Knowledge management practices in academic libraries

The case of NTUA Central Library

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Date: 2018-09-24
Course Code: 18VT - 5IK50E, 30 credits
Subject: Informatics
Level: Master
Department of Informatics
Abstract

The last years, libraries and information centers, as well as other organizations are attempting to survive in a knowledge-driven society. Moreover, they are called upon to redefine their structure and management processes in order to increase their competitive advantage through their learning capability and their knowledge assets. Knowledge has become their core element that contributes to the development and improvement of their services through knowledge management (KM) initiatives, connected with knowledge assets creation, sharing, and exploitation.

This study is a qualitative research that has been conducted in NTUA Central Library with main research object the Department of Information and Users’ Services. The study examines the knowledge management (KM) perception in the Department and by extension, the library. It aims to identify the adopted KM practices, investigate the KM process through knowledge creation and sharing, collaboration and communication among employees and external collaborators and finally, to propose new methods and techniques through a KM strategy, for improving the Department and library’s internal operation and services provision. The study’s goal is to present the current situation of one of the biggest Greek academic libraries regarding KM initiatives and to draw attention on the academic libraries’ changing role in the new digital era and the opportunities that KM provides them to participate in the knowledge-based economy and the knowledge-based society.

The importance of this study lies on the fact that few researches have been conducted in Greek academic libraries and the results have presented that they demonstrate little attempt to adopt KM practices and rather, to establish a clear KM strategy. In this context, the study is trying to clarify the importance of focusing on people as libraries’ knowledge resource connected with their knowledge and experience, which defined as “intellectual assets” that need to be recorded, classified, updated and definitely shared, in order to become searchable and accessible.

It is a case study, conducted through an interpretive approach, following a holistic ethnography tradition. The research methods used for the data collection were the methods of participant observation and semi-structured interviews. The data collected have been analyzed through the six (6) phases of the thematic analysis, while methods data validation have been used to ensure their reliability.

In conclusion, the study presents results connected with the Department’s knowledge specification (tacit and explicit), the process of knowledge sharing by mentioning the people involving, the methods and tools. Furthermore, the weaknesses the Department faces are presented regarding employees’ involvement – mostly connected with communication and collaboration – and the systems and resources management. Finally, the anticipated future challenges are presented and analyzed, as defined by the library’s role, the employees’ role and the KM role.

Keywords
knowledge management (KM), knowledge sharing, knowledge, organizational knowledge, organizational learning, academic libraries
Acknowledgements

First, I would like to express my sincere gratitude to my supervisor Prof. David Randall for his support, guidance and encouragement before and during my thesis writing. I truly could not have imagined having a better supervisor for my thesis.

Additionally, I would like to thank Professor Anita Mirijamdotter, Professor Paivi Jokela and my fellow students for their constructive comments during the “Work-in-Progress Seminars”.

I would like to express my very great appreciation to the Manager of NTUA Central Library, Stavroula Kouri for her condescension to conduct my research in the library. However, I would not have been able to accomplish my study without the cooperation of my beloved colleagues, to whom I owe a large part of this study completion. Many thanks to Evi, Efi, Vicky, Eleni, Fotini, Dionysis, Vasso and Christina and all the library staff for their support and patience.

I am always grateful to my good friend Klelia Tsapekou for her contribution in the text’s proofreading.

And of course, I extend my heartfelt thanks to my beloved parents and friends for their encouragement and kindness during my study period.
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List of abbreviations
ANT Actor Network Theory
BL British Library
CS Computer Scientist
Heal-Link Hellenic Academic Libraries Link
ICT Information and Communications Technology
IL Information Literacy
ILL InterLibrary Loan
ILS Integrated Library System
ILSaS Integrated Library System as a Service
IM Information Management
IRIS Interlibrary Loan System of Greek Academic Libraries
IS Information Systems
IT Information Technology
KM Knowledge Management
LIS Library and Information Science
MODIP Quality Assurance Unit
MSc Master of Science
NTUA National Technical University of Athens
RSS Rich Site Summary
SL System Librarian
SMS Short Message Service
1. Introduction

Nowadays, libraries and information services, as well as other organizations, face the challenge of surviving in the so-called ‘knowledge society’ and becoming successful through the implementation of knowledge management processes. The technological changes and the “global competition”, as well as the knowledge-driven economy – defined as the rapid development of communication, computing and digital content (Yaacob, Jamaluddin and Jusoff, 2010) – are pushing the organizations to change their structures and adopt new management processes, in order to become more flexible, and to enhance their innovation and performance as well. (Porumbeanu, 2010). The organizations’ competitive advantage is connected with their learning capability and their knowledge assets (Prusak, 1997). Knowledge is an essential key resource for organizations; its effective and efficient management can contribute to the development and improvement of organizations’ services (Yaacob, et al., 2011). Therefore, knowledge management (KM) has become an integral process for organizations, which focus on KM initiatives, such as creation, sharing, integration and exploitation of knowledge assets (Porumbeanu, 2010).

1.1 Introduction and research setting

In the growing environment of knowledge management, library’s role is defined as central in knowledge development and modification. KM needs particular methods for implementing information management (IM), information transferring and connection with individuals and their activities (Kumar, 2010). Over the last years, libraries have no longer limited their activities in organizing their collections, hence, they are able to provide access to information resources, including online resources as well. In order not to cause confusion between information management and knowledge management, we mention researches that describe KM as “librarianship in new clothes” (Koenig, 1997) or librarianship, as the organization of recorded knowledge and KM as mutual to IM (Roknuzzaman and Umemoto, 2009). Besides, Abram (1997) describes the knowledge creation process as “data transforms into information, information transforms into knowledge and knowledge drives and underpins behavior and decision-making”.

Moreover, in the new knowledge-based economy and digital age, the business world is changing and the libraries’ role is redefined. Libraries have become learning centers, where the knowledge management is one of the main activities connected with their new role. In this context, they aim to increase the knowledge access levels for their users (Lee, 2005). In addition, libraries operate as an integrated part of the “scientific system chain” by participating in the scientific research process directly through knowledge and information acquisition, storage and distribution. In this framework, KM contributes to building relationships in the library, between the libraries and between library and users by enhancing knowledge exchanging and sharing (Shanhong, 2000).

1.2 Purpose statement and research questions

Academic libraries are essential parts of university institutions and they are affected by their mission and goals. Consequently, academic libraries’ role is to provide competitive advantage for their parent institutions through improved services that cover the institutions’ requirements
KM initiatives contribute to academic libraries ability to meet the mission, vision and goals of universities after understanding their institutions’ needs. Especially during the digital era, the process of KM implementation, through knowledge creation, acquisition, capture, sharing, record and preservation, empowers the librarians’ adaption in new changes, and develops further the role of both libraries and librarians in the academic community. Moreover, the same process builds a well-informed academic community with “critical thinkers and independent users” (Jain, 2013)

A successful academic library utilizes its employees’ information and knowledge for better serving the academic community (Poonkothai, 2016). On the other hand, academic libraries face various challenges such as funding reduction, usage decrease, transition into digital services and demanding of new services. Therefore, academic libraries, for facing these challenges, need to redefine their role in the new digital environment, take advantage of their potential and use innovation to create and provide services more convenient. Besides, knowledge is not just managed by the library but it is created into the library (Islam, Agarwal and Ikeda, 2015).

More specifically, in academic libraries, reference librarians possess knowledge for responding to difficult questions and it is mostly acquired through their experience, insights and individual contexts (Gandhi, 2004; Stover, 2004). This kind of knowledge is called tacit or implicit and it is described by the difficulty in communicating it, since it remains in humans’ minds and it has not been recorded, documented or written down in an understandable format (Kumar, 2010; Gandhi, 2004). However, in the case of a reference librarian, tacit knowledge can be accessible by other colleagues only if he/she decides to share it through formal or informal methods (discussion, notes, formal documents, etc.). By this process, the explicit knowledge arise; it is described as codified and adapted knowledge in particular formats, recorded and documented in manuals, written workflows and guides that facilitate its sharing with colleagues and users (Gandhi, 2004).

Knowledge sharing is considered as a basic element of the KM process, especially in academic libraries’ Reference Departments, where their employees have daily communication with users. Reference librarians capture users’ knowledge and, through its sharing and dissemination, contribute in decision making process. They understand better their users’ needs and they are able to redesign the current services in order to create new and updated services (Jain, 2013).

The main concern is focused on academic libraries tendency to produce great amounts of operational information, but they seem unable to use it for creating organizational knowledge. More specifically, libraries’ role remain limited in the traditional services provision than exploiting the ever-increasing information flow to increase their organizational effectiveness. Essentially, libraries do not identify organizational knowledge as a resource and they do not manage it as other resources in order to improve their services. This remains an essential problem, since it prevents libraries from identifying and managing the operational information from both themselves and their parent organizations that will lead them to create knowledge and improve organizational effectiveness. Consequently, KM role is defined by the opportunity provided to the academic libraries to become more effective internally and externally throughout their institutions (Townley, 2001).

During my experience in academic libraries, I have been recognized basic weaknesses in library’s organizational knowledge management, connected mostly with the knowledge capturing and knowledge sharing. I identified the problematic situation in communication and
collaboration among employees regarding knowledge transferring, which influences the library operation and consequently, the services provided to users.

The current study focuses in Central Library of National Technical University of Athens and particularly in the Department of Information and Users’ Services. The purpose of this study is defined by two (2) research questions that will be answered in the following chapters. The study’s goal is to describe the current situation of Department of Information and Users’ Services through the KM perception and the KM initiatives and clarify the need of a KM strategy adoption, implemented through simple and zero cost methods and techniques for knowledge creation, capturing, preservation and sharing.

❖ *Research Questions*

Research Question 1
What are the academic libraries perspectives in their new role as digital learning centers, with focus on knowledge, knowledge management and knowledge sharing?

Research Question 2
What are the anticipated future challenges of KM practices in academic libraries’ role?

1.3 Topic justification

Greek academic libraries face the new challenges of the digital era through the information explosion and the rapid flow of knowledge and information exchange, as well. According to Koloniari and Fassoulis’ (2016) research in Greek academic libraries, they concluded that even though practitioners accept the KM utility in practice, little attempt is observed regarding KM implementation in libraries. In addition, librarians use a wide range of tools and methods to manage explicit knowledge, but they miss the opportunity to focus on internal tacit knowledge (Koloniari and Fassoulis, 2016). Moreover, Koloniari, et al. (2015) mention the weakness of a clear KM strategy in Greek academic libraries and a “knowledge-friendly culture” that will contribute to employees’ acceptance of knowledge sharing and creation based on trust, collaboration, receptiveness and compromise.

In addition, for organizations such as academic libraries, efficiency is linked to culture, which determine employees’ attitudes and behavior and affects various outcomes, such as innovation and efficiency (Porembeau, 2010; Koloniari et.al., 2015). The need for libraries to define their culture in respect of operation, people, learning and continuous training, is imperative (Porembeau, 2010). The adoption of such a culture reinforces positive knowledge behavior, such as collaboration, trust between both employees and organization (Koloniari et al., 2015).

Nonetheless, employees play an important role in academic libraries as basic resources of knowledge (Kianto and Andreeva, 2014). Lee (2005) argues that the knowledge and experiences of library staff, produced through writing, teaching, guiding, publishing, are the library’s “intellectual assets” and they should be valued and shared. The library’s organizational culture should establish knowledge transfer and sharing between staff members and especially as a mentoring system that will allow the newcomers to be guided and acquire the appropriate knowledge (Lee, 2005). Besides, it is necessary for knowledge to be recorded, classified, and updated, in order to become searchable and accessible (Lee, 2005). Additionally, the stored knowledge on a library network or on electronic databases maintained by the library is ensured by preventing the risk of loss (Wen, 2005).
1.4 Scope and limitations

Based on previous researches conducted in academic libraries globally, the current study will present results arising from research focused on one of the greatest Greek academic libraries, the NTUA Central Library. The problematic area was identified before the research started and was discussed between the researcher and the Library Manager. We both concluded that KM is a vague term in the library’s operation; KM perception and initiatives, we felt, could contribute to an improvement in knowledge capturing, codification and dissemination. Then, we decided that the research should focus on the “Department of Information and Users’ Services”, as an essential part of the library, and investigate the KM process through knowledge creation and sharing, collaboration and communication among employees and external collaborators. The ultimate goal of the study is to develop a perception that leads to a KM strategy for creating a stable working environment and improving the Department’s operation and services provision. At a later stage, the Library Manager wishes the KM implementation to concern the entire library operation through the development of a new role of ‘knowledge manager’ that will contribute to enhancing KM strategy and culture.

This study is limited to the “Department of Information and Users’ Services”, of which employees participated in the research methodology. However, the research was conducted during a particularly difficult period; first, the summer vacation was close and sometimes, the employees’ fatigue was obvious and second, three employees changed offices and tasks. Nonetheless, it is worth mentioning that none of the above factors negatively influenced the research conduct or made it untrustworthy.

1.5 Thesis organization

The study is organized in six (6) basic chapters divided in more sections. More specifically:

Chapter 1 “Introduction” mentions the basic terms of the study and introduces the reader to the central object of the thesis.

Chapter 2 “Literature Review” cites the previous scientific researches regarding the thesis subject.

Chapter 3 “Research Methodology” describes the methodology that was used during research in theoretical and practical framework.

Chapter 4 “Empirical Findings” mentions the data collected during the research.

Chapter 5 “Discussion and analysis” analyzes the findings in conjunction with the scientific literature.

Chapter 6 “Conclusion” refers to the concluding results of the entire study.
Thesis organization

Figure 1
2. Literature Review

2.1 Knowledge, knowledge management and knowledge sharing

One of the most important challenges that modern organizations face is the management of knowledge assets as a competitiveness factor. We are going through the “Knowledge Age”, where organizations promote collaboration as an alternative to the “organizational hierarchies” with progress now being based on collective knowledge, its efficient use and the ability to collect and use new knowledge. Therefore, organizations obtain the capacity to learn, remember and act by exploiting the appropriate information, knowledge and expertise (Dalkir, 2005). This knowledge-based view of the organizations reveals what the organizations actually do in an effort to create, organize and use knowledge assets by determining their performance (De Long and Fahey, 2000). Moreover, regarding management theory, the creation and management of knowledge assets contributes to organizational efficiency and sustainability (Grant, 1996 cited in Chung and Yoon, 2015).

Knowledge

However, before we proceed to analyze knowledge management in organizations, it is important to clarify what we mean by “knowledge” as a term. According to De Long and Fahey (2000), there is a distinction between data, information and knowledge. They define data as unprocessed “descriptions or observations” about past, present or future situations, while on the other hand, information is norms that are included in data or enrich data (De Long and Fahey, 2000). Knowledge, in this view, is defined as an item derived from “human reflection and experience”. A basic element of knowledge is its production by an individual or a collective body and it is integrated into daily work or a process. In addition, knowledge can be constituted in concepts, rules and tools, and contributes to the process of decision making for achieving a specific goal (De Long and Fahey, 2000).

De Long and Fahey (2000) mention knowledge resident in both individuals and organizations. Additionally, they refer to the distinction between explicit knowledge, namely codified knowledge, and the tacit that is the knowledge we cannot explain (Nonaka and Takeuchi, 1995). In this context, the importance lies in improving knowledge creation and use by individuals and organizations. Nevertheless, they explain the division of knowledge into three distinctive categories in an effort to clarify the difference between knowledge and knowledge management. For instance, De Long and Fahey, (2000) recognize three (3) types of knowledge: a) the “human knowledge”, which is the individual knowledge that covers skills and expertise and may include tacit and explicit knowledge; b) the “social knowledge”, which is the knowledge among individuals or groups, characterized more as a tacit knowledge; c) and the “structured knowledge”, the one produced by organization systems, processes, tools and daily works, and is mostly explicit knowledge.

According to Prusak (1996) knowledge in organizations has six (6) “environmental issues” that make knowledge important to organizations. More specifically, he mentions: a) knowledge is changing rapidly and employees must learn quickly for the organization to be competitive; b) products provided by an organization gain their value through knowledge creation c) in academic institutions knowledge is distributed out of “campus”; d) the rapid shift in role
responsibilities in academic institutions lead to a “knowledge deficit situation” and it should be ensured that this knowledge will remain where it is produced; e) virtual environments should provide embedded knowledge for effective operation; f) through the systems used widely, knowledge produces more knowledge and it must be managed (Prusak, 1996).

Organizational knowledge

Furthermore, according to Nonaka and von Krogh (2009), individual knowledge is linked with organizational knowledge through various processes including the creation, use, transfer and sharing of knowledge, as well as its further storage and retrieval. However, through these processes the most complicated issue is the conversion of tacit knowledge into explicit. More specifically, the tacit knowledge is connected with the experience and intuition; while on the other hand, the explicit knowledge may be expressed and formulated through the words (Nonaka and von Krogh, 2009). Consequently, only explicit knowledge can be embedded into the organizational knowledge. Hence, to foster the process of the tacit knowledge conversion into explicit and to support the above mentioned processes the term “knowledge management” is appearing by involving various organization practices, including creation, storage, use and sharing of knowledge (Lindner and Wald, 2011).

The knowledge-based theory of the firm, stressing organizational knowledge as an important source for achieving successful organizing into a strategic context, became important (Berends, Vanhaverbeke and Kirschbaum, 2007). According to Nonaka and von Krogh, 2009), organizational knowledge creation is the process of making knowledge accessible and also of enhancing the knowledge created by individuals by connecting it with an organization’s knowledge system. Organizational knowledge creation aims to interpret the knowledge assets and to propose management strategies, and also, to explain the “dynamic processes” of organizational knowledge through the knowledge-based view of the firm and its dynamic capabilities (Nonaka and von Krogh, 2009). In addition, Nonaka and von Krogh (2009) consider that tacit knowledge is the basic element of organizational knowledge. Therefore, the nature of this knowledge, that is collective, established and tacit, cannot be defined as a “sustainable source of competitiveness” the need for it to be transferred, depicted or reproduced is not often met. In this respect, organizations are slowly apprehending the importance of organizational knowledge and the need to improve the creation, sharing and application of knowledge. Hence, all this effort, determined by a systematic approach, is specified as knowledge management (Berends, Vanhaverbeke and Kirschbaum, 2007).

Knowledge management

The history of “knowledge management” starts in the 1960s, when the Peter Drucker invented the term “knowledge workers”. However, during the 1970s, the term “knowledge management” slowly evolved. In the 1990s, laptop use allowed employees, and mostly freelancers, to telework. This flexibility caused various issues regarding knowledge exchange between colleagues. In this context, employees started to adopt or examine new knowledge management processes. That was the so called “Generation 1 of Knowledge Management” and lasted between 1990-1995 (Schütt, 2003). In the next five (5) years, “Generation 2” appears, largely due to the work of Ikuijiro Nonaka (Schütt, 2003). He firstly introduces the term “knowledge creation” by proposing a model based on “the process of socialization, externalization, combination and internalization of knowledge” (Nonaka and Takeuchi, 1995). Subsequently, much research was published discussing models of knowledge management and supporting
different theories regarding tacit and explicit knowledge. Moreover, knowledge databases were being developed as tools that gave the employees the ability to exchange knowledge as well. (Schütt, 2003).

Concerning knowledge management, Swan, Scarbrough and Preston (1999) give their definition as a process or practice of building, getting, apprehending, sharing and using knowledge coming from various sources, in order to enhance organizational learning and performance. In addition, Dalkir (2005) characterizes knowledge management as a purposeful and methodical cooperation among people, technology, processes and structure to obtain value through modernization and restate. This cooperation or “coordination” is structured by building, sharing and applying knowledge and also, by the experience gained that is used for developing organizational learning (Dalkir, 2005).

Knowledge sharing

However, organizations, through an effort to increase their competitive advantage, to improve their performance and sustainability via knowledge creation, have to face the challenge that “intellectual assets” belong to their employees (Connelly, et al., 2011). Knowledge transfer, thus, requires the commitment by employees to share their knowledge with other colleagues. This challenge is reinforced by various motivations, such as reputation or status enhancement and the development of cooperative relationships between the members of an organization. This, in turn, requires incentives, or other means for the maintaining of psychological balance. (Connelly, et al., 2011). According to Argote and Ingram (2000), there are specific conditions that determine the difficulty level of knowledge learning and sharing into the organizations. In this context, Hinds and Pfeffer (2003) argue that sharing knowledge and expertise is a problematic situation, where “cognitive” limitations, namely mental capacity, and “motivational” limitations, particularly with regard to the gap between experts and newcomers – intervene in people’s intention to share their expertise.

Huysman and de Wit (2002) attempt to provide some nuance to the concept of knowledge management, deriving knowledge sharing types from the knowledge-sharing cycle; they are: “knowledge retrieval”, “knowledge exchange” and “knowledge creation”. Additionally, they mention three (3) basic “traps” in knowledge management initiatives, connected with practices of knowledge sharing management. For instance, they refer to initiatives that are sustainable because they are embedded in daily sharing practices, unlike the introduction of individual learning processes, where knowledge sharing is uncertain. They also argue that knowledge exchange should be treated as a flow process instead of a stock process. Finally, they mention that knowledge management will be more effective for the organization only if the organizations have an organization-centered approach than an operational one (Huysman and de Wit, 2002).

Ackerman, et al. (2013) develop research further by dividing knowledge into knowledge sharing and expertise sharing. They mention that knowledge from people, thus, its social character is undeniable. Moreover, based on Normark and Randall's research (2005 cited in Ackerman, et al., 2013), the most effective systems are developed by analyzing the work practices and taking under consideration the social aspect of knowledge sharing, as well. According to Ackerman, et al. (2013) in the context of CSCW (Computer-Supported Cooperative Work), the distinction between knowledge and expertise sharing is necessary. Hence, while the dissemination of knowledge through computational or information technology
devices, such as repositories, can be very important for knowledge sharing, expertise sharing is connected with the ability to accomplish a task or to solve a problem through discussion among human actors (Ackerman, et al., 2013).

Additionally, Twum-Darko and Harker (2017) argue that knowledge sharing, as a sociotechnical concept, is network-based, and formed by various factors, such as technology, processes and knowledge sharing strategy that promotes the distribution of collective knowledge. In this context, they (Twum-Darko and Harker, 2017) use actor-network theory (ANT) as a means to interpret the sociotechnical processes of knowledge sharing. Furthermore, they say, knowledge sharing cannot be successful without a network with “aligned interests”. ANT, as a social theory that examines the relationships found in the actors’ network, contributes to the understanding of the dynamics that affect the creation of an aligned interests network for knowledge sharing (Twum-Darko and Harker, 2017). Moreover, ANT operates as a method for an organization to involve actors in the knowledge sharing network, in order for them to identify their interests and transform knowledge sharing as an “organizational culture”. Thus, successful knowledge sharing for an organization depends on whether existing limitations have been already assimilated. Likewise, the organization’s culture provides the appropriate knowledge sharing methods by affecting the processes and the usefulness of technological innovations (Twum-Darko and Harker, 2017).

### 2.2 Libraries and KM

Into the fast-changing environment of information, libraries are becoming information and knowledge centers, trying to implement various practices to enhance their services (Mavodza and Ngulube, 2011; Sarrafzadeh, 2008). The internet use and the various technological developments have increased information production and, inevitably, have influenced the nature of library and information services, regarding the creation of new products and services (Sarrafzadeh, 2008). The libraries’ role has been developed further by redefining its usability from a collection warehouse to a provider of information access, through various well-organized resources (Kumar, 2010). In this context, libraries adopted KM for providing modern library services. We must take under consideration that libraries manage the knowledge produced by various source characteristics, such as “connectivity”, mobile applications, big data and digital and physical items and also, the knowledge produced into the libraries (Islam, Agarwal and Ikeda, 2015).

Roknuzzaman and Umemoto (2009) claim that KM history has its origins in “library practice”, as a process of “managing codified or recorded knowledge”. However, the relationship between LIS and KM is uncertain. For instance, Wilson (2002) argues that LIS is “nothing more than information management”, while others agree that KM is librarianship or information management by another name (Davenport and Prusak, 1998). According to the second perspective, various parallels have been expressed in the scientific literature, comparing KM with LIS as “new wine in old bottles”, as “librarianship in new clothes” or giving the sense of “deja vu” (Koenig 1997; Rowley 2003; Schwarzwalder 1999; Loughridge 1999 cited in Sarrafzadeh, 2008).

Actually, KM was originally developed in order to serve profitmaking organizations, but its implementation spread to non-profit, as well. The difference is at the goal set by the two sectors.
Competitive advantage is identified as the profit companies’ goal, but quality service improvement is defined as the main goal of non-profit companies, such as libraries. For instance, KM objective in libraries is the knowledge innovation, knowledge flow and the relationships between library and user and between libraries as well (Sarrafzadeh, 2008). Sarrafzadeh (2008) adopts the Teng and Hawamdeh’s (2002) perspective that KM improves the communication between staff and managers and also provides a common culture based on trust, exchange and sharing by transforming library into an efficient knowledge sharing organization (Shanhong 2000 ; Jantz 2001 cited in Sarrafzadeh, 2008).

2.2.1 Academic libraries and KM

At this point, we mention academic libraries as a special category of libraries, central to universities and their organizational culture, and consequently, affected by their parent bodies (Onifade, 2015). Furthermore, academic libraries provide competitive advantage to universities and their success results from their staff information and knowledge utilization in order to provide better services to the academic community (Nazim and Mukherjee, 2011). Another challenge that is common in academic libraries, especially in countries with financial issues, is their ability to operate efficiently with reduced budget and staff. In this context, KM may become the “tool” for the libraries to provide the appropriate services to their parent institutions and ensure their survival into a competitive and challenging environment (Nazim and Mukherjee, 2011).

Townley (2001) mentions that for more than two decades academic libraries produced knowledge and great amounts of information regarding their operations, but they were unable to use it for creating or applying “organizational knowledge”. In this context, librarians should, instead, use knowledge grounded in their expertise in order to achieve library’s goals. Therefore, according to Shina (2014), KM in libraries should be oriented to knowledge research and development, the creation of knowledge bases and support for knowledge sharing and exchange between staff. Moreover, they should show proper attention to the different and various requirements of their staff by enhancing human resource management (Shina, 2014).

On the other hand, Sheng and Sun (2007) claim that the academic libraries’ management is more user-oriented with less attention on their employees’ needs. Into this context, Shanhong (2002) mentions the importance of library staff training and education, in order to increase their scientific knowledge and their capacity to acquire new knowledge. Moreover, through this process, the libraries can exploit and ensure the lifelong maintenance of the “wealth, wisdom, expertise, and experiences” possessed by individuals. The methods they can use are simple and low cost, such as brainstorming, open discussions, sharing of ideas, workshops and conferences, guiding, digital archiving, problems identification and solution finding (Poonkothai, 2016). Thus, a learning environment will be created, as a fertile ground for knowledge sharing (McInerney 2002 cited in Sarrafzadeh, 2008).

Sarrafzadeh (2008) describes knowledge sharing as “a means to achieve business goals through transferring knowledge between employees, customers and other stakeholders”. In addition, the continuous experience transferring may prevent duplication and “reinventing the wheel” (Hayes, 2004 cited in Sarrafzadeh, 2008) any time a new project starts. However, knowledge sharing needs both organizational support and individual interest. More specifically,
organizational support will be achieved through well-designed organizational procedures, defined organizational culture and technological infrastructures; and on the other hand, the personal interest will be ensured through the librarians access on tacit and explicit knowledge as “organized knowledge bases” and experiences of other colleagues (Parirokh, Daneshgar and Fattahi, 2008). By the same logic, Sarrafzadeh (2008) considers organizational culture as an important factor in providing knowledge sharing success. Nevertheless, as organizational culture is unique for every organization, it is quite difficult to change it and it is subject to the policy of either the Library Manager or the Department Manager (Poonkothai, 2016). Regarding employees, motivation and trust should be the initiatives to prompt them to share knowledge. Furthermore, informal sharing forms, such as asking for advice orally rather than asking to write them down or upload them on a database may contribute to convincing employees to share their knowledge more readily (Sarrafzadeh, 2008).

Besides, academic libraries are experienced in resource sharing and networking, since the majority of them participate in consortia, where cooperative work, and resource sharing is a common practice. The libraries benefit from this cooperation and sharing and this is the result of their members’ willingness to cooperate and share without the sense of selfishness (Lee, 2005). This policy enhances communication efficiency and also, it contributes to knowledge acquisition through links and networking with other libraries, workshops, conferences and seminars, and finally, digital communities of common practices (Sarrafzadeh, 2008 ; Shanhong, 2000).

As mentioned above, academic libraries are important constituent of universities and their mission is to provide knowledge access to their users (Lee, 2005). In this context, libraries should analyze their users’ needs, and then, they should use methods to capture all the relevant tacit knowledge. Various means may be developed to share tacit and explicit knowledge and make it available to users, such as the library website, which can be used as a postal service (Lee, 2005). On the other hand, the library website or its catalogue should be used to provide knowledge, derived from data collection regarding users’ behavior, failures and/or persistence rates that will result in the improvement of operational effectiveness (Sarrafzadeh, 2008). Furthermore, Parirokh, Daneshgar and Fattahi (2008) mention other technological methods that enhance knowledge sharing between library and users, such as emails, automatic alert system, FAQ database and databases.

The challenge of reference services

The reference desk is the “frontline for face-to-face” dissemination of knowledge. The staff is charged with sharing information in a continuous changing environment. However, in the past, this work was distributed to a short number of individuals, but nowadays, the majority of academic libraries has in its disposal many employees who provide reference services, such as permanent staff, students, trainees and staff under different professional regime (permanent or temporary contract). Very often, these employees are not working together and sometimes they meet rarely (Rodriguez, 2010). Thus, the need to exchange their information and knowledge is inevitable.

On the other hand, Stover (2004) mentions some critical issues regarding the reference librarian’s ability to answer questions from various disciplines, to comprehend new knowledge coming from sources and practices, to remember organizational policies and to follow the rapidly changes of library databases and software. Through these questions, he raises the need
for KM practice to convert tacit knowledge into explicit, codified knowledge (Stover, 2004). Librarians possess tacit knowledge and unrecorded expertise, important for their work, which should be articulated and ensured by the risk of loss (Stover, 2004). Gandhi (2004) points out that some reference librarians may have the ability to answer various and difficult reference questions, possessing a great amount of tacit knowledge, regarding library, community and online resources (Sarrafzadeh, 2008), hence, this knowledge is accessible depending on librarians’ willingness.

Gandhi (2004) considers KM as an important tool in reference work, since librarians are asked to answer thousands of questions every day and only a 50 – 60 % of their responses are correct and finally, he recognizes that librarians, even the reference librarians, are not able to remember all sources. Furthermore, Sarrafzadeh (2008) highlights the importance of capturing the tacit knowledge of reference librarians – knowing how to find information, selecting the right resources, how to get the right information – as the most significant part of KM. Additionally, Rodriguez (2010) insists on developing methods that will improve communication between reference desk employees. Sternberg (1999 cited in Stover, 2004) uses the phrase “knowledge isolation” as a problematic situation for many professionals. Therefore, this problem still exists even if the reference librarians work in groups, when they do not share their knowledge. However, the problematic situation should be solved through tacit knowledge articulation via specific practices and tools, such as e-mails, workshops, conferences, seminars, printed and electronic guides, publication of books and journal articles, and personal conversations. In addition, reference librarians acquire knowledge through collaboration with their colleagues or through guiding by more experienced staff. The positive impact of capturing and converting tacit knowledge to explicit lies in the ability of librarians to adapt to changing environments, where internal policy resources are changing, information is changing and growing, and they see the reference librarians as responsible to possess all the new knowledge (Stover, 2004 ; Rodriguez, 2010).

Beyond the reference services, one of the most important role of academic libraries is the implementation of educational practices (Sarrafzadeh, 2008). Through these practices, the libraries provide new methods, content and frameworks, in order to make universities faculties think creatively (Stoffle, 1996). Besides, Sarrafzadeh (2008) claims that information literacy – sometimes integrated in faculties’ curriculum through individual courses – can be more systematically provided to promote universities’ mission and lifelong learning to their students.

Blair (2002) argues that KM will be successful depending on whether the ability to access stored information and knowledge among workers leads to the ability to “evaluate the validity and reliability of information obtained from unfamiliar sources”. Information literacy is moving in the same framework, and provides a field of opportunities in LIS in the context of KM. Furthermore, the librarians’ role is determined by teaching database searching, use of groupware, database mining and use of various services to students (Sarrafzadeh, 2008). Hence, the users will be able to find, access, and use information for their academic and individual needs (Mavodza, 2010). It is worth mentioning, that in our days, more than ever, the users need guiding in using electronic resources (databases, repositories) than in using print material. This is, actually, remarkable because the modern websites and platforms are user-friendly (Mavodza, 2010). In addition, librarians’ role is not limited in providing access to information or in teaching users how to search by using IT capabilities, but they are embedded in information
systems development, in order for the information literacy guides to be part of the information resources (Mavodza, 2010).

2.2.2 IT/ICT and KM

In KM implementation, the use of Information Technology (IT) facilitates knowledge capture, sharing and application by providing technologies that enhance the knowledge capture and elicitation and support the knowledge and information sharing (Sarrafzadeh, 2008). Moreover, the combination of computers, databases and telecommunications may improve the organizational functions. In addition, they provide many benefits such as, reduced cost, saving time, providing quality and quantity, improving services and productivity, user satisfaction, enhancing confidence and increasing the possibilities of goal achievement, fast and easy information dissemination, reduction of risk and errors (Raja, Ahmad and Sinha, 2009).

Lee (2005) proposes the development of a knowledge management system that will be installed on existing computer and technology infrastructures by using upgraded intranet, extranet, internet and relevant software programs. This system will support the information resources capturing, analysis, organization, storage and sharing for ensuring knowledge exchanging among various stakeholders, such as users, publishers, industries, etc. (Lee, 2005). However, in the reality of academic libraries that face financial issues and their budget is low, there are more convenient solutions of IT/ICT tools that influence knowledge creation and sharing and facilitates the knowledge collection, storage and exchange by promoting communication and social connection. For instance, e-learning and knowledge repositories, databases, video conferences, electronic whiteboards, yellow pages, and discussion forums is a number of information and communication tools, which support KM efficiency and organizational learning, as well (Koloniari et al., 2015; Koloniari and Fassoulis, 2016).

Kim and Abbas (2010) describe library’s operation as a knowledge repository and an operator for knowledge dissemination. However, they mention that a library’s role has been enriched with the users’ participation. Library 2.0 originates in Web 2.0 technology, which has changed radically the relationship between library and users by enabling users to communicate, exchange knowledge and participate in some library activities (Kim and Abbas (2010). The main Web 2.0 tools used by the libraries are social networks, blogs, micro-blogging, social bookmarks, wikis, photo, video and document sharing (Mahmood and Richardson, 2013). Moreover, Library 2.0 functionalities, such as personalization, tagging, wikis, blogs, social networks and RSS allow users to define various services according to their preferences; while also, they may organize information and maintain it to make it accessible any time and finally, they obtain the ability to express their thoughts and opinions (Kim and Abbas (2010). However, libraries as well as users benefit from Web 2.0, as a tool that adds values regarding the libraries’ relevancy with users, the provision of quality services, the improvement of decision-making and solving problems and the enhancement of knowledge sharing and collaboration (Cao, 2009 cited in Mahmood and Richardson, 2013).
2.3 Summary

In this chapter, the theoretical perspective of KM has been cited as a competitive advantage for organizations. We proceeded to clarify the definition of knowledge by referring to the distinction between data and information. Moreover, we emphasized the difference between explicit and tacit knowledge and we recognized the reasons that make KM important. The importance of knowledge and expertise sharing was analyzed, and ways of developing the knowledge sharing network discussed.

In the second section, issues regarding libraries, librarianship and KM were discussed, notably the relationship between KM and Library and Information Science (LIS) (Dalkir, 2005). In the same section, two (2) different elements were identified: “Academic Libraries and KM” and the “IT/ICT and KM”. In addition, the importance of knowledge sharing was mentioned as a process that contributes to the improvement of libraries’ organizational operation; and respectively, it is described as a process for developing and further improving the services providing to users. In this context, KM was identified as essential “tool” applied in reference services and information literacy by emphasizing in the need of specific tools and techniques that will support the creation of well-informed librarians and literate users. The chapter concludes by mentioning the relation of IT/ICT with KM, and a number of IT/ICT tools we referred that may ameliorate the library services and improve the knowledge sharing, the communication and collaboration among the library staff and between library and users, as well.
3. Research Methodology

According to Myers (1997), there are various research methodologies, with the most commonly used distinction being between quantitative and qualitative research. More specifically, quantitative methods are typical of the natural sciences, but they are also acceptable in the Social Sciences. In the latter, they consist mainly of survey methods, experiments of various kinds and statistical analysis. What they share is a commitment to what is usually called the hypothetico-deductive method. This refers to the kind of deductive analysis, which begins with a theory or hypothesis to be tested, and experiment with which to test it and a result, which confirms or disconfirms it. It is obvious that such methods need precise, testable, and measurable concepts. Qualitative research methods, in contrast, are usually inductive. This means (roughly) that data comes first, and theories are subsequently derived. There are various methodological approaches, which can be aimed at deriving theory from case studies, via action research, and from ethnographic or observational data. They include “Grounded Theory” (Glaser and Strauss, 1999) and “Thematic Analysis” (Clarke and Braun, 2013) although, to be clear, such approaches are not “necessarily” inductive. Clarke and Braun (2013) define qualitative research, as research that uses “words as data”, and data are collected and analyzed in various ways.

For the most part, there is an epistemological division separating quantitative and qualitative approaches. Quantitative approaches make a claim to objectivity, because the large data sets they typically ‘iron out’ and different interpretations, and because the precise concepts (variables) they are based on allow for statistical analysis. However, it can be argued that the results of quantitative analysis in the social and human sciences are only ever correlative and, famously, ‘correlations are not causes’. Statistical outcomes will depend very much on the definitions one applies in the first place. For example, the possible relationship between children, gameplaying and educational outcomes is likely to depend on how one defines a child (where is the boundary?) and what a ‘game’ is. An example of how difficult the problems associated with quantitative analysis in relation to human behavior is given by the “replication crisis”. If the results of an experiment are reliable then we should see that when the experiment is repeated one gets the same result. In fact, as Brian Nosek has shown, this seldom happens (Nosek, Spies and Motyl, 2012; Button, et al., 2013). It is also argued that methods, which depend on statistical analysis, also fail to take account of human ‘meaning’. It is difficult, in such analysis, to get a good grasp of peoples’ reasons or rationales for doing what they do.

For these reasons, qualitative methods, which contribute to researchers’ understanding of humans and their social and cultural environment, are sometimes preferred. These methods ensure that the participants' point of view is taken seriously, and properly understood in their social and cultural context (Myers, 1997). In the same framework, Kaplan and Duchon (1988) refer to two (2) studies, where Mumford (1985) uses qualitative research for depicting the “total” situation through action-oriented, integrative and participatory approach, where the research questions and hypotheses are dynamic and evolving during the process. Lyytinen (1987) develops a similar view for qualitative research, through action research and case study methods by stating that with this strategic perspective rich data collection is ensured and also, data validity (its relationship to the real world) is maintained.
3.1 Methodological tradition

In this study, qualitative research has been conducted, since it emphasizes the research carried out in natural environments with a central emphasis on the participants’ perspectives. Theories, or even generalizations, come from qualitative research and emerge as the research is conducted (Jacob, 1998). Jacob (1998), points out, though, that several different traditions depend on qualitative research and proposes six (6) qualitative research traditions connected to the disciplines of anthropology, sociology, and psychology. These traditions are the human ethology, ecological psychology, holistic ethnography, cognitive anthropology, ethnography of communication, and symbolic interactionism (Jacob, 1998).

In this study what Jacobs calls ‘holistic ethnography’ is used for describing and analyzing participants’ culture and community by describing their beliefs and practices and by showing how the participants contribute to the culture configuration as an integrated whole (Jacob, 1987). According to Randall and Rouncefield (2006), ethnographic principles are based on the study of people and their activities in their natural environment. Because the environment may be uncertain before the research is conducted, some ‘enculturation’ may be necessary. Thus, as a method it focuses on developing an understanding of the culture in real-time and through on site research for eliciting the appropriate data (Randall and Rouncefield, 2006).

According to Jacob (1998), the holistic ethnography’s main concept is culture and includes “patterns of behavior and patterns for behavior”. These are specified as standards connected to social structure or social organization and respectively, as “standards for deciding what is, standards for deciding what can be, standards for deciding how one feels about it, standards for deciding what to do about it, and standards for deciding how to go about doing it” (Goodenough, 1971 cited in Jacob,1998).

Furthermore, holistic ethnography is an empirical tradition based on methods of observation and interviews, and proceeds to data analysis through qualitative methods (Jacob, 1998). Randall and Rouncefield (2006) state that ethnography reveals the world as it is perceived by the “social actors”. Hence, the ethnography deals with behavior, but it is not behaviorist, since it is interested in interpreting the “significance of behavior” rather than the behavior itself (Randall and Rouncefield, 2006).

3.2 Methodological approaches

Myers (1997) mentions that research is usually conducted in relation to specific assumptions that define “valid” research and consequently, the methods that should be used. These “philosophical assumptions” are related to the epistemology of research (Myers, 1997). For Myers, there are three (3) categories based on research epistemology, called “paradigms”, and are connected to decisions about research method. Thus, research may be positivist, interpretive, or critical. Clarke and Braun (2013) define a paradigm as “beliefs, assumptions, values and practices” held by researchers and which defines a general framework for the research.

More specifically, positivist research is defined as research based on objective reality and it is represented by measurable qualities, independent of the researchers and their tools (Myers, 1997). On the other hand, interpretive research deals with the ‘lived experience’ of people and research methods in IS intend to uncover those experiences (Myers, 1997). Finally, critical research addresses the social conditions in which experience is “produced and reproduced by
people”. Moreover, critical research focuses on social critique by revealing conditions such as “oppositions, conflicts and contradictions” and attempts to eliminate the causes of these conditions (Myers, 1997).

Therefore, this study will follow the interpretive approach of qualitative research, recognizing how reality and knowledge are the inseparable social products of social actors, including researchers, who also create this reality (Orlikowski and Baroudi, 1991). Moreover, Orlikowski and Baroudi, (1991) state that meanings and descriptions are essential because they reveal how peoples’ beliefs and attitudes are closely connected with their behavior.

Orlikowski and Baroudi (1991), from an ontological perspective, argue that the inevitably interwoven nature of human understandings, behavior and organization mean that no objective or all-embracing knowledge is possible. The importance of interpretive research relies on revealing the relations among different elements of social reality after assimilating the rules and meanings that constitute various social practices (Orlikowski and Baroudi, 1991).

3.3 Research method

Research method is a strategy for transferring from theory to practice that moves from the “philosophical assumptions to research design and data collection” (Myers, 1997). In this particular study, the case study in combination with ethnography have been selected. Klein and Myers (1999) argue that there are no essential differences between these two (2) methods and they are limited only by time spent and the level of deepening into the life of the people under investigation. Yin (2002) mentions that ethnographies need more time for researching and they present observational results in a more detailed way, while case studies are more independent from participants’ data.

Below is the definition of case study, as expressed by an observer.

“the essence of a case study, the central tendency among all types of case study, is that it tries to illuminate a decision or set of decisions: why they were taken, how they were implemented, and with what result”. (Schramm, 1971 cited in Yin, 2002)

Yin (2002) states that case study is a method that contributes to investigate an issue, namely “a phenomenon”, in its “real-life context”, where the borderline between them is not clarified. Regarding ethnography, Myers (1997) claims that it is a method for deepening an understanding of the lives of the people participating in the research and has, as an objective, entering into their social and cultural context. Furthermore, Klein and Myers (1999) introduced seven (7) criteria-principles as quality standards for interpretive research methods of case studies and ethnographies. Briefly, the principles focus on human understanding by investigating the social and historical background and also, they focus on the social construction of the data, through the interaction between researchers and participants. Additionally, according to the principles, the researchers should be well prepared to face possible contradictions, possible differences and possible “distortions” during the research method, and finally to interpret all the data collected in order to reveal the contextual nature of human understanding and social action (Klein and Myers, 1999).
3.4 Data collection

According to Yin (2002), ethnography uses participant observation for data collection, where the observer visits the participants’ field of action and “learns the ropes” by watching, listening, questioning and talking with the participants (Randall and Rouncefield, 2006). On the other hand, the case study is conducted through interviews for gathering primary data and they are classified into structured, semi-structured and unstructured interviews (Myers, 2009).

The observation technique can be divided into three (3) categories, controlled, naturalistic and participant observation (McLeod, 2015). In this study, participant observation has been selected, such that the researcher can become part of the lived work of participants (McLeod, 2015). In this particular case, the researcher is a member of the organization investigated and, thus, already immersed in the participants’ work and activities (Randall and Rouncefield, 2006). Moreover, as mentioned above, the interviews may be structured, semi-structured and unstructured interviews (Myers, 2009). In this study, semi-structured interviews were conducted to provide reliable and comparable qualitative data. The main characteristic of semi-structured interviews is the combination of open-ended questions prepared ahead by the researcher and the interviewees’ opportunity to express freely their opinion by being allowed to use their own terms (Cohen and Crabtree, 2006).

3.4.1 Implementing the techniques

After getting permission from the Library Manager to conduct my research in the library, I wrote an email where I explained my study’s purposes and set the time schedule for the data collection methods. The email was sent to the Manager and she, in her turn, forwarded the email to the Heads of the Departments to inform their employees. I did not receive any negative response and, thus, I started with the observation.

The research is focused on the Department of Information and Users’ Services. Both techniques took place in the four (4) different offices of the Department and in the reference desk. Observation was the first method; it lasted five (5) days, for almost three (3) hours in each office. Before the observation started, I informed the participants of my research topic and the method implementation. Since, no one refused to participate, I started the observation. During that time, I had the opportunity to observe the offices’ daily processes and apprehend the employees’ orientation to library operations. Working methods, sharing information between different departments and branches, sharing data and providing services to users, were some of the topics around which data was collected. However, during the observation, some questions arose regarding the offices’ operation; therefore, I had a discussion with the people observed with view to clarify these questions. A kind of unstructured interview was conducted, in an effort to apprehend what was not, in my view, sufficiently clarified, such as the role of culture, experience, or setting. Moreover, it operated as a preliminary step for developing my next method, the semi-structured interview (Cohen and Crabtree, 2006). See below (table 1) for the details of the observation process.
**Observation**

<table>
<thead>
<tr>
<th>Office</th>
<th>Participants</th>
<th>Role</th>
<th>Years of experience in the Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loan Office</td>
<td>4</td>
<td>Librarian - Head of Department</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Librarian – Responsible for user registration and user communication</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Librarian – Responsible for user registration and book holds</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Administrative staff – Responsible for user registration and guides writing</td>
<td>2</td>
</tr>
<tr>
<td>Interlibrary Loan Office</td>
<td>2</td>
<td>Librarian – Head of the service</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Librarian – Supporting ILL services</td>
<td>10</td>
</tr>
<tr>
<td>Information Literacy Office</td>
<td>2</td>
<td>Librarian – Responsible for service design and implementation</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Librarian – Supporting ILL services</td>
<td>8</td>
</tr>
<tr>
<td>Reference Desk</td>
<td></td>
<td>The number of people working on reference desk varies from one (1) to two (2) employees in every shift (morning and afternoon) and the people change daily</td>
<td></td>
</tr>
</tbody>
</table>

**Table 1**

The second method adopted was the semi-structured interview. Interviews were conducted in four (4) days and lasted 45 minutes on average. The four (4) offices participated with one representative from each one. The selection of people was not predetermined, but was a consequence of some changes internally in the library's structure, where people changed departments and/or roles, and on different occasions, a lack of disposability was mentioned. Before I started the interviews, I informed the participants about the method’s implementation and asked their permission to audio record the process. After permission was granted, the interview started and the interviewees were asked to answer questions, where they had the opportunity to provide detailed responses (Nyame-Asiamah and Patel, 2009). Moreover, through the open questions I was able to reveal the participants’ experience in their workplace and uncover areas, such as variability, complexity of work and collaboration and participation perspectives (Kira and Frieling, 2007). During the recorded interview, I kept some notes in order to return to the transcript later, but I attempted to avoid losing my concentration on the interviewee (Walsham, 2006). See below (table 2) the details of the interview process.
### Interviews

<table>
<thead>
<tr>
<th>Office</th>
<th>Participants</th>
<th>Role</th>
<th>Interview duration (in minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loan Office – Head of Department</td>
<td>1</td>
<td>Librarian - Head of Department</td>
<td>38</td>
</tr>
<tr>
<td>Loan Office</td>
<td>1</td>
<td>Administrative staff – Responsible for user registration and guides writing</td>
<td>15</td>
</tr>
<tr>
<td>Interlibrary Loan Office</td>
<td>1</td>
<td>Librarian – Head of the service</td>
<td>28</td>
</tr>
<tr>
<td>Information Literacy Office</td>
<td>1</td>
<td>Librarian – Responsible for service design and implementation</td>
<td>57</td>
</tr>
</tbody>
</table>

Table 2

#### 3.5 Data analysis

According to Randall and Rouncefield (2006), researchers have at their disposal many analytical schemes for data analysis, which, apparently, influence the way of data presentation. Clarke and Braun (2013) mention that qualitative data analysis has one (1) of three (3) basic forms or frameworks, such as “patterns”, “interaction” and “stories”. In this study, we focus on pattern framework and a pattern-based method of analyzing qualitative data. This method is based on content analysis where qualitative data are coded, and it is called thematic analysis. (Clarke and Braun, 2013).

Braun and Clarke (2006) give their definition regarding thematic analysis by suggesting that:

> “Thematic analysis is a method for identifying, analyzing, and reporting patterns (themes) within data”

Thematic analysis is characterized by flexibility and the ability to organize and describe data sets extensively. In contrast to other analytic methods, such as grounded theory and IPA, where the intention is to describe patterns in qualitative data and where analysis is limited by theoretical frameworks, thematic analysis is not strictly connected to any framework, thus it can be used through various frameworks, operating differently each time within them (Braun and Clarke, 2006). Moreover, thematic analysis may get various qualities, such as the “essentialist” or “realist” and “constructionist” method, which describe participants’ experiences, interpretations, and reality.

At this point, the terms used in the method of thematic analysis are mentioned bellow (Braun and Clarke, 2006):

**Data corpus**: all the data collected
**Data set:** data from data corpus used for a specific analysis  
**Question:** an issue that should be expressed, considered and discussed during the method, even if it had not been expressed before the analysis, and sometimes, before data collection.  
**Code:** feature of data (basic element of raw data) with an interest for analysts  
**Theme:** an important element regarding data, connected with research question and “represents some level of patterned response or meaning within the data set” (Braun and Clarke, 2006).

Before the researcher proceeds to the analysis, firstly, it is important for them to determine the type of analysis and the claims to be made according to the data set. For instance, there are two (2) types of analysis, such as “the rich description of the data set” and “the detailed account of one particular aspect” (Braun and Clarke, 2006). In the particular case, the second type of analysis has been selected, since it provides a more “detailed account” of a particular theme and it is connected to a specific area of interest within data. On the contrary, the first type of analysis is focused on coding, describing and analyzing the themes connected with the entire data set. Consequently, the analysis is not deepening into theme, but it ensures a total and general description (Braun and Clarke, 2006).

Furthermore, the data analysis will be thematic rather that inductive, since the analysis is driven by the researcher’s theoretical and analytic interest in the specific research area. Instead, inductive analysis is typically not driven by the researcher’s theoretical interest in the area and it consists of a process where coding data is realized with no attempt to adapt it into a “pre-existing coding frame”. On the other hand, the theoretical thematic analysis is more a detailed analysis than a descriptive one (Braun and Clarke, 2006).

Finally, the themes will be identified in a latent rather than semantic level by developing the themes in an interpretative way and by producing a theorized analysis than description. In contrast, semantic approach is based on a more superficial level regarding themes description and the researcher remains in the participants’ statements (Braun and Clarke, 2006).

**Types of thematic analysis**

<table>
<thead>
<tr>
<th>Types of thematic analysis</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rich description of the data set</td>
<td>✗</td>
</tr>
<tr>
<td>Detailed account of one particular aspect</td>
<td>✔</td>
</tr>
<tr>
<td>Thematic analysis</td>
<td>✔</td>
</tr>
<tr>
<td>Inductive analysis</td>
<td>✗</td>
</tr>
<tr>
<td>Latent level</td>
<td>✔</td>
</tr>
<tr>
<td>Semantic level</td>
<td>✗</td>
</tr>
</tbody>
</table>

**Table 3**

3.5.1 Thematic analysis implementation

According to Braun and Clarke (2006), the analysis starts when the researcher is seeking “patterns of meaning” and an area of interest in the data. The analysis consists of a process of a continuous flow back and forth among the data set, the coded data and the analysis. Consequently, the analysis is not a tight process where it follows a specific route, from one phase to the next, but it operates dynamically, as a “recursive process” and it is developed constantly (fig. 2).
They mention six (6) phases for carrying out thematic analysis (Braun and Clarke, 2006).

**Phase 1: familiarising yourself with your data**
The first phase is “the bedrock for the rest of the analysis” (Braun and Clarke, 2006) and it includes reading and repeating reading data as far as they will become absolutely understandable (Maguire and Delahunt, 2017). At this point, the researcher is searching for meanings and patterns and is becoming familiar with all aspects of the data. In case of verbal data, coming from interviews, the researcher should transcribe them in written form in order to proceed to thematic analysis (Braun and Clarke, 2006).

**Phase 2: generating initial codes**
After the reading and familiarization with data, the researcher creates a list of ideas concerning data and the interesting area. In this phase, the codes of data are produced (Braun and Clarke, 2006). Code is a description and not an interpretation and it provides the researcher with the ability to start organizing the data into meaningful categories (Mortensen, 2018).

**Phase 3: searching for themes**
In this phase, all the data are coded and gathered together, where a list of various codes have been identified across the data sets (Braun and Clarke, 2006). The codes provide interesting information in the data, but the themes are broader and contribute to the codes and data interpretation (Mortensen, 2018). At the end of this phase, the codes are organized into broader “candidate” themes, sub-themes all extracts of data that specify the research (Maguire and Delahunt, 2017; Braun and Clarke, 2006).

**Phase 4: reviewing themes**
The phase begins with the “candidate” themes and their clarification. The themes might be divided into more and on the other hand, the codes might be moved into different themes, where they adapt better (Braun and Clarke, 2006; Maguire and Delahunt, 2017).

**Phase 5: defining and naming themes**
In this phase, the final refinement is being realized, where the researcher apprehends the meaning of each theme and identifies the themes’ ability to cover the data aspects (Maguire and Delahunt, 2017; Braun and Clarke, 2006). At this point, the researcher recognizes the theme’s story-telling, their relation with other themes and the research question, as well (Mortensen, 2018).
Phase 6: producing the report
In the last phase, all the sets of themes, the final analysis and the report writing are included. The report is based on the analysis, which must be brief but comprehensive, contextual, logical and includes interesting information regarding data “within and across themes” (Braun and Clarke, 2006).

Six (6) Phases of Thematic Analysis

3.6 Research validation (reliability and validity)
During the research method, as a researcher I had different roles. Primarily, I was the method designer and the analyst of the results. Also, I was an observer that encouraged people to participate in my research methods by supporting them and providing assistance through procedures and/or question clarifications.
Additionally, after the data collection and analysis, in qualitative research validation it is important to ensure the lack of misunderstanding and to create a common knowledge source, through validity and reliability criteria (Maxwell, 1992). Lincoln and Guba (1985) introduce the terms “consistency” of and “dependability” on data and they propose the process “inquiry audit” to measure these terms. They also argue that reliability is essential for validity, thus, the validity demonstration will ensure reliability. Moreover, according to Venkatesh, Brown and Bala (2013) validity is the level of data plausibility, credibility, and trustworthiness, which guarantees the data. Furthermore, Maxwell (1992) proposes three (3) types of validity, such as: descriptive validity, where the researcher accurately reports the data; interpretive validity, where the thoughts of participants are totally understood by the researcher; and theoretical validity, the level where the theoretical framework is compatible with data. However, Venkatesh, Brown and Bala (2013) mention three (3) broader categories of validity by taking into account Maxwell (1992) and Lincoln and Guba’s (2000) criteria for validity. These categories are: design validity, which includes descriptive validity, credibility, and transferability; analytical validity, which includes theoretical validity, dependability, consistency, and plausibility; inferential validity that includes interpretive validity and confirmability.

During research, while the results are produced, the evaluation of reliability is an important process to ensure research quality. For a researcher, systematic error analysis and/or the estimation of possible error sources is considered just as necessary to assure the trustworthiness of results (Swedish Research Council, 2011). According to the report of Swedish Research Council (2011) regarding good research practice, data evaluation should be realistic and the researcher must be explicit, critical and authentic.

In my case, during the observation and interview, I used the “member check” or “member validation”, as a research stage that ensures data correctness and validity, since the people participated in the interview and observation, they participated in the resulting validation as well. (Dewi, Gunawan and Weily, 2015). For instance, during the research, I asked the participants to confirm my apprehension regarding the findings and by the end of the process, I summarized the data collected to ensure my correct perception. I wrote a small report of the findings and I sent it to participants for any objection and/or amendment (Dewi, Gunawan and Weily, 2015).

3.7 Ethical considerations

My intention in this study is to take into consideration all the parameters in order to follow the good research practices. According to the fundamentals of research ethics, I was willing to champion the uprightness, honesty and responsibility of my research process during its design and conduct. More specifically, I followed all the guidelines, in order to avoid plagiarism and to have all the collected data available for the participants, from whom they had been collected for validation reasons. Moreover, it is clear that my research needed to be sensitive to the people that were involved and I had to ensure they all were protected from harm or wrongdoings. (The National Committee for Research Ethics in Science and Technology, 2008 ; Swedish Research Council, 2011). Therefore, there are specific demands in order to protect their participation and, thus, I followed the ‘good practices’ procedure to ensure their protection. More specifically: a) I clarified to all the participants the researches’ main idea; b) I ensured their voluntary
participation and their ability to reveal their decision voluntarily; c) I respected privacy and anonymity; d) and finally, I guaranteed the data storage in order to protect personal information (The National Committee for Research Ethics in Science and Technology, 2008).

Furthermore, according to Pimple (2002) in any research three (3) main questions concerning ethics should be taken into consideration: “Is it true?”, “Is it fair?”, “Is it wise?”. In the current case, I definitely answer yes to all three (3) questions.

- **Is it true?**

Yes it is. The research subject is based on real concerns on the academic library environment and the conclusions are based on real data.

- **Is it fair?**

Yes it is. The research is based on honesty and fair research practices. The relationship among previous researchers and subjects participating in the research are based on verity, respect and reliability by using citation of previous research publications and also, by clarifying to the participants the survey’s goal and ensuring their personal data privacy.

- **Is it wise?**

Yes it is. The research aims to investigate, publish and detect issues concerning the knowledge management in Greek academic libraries.

At this point, it is worth mentioning that during the research methods not any informed consent form used. The participants were the researcher’s colleagues and their participation agreement was oral. More specifically, the participants were informed through an email, sent by the Library Manager, about the process of the research, the goal and the methods. Afterwards, the researcher informed them orally for the accurate procedures of observation and interview and the practitioners agreed orally to participate. During the process, they were encouraged to express their honest opinion and present the actual situation of their working environment. The good working relationship among the researcher and the participants resulted in good cooperation based on honesty, trust and feeling of security. Somehow or other, Corbin Dwyer and Buckle (2009) mention that the *insider researchers* are more easily accepted by the research participants, who usually are more open and willing to share their experiences because of the sense of understanding and the belief of distinctiveness.

Nevertheless, the relation of the researcher with the members of the examined group may provoke conflict between the researcher’s personal perception, based on his/her experience, and the perception of the participants. This might affect negatively the data analysis by emphasizing on the researchers factors of a phenomenon interpretation than addressing the participant’s needs (Corbin Dwyer and Buckle, 2009). Yet it is acceptable that during a qualitative research, the data gathered and the analytic processes are characterized by subjectivity, without though, excluding the fact that even the quantitative research is affected by subjectivity. “All research is subject to researcher bias” (Morrow, 2005). In this context, researchers are trying to manage subjectivity through making it obvious to themselves and others (Morrow, 2005).

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1 “Insider research refers to when researchers conduct research with populations of which they are also members, so that the researcher shares an identity, language, and experiential base with the study participants” (Morrow, 2005).
Consequently, my attempt was to use practices in order to deal with biases and assumptions, and face the factors that affect the “fair collection and interpretation of data” (Morrow, 2005).

More specifically, I used literature to base the data analysis by understanding better the internal phenomena of library operation and interpret the various processes. In addition, I tried to approach this attempt through “reflexivity”\(^2\) by recording any experiences, reactions and awareness of any assumption or bias that arise every now and then. This practice, allowed me to examine the various understandings, which I tried to eliminate and/or to integrate into the analysis framework.

3.8 Summary

In this chapter, the qualitative approach of the research was presented, in a theoretical and practical framework. More specifically, the holistic ethnography has been adopted as an empirical tradition based on methods of observation and interviews. The research is identified as interpretive, dealing with the ‘lived experience’ of people. Moreover, the research method is a case study, that investigates a particular issue and the collection of data was carried out through observation and interviews. In addition, both the processes of observation and interviews are described, as well as the process of data analysis. More specifically, for the procedure of data analysis, the thematic analysis was used because of its flexibility and ability to organize and describe data sets extensively (Braun and Clarke, 2006). To conclude, the research validation process through validity and reliability criteria was described; and also, the ethical considerations that were taken into account to ensure that research follows good research practices.

\(^2\) “Self-awareness and agency within that self-awareness” (Rennie, 2004 cited in Morrow, 2005).
4. Empirical Findings

In this chapter, the empirical findings, which arose from the thematic analysis will be presented. The data derives from the observation and interviews conducted during the research.

As mentioned on chapter 3, thematic analysis was used for analyzing the data collected and for providing information that will be used to answer the research questions. In the thematic analysis framework, the empirical findings were organized according to themes and codes. More specifically, the themes were six (6), including the library knowledge, the methods for knowledge sharing, the people that participate in knowledge management process, the problems the library’s changing role, the problems arising and the solutions. All themes are divided in codes, which provide a detailed context (table 1, Appendix 2).

After the first phases of thematic analysis, I proceeded to the revision of the themes. The results which emerged are presented in table 2 (Appendix 2), where I reduced the codes to four (4) basic themes divided into more sub-themes, which are “Library knowledge”, “Knowledge sharing”, “Knowledge management weaknesses” and “Future challenges”. These themes and their sub-themes will be analyzed below.

4.1 Library knowledge

During the observation and interviews, the knowledge in the library is defined as explicit and tacit or “local” knowledge (Randall and Rouncefield, 2006). More specifically, the library’s explicit knowledge includes various documents in print and electronic format, such as guides, certifications, policies, e-mails archive, reports, invoices, brochures, system archives and statistics reports. On the other hand, the tacit or local knowledge is formed by the employees’ experience gained through projects, personal education (e.g. MSc), workshops, studying bibliographies, participating in conferences, collaboration with other libraries, or searching and studying international libraries’ policies.

❖ Explicit knowledge

During observation, the production of knowledge through documents was revealed. The need to record knowledge by using various documents led to a number of print material production. For instance, the Department keeps print and electronic documents that concern both employees and users (table 4).

<table>
<thead>
<tr>
<th>Offices’ recorded material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head of Department</td>
</tr>
<tr>
<td>Reference and circulation desk policy</td>
</tr>
<tr>
<td>Loan regulation</td>
</tr>
<tr>
<td>ILL regulation</td>
</tr>
<tr>
<td>Shifts schedule</td>
</tr>
</tbody>
</table>
Table 4

- Tacit Knowledge

As described above, tacit knowledge has been obtained by employees through their long experience in library services and their personal requirements, to develop further their skills and enrich both their experience and knowledge.

During the interview, the participants were asked their opinion regarding the services provided and the success level. All of the participants mentioned that according to their personal estimation, the Department provides successful services. The sub-question focused on the clarification of this estimation and the reasons of forming their opinion. At this point, the majority of participants mentioned their intention to be updated on new trends in Library Science. This intention led them to develop further their studies by attending Master Programs, read scientific literature, participate in various librarian seminars and conferences, collaborate with other libraries and colleagues, and consult other libraries – mostly foreign – policies.

- Question: Does your Office successfully provide the services?
  a) What contributes to the success?
Some years ago, I attended a Master Program in Library Science and I had a course in Information Literacy. During the course, I had the opportunity to study relevant bibliography and also, participate in a workshop. Consequently, I realized the importance of IL in libraries and I enjoyed the idea of applying it in the library where I worked. In this context, I decided to conduct a graduate thesis including IL as part of my thesis to obtain as much knowledge as possible. After completing my studies, and when I started designing the service in the library, I decided that I had much to do to enrich my project idea. Therefore, I conducted a research in other Greek academic libraries, I studied many bibliographical resources and I used information from foreign libraries.

- Question: Are your users satisfied with the services you provide?
  a) How do you understand their satisfaction level?

Answer: Well, we have the opportunity to work closely with users and understand their reactions immediately. Most of the users show their satisfaction by expressing their feelings and confessing their contentment of the services they receive from the library and the Department. Also, other than that, we conducted a research, supported by the Quality Assurance Unit (MODIP, which published a statistic report mentioning the high levels of users’ gratification regarding library operation and its services.

At this point, it is obvious that, where experience and personal skill informed practice, the Department staff managed to transform it into explicit by recording it into documents, as mentioned above, based on their knowledge. For instance, the reference policy is based on the employees’ experience, their observation regarding the Department’s daily operation, their personal research in other library policies and their communication with their colleagues, who highlight daily problems, remarks and various requirements.

Nevertheless, through the observation, I realized that there is still knowledge that remains unrecorded, yet stored in the employees’ mind. To be precise, many tasks that are accomplished daily have no workflows recorded and consequently, every employee is free to act more or less as they see fit. For instance, the greater part of the work of the ILL office and the daily tasks are not recorded as a workflow but are based on the employees’ experience, acquired through daily engagement.

4.2 Knowledge sharing

After defining the knowledge held by the Department, the next section is about the methods and tools, which contribute to knowledge sharing between the people participating in the daily operation.

- People

The Department of Information and Users’ Services is consisted of six (6) employees, who have undertaken different tasks (4 Offices). However, people working in different departments contribute to various services according to their experience and availability. More specifically, two (2) employees from the “Department of Cataloguing and Collection Development” serve the new developing service entitled “Service of events organization and social media management”. In addition, employees from all the Departments participate in the library tours, the IL courses and the reference and circulation desk. Consequently, the number of people...
collaborating with the department varies depending on their availability, and typically consists of a number from six (6) to 23 employees approximately.

Another reference point is the participation of the Library as a member in the Hellenic Academic Libraries Link (Heal-Link). This fact led to the collaboration between Library and Heal-Link for projects’ accomplishment. For instance, ILSaS is a project that concerns the majority of Greek academic Libraries, within which they obtained both a common integrated library system and IRIS, a system for supporting the ILL service. In this context, the Department cooperates with Heal-Link staff, who are responsible for the project’s implementation and the technical support of the various systems.

The Library is an essential part of the NTUA academic community and the Department of Information and Users’ Services constitutes the direct link between the Library and the Community. The Department services address the needs of users, such as the academic staff, the students, the administrative staff and the external users. In addition, the Department has almost daily cooperation with other Greek libraries and Institutions and some foreign libraries (e.g. the British Library), as well.

❖ Methods

The importance of knowledge sharing lies in the adoption of appropriate methods and tools that ensure knowledge transference among the parties concerned. Mostly, the explicit knowledge is shared through guides and regulations that are recorded, as mentioned above. Workshops, personal training, training seminars, personal collaboration, brainstorming, consultation and tests are the methods the Department uses for transferring knowledge to participants in the different services.

➢ Question: What affects how the service operates?

Answer 1: I had a very good cooperation with my colleagues, who explained to me how the Office works; they gave me all the available material to read; they spent time for my personal training; they applied their knowledge in real time practice, where I was an observer. In this case, I had the opportunity to understand how the Office works and how my colleagues deal with day-to-day activities in order for me put everything I learned into practice.

Answer 2: My intention is to achieve the cooperation among the people who participate in the service implementation. Years ago, when I first designed the service I used methods based on the theoretical approach and I applied them as a teaching procedure divided in separate lessons. In these lessons, I used my previous experience and scientific bibliography to share my knowledge with the participants. Then, after completing the course, I provided the participants with a test to check the knowledge they gained. Now, my intention is to apply more practical methods that include workshops, where the knowledge sharing between the participants will be achieved. I invest in collaboration through brainstorming and practical applications, such as the real presentation of an IL course by the participants. In this case, I expect essential results from the constructive comments of the participants, which are based on their knowledge, experience and comprehension to achieve service improvement.

❖ Tools

The last section has to do with the tools that are used to ensure knowledge transferring into the Department and the external parties among the employees. More specifically, the tools the
employees prefer to use are mostly communication tools, such as e-mails, phone calls and personal contact. However, some employees prefer social media (e.g. Facebook) as tools for more direct communication. The library website is also a tool for uploading material, accessible by both the employees and external users. Moreover, a blog and a service integrated in the new library website was used for the IL to provide access both to practitioners and users, as well.

Regarding reference and circulation desk, where the majority of library staff participates, the knowledge is shared through stored material on the PCs and notes that have been posted at various points on the wall desk. Through the observation, the phenomenon of post-it notes with view to inform staff about something, which arose during the day, becomes present. For instance, employees change during the day, as there are two (2) shifts, and the notes serve for keeping update the people coming later during the day.

4.3 Knowledge management weaknesses

Through the observation conducted in the Department of Information and Users’ Services and additionally, from the interviews with the representatives from the different Offices, some KM weaknesses arose. According to the analysis, they are divided into those which are caused by the employees and those caused by systems and resources.

❖ Employees

Mostly during interviews, in some cases regarding new services development, the participation of employees in KM process was mentioned as problematic. The inability to recognize specific situations and act/react respectively is one of the problems detected in the library operation. In the same context, various weaknesses – concerning employees’ working methods – are expressed, such as lack of knowledge and experience, lack of communication, lack of motivation to participate actively in knowledge sharing are leading to essential information and knowledge of various projects and services being missed. Moreover, the employees’ different perception and their weakness to apprehending new knowledge are some of the problems the library face in its effort to manage knowledge and consequently, to ameliorate its operation management. On the other hand, in some cases, the lack of specialized staff to assist and support special services is mentioned as a complicating factor, such that employees with little experience have to contribute with any means they can in the various services development.

❖ Question: Do you identify any weaknesses? If yes, please specify.

Answer 1: Yes, I suppose that my colleagues’ lack of knowledge and experience is some of the weaknesses. In addition, my experience showed that some of them reacted and finally left the project, because of losing their interest or having a different perception regarding the project procedure and approach. On the other hand, I identify as weakness the lack of an employee, who have the specialized knowledge to support technically the project.

Answer 2: Sometimes, I realize that we may have difficulties in understanding each other, influenced by external factors or lack of knowledge and perception. I also think that Reference service is a teamwork and in many cases, the information and flexibility are missing. The problem that part of the staff ignores essential issues regarding library operation makes me think that it is due to inability to receive information, sometimes, indifference and complacency in others’ knowledge. Therefore, I will not conceal my concern of expecting various reactions when some procedures change in the near future.
The problematic area in knowledge management is also observed in the systems and resources the library possesses. Both through observation and interviews, weaknesses were revealed that have to do with problematic systems and insufficient technical support, such as the ILS and the ILL system. Furthermore, in some cases, insufficient guides have been observed that allow employees to act at will with absence of guides with well-designed structure. For instance, there is not a specific guide for the guided tours into the library and also, the participant employees are not trained. Finally, some resources are identified as not well-organized, and that leads to problems in detecting the appropriate material.

Question: Do you identify any weaknesses? If yes, please specify

Answer: Unfortunately, the system has been designed by an administrator, who is not always available to support us. Thus, with no technical support, and with various system bugs, we try to handle daily activities through various alternatives, having the risk to lose information. On the other hand, we face problems concerning detecting appropriate material into the library. In this case, the deficiency of well-organized resources makes us waste time searching the material and sometimes losing our credibility to our partners.

4.4 Future challenges

The last research findings are connected to the new challenges as mentioned by the participants during the methods’ implementation. The findings are divided into three (3) specific categories that concern: a) the role that the library is called on to play in the near future; b) the employees’ role as formed by the new library’s conditions; c) and finally, the adoption of a knowledge management strategy that will contribute to the library’s goals achievement.

Library’s role

Through observation and interviews, both the participants and I, the researcher, recognized the new challenges of the digital era. The material shared between the library staff and users is changing its form from print to digital. Therefore, new challenges for material management appear and they create an imperative need for management tools and methods. For instance, in the reference and circulation desk there is a file with regulations and guides in print format. However, the same material is also stored on the PCs and some of them are published on the library’s website. During the observation, I observed that none of the employees consulted the print material. Instead, they visited the library website and the files on the PC.

As observed, the library has realized its educational role in contributing to teaching users how to use research tools and how to detect the appropriate information in the ‘chaos’ of web information. On the other hand, the library’s role is being developed further by creating users who are informed and updated. For instance, the IL courses aim to inform users and make them understand the power of knowledge through information which is updated, well organized and structured, and fairly used (against plagiarism).

The last two (2) years, the library recognized its role in supporting the University community. Getting out of its basic and strict role of providing information resources, the library has started listening to its users and their needs and also, has observed the European trend in a more user-
friendly approach. Consequently, it is still in the process of developing services to attract more users and promote its work, through social media pages and event organizations.

- Question: What do you think must change and/or develop further?

Answer: *I think that the library needs to redefine its role that is multidimensional and additionally, to change its strategy. Therefore, it is necessary for the library to create a new strategy based on new challenges. I consider that it must begin from the organizational structure that will allow it to redefine its goals and then, set new methods to achieve them.*

- Employees’ role

Regarding employees’ role, it must be determined through communication and collaboration, and information improvement. Moreover, some techniques for enhancing experience and knowledge sharing must be acquired. The training and in-practice learning, as well as knowledge acquisition through models and international standards studying will provide development of the employees’ skills and increase their self-confidence. On the other hand, the new strategic culture, as mentioned above, will determine the employees’ role and will ensure their participation productively, will increase their availability and focus on specific tasks and services.

- Question: What are the challenges you are calling to face?

Answer 1: *I strongly believe that communication through expression of concerns and better information regarding colleagues tasks are the most important challenges we are calling to develop and improve. In my opinion, the internal workshops could probably improve and enhance the above-mentioned elements. Furthermore, I insist on the collaboration with other Departments, which must involve actively in reference services.*

Answer 2: *I think that other colleagues must participate in the same procedure by following a common policy regarding services provision to users. I suppose that the majority of employees are willing to contribute and provide services of best quality, but they miss basic information. The dynamic of communication and collaboration would cover this gap and the library goal to attract more users, if they have not been achieved, would definitely be meliorated.*

- Knowledge Management role

By discussing with the participants about KM, some essential challenges arose. For instance, the establishment of a KM system was a proposal for handling and improving issues that the library and the Department face daily. Additionally, some problems the KM policy can manage are: a) resource management, including the direct updating of guides, policies and various documents by making them easily accessible; b) provision of a well-organized archive; c) provision of an explicit definition of employees tasks (who knows what and how to contact them); d) recording and use of prior knowledge; e) and finally, elimination of the distance between some colleagues.

As mentioned above, during the observation at reference and circulation desk, many notes on the wall or post-it notes are used to inform employees about various issues arising during shifts. Discussing this phenomenon with the participants, they concluded that a KM method could collect all this information, where stored and updated will be accessible and the risk of missing any of this will be decreased.

- Question: What are the KM challenges?
Answer: A KM system would contribute to organizing all the knowledge produced in the Department and the library, as well. Certainly, we need something to organize our knowledge. This is something we face daily and we recognize our weakness to collect and store all the knowledge and information. I believe that if we followed a KM process, it would solve some of our problems