.

In the international library environment, there are academic libraries that have complemented their ILS with user-centered ‘customer relationship management’ systems for developing local services in order to meet local needs. Such libraries include Lancaster Library, the University of Malta Library and the University of Coventry Library (Broady-Preston, Felice and Marshal, 2006; Coventry University, 2014; Lancaster University, 2006-2013; University of Malta, 2012). Other libraries such as the Kennedy Library of California Polytechnic State University in San Luis Obispo engaged students in co-designing library systems and interfaces (Somerville et al., 2007). The Auraria Library at the University of Colorado Denver improved their library information systems through instituting collaborative evidence based information practices to improve staff analysis and planning for more user-centered services (Somerville and Howard, 2010). However, the review of literature in Greek academic libraries did not reveal any use of such systems or practices for improving the library services. Although some practices have been reported that match the characteristics of a user-centered ‘customer relationship management’ system, like the creation of users’ profiles or the recording of users’ attitudes, these practices were related only to traditional library services such as circulation, interlibrary loan or reporting.

2.4 Soft Systems Methodology (SSM)

There are several research approaches that could be used for exploring the library users’ perceptions and desired characteristics of an improved Integrated Library System (ILS). In this research, I will use Soft Systems Methodology (SSM).

In 1970 Peter Checkland developed Soft Systems Methodology (SSM) as an approach for undertaking the improvement of problematical social situations (Checkland and
Poulter, 2006). Soft Systems Methodology (SSM) is inherently Action Research, where the researcher comes into a human situation of the real world with the intention to improve the situation and obtain knowledge (Checkland and Holwell, 1998). Action Research emerged from Kurt’s Lewin findings about the limitations of examining complicated social phenomena of the real world in a laboratory because, as the researcher enters a changing situation, he/she has to follow it wherever it takes him/her (Foster, 1972). Therefore, according to Checkland and Holwell (1998), the change process becomes the real object of research and the participants become actively involved in it (Whyte, 1991). Checkland and Poulter (2006) argue that Soft Systems Methodology (SSM) is an action-oriented process for improving local situations in which the practitioners go through several stages, from developing an in-depth understanding and learning about the problem to taking actions to improve it. These problems are characterized by complexity because they are constantly changing; and every participant sees and understands the problem from his/her point of view. The involved participants are trying to act purposefully in order to improve the problematical situation. Therefore, Soft Systems Methodology (SSM) is a process of research, which through social learning takes action to improve.

Soft Systems Methodology (SSM) recognizes that every social organization is a living system, which is comprised of different elements that interact and, consequently, relate with each other. The interrelatedness of the system’s elements makes every system complicated. In order to solve potential problems, we need to look at them from a holistic perspective, or, in other words, from a system’s point of view. Looking at the problem as a whole is called the systems approach (Schoderbek, Schoderbek and Kefalas, 1990). On the other hand, when viewing the problem by analyzing its components, we use the analytical approach. Many researchers argue that systems are better studied as a whole due to the interaction of their constituting elements. It follows that today’s social organizations, because of their complexity, are best studied from a systems approach. In such a case, systems thinking supplements analytical thinking.

Checkland (1999) states that Systems Thinking is comprised of Systems Analysis and Systems Synthesis. Systems Analysis examines hard problems. The structured problems are called hard, and they start from a current state with the aim of reaching a desired one by employing the optimum solution. The problem lies in the gap between the existing and the desired state. Therefore, Hard Systems Thinking is an approach that examines structured real-world problems, while Systems Synthesis investigates soft problems, which represent unstructured problems that are not easily defined. Thence, Soft Systems Thinking is an approach that explores real-world problematical situations by seeing the system as a whole (Rose, 1997).

In 1966 Professor Gwilym Jenkins and his team in University of Lancaster tried to undertake management situations, which were problematic, by applying a Hard Systems Thinking approach, Systems Engineering (Checkland, 1991). The team of academics found that it was difficult to solve management problem using Systems Engineering because, according to the approach, the problem in order to be solved should have a single definition. In contrast, in organizations’ management problems, where different
stakeholders were involved, there were different viewpoints and, consequently, definitions of the problem (Checkland, 1991).

Later on, in 1969 Professor Peter Checkland joined Jenkins’ team. He tried to tackle the management problems with a new, at that time, methodology. His team members until then worked with a defined goal, and they systematically tried to find a way for a system to achieve the defined goal. Checkland, on the contrary, perceived as problematical what was taken as granted, the goal. He understood that the objective and the way to reach it were parts of the problem. He also recognized that real-world problems are complex and that negotiation requires models of purposeful activities from different viewpoints. According to Checkland, the models provided a way of building a discussion between conflicting perspectives. He tried, through this process, to reconcile the contrasting interests and facilitate action to be taken in order to improve the problematical situation. This interactive process is shown below in Figure 3 (Checkland, 1991). Figure 3 explains that real-world is characterized by constant change of events, which produce problematical situations. Every participant perceives these situations differently according to his/her worldview and tries to act purposefully by employing his/her ideas. By creating a discussion of the ideas among different viewpoints, a conciliation of the contrasting interests is achieved that leads to commonly accepted proposed activities in order to improve the problematical situation.

The Lifeworld is a flux of interacting events and ideas

![Diagram](image)

**Figure 3:** Checkland’s Concept of ‘Managing’ (Adapted from Checkland, 1991, p. 79)

In 1970, Soft Systems Methodology (SSM), as it is known today, emerged from Checkland’s work. Soft Systems Methodology (SSM) develops in seven (7) stages (Checkland, 2011). At the first stage, the practitioners explore the problematical situation through intervention, social and political analysis. Rich Pictures represent the second stage (Checkland and Poulter, 2006). According to Checkland and Poulter (2006), Rich
Pictures is a technique for depicting the problematical situation that needs to be changed or improved by showing the interrelations between the involved parts (stakeholders, processes, structures, and ‘climate’). The process of generating and interpreting Rich Pictures perceives the organization as a system and analyses it in order to locate problem areas (Rose, 1997). At the third stage some Root Definitions are formulated (Checkland and Poulter, 2006). The Root Definitions are statements describing the activity system that needs to be created in order to improve the situation and act as the basis for building some Conceptual Models of the systems at the fourth stage. The Conceptual Models describe all the activities in the right order that need to be performed in the system in order to achieve its transformation (Rose, 1997). After building the Conceptual Models, at the next stage, they are compared with reality for defining the differences between the ideal and current situation. At the sixth stage, the outcomes of the comparison are used to find out the needed changes for improving the problematical situation. The changes should be aligned with what is possible regarding the cultural and political situation (cultural feasibility), and the changes should also be aligned with the Human Activity Systems stated in previous stages (systemic desirability). At the final stage, the proposed changes are implemented. The implementation stage is outside of the scope of this study. Therefore, Soft Systems Methodology (SSM) is here considered not an optimizing system, but rather a learning and participative system (Checkland, 1991). This process is illustrated in Figure 4.
2.5 Organization Development

Kurt Lewin is also the father of the organization development concept. The process of organizational development was based on his ideas about group dynamics and action research. During the 1940’s, Lewin experimented with the action research’s predecessor, a collaborative process of change, which unfolded on three stages: planning, taking action, and estimating the results. Additionally, he experimented with the dynamic of groups in and out of the laboratory and how a group member could gain knowledge, learn and transfer knowledge in the best way. Finally, he found that learning could be better achieved in groups within an organization, not in a laboratory. From Lewin’s belief that group members could be best trained within their organization and his recognition of the important role of workplace culture in their training, the term of organization development emerged. Being wide and complex, organizational development has been defined in various ways by theorists. Most of them agree that it is a continuous systemic process that through learning leads an organization to an effective change (Bradford and Burke, 2005). Similarly, Orlikowski (2000; 1992) stresses the importance of developing technology structures that come from practice, not strict structures that are determined by technology. Continuing, she emphasizes that technology structures, as social structures, can change through human action (Orlikowski, 2000).

In summary, as revealed in the preceding literature review, this study occurs within the larger context of a national economic crisis that has created resource challenges for Greek academic libraries. Despite these limitations, user demand continues to grow, presenting opportunities for - and, in fact, requiring - professional innovation. For these reasons, an interpretivistic research approach to user-centered systems design (Framework of Ideas) will be guided by Soft Systems Methodology (Methodology) to redesign a library artifact, the OPAC interface (Area of Concern). Throughout, the study will aim to evolve a more user-centered approach for the ‘public facing’ module of the library ILS. Although there are several research approaches that could have been used, Soft Systems Methodology will be selected because it is a participative learning system (Checkland, 1991) that can lead an organization to an effective change (Bradford and Burke, 2005), as explained in the next chapter.
Chapter 3
Methodology

This Chapter is a presentation on the methodology of inquiry. The methodological tradition and its potential applications are discussed to illustrate its appropriateness in the research study. The methods for data collection and the modes of data analysis are discussed in detail. Chapter 3 concludes with the discussion of issues such as validity, reliability, reflexivity and ethical concerns.

3.1 Methodological Tradition

According to Myers (1997), epistemology refers to the assumptions about knowledge and how this knowledge can be obtained. In other words, epistemology refers to the relationship between the researcher and the reality, and how this reality can be known. Therefore, there are three (3) types of epistemologies that a researcher can adopt: the positivist, the interpretive and the critical. Positivism argues that reality is objectively constructed and it can be measured independently from the researcher (Myers 1997). On the other hand, Interpretivism assumes that reality is socially constructed and the researcher has a prior awareness of the research topic, while the Critical epistemology assumes that reality is historically constructed and it is produced and re-produced by people (Myers, 1997).

Interpretivism is the methodological tradition that will be used in this research study because I will attempt to understand phenomena through the meanings that people give to them and interpretive methods of research in Information Systems (IS)

"aim at coming to an understanding of the context of the information system, and the process wherefore the information system effects and is effected by the context" (Walsham, 1993, pp.4-5).

Interpretive theory is more accepting of free will and sees human behavior as the outcome of the subjective interpretation of the environment. It focuses on actors’ definitions of the situations in which they act. Interpretive research is fundamentally concerned with meaning and it seeks to understand social members’ definitions of situations (Schwandt, 1994 cited in Denzin and Lincoln, 1994, p.118) or, according to Boland (1991), the humans’ subjective experiences and interpretations of the phenomena that surrounds them.

So, in this research, I, as an Interpretivist researcher, enter the field as intentionally aware as possible of my pre-existing beliefs and understandings. The Interpretivist tradition is chosen because it can contribute to my better understanding of the library users’ and academic librarians’ perspectives of the current library services provided through the existing Integrated Library System (ILS). This knowledge will provide a
foundation for appreciating their desired characteristics of an improved ‘public facing’ Integrated Library System (ILS). Thereby, with the help of the Interpretivist tradition, I will generate a list of desired user-centered characteristics of an improved Online Public Access Catalogue (OPAC) and recommend improvements that will, consequently, produce changes in this organizational system through collaborative design processes.

3.2 Methodological Approach

Research methods offer strategies of enquiry, which inform the underlying philosophical assumptions of the researcher through research design and data collection (Myers & Avison, 2002, p. 5). According to Gall, Borg, and Gall (1996), qualitative research is defined as the research, which is built on the assumption that individuals formulate social reality in the form of meanings and interpretations, and that these formulations tend to be temporary and circumstantial. So, in this research, the qualitative approach will be developed in order to study a specific social and cultural phenomenon. The qualitative methodological approach is chosen because, according to Myers and Avison (2002), it is the appropriate method for understanding people and the social and cultural context within which they live. According to Creswell (2009), in the quantitative approach, the researcher aims to generalize the result, while in the qualitative approach the researcher aims at understanding and interpreting the data.

More specifically, I will use Soft Systems Methodology (SSM), which is a qualitative interpretivistic research approach, because the situation is characterized by complexity, uncertainty, and contrasting interests. It involves various stakeholders with different perspectives, such as the university students, the faculty members and the University authorities, and the librarians working in the Academic Library. According to Checkland and Poulter (2006), Soft Systems Methodology is an ideal approach for undertaking study of complex situations. SSM will guide me to learn through the perspectives of different stakeholders groups regarding library services, present conceptual models of their desired library services and finally facilitate the Academic Library’s collaborative design of a more user-centered library information system that could advance the library services.

3.3 Methods for Data Collection and Modes of Analysis

3.3.1 Data Collection

Having established the stakeholders’ groups of postgraduate students, Faculty members, and junior and senior academic librarians, conversations among participants in each groups were convened in March and April 2014 in order to collect the data. Small group discussions were facilitated by the focus group technique used in social sciences research. A focus group is not based on strictly structured protocols (Grudens-Schuck, Allen and Larson, 2004). Rather, it is more based on insights than rules that emerge from a facilitated group interview, in this case of social groups with similar characteristics and power relationships.

I chose this specific technique because, besides recording the conversation among the participants, a focus group methodology will allow me to observe the body language of
the participants, their feelings, even some underlying tensions. In other words, it will allow me to ‘see’ behind the words and extract additional information from the multiple perspectives represented. In contrast, were I to choose a quantitative technique, for example, a survey, I wouldn’t have this rich data collection and interpretation opportunity.

The technique for picking the sample for the focus groups was, according to Creswell (2009), the quota sample. The specific technique for selecting the participants is based on the desired characteristics that the researcher seeks from the sample. In this research, I required that the respondents have at least two (2) years of experience as library users of the Academic Library. The two (2) years of regular library use are considered adequate time for a library user to become familiarized with the library services mediated through the OPAC and to be able to express an informed opinion about user experiences. The sampling in this research was interpreted as purposive, which, according to Patton (2002), means that the selection of the sample is emphasized purposely on the richness of the information source and not on generalizing the sample to population.

Before the focus groups took place, I informed and asked for permission from the Director of the Academic Library to execute the specific research. After receiving permission, I organized the focus groups and conducted the conversations. The conversations were recorded with the informed consent of the participants (see Appendix B) and some session notes were kept, when necessary, to help me in the transcription and data analysis.

The participants were categorized in three (3) groups in order to express the different worldviews of the stakeholders’ groups and facilitate, for that reason, the research which aimed to identify varying points of view. About twenty (20) persons of each group were invited, so as to ensure 6-8 participants per group. The invitation was delivered in person. Communication via e-mail followed between the persons that had accepted the invitation in order to inform them about the details of our meeting (date, time, venue etc.). The focus groups took place during working hours in the Academic Library’s setting; more specifically, a library study-room was booked for an hour and a half (1 ½) for each group. The aim of the focus group technique was to generate a good conversation on the research topic among the participants. However, I had to manage the course of the conversation to encourage the participants to stay focused on the study purpose. For that reason, I used an interview guide (Morgan and Krueger, 1998), which enabled me to guide the conversation, and, at the same time, gave me the possibility of modifying the questions (Longhurst, 2010), when necessary, for leading to a more in depth discussion among the participants. Additionally, the interview guide (see Appendix A) helped the participants feel comfortable, loosen up, work together, think together and come up with a rich range of ideas.

I began the conversations by welcoming and thanking the participants. Then I offered details about my research, including assurance of confidentiality, and I requested participants to follow some protocol guidelines. Finally, I requested that participants read and sign the informed consent form. The discussions followed, and lasted between fifty
(50) to seventy (70) minutes. In the remaining twenty (20) to forty (40) minutes, participants drew Soft Systems Methodology (SSM) Rich Pictures.

I also acted as the facilitator of conversations guided by the prepared questions. In the focus group of the postgraduate students, I guided the discussion in order to explore their current perceptions about the ‘public facing’ aspects of the integrated library system (ILS). In another session, I used the interview questions to facilitate the focus group discussion among Faculty members in order to examine similar questions from the professors’ point of view. I then conducted the discussion with the focus group of junior and senior academic librarians in order to explore their perceptions and ideas of improving the library services provided by the existing library information system.

To generate conversation among the groups of library users and academic librarians, the first research question was “How do you perceive the current library discovery and access services as mediated through the Online Public Access Catalogue (OPAC)?” Several additional ‘prompts’ were included in the focus group protocol to ensure robust consideration of the multi-faceted question. To supplement participants’ recall, I showed on a screen the current functions and features of the Integrated Library System (ILS) to the participants of each group, to prompt their further evaluation of the system adequacies and inadequacies. Then, I requested that each group draw Rich Pictures of desired characteristics of the ‘public facing’ Integrated Library System (ILS), which produced three (3) Rich Pictures. The participants were not aware of the Rich Pictures technique. Therefore, I briefly explained the technique and showed some Rich Pictures examples from the literature. My intention was not to get into details about the technique because I wanted to avoid affecting the participants’ imagination so their creativity could be freely expressed. I analyzed this data to answer the second research question “How do library users and academic librarians describe their desired characteristics of a ‘public facing’ Integrated Library System (ILS)?”

3.3.2 Data Analysis

As stated in the methodological section, the qualitative interpretivist Soft Systems Methodology (SSM) research approach was followed. So in this section, I will first discuss how the collected data from the discussions and the Rich Pictures were analyzed and interpreted. This will be illustrated through application of the six stages of Soft Systems Methodology (SSM), which will be presented in the next chapter. The implementation stage is outside of the scope of this research study.

Data analysis is the interaction between the researcher and the collected data in order for the researcher to identify and extract themes for generating patterns from the raw data.

3.3.2.1 Part 1: Discussions

Thematic analysis was followed for interpretation of collected data based on discussions (Boyatzis, 1998). Thematic analysis is a coding process for qualitative data, which unfolds in six (6) steps: become familiar with the data, produce primary codes descriptive of the data, look for themes in these codes, examine the themes, define the themes and present the final findings. Themes are defined as patterns in the data sets,
which are connected to the stated research questions and give insights to the phenomenon in focus when data is sorted into categories of analysis. According to Boyatzis (1998), thematic analysis is an appropriate approach for the researcher to analyze and interpret various data in a precise and definite way. He also states that the data could be approached in a deductive or inductive way (Boyatzis, 1998). Deductive means that themes are identified based on guiding theory, while inductive means that themes are identified based on the empirical data. In the research study, I used the induction to examine and interpret the library users and academic librarians’ perceptions on the provided services mediated through the Online Public Access Catalogue (OPAC).

More specifically, the discussions were recorded using a digital recorder. For the transcription process, I used a media player to listen to the conversations. I paused the recorder periodically and typed statements verbatim. By listening to the discussions repeatedly, I corrected the transcriptions, including spelling and syntactic errors. The collected and transcribed data were in the Greek language. Therefore, the focus groups conversations were then translated into the English language. The translation turned out to be difficult because the discussions were in the vernacular Greek language and the meaning was not easily translated into the English language. After completing the translation, I re-read several times the three (3) transcriptions in order to get a deeper understanding of the participants’ perceptions and to identify the similarities to generate patterns. I then applied labels to the identified patterns in order to develop themes. I placed similar patterns together to make higher-level categories. I concluded the analysis by defining each category using rich and thick descriptions to assure meaningful differentiation.

3.3.2.2 Part 2: Rich Pictures
After that, I analyzed the three (3) Rich Pictures (see Figure 5, 6, 7) drawn by the three (3) focus groups to extract common desired characteristics for an improved Online Public Access Catalogue (OPAC). According to Mingers and Taylor (1992), the technique of Rich Pictures is one of Soft Systems Methodology’s most common and favorite techniques. The Rich Picture technique aims to represent a situation without demanding a strict structure (Checkland and Poulter, 2006). Checkland and Poulter (2006) state that Rich Pictures is an excellent way of representing complex human situations as a whole, as the interrelations and worldviews of the stakeholders are illustrated. In this way, a holistic approach of the situation under study was enabled (Checkland and Poulter, 2006).

By analyzing the Rich Pictures and then synthesizing the collected data, I generated a list of characteristics for an improved OPAC ‘public facing’ module of an Integrated Library System (ILS). The enhancements emerged from thematic analysis of focus group discussions and Rich Picture drawings which intended to increase usage of and satisfaction with library services. The list of characteristics for an improved ‘public facing’ Integrated Library System (ILS) or, in other words, an improved Online Public Access Catalogue (OPAC), guided creation of a Root Definition, and, consequently, a
Conceptual Model (Checkland, 1991). From the comparison of the conceptual model with reality, several recommendations were made for improving the Online Public Access Catalogue (OPAC) interface features and functions through collaborative design of a more user-centered library information system. The whole Soft Systems Methodology (SSM) application is presented in Chapter 4.

3.4 Reliability, Validity and Reflexivity

The quality of the research procedure refers to assuring the reliability and the validity of the research. Qualitative reliability implies that the approach followed by the researcher is compatible with other researchers’ approaches (Gibbs, 2007). Gibbs (2007) recommends various reliability procedures from which I chose, for instance, to repeatedly confirm the accuracy of transcriptions to avoid any mistakes during transcription or translation.

Qualitative validity is considered one of the strengths in qualitative research. It means that the researcher checks whether the findings of the research are precise and accurate (Gibbs, 2007). Creswell and Miller (2000) argue that terms such as credibility, trustworthiness and authenticity can be used to ensure validity, while Lincoln and Guba (1985) describe trustworthiness with terms such as internal and external validity, reliability and objectivity. Creswell (2009, p. 191) suggests several validity procedures from which I chose:

- To use rich and thick descriptions to ascribe the findings of the research to the readers in order the presented results become more realistic.
- To clarify the bias I brought to the study and explain how my background, profession, culture and social and economic origin shaped the interpretation of the data.
- And to spent extended time in the field. As I am a librarian in the Academic Library for more than ten (10) years, I have developed a comprehensive understanding of the setting, the people and the phenomenon in focus.

According to Denzin and Lincoln (1994), in qualitative social science research, the researcher’s interpretation prevails. It is impossible for the researcher to be totally neutral. Hence, the researcher’s knowledge and prejudices have to be taken into account. This issue can be addressed through reflexivity which, according to Steedman (1991), requires that the researcher is cognizant of his/her impact on the interpretation of the data and, consequently, on the findings. This naturally follows from the argument that knowledge cannot be detached and isolated from the person who owns it. Therefore, I acknowledged my role and the fact that it wasn’t possible to be totally detached from my personal knowledge. In order to achieve reflexivity, I continuously reflected on my perceptions and examined my preconceptions throughout the research study, so as not to influence the research process and data interpretation.
3.5 Ethical Considerations

In the research study, I addressed some ethical issues such as securing permission for conducting the research and obtaining informed consent from the participants. In addition, I assured the confidentiality and anonymity of the respondents and the protection of their personal information through elaborating security measures for data during and after completing the research, acknowledging the respondents and working with the organization (Walsham, 2006). Considering these ethical issues were important in order to prevent any harm to the participants.

Permission was requested from the Director of the Academic Library for conducting the focus groups meetings for the research among the library users and academic librarians. This process both met an ethical requirement and also ensured his interest in the study results.

All participants were fully informed about the study purpose, methods, and tools through a written consent form (Appendix B.) distributed before the focus group discussions. This information aimed to create a confident and, at the same time, friendly relationship between the researcher and the participants. In addition, written permission from all participants was secured so the discussions could be recorded for subsequent analysis. Also, all participants were assured of confidentiality, which means that the identity of the discussants will not be revealed to others outside of the focus group’s members. All participants were informed of how the collected data will be treated and that the data will be used solely for the purpose of the research and viewed only by me and my Master thesis supervisors. All the above mentioned ethical issues were addressed in the written informed consent form signed by participants.

Participation of the focus groups members will be acknowledged in the thesis reporting results of the research. However, their identities will not be revealed there.

Being both a researcher and an employee in the specific institution, I had to be careful during the research process, including the project announcements, not to suggest the University’s endorsement of the study or its findings. The numerous protections for participants ensured willing and forthright engagement in the research processes, which will be explained more fully in Chapter 4.
Chapter 4  
Empirical Findings –  
Soft Systems Methodology (SSM) Application

Chapter 4 consists of two (2) parts. In the first part, the findings generated through thematic analysis of the focus group discussions are presented. The second part describes the application of several stages of the Soft Systems Methodology which produced the results of the research study. Firstly, the problematical situation is explored through social and political analysis. Following this, the SSM Rich Pictures, which culminated focus group sessions, are presented. Then, a Root Definition resulting from data analysis is stated and a Metalevel Conceptual Model is created. From the comparison of the Metalevel Conceptual Model with the real-world situation, several recommendations are made.

4.1 Part 1: Empirical Findings – Thematic Analysis
The themes that emerged through thematic analysis of the focus group transcripts are the following:

Theme 1: Inefficiency of searching functions
Theme 2: Lack of Web 2.0 tools in OPAC
Theme 3: Lack of results’ integration and users’ difficulty in using the retrieved results
Theme 4: Absence of personalized Online Public Access Catalogue (OPAC) interface
Theme 5: Difficulty in customizing the Online Public Access Catalogue (OPAC) interface
Theme 6: The librarian as a mediator between library users and technology

Theme 1: Inefficiency of searching functions
Both library users and academic librarians expressed points of dissatisfaction with the existing discovery and access services as mediated through the Online Public Access Catalogue (OPAC) because, although it provides access to library material, the process does not completely meet users’ needs. Library users underscored that they need instructions to use the Online Public Access Catalogue (OPAC) in an effective manner. And academic librarians admitted that the Online Public Access Catalogue (OPAC) reflects ‘librarian logic’, which means that the library users must be familiarize with the bibliographic system structure in order to come up with accurate search results.

One of the librarians, librarian A, said: “...the searching process should be easier and quicker for the users”.
Another librarian, librarian B, added: “the library users are feeling insecure during the searching process because they are not accustomed to the Integrated Library System (ILS); it is definitely a matter of information literacy”.

“...it would be of great help for the library users while searching, to open a keyword box next to the search box, so that they can pick keywords for their searches”, said librarian C.

One of the professors, professor A, said: “...our OPAC has some problems compared to those of other European universities. I use advance searching in order to limit the results, but after a while the limitation does not work and the returned results are still very wide”.

One of the students, student A, said: “I believe that oftentimes our OPAC is not easy to use because, in order to have certain research result, you have to spell right every word in the search box, and I want to write whatever I want and retrieve my results easier”.

**Theme 2: Lack of Web 2.0 tools in OPAC**

Both academic librarians and library users strongly expressed that the existing Online Public Access Catalogue (OPAC) lacks Web 2.0 tools, such as RSS feeds, users’ collaborative tagging and users’ reviews on library material and blogs, which disallows users’ participation in library services. The library users said that they would willingly add uncontrolled keywords to resources, or add reviews, or scan and add abstracts and the books’ title and back cover pages. Most of the academic librarians stated that this could be a great help in their work.

Professor C said: “I really like getting updates about material related to my field of interest mainly from foreign publishers or international e-shops. I wish this could happen from our OPAC”.

Student E said: “It would be interesting to find a group with the same interests and talk. For example, ask if anyone has borrowed a specific book, what he/she think of it, is there any other good book to propose, etc....”

“I find it interesting to be able to add keywords in a book that was located through the OPAC besides those put by the librarians”, student D added.

“...when finding an interesting book in the OPAC, it’s easy for me, to scan and add its summary or front and back page and write a few words about it”, student B said.

Librarian G said: “...library users in the academia are more experts in their field of interest than the librarians. So, many times they could add keywords that the librarian couldn’t have known or imagined that could help other users in their retrieval process”.
Theme 3: Lack of results’ integration and users’ difficulty in using the retrieved results
Library users said, and academic librarians confirmed, that it is difficult for the users to search for needed material in different indexes of the A-Z database list in the Online Public Access Catalogue (OPAC). Library users prefer to search in one unified index, in a single search box, containing resources in various formats. They prefer to enter simple search terms (not complicated keywords) and retrieve everything that is related to what they are seeking in a single search transaction. They want tools that allow them to retrieve concise results, which represent both accurate recall and precision, with few clicks.

Professor F said: “When searching in the OPAC, I want to retrieve results of resources in various formats, for example, books, journals, cds, digitized material, etc. and to sort them by myself. At least, I know that I found everything that’s in the OPAC in one search”.

“...searching in the index for journals is difficult...why do you have to separate the book search from the journal search from the thesis search...I want everything at once”, said student B.

Librarian D said: “if users knew better how to search in different indexes, they may find it more helpful than searching in one index. So, video instructions may be of great help for the users”.

Professor D concluded: “I want to put in searching criteria. Facets, for example, I want this author’s works written for this thematic category, since then, chronologically,...and come up with a set of results”.

Theme 4: Absence of personalized Online Public Access Catalogue (OPAC) interface
The library users and the academic librarians emphasized the importance of the users being able to customize the OPAC interface. The library users wanted to have their own accounts, in which they will create history lists of previously borrowed material, wishing lists of material they want to borrow in the future, and bibliographical lists with material they used in their assignments. Additionally, through their account, they would like to have several functions such as ‘Hold this item for me’, ‘I propose the library buy this item’, ‘Order this item for me from another library’, etc. The academic librarians agreed that it is really important that the users can administrate their account by themselves. That way, many ethical issues are solved for the academic librarians, such as the privacy of information about users’ borrowed books.

Student C said: “…but it would be better if every library user have his/her own account through OPAC and manage it by him/herself. We could make our history lists, our wishing list, we could create groups and communicate and share knowledge”.
Professor D added: “it would be nice to have a personal account connected to my mobile, so I could get reminders of the due dates for the borrowed books; just like the banks do...in two days you have to pay your monthly payment of your credit card...”.

“...the existing OPAC has the function of ‘My Account’ but it has limited uses and the library users are not motivated to use it”, said librarian D.

Librarian E said: “having a personal library users’ account would solve issues the librarians have, such as keeping records of personal users’ profiles or history of users’ borrowed books”.

Theme 5: Difficulty in customizing the Online Public Access Catalogue (OPAC) interface
Both the library users and the academic librarians said that the interface of the Online Public Access Catalogue (OPAC) is old-fashioned and unattractive to users. In addition, the academic librarians said that, besides the layout issue, the presentation of the search results could be improved. They had several suggestions based on their experiences and on library users’ comments. However, they acknowledged that the Online Public Access Catalogue (OPAC) ‘out of the box’ interface does not permit easy customization. The alternative is a separate module for which additional one-time expenditures and annual maintenance fees are required. The Academic Library cannot afford these additional costs, so the result has remained an old-fashioned and unappealing OPAC.

Student F said: “I don’t like that dull grey color our OPAC has. I prefer something more modern and colorful”.

Professor B said: “I don’t mind OPAC’s layout as long as it does its work. But, it would be great, if it could be more friendly and happy and functional at the same time”.

“...besides OPAC’s interface, we could improve the way the results are presented, if we had the money...The vendors of the ILS ask a fortune to give us interface upgrades...”, librarian F underscored.

Theme 6: The librarian as a mediator between library users and technology
The library users expressed the need for having librarians’ help whenever they needed it. The academic librarians admitted that it would be good to have an online service like ‘Ask your librarian’ for the library users.

Professor E said: “...you know...it would be nice to have a closer relationship with the people in the library, the people behind the ILS, the people that, when we cannot find a journal article that we need for our research, they could advise us what to do and how to find it. If I had this guidance when I am at home, it would be great”.

Student E added: “Sometimes, when I am lost in the journals, and I need to submit a paper, I want a ‘voice’ to come and help me; I want to be able to ask the librarian 24/7”.
“…the librarians are the ‘glue’ between us and the ILS, between us and the professor, I mean…they are the link…through our assignments…”, said student G.

4.2 Part 2: Empirical Findings – SSM Application

4.2.1 Stage 1: Exploring the Problematical Situation

Because the Soft Systems Methodology (SSM) stages form a learning cycle, they do not have to be followed or displayed in a linear prescriptive fashion (Checkland and Poulter, 2006, p. 193). In fact, as learning develops while using SSM, practitioners may make iterative use of cyclical stages (Checkland and Poulter, 2006, p. 193). In this way, they can use the tools in ways that makes sense for them as they explore the problematical situation (Checkland and Poulter, 2006, p. 208). In this study, however, a linear progression was used. Also, because the implementation stage is outside the scope of this study, iterative cycles were not employed.

According to these SSM stages, the fluidity of everyday life produces problematical situations. Every problematical situation is perceived differently by the various stakeholders, according to their worldviews. Therefore, during an SSM intervention, the social and the political context, in which the situation lies, should be described, and the various roles and interrelations of the involved persons should be identified. SSM recognizes that, in every problematical situation, stakeholders try to act purposefully with the aim to improve or change the situation.

Stakeholders’ actions can be expressed through Root Definitions (RDs), which lead to the creation of Conceptual Models of purposeful activities as they are conceived by the stakeholders’ different worldviews. The Conceptual Models are used as a source of questioning about the problematical situation, and as a basis for structuring a discussion about desirable and feasible changes. The aim of SSM is to engage practitioners in reconciling the different worldviews and finding a version of the to-be situation, which will satisfy all the involved parts. Changes are implemented in order to improve the problematical situation. However, in this study, the implementation of the proposed changes is outside the scope of the study.

4.2.1.1 Analysis 2. Social Analysis

The social context of the problematical situation consists of roles, norms and values, or, in other words, of the organizational culture. Most of the public educational institutions in the Greek public sector and, therefore, their academic libraries are characterized by a hierarchical culture. Similarly, the Academic Library has to follow some old-fashioned laws and rules, which produce difficulties in the dissemination of the university’s aspirational values and goals to the university employees, including academic library staff members. Therefore, this situation leads to difficulties in meeting the goals of the University’s Authorities (e.g., University Board, Rector and Vice Rectors, University Senate), as depicted in Appendix C. This situation has produced lack of motivation and creativity through the higher education institution, including among the librarians
working in the Academic Library. In addition, the financial crisis in Greece during the last five years has produced other serious problems in the Academic Library, such as reductions in human, technological and financial resources. So, ironically there are the academic librarians that struggle to maintain their jobs and provide quality library services while at the same time the library usage statistics show increased demand for library services. At the same time, the Government remains primarily concerned with monetary issues, given the financial crisis.

A Soft Systems Methodology (SSM) model can be used in order to better understand the social setting of the Academic Library. The setting will be expressed through CATWOE, an acronym, which is based on the idea that the purposeful activity system can be described as a transformation process T and a worldview W. The purposeful activity system requires people/actors A in order to perform it and, by that, it influences people/customers C. The model takes into account important forces from the environment E, and can be paused or altered by persons who own it/owners O (Checkland and Poulter, 2006, pp. 219-222).

It follows that the system can be analyzed as follows according to the CATWOE model:

C (Customers served by the system): Library users.
A (Actors performing activities in the system): Academic Librarians.
T (Transformation process): Improvement of the OPAC module in the existing ILS (Input: set new characteristics for the OPAC module and Output: improved OPAC module).
W (Worldview or Weltanschauung of the system’s existence): Advance the Academic Library’s services and guide the Academic Library staff members’ collaborative design for a more user-centered library information system.
O (Owners of the system): Academic Library’s management and University Authorities.
E (Environment’s constraints): Economic crisis, reductions in human, technological and financial resources.

4.2.1.2 Analysis 3. Political Analysis
The Academic Library is organized under the coordination and supervision of the Directorate of the Library and Information Center of Athens University along with another five (5) libraries, each of which meets the needs and requirements of a specific University School and has the obligation of providing access to authoritative academic information resources to its library users. The Academic Library reports to the Directorate of the Library and Information Center of Athens University and the University Authorities. The Academic Library is regulated by Athens University and funded by the Greek Government. However, the Athens University can decide autonomously about the allocation of its resources.

The economic crisis in Greece during the last five years has affected the operation of the Athens University Academic Library. The public funding for the university was decreased, an increased number of retirements have occurred within the ranks of the
teaching and administrating personnel, and 50% of the Academic Library’s librarians were dismissed.

The political instability produced some additional communications problems. The needs and problems of the academic librarians are addressed through the Academic Library’s Director to the University Authorities, but they cannot easily be communicated to the Greek Government. Additionally, the library users’ needs, requirements and rights are considered to be taken into account by the Academic Library’s policy, although the existing organizational culture does not engage users’ input. Despite these communication issues, this study recognizes that much can be done at the local level, including initiating system improvements through collaborative user-centered design.

4.2.2 Stage 2: Using the “Rich Pictures” Technique for describing the Problematical Situation

Having identified three (3) stakeholders groups, the postgraduate students, the Faculty members and the academic librarians, in the situation under study and, consequently, three (3) worldviews, the focus groups were created. Conversations among the participants in the three (3) focus groups took place in order to collect the data that led to answering the first research question. Following this, participants in each of the groups were asked to use the Soft Systems Methodology Rich Pictures technique. The technique is literally a picture that describes the situation from different stakeholders’ points of view (Checkland and Poulter, 2006, p. 209).

Members of each focus group were asked to draw a Rich Picture in order to describe their desired characteristics of an improved Online Public Access Catalogue (OPAC) module. By analyzing the Rich Pictures and then synthesizing the collected data, I generated a list of characteristics for an improved OPAC ‘public facing’ module of an Integrated Library System (ILS) and, consequently, answered the second research question “How do library users and academic librarians describe their desired characteristics of the ‘public facing’ Integrated Library System (ILS)?”

4.2.2.1 Postgraduate Students’ Rich Picture

The focus groups’ Rich Pictures below depict participants’ visual representation of desired OPAC characteristics. The first Rich Picture was generated by the focus group of postgraduate students. They depicted the whole context of the problematical situation showing that the Greek state, the Ministry of Education, and, consequently, the Athens University and its libraries are affected by various forces, such as financial, political, social and technological forces, though they focused on the economic crisis. They described the University and the Academic Library as constituted of professors, students and staff, focusing on the librarians, who were represented as the link between the students and their professors. The postgraduate students underscored that they paint the stakeholders in various colors in order to show their acceptance of differences (color, gender, gender orientation, etc.).
At the left side of the paper, they drew something like a premature visual prototype or representation of their desired characteristics of the Online Public Access Catalogue module of the Integrated Library System. They drew one search box that searches all academic resources in one unified index. Next to the search box they put tags with subject keywords added by library users. They emphasized their need for retrieval of easy, quick and reliable research results, including display of relevant newly acquired items, along with the most popular relevant borrowed items. They pictured the cover page of the retrieved book, its abstract, its table of contents, as well as the library users’ reviews. Although they indicated a preference for fully digitized material, students said that they were willing to add without assistance the cover and back pages, the abstracts, the table of contents, etc. of print resources.

The students described a personalized Online Public Access Catalogue interface with ‘My Account’ features. They identified the desired ‘My Account’ features as ‘List of currently borrowed material’, ‘My History’ and ‘My Wishing list’. Students even painted an electronic floor plan map associated with call number ranges, in order to facilitate book location in the stacks. They differentiated by color the availability of the retrieved items: red for checked out/not available items, yellow for limited availability and green for checked in/available items. Students also underscored the importance of making suggestions about material acquisition from the OPAC page, suggesting the addition of a ‘recommended purchase’ function. Finally, they expressed their desire for an attractive and more modern OPAC layout.

Figure 5: Postgraduate Students’ Rich Picture
4.2.2.2 Faculty Members’ Rich Picture

The Faculty members’ Rich Picture emphasized the interrelations of the various parts of the higher education environment and the academic information ecosystem. The professors underscored that the economic crisis produced funding reductions and many dismissals of public servants, and, consequently, of the university’s administrative staff and academic librarians. Being more knowledgeable than the students regarding the university’s organizational chart, they drew all six (6) Academic Libraries of Athens University, one (1) for each University School. They drew a line coming from the Academic Library of the School of Philosophy and depicted the academic librarians and library users, both faculty members and students. They even emphasized the increased demand for library services by users that has been observed and documented in previously cited secondary reports.

Finally, on the upper right side of the Rich Picture, they created a summary list of their desired characteristics of the Online Public Access Catalogue module. The professors’ recommended enhancements included suggestions for a search system that retrieves better results easier and quicker. Functional information system improvements included keyword search capabilities supplemented by faceted search capabilities for advanced searches that simultaneously search for digital and non-digital resources. In addition, they wanted the option of a personalized OPAC interface with ‘My Account’ features, as well as an OPAC interface enhanced with Web 2.0 tools. The professors’ desired characteristics of an improved OPAC, as expressed through the Rich Pictures, showed a convergence of views with those of the postgraduate students.

Figure 6: Faculty Members’ Rich Picture
4.2.2.3 Academic Librarians’ Rich Picture

The academic librarians’ Rich Picture illustrated the general context of the situation, which consisted of financial, political, social and technological forces that affect the situation under study. They drew the Greek Government, the Ministry of Education, the Athens University and its Academic Libraries, but they chose a different way of depicting them. They drew many rectangles, one within the other in order to show the strong interdependencies between the affected parts. Besides representing the reductions in human, financial and technological resources, they also included other elements of the current environment, which emphasized their specific problems. They listed the current difficulties in their profession, the love they still have for it, and the lack of motivational factors in the current environment.

Their desired characteristics of the Online Public Access Catalogue (OPAC) module included:

- Simple OPAC search in one unified index.
- Quicker and more reliable items’ retrieval.
- Educational videos accessible in OPAC interface to develop users’ research competencies.
- Display of the most relevant items first in list of resources retrieved.
- OPAC enhancement with Web2.0 tools.
- Suggestion lists for subject terms or keywords displayed next to the OPAC search box.
- Inclusive search of print and digital books and journal articles.
- Images of the books’ title and back cover pages in the record.
- Book and journal abstracts, table of contents and indexes in the record.
- Item-level format display in the record (for example, book, e-book, journal, audio CD, etc.).
- “User Account” feature managed by the library user to create Lists of interest, History of borrowed books, Groups or Communities with similar fields of interest.
- Mobile application for the OPAC.
- Simple, but modern and attractive, OPAC layout.
Figure 7: Academic Librarians’ Rich Picture

As the preceding detailed analysis shows, the most common desired characteristics for the Online Public Access Catalogue, as expressed through the three (3) focus groups’ Rich Pictures, revealed a convergence of views. The main user-centered characteristics included suggestions for a simple, modern OPAC homepage layout and design, as well as a search system that retrieves better results easier and quicker. Therefore, functional information system improvements would include keyword searching features supplemented by faceted search capabilities for advanced searches that simultaneously search for digital and non-digital resources. In addition, focus group participants wanted the option of a personalized OPAC interface with ‘My Account’ features, as well as an OPAC interface enhanced with Web 2.0 tools.

The following Table 1 presents the aggregated desired characteristics of the ‘public facing’ module of the Integrated Library System (ILS) as expressed by the library users’ and the academic librarians’ focus groups:
### Table 1: Comparative Table of Focus Groups’ Desired Characteristics of the OPAC

<table>
<thead>
<tr>
<th></th>
<th>ACADEMIC LIBRARIANS’ FOCUS GROUP</th>
<th>FACULTY MEMBERS’ FOCUS GROUP</th>
<th>POSTGRADUATE STUDENTS’ FOCUS GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Simple OPAC search in one unified index (Google like search, “do you mean…”)</td>
<td>Simple OPAC search in one unified index (Google like search, “do you mean…”)</td>
<td>Simple OPAC search in one unified index (Google like search, “do you mean…”)</td>
</tr>
<tr>
<td>2.</td>
<td>Item-level format display in the record (for example, book, e-book, journal, audio CD, etc.)</td>
<td>Item-level format display in the record (for example, book, e-book, journal, audio CD, etc.)</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Educational videos accessible in OPAC interface to develop users’ research competencies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td>“New Releases” classified by field of interest</td>
<td>“New Releases” classified by field of interest</td>
</tr>
<tr>
<td>5.</td>
<td>OPAC enhancement with Web2.0 tools (for example, RSS feeds)</td>
<td>OPAC enhancement with Web2.0 tools (for example, RSS feeds)</td>
<td>OPAC enhancement with Web2.0 tools (for example, RSS feeds)</td>
</tr>
<tr>
<td>6.</td>
<td>“User Account” feature managed by the library user to create Lists of interest, History of borrowed books, Groups or Communities with similar fields of interest</td>
<td>“User Account” feature managed by the library user to create Lists of interest, History of borrowed books, Groups or Communities with similar fields of interest</td>
<td>“User Account” feature managed by the library user to create Lists of interest, History of borrowed books, Groups or Communities with similar fields of interest</td>
</tr>
<tr>
<td>7.</td>
<td>Suggestion lists for subject terms or keywords next to the OPAC search box</td>
<td></td>
<td></td>
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<tr>
<td>8.</td>
<td></td>
<td>Direct library users’ access from the User Account to items’ status (for example borrowed, under order, ordered and expected, etc.)</td>
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<tr>
<td>9.</td>
<td></td>
<td></td>
<td>Electronic floor plan map next to call numbers for easy book</td>
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<td></td>
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<tr>
<td><strong>10.</strong></td>
<td>Quicker and more reliable items’ retrieval</td>
<td>Quicker and more reliable items’ retrieval</td>
<td>Quicker and more reliable items’ retrieval</td>
</tr>
<tr>
<td><strong>11.</strong></td>
<td>Inclusive search of print and digital books and journal articles</td>
<td>Inclusive search of print and digital books and journal articles</td>
<td>Inclusive search of print and digital books and journal articles</td>
</tr>
<tr>
<td><strong>12.</strong></td>
<td>Images of the books’ title and back cover pages in the record</td>
<td>Images of the books’ title and back cover pages in the record</td>
<td>Images of the books’ title and back cover pages in the record. Enable library users’ ability to scan and upload</td>
</tr>
<tr>
<td><strong>13.</strong></td>
<td>Book and journal abstracts, table of contents and indexes in the record</td>
<td>Book and journal abstracts, table of contents and indexes in the record</td>
<td>Books and journal abstracts, table of contents and indexes in the record. Enable library users’ ability to scan and upload</td>
</tr>
<tr>
<td><strong>14.</strong></td>
<td>Mobile application for the OPAC</td>
<td>Mobile application for the OPAC so library users can have reminders about the due day for returning the books</td>
<td></td>
</tr>
<tr>
<td><strong>15.</strong></td>
<td></td>
<td></td>
<td>Library users’ ability to submit PhDs or Master thesis</td>
</tr>
<tr>
<td><strong>16.</strong></td>
<td>Simple, but modern and attractive, OPAC layout</td>
<td>Simple, but modern and attractive, OPAC layout</td>
<td>Simple, but modern and attractive, OPAC layout</td>
</tr>
<tr>
<td><strong>17.</strong></td>
<td>Display of the most relevant items first in list of resources retrieved</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>18.</strong></td>
<td>“Ask a librarian” feature for online assistance on OPAC search questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>19.</strong></td>
<td>User supplied tags for additional subject keywords</td>
<td>User supplied tags for additional subject keywords</td>
<td></td>
</tr>
<tr>
<td><strong>20.</strong></td>
<td>User supplied, item level reviews and comments</td>
<td>Users supplied, item level reviews and comments</td>
<td></td>
</tr>
<tr>
<td><strong>21.</strong></td>
<td>Acquisition suggestions feature on the OPAC home page</td>
<td>Acquisition suggestions feature on the OPAC home page</td>
<td></td>
</tr>
</tbody>
</table>
In more general terms, the user-centered characteristics of an improved Online Public Access Catalogue (OPAC) proposed by the library users and the academic librarians were:

- Simple, but modern and attractive, OPAC layout.
- Simple OPAC search in one unified index.
- Automatic spelling correction in the search box.
- Quicker and more reliable items’ retrieval.
- Simple keyword search.
- Simultaneous search for digital and non-digital resources.
- Provision of access to more digitalized material or, at least, access to the abstract, table of contents, title and back cover pages and some pages of books.
- Personalized OPAC interface with ‘My Account’ features.
- Enhanced OPAC interface with Web 2.0 tools and other discovery enhancements.

Drawing from the common desired characteristics for an improved OPAC, as proposed by library users and academic librarians in their Rich Pictures, I generated a Root Definition. In the real world, several Root Definitions reflecting the different stakeholders’ points of view would be represented as the first step in achieving a negotiated accommodation. But, in this research study, only one Root Definition is presented, in the assumption that it accommodates the three (3) stakeholder groups’ worldviews.

4.2.3 Stage 3: Root Definition

The Root Definition (RD) served as a statement describing the activity system that needed to be created in order to improve the situation. It also acted as the basis for building a Conceptual Model of the systems at the fourth stage.

The RD refers to a locally produced and maintained system, owned and managed by the Academic Library, with aim to create an improved Online Public Access Catalogue (OPAC) based on the common desired characteristics expressed by the library users and academic librarians, in order to advance the Academic Library’s services and, consequently, guide the Academic Library staff members’ collaborative design of a more user-centered library information system.

For the creation of the Root Definition, some rules were followed, such as the CATWOE model, which was explained earlier, the PQR formula, and the three E’s.

The PQR formula recognizes that a system must do P by means of Q in order to achieve R. The PQR formula answers the questions what the system does, how it does it and why it is being done (Checkland and Poulter, 2006, pp. 219-220).

Therefore, the system described in the Root Definition is understood as follows according to the PQR formula:
P – Create an improved Online Public Access Catalogue based on the common desired characteristics expressed by the library users and academic librarians.

Q – Owned and managed by the Academic Library.

R – Advance the Academic Library’s services and guide the Academic Library staff members’ collaborative design of a more user-centered library information system.

The OPAC transformation process is monitored by criteria for efficacy, efficiency and effectiveness, which are known as the three (3) E’s (Checkland and Poulter, 2006, p. 222). The criteria of efficacy state whether the transformation process achieves its expected outcomes. The criteria of efficiency state whether the transformation process is accomplished with the least resources. And the criteria of effectiveness define whether the transformation process is aiming at a higher goal.

Thus, the efficacy, efficiency and effectiveness of the system described in the Root Definition are analyzed as follows according to the 3 E’s criteria:

Efficacy: The improvements of the OPAC module will advance the Academic Library’s services.

Efficiency: The major improvements of the OPAC module will be made in the existing ILS by the academic library staff, so the process will be conducted one-time with iterative updates using recurring human technical and professional resources.

Effectiveness: The improvements of the OPAC module will consequently guide the Academic Library staff members’ collaborative design for a more user-centered library information system. In the design of such an information system, the end users’ needs, desires, requirements and limitations are placed at the center of attention and the users are actively involved in the design process for producing an IT artifact with high usability (Gullliksen et al., 2003).

4.2.4 Stage 4: Metalevel Conceptual Model

In the Soft Systems Methodology (SSM) learning cycle, the creation of the Root Definition is followed by a Conceptual Model. The Conceptual Model is a schematic representation of the activities needed for the system to achieve its transformation. It enables a discourse, which will bring into light the viewpoints and will generate the ideas for improving or changing the problematical situation. Therefore, the aforementioned stated Root Definition was the basis for producing the following Metalevel Conceptual Model for advancing the library services, which encapsulates the worldviews of the library users and academic librarians. This high level (metalevel) model suggests a transferable example for other library service improvement projects as well.

The Metalevel Conceptual Model described all the activities in the right order that needed to be performed in the system in order to achieve its transformation (Rose, 1997). As Figure 9 illustrates, the first activity refers to the decision of conducting the research study, deciding on the methodological tradition, approach, techniques for data collection
and modes of analysis. Then, the actual research is being conducted. Following this, the analysis and interpretation of the collected data led to generating a list of common desired characteristics of an improved Online Public Access Catalogue module for the Academic Library’s information system, the current Integrated Library System. After that, the new features of the OPAC module would have to be set in order to create an improved ‘public facing’ ILS interface. Subsequently, this will lead to advancing the Academic Library’s present and future services, as well as guiding sustained collaborative design of an even more user-centered library information system. During the process, the criteria of efficacy, efficiency and effectiveness of the system have to be observed and, potentially, redefined. In addition, the process has to be well monitored in order to avoid or correct mistakes.

Figure 8: Metalevel Conceptual Model for advancing Library Services

4.2.5 Stage 5: Comparing the Metalevel Conceptual Model with Reality
The Metalevel Conceptual Model facilitates a reconsideration of the situation in order to find ways to change or improve it. There are four ways of questioning reality through the
Conceptual Models according to Checkland and Poulter (2006, pp. 227-229). The first approach, which is the most informal, suggests using the purposeful activity model as a reference and locating the differences between it and the present situation in order to choose which of the differences will produce change in the problematical situation. A second approach, which is considered to be the most common, suggests creating a matrix with columns. In the left column of the matrix, questions regarding the activities and dependencies of the model are placed. In the other columns of the matrix, questions to be asked about these activities and dependencies are placed. The filled matrix permits answering the stated questions. A third way proposes writing scenarios or stories of how some activities would be done, based on the Conceptual Model, and comparing them with similar real-world situations. And a last approach suggests building a new model from a similar part of the reality and comparing it with the Conceptual Model in order to identify their differences. Whatever approach is chosen for the comparison with reality, the intention remains the same: to reconcile the different worldviews of the stakeholders and to find a common accepted way to improve the problematical situation.

I have chosen to compare the Metalevel Conceptual Model with the real problematical situation using the first way: using the purposeful activity model as a reference and locating the differences between it and the present situation in order to choose which of the differences will produce change in the problematical situation. This approach offers a simple and clear method for evaluating the main differences among Rich Pictures and, thereby, worldviews.

The Academic Library’s Integrated Library System has served its library users since 1998. Although the ‘public facing’ OPAC module of the ILS is focused on execution of traditional library users’ services, it lacks user-centered functionalities. Given the circumstances created by the economic crisis, such as the reduction in human, financial and technological resources, and the increased number of library users, the Academic Library has to improve the OPAC interface features and functions. System improvements can best be accomplished through the Academic Library’s collaborative design of a more user-centered library information system that could advance the library services and could fortify the library’s presence on campus. Hence, the current Online Public Access Catalogue, when compared with the improved system from the Metalevel Conceptual Model, suggests the following differences:

- The current OPAC module is built on a ‘librarian-logic’ that makes it difficult to be used and understood by library users.

- The current OPAC module is more based on a system-centered rather that a user-centered approach.

- The library users were not included in the design process of the current OPAC module.
• The current OPAC module lacks Web 2.0 tools that library users are accustomed to using nowadays.

• A virtual librarians’ ‘help’ function does not exist in the current OPAC module.

• The current OPAC module does not include discovery and access to digitized material (e-resources).

• The current OPAC module does not allow personalization with ‘My Account’ features.

• The current OPAC module does not allow easy customization of its interface.

• The current OPAC module has an old-fashioned and unappealing visual appearance.

Accordingly, the outcomes of the comparison between the current Online Public Access Catalogue and the to-be Online Public Access Catalogue, suggest proposed changes for improving the situation under study.

4.2.6 Stage 6: Proposed Changes
Consequently, the proposed changes that will guide the Academic Library to advance the quality of users’ services through employing technology-based information systems in new ways, guided by user-centered design, are:

• The design of an improved ‘public facing’ module of the existing Integrated Library Systems based on the desired characteristics expressed by the library users and the academic librarians.

• The engagement of library users in the design process of the library’s information system.

• The establishment of continuous and viable communication and cooperation between both library users and academic library staff in order to address the problematical situation and carry out the transformation process successfully.

• The establishment of sustainable communication and interactive evaluation involving both library users and academic library staff, which would assess the value of any changes and thereby inform further changes.

• The fortification of the Academic Library’s presence on campus which would, thereby, reduce its vulnerability from further budget cuts.
Chapter 4 presents the findings of this research study which applied all the Soft System Methodology stages, except the implementation stage. In the next chapter, the core findings of the research study will be discussed to create a more complete understanding of the significance of the study’s outcomes.
Chapter 5
Discussion

Chapter 5 constitutes a discussion about the core findings and their significance for the research study. A discussion of the results is made, followed by a presentation of the pros and cons of the use of Soft Systems Methodology in the study.

Toward the end of exploring the usefulness of SSM to such a problematical situation, two summaries of findings follow. The first table (Table 2) represents the findings of the first research question “How do library users and academic librarians perceive the current library discovery and access services as mediated through the Online Public Access Catalogue (OPAC)?”

**Table 2:** Library Users’ & Academic Librarians’ Perceptions of the Current Online Public Access Catalogue (OPAC)

<table>
<thead>
<tr>
<th>LIBRARY USERS’ &amp; ACADEMIC LIBRARIANS’ PERCEPTIONS OF THE CURRENT OPAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Inefficiency of searching functions</td>
</tr>
<tr>
<td>2. Lack of Web 2.0 tools in OPAC</td>
</tr>
<tr>
<td>3. Lack of results’ integration and users’ difficulty in using the retrieved results</td>
</tr>
<tr>
<td>4. Absence of personalized Online Public Access Catalogue (OPAC) interface</td>
</tr>
<tr>
<td>5. Difficulty in customizing the Online Public Access Catalogue (OPAC) interface</td>
</tr>
<tr>
<td>6. Mediation of the librarian between library users and technology</td>
</tr>
</tbody>
</table>

The following table (Table 3) is a representation of the findings for the second research question “How do library users and academic librarians describe their desired characteristics of the ‘public facing’ Integrated Library System (ILS)?”
Table 3: Library Users’ & Academic Librarians’ Desired Characteristics of the Online Public Access Catalogue (OPAC)

| 1. | Simple, but modern and attractive OPAC layout |
| 2. | Simple OPAC search in one unified index |
| 3. | Automatic spelling correction in the search box |
| 4. | Quicker and more reliable items’ retrieval |
| 5. | Simple keyword search |
| 6. | Simultaneous search for digital and non-digital resources |
| 7. | Access to more digitalized material or, at least, access to the abstract, table of contents, title and back cover pages and some pages of the book |
| 8. | Personalized OPAC interface with ‘My Account’ features |
| 9. | Enhanced OPAC interface with Web 2.0 tools |

Besides the main findings of the study, the focus group technique allowed me to ‘see’ behind the words and extract additional information. For example, the public servants in the Greek public sector are accustomed to staying many years in the same workplace. Therefore, the Faculty members and most of the academic librarians, because of their many years working in the Academic Library, were fully aware of the differences between the previous and the current situation of the university and its Academic Library. On the contrary, the students didn’t seem to have fully realized the consequences that the deep financial crisis produced for the university and, consequently, for the Academic Library. Additionally, the students, due to their younger ages, were more optimistic about the situation and they brought joy and fresh ideas to the focus group conversation.

The range of topics discussed in the focus groups was greater than the themes depicted in the Rich Pictures, describing the desired characteristics of the Online Public Access Catalogue. For example, the students talked of their need to have the help of an e-librarian, but when the time came for summarizing their desired characteristics for an improved OPAC, they decided not to include it because they said there were more important characteristics for them. This phenomenon required clearly distinguishing
between the purpose of the focus group - to get people talking - and the Rich Pictures - to generate a list of desired characteristics for the OPAC - in data analysis and interpretation.

The participants in the academic librarians’ focus group were the most distressed about the current situation because of the recent staff reductions. An underlying ‘loss of locus of control’, i.e., felt they have no control over the situation, caused a lack of motivation and an onset of depression and discouragement, which permeated their comments. In addition, although many academic librarians talked about having more user participation in the refinement of traditional library services and librarian duties, such as resource descriptions which could be augmented by user-generated keywords, some admitted that while this assistance could be of help, it felt like they were losing their ‘dominance’ on the library information system. This produced reluctance to embrace this innovation, given the vulnerability they were experiencing in an uncertain Greek economy.

Additionally, the matter of information literacy in organized lectures was discussed several times from the academic librarians as a solution to the users’ problems. However, reduced numbers of academic librarians disallowed expansion of this educational service. Since I knew these emotional issues intimately from personal experience, it proved challenging to establish and maintain the necessary distance needed to competently extract sufficient, but not overly contextualized, information from focus groups in explaining rationales for improved Online Public Access Catalogue characteristics represented in the Rich Pictures.

Finally, the Faculty members underscored several times their need of having closer relationships with the academic library staff in order to get more information and guidance in issues concerning their research. Again, I had to achieve an appropriate balance between desiring to satisfy user demand and recognizing the resource constraints.

The consideration of Academic Libraries’ services, and specifically of Greek Academic Libraries’ services, is a complex topic. The Academic Libraries play a pivotal role in education and research in national higher education. Therefore, it is critically important that libraries provide high-quality services to users. Despite that, the financial crisis in Greece during the last years has given rise to serious problems in Greek academic libraries, such as reductions in human, technological and financial resources. But the economic crisis has not reduced the multi-faceted need for and role of academic libraries. In fact, increased demand for library services by users has been observed and documented.

As a result, the Academic Library and its staff have been in a survival struggle over the last two years. While users are increasing and have higher expectations and requirements, organizational resources continue to diminish. Advancing initiatives for improvements in such an environment is not easy because of the many stakeholders, the different perspectives, and the contrasting interests. The Soft Systems Methodology (SSM) research approach, who states that everyday life is composed of complex
interrelated situations where people are trying to act purposefully for improving problematical situations, seemed to be an appropriate guiding methodology.

Conducting a Soft Systems Methodology research study is, at the same time, challenging. Being an approach that considers every situation as a holon, the researcher needs to take into account all the aspects of both internal and external environments in order to create a clear and deep understanding of the situation under study. Encapsulating all the components is not easy. The Soft Systems Methodology (SSM) requires proper identification of the stakeholder groups as well as their active participation in design activities, so as not to exclude any perspective or worldview. It also requires difficult reconciliation of the different worldviews in order to come to common accepted proposals for improvement or change. Besides the requirement of stakeholders’ intention to act purposefully in a problematical situation, it is also necessary that they overcome individualistic tendencies of human nature, in order to reach agreement or compromise on collective needs and expectations. Hence, the researcher needs to have in mind all the preceding elements, with the aim to find an acceptable accommodation among the stakeholders.

Additionally, SSM recognizes that problematical situations are multidimensional and seeks to improve them through action learning. Because Soft Systems Methodology is a holistic approach, reflection and analysis on the findings is difficult. Amongst the difficulties is knowing how much data to extract in order to produce clear results and documented explanations that readers understand.

Besides the underlying emotions of the participants in each focus group, the followed methods allowed me to extract additional information regarding the chosen theoretical framework. In the case of the OPAC of the Academic Library’s ILS, the criticism and possibilities of interface design clearly emerged, through data analysis of focus groups and Rich Pictures, as the way users understand the system and interact with it. The discovery justified this study’s focus on the system’s interface and its aspiration for user-centered redesign, so as to better satisfy, and even anticipate, users’ needs and requirements. By following a user-centered approach, I sought insights into users’ perceptions, needs and desires as expressed in Rich Pictures. Then, by using the findings, I recommended improvements that will help, at a later stage, to guide decision-making about the design and development of an improved library information system at Athens University.

User-centered design processes proved to be an appropriate, and enabling, philosophical choice of approach for this study, given research questions and study aims which, like UCD, focuses on users and their requirements when designing an IT artifact. As illustrated in this application of SSM user-centered design tools, users’ involvement in the design process is important because users are the most experts when it comes to designing a ‘tool’ for themselves. Additionally, by being significantly involved in the practical aspect of design or redesign, users experience influence and even control and, that engenders ownership and adoption.
The user-centered Soft Systems Methodology design approach provided me with a structured way of exploring library users’ and academic librarians’ needs and requirements for an improved ‘public facing’ module of the Academic Library’s information system. While, the research study focused on Faculty members and postgraduate students, it also included academic library staff in order to meet the holistic requirement of Soft Systems Methodology (SSM) – to consider all stakeholder viewpoints. In addition, by considering academic librarians’ contextual information and professional knowledge, I intended to further their receptivity to considering future changes in both the OPAC interface and also their professional roles. If participants in the study became advocates for change, it would enable positive organizational decision-making about the later design and development of an improved library information system.

The immediate aim of the study was to explore the efficacy of user guidance on the re-invention of the Online Public Access Catalogue module in order to better support their work. The longer-term aspiration is to use these research results to enhance the OPAC design and thereby provide better library user services. Further in the future, the hope is to continue to conduct user-centered design projects in order to satisfy users’ ever-changing and evolving expectations and requirements amidst highly disruptive changes in the scholarly communication environment. In these ways, the Academic Library can employ collaborative design to co-create a more user-centered library information system that, through continuous improvements, will advance its user services by employing technology in new ways.
Chapter 6
Conclusion and Future Research

In this chapter, general conclusions are made about the research study. Some challenges experienced during the progression of the investigation are presented. Additionally, the study’s contribution to research and practice is explained. The chapter concludes with suggestions for future research.

6.1 Conclusion

In this research study, I aimed to explore the library users’ and academic librarians’ perceptions of current library discovery and access services as mediated through the Online Public Access Catalogue and to find out the participants’ desired characteristics for the ‘public facing’ Integrated Library System of the Academic Library of the School of Philosophy at Athens University in Greece. Both focus groups and Rich Pictures were used to generate data in order to make recommendations and thereby guide the Academic Library’s collaborative design for a more user-centered library information system.

The research study focused on the OPAC, which represents the library users’ interface. It is the means by which the library users communicate with the library’s technology system and, therefore, discover and access the library resources. Through employing an interpretivist qualitative approach, specifically Soft Systems Methodology, I intended to explore two (2) research questions and propose recommendations at the conclusion of my thesis as the outcomes of the research project.

The results of this study revealed that both library users and academic librarians were not completely satisfied by the library services provided through the current Online Public Access Catalogue module because it focuses mainly on providing traditional services, and it lacks user-centered design and functionality. Both library users and academic librarians agreed that the Academic Library serves a core role within Athens University and contributes actively in the support of teaching, learning, research and science missions. Research participants noted that this significant contribution continues, despite the far-reaching consequences of the national economic crisis. Therefore, through their active engagement, participants underscored the importance of co-creating high-quality users services which employ technology-based information systems in new ways in order to anticipate their changing requirements and expectations.

From the discussion with participants, I acquired deeper knowledge about the existing situation and realized the library users’ intense needs for modern, attractive and high-quality user services that benefit from ‘value added’ technology-based information systems. Additionally, the importance of users’ participation in the design of the interface of the Integrated Library System was demonstrated as I analyzed and interpreted data for subsequent presentation in this research report. From this experience,
I learned that when designing an IT artifact, it is better that the users are put at the center of attention and actively involved in the design process. More specifically, library users can be productively engaged to clarify their expectations and requirements and, consequently, lead to the description of the desired characteristics of the ‘public facing’ module of an Integrated Library Systems with high usability. It naturally follows that when user-centered design is employed in an iterative fashion, continuous improvements in systems design, based on collective learning, can occur.

From the library users’ and academic librarians’ responses to the second research questions “How do library users and academic librarians describe their desired characteristics of the ‘public facing’ Integrated Library System (ILS)?”, I generated a list of desired characteristics for the Online Public Access Catalogue module of the library’s integrated system. After completing all but the last stages of Soft Systems Methodology, I concluded by proposing several user-centered information system modifications to the current OPAC. These desired design features would better meet the needs and requirements of the Academic Library’s current users and, consequently, would advance the organization’s delivery of library services.

The new Online Public Access Catalogue’s desired features include suggestions for a simple, but modern and attractive OPAC homepage layout and design, as well as a search system that retrieves better results easier and quicker. Therefore, functional information system improvements would include automatic spelling corrections in the search box, and keyword searching supplemented by faceted search capabilities for advanced searches that simultaneously search for digital and non-digital resources. In addition, the desired features include suggestions of a personalized Online Public Access Catalogue interface with ‘My Account’ features, as well as an OPAC interface enhanced with Web 2.0 tools.

6.2 Research Challenges
The whole process of the Master thesis was more than just researching and writing. It was a real learning ‘journey’ with ups and downs, and dramatic emotional changes from frustration to excitement. Several challenges were faced during this process.

One of the most outstanding challenges I confronted during the Master thesis’s progression had to do with the data collection. My choice of conducting focus group discussions required careful and accurate participant selection in order to gather rich information that could lead to representative findings. Additionally, the process of organizing the meetings with the participants was demanding because I had to find suitable meeting hours for all the focus group members. Several cancellations from the participants were made, especially the students, because the focus group meetings coincided with their examination period. The data analysis was also difficult and time consuming because of the verbatim transcriptions, the translation of the transcription from the Greek to the English language and the process of extracting correct thematic categories.
My relationship with the institution under study had to be taken into account. Being a current employee in the Academic Library was sometimes an advantage and at other times was a disadvantage. Working as a librarian in the Academic Library for more than ten (10) years, it was easier for me to develop a comprehensive understanding of the setting, the people and the phenomenon in focus. On the contrary, it was more difficult to distance myself from the situation. Additionally, my sense of responsibility towards the collected information regarding the university was very high.

6.3 Research Contribution
This research study is a contribution to the application of Information Systems in the field of Library and Information Science in Greece because it aimed to develop a collaborative user-centered approach within the context of organizational learning in an academic library. Additionally, the study is built upon the framework of Checkland’s theory of systems thinking. And because no such study has been implemented in the Academic Library at Athens University, nor in any other Greek library, both the focus and the methodology constitutes the unique contributions of this Master thesis to research and practice.

6.4 Future Research
At this point, I would like to propose some topics for future research by other researchers based on the conducted research study results.

Hopefully, these results stimulate customization of the Athens University Library Online Public Access Catalogue in order to advance library services using Soft Systems Methodology tools. Following implementation, to continue to build on relationships with users, usability studies and other means should be employed iteratively to continuously refine the user experience. This will also serve to ensure continuous improvement of the OPAC interface and, through this, library services.

The common desired characteristics of an improved Online Public Access Catalogue stated by the participants of the three (3) focus groups could inform a future implementation in other Academic libraries with a similar organizational context, cultural background and governing regulations. In other words, these findings could be used to inspire and inform customization efforts elsewhere, which would ideally also benefit from user-centered design that would forge relationships between the library and the campus.

Finally, this Soft Systems Methodology (SSM) study highlights the efficacy of employing a user-centered approach for Greek academic libraries choosing to advance library services during complicated and problematic situations today. The participatory nature of this approach fosters user communication and fortifies user relationships, even as it advances professional understanding and library systems’ services.
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### Appendices

**Appendix A. Script for the Focus Group Interviews**

<table>
<thead>
<tr>
<th>Welcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hello, I would like to thank you very much for accepting my invitation to participate in this meeting. If you choose to participate in this focus group discussion, would you please sign the consent form?</td>
</tr>
</tbody>
</table>

(At this point, I will give the participants some time to read and sign the informed consent form and, then, I will turn on the voice recorder)

I would like to thank you very much for accepting my invitation to participate in this meeting. Most of you already know me, but for those who don’t, my name is Niki Chatzipanagiotou and I am a librarian in the Academic Library since 1999. Within the context of my Master thesis, I need to conduct this research. So today I am assuming the role of the researcher and also I will facilitate our conversation.

<table>
<thead>
<tr>
<th>Our main topic is</th>
</tr>
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<tbody>
<tr>
<td>to explore the library users’ and academic librarians’ perceptions of the current library services provided by the existing Integrated Library System (ILS), mediated through the Online Public Access Catalogue (OPAC). Additionally, I aim to explore the library users’ and academic librarians’ desired characteristics of an improved ‘public facing’ Integrated Library System (ILS) in order to make recommendations and thereby guide the Academic Library’s collaborative design for a more user-centered library information system. At a later stage, the results could be used to inform a proposed implementation for such a system that could advance the Library’s future services towards its users. So, the information you will share with me will help the library move in this direction.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The results of our meeting will be used solely</th>
</tr>
</thead>
<tbody>
<tr>
<td>for the purpose of the research. Your contribution will only be shared with the other participants of the group, as well as myself and my Master thesis supervisors. So you are requested to keep confidential what we will discuss during this meeting. Additionally, your full names will not be exposed during and after the research. Your written permission of recording the conversation of the meeting has been requested (with name provided too).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>You were selected because</th>
</tr>
</thead>
<tbody>
<tr>
<td>you have similar characteristics (you are all academic librarians/faculty members/postgraduate students) that have at least two years’ experience as users of the academic library; and I believe that you could be a rich source of information for the research regarding the library services.</td>
</tr>
</tbody>
</table>

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### Table 4: Script for the Focus Group Interviews

(Adapted from: Krueger, 2002. *Designing and Conducting Focus Groups Interviews*)

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*:Appendices*

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You are kindly requested to follow some guidelines:
1. We are on a first name basis.
2. We are tape recording, so only one person should speak at a time.
3. We request that you turn off your phones. If you cannot and if you must respond to a call please do so as quietly as possible and rejoin us as quickly as you can.
4. There are no right or wrong answers, only different points of view.
5. You do not need to agree with others, but you must listen respectfully as others share their views.
6. My role as facilitator will be to guide the discussion. For that reason, I have a set of questions to guide our conversation. In fact, ideally this is more of a conversation than a question and answer session.
7. Our discussion will last no more than 90 minutes.

Before we proceed, I would be willing to answer your questions, if there is any, about what I said. Again, I thank you for participating in this discussion.

**Interview guide for the focus group of Academic Librarians**

**Opening Questions**
1. Could you please introduce yourselves by stating only your first names, your status (librarian) and how many years of experience you have in the specific Academic Library?
2. Have you ever worked in other Academic Libraries?
3. Did you have the chance to work on other ILSs besides the one you work now? What did you most like about them?

(At this point, I will show the participants on screen the OPAC and some other Academic Libraries’ OPACs)

**Questions**
4. Could you please share with us your opinion about the current library services provided by the existing ILS and mediated through the OPAC?
5. What do you think could be changed or improved regarding the library services provided by the existing ILS? (features that need to be changed or improved)
6. Could you think of a recent interaction/example with a user who would have benefited from enhanced ILS functions/features?
7. Example 1: A postgraduate student that had recently borrowed and returned the borrowed books, came to me and said that she had used material from a book in her assignment, but she forgot to write down the reference and she didn’t remember the title of the book. The student asked me if we kept records of the previously borrowed books of the users, so I can tell her which books she had borrowed in order to help her remember the title. At that time, I thought that it would be a good idea if each user had the option of keeping his/her personal records of borrowed books by himself/herself. What do you think of that?
8. Example 2: I have noticed that most of the users can easily use the ‘basic search’
(search for a term in the selected index) engine of the OPAC, but when it comes to ‘advanced search’ (search for various terms in multiple indexes simultaneously) or ‘power search’ (search for various terms, in multiple indexes, which are combined using AND, OR, NOT operators), they have difficulties. Do you have something to suggest about it?

9. Example 3: I have noticed that users very often ask the academic librarians if they could find PhDs or Master theses in digital form. At the Academic Library we haven’t been able to digitize the whole collection of PhDs and Master Theses. What would you suggest?

10. Example 4: I have noticed that, although users can easily find a book’s call number through the OPAC, they have difficulties locating the item on the shelves. Is there an OPAC function/feature that you think it could help in this case?

11. Example 5: I have noticed that, mainly, first year students look for other team members for group assignments. Do you think that an enhanced OPAC feature/function could help them?

12. Example 6: I have noticed that users oftentimes ask each other if a specific book is good or not. Is there an OPAC function/feature that you think it could help in this case?

13. Example 7: I have noticed that users very often call the library to check the due dates for returning the borrowed books, although in the OPAC they can find the due date, with the excuse that they don’t remember how to do it, or they do not have access to a computer at the moment. Is there an OPAC function/feature that you think it could help in this case?

14. Example 8: I have noticed that users very often call the library to renew the time-period for their borrowed books. Therefore, academic librarians spend a lot of time on the phone with users. Is there an OPAC function/feature that you think it could help in this case?

15. Example 9: I have noticed that users often have difficulties finding journals or articles through the OPAC. Is there an OPAC function/feature that you think could help in this case?

16. If you have a magic wand (Foster et al., 2011) that could make the desired ‘public facing’ ILS for you, what characteristics would you include?

17. Would you please all together draw a picture that captures the desired characteristics of the ‘public facing’ ILS in your experience? (Before asking the academic librarians to draw a rich picture, I will prompt them by telling them what a rich picture is and show them some examples).

Interview guide for the focus groups of Faculty members & Students

Opening Questions

1. Could you please introduce yourselves by stating only your first names, your status (faculty member/student) and how many years of experience you have in this Academic Library?

2. For what reasons do you usually visit the Academic Library?
3. Recall the last time you searched for resources in the Academic Library? Could you please describe your last experience while searching?
4. Have you shared this resource with anyone else?
5. Have you ever used an online catalog at another college or university that you liked better? What did you like about it?

(At this point, I will show the participants on screen the OPAC and some other Academic Libraries’ OPACs.)

Questions
6. Could you please share with us your opinion about the current library services provided by the existing ILS and mediated through the OPAC? (search engine/interface)
7. What do you think could be changed or improved regarding the library services provided by the existing ILS? (features that need to be changed or improved)
8. Could you think of a recent example in which you would be benefited if there were an enhanced ILS functions/features? If so, what was the feature(s)?
9. Are there tools or resources that you found particularly valuable in the discovery process? What made them so valuable?
10. Example 1: A library user that had recently borrowed and returned the borrowed books, came to me and said that she had used material from a book in her assignment, but she forgot to write down the reference and she didn’t remember the title of the book. The library user asked me if we kept records of the previously borrowed books of the users, so I can tell her which books she had borrowed in order to help her remember the title. At that time, I thought that it would be a good idea if each user had the option of keeping his/her personal records of borrowed books by himself/herself. What do you think of that?
11. Example 2: I have noticed that most of the users can easily use the ‘basic search’ (search for a term in the selected index) engine of the OPAC, but when it comes to ‘advanced search’ (search for various terms in multiple indexes simultaneously) or ‘power search’ (search for various terms combined using AND, OR, NOT operators in multiple indexes), they have difficulties. Do you have something to suggest about it?
12. Example 3: I have noticed that users very often ask the academic librarians if they could find PhDs or Master theses in digital form. At the Academic Library we haven’t been able to digitize the whole collection of PhDs and Master Theses. What would you suggest besides digitization by the academic library staff?
13. Example 4: I have noticed that although users can easily find a book’s call number through the OPAC, they have difficulties locating the item on the shelves. Is there an OPAC function/feature that you think it could help you in this case?
14. Example 6: I have noticed that users oftentimes ask each other if a specific book is good or not. Is there an OPAC function/feature that you think it could help you in this case?
15. Example 7: I have noticed that users very often call the library to check the due
| Example 8: | I have noticed that users very often call the library to renew the time-period for their borrowed books. Therefore, a lot of time is spent on the phone by users. Is there an OPAC function/feature that you think it could help you in this case? |
| Example 9: | I have noticed that users often have difficulties finding journals or articles through the OPAC. Is there an OPAC function/feature that you think could help you in this case? |
| Example 10: | I have noticed that users often ask the academic librarians about new released books in their field of interest. How do you keep up in your field? Is there an OPAC function/feature that you think could help you in this case? |
| Example 11: | I have noticed that users often call the library and ask the academic librarians to help/give them directions about the search process. Therefore, a lot of time is spent on the phone for both users and librarians. Is there an OPAC function/feature that you think could help you in this case? |
| Example 12: | If you have a magic wand (Foster et al., 2011) that could make the desired ‘public facing’ ILS for you, what characteristics would you include? |
| Example 13: | Would you please all together draw a picture that captures the desired characteristics of the ‘public facing’ ILS in your experience? (Before asking the participants to draw a rich picture, I will prompt them by telling them what a rich picture is and show them some examples) |
Appendix B. Informed Consent Form for Master Thesis

Table 5: Informed Consent Form for Master Thesis

(Adapted from:

Informed Consent Form for Master Thesis

Date: March-April 2014.

Title of the Research (The possibility of making slight changes to the title are declared): Advancing an Academic Library’s services through application of Soft Systems Methodology (SSM) tools.

Researcher: Niki Chatzipanagiotou, Master Programme in Information Systems, Linnaeus University – Librarian, (nc222be@student.lnu.se , +306934541826).

Purpose of the Research: To explore the library users’ and academic librarians’ perceptions of the current library discovery and access services as mediated through the Online Public Access Catalogue (OPAC) and of their desired characteristics of the ‘public facing’ Integrated Library System (ILS) in order to make recommendations and thereby guide the Academic Library’s collaborative design for a more user-centered library information system. At a later stage, the results could be used to inform a proposed implementation for such a system that could advance the Library’s future services towards its users. This implementation is not in the scope of the specific study.

What you will be asked to do in the Research: You will be asked to participate in a focus group discussion not more than 90 minutes within other academic librarians (1st focus group), or faculty members (2nd focus group), or postgraduate students (3rd focus group) in order to generate conversation among the library users and the academic librarians and reveal your current perceptions about the ‘public facing’ aspects of the Integrated Library System (ILS). The focus group responses will guide me to generate a list of the characteristics for an improved ‘public facing’ Integrated Library System (ILS) or, in other words, an improved OPAC. More specifically, I will request each group of participants to draw rich pictures of desired system characteristics. By analyzing the rich pictures and then synthesizing the collected data, I will generate a list of characteristics for an improved OPAC ‘public facing’ module of an Integrated Library System (ILS).

Risks and Discomforts: I do not foresee any risks or discomforts from your participation in the research.
Confidentiality: Your identity will not be revealed to others outside of your focus group’s members. Additionally, your full names will not be exposed during and after the research. The results of our meeting will be used solely for the purpose of the research. Your contribution will only be shared with the other participants of the group, as well as myself and my Master thesis supervisors. Confidentiality will be provided to the fullest extent possible by law.

Benefits of the research and benefits to you: As the researcher, I will acquire knowledge and understanding about the existing situation regarding your perceptions of the current library services provided by the existing ILS. As academic library staff and library users, you could be benefited by learning ways of enhancing and advancing the ‘public facing’ module of the existing ILS.

Voluntary Participation and Withdrawal: Your participation in the research study is voluntary. You may refuse to answer any question that makes you feel uncomfortable or you may choose to withdraw your participation at any time or any reason. Your decision not to volunteer or stop participating will not influence the nature of your relationship with the researcher or Linnaeus University either now, or in the future. In the event you withdraw from the research study, all associated data collected will be immediately destroyed.

Questions about the research: If you have questions about the research or about your role in the research study, please do not hesitate to contact Niki Chatzipanagiotou, MIS Student-Librarian, either by telephone at +306934541826 or by e-mail nc222be@student.lnu.se.

Legal Rights and Signatures: I consent to participate in the research study “Advancing an Academic Library’s services through application of Soft Systems Methodology (SSM) tools” conducted by Niki Chatzipanagiotou. I have understood the nature of this research study and I wish to participate and allow the recording of the discussion. I am not resigning any of my legal rights by signing this form. My signature below indicates my consent.

Signature:
Participant:
Date:
Signature:

Researcher: Niki Chatzipanagiotou

Date:
Appendix C. Athens University Organization Chart

Note: The current organization chart is under re-structuring and is expected to finalize by summer 2014.

Figure 9: Athens University Organization Chart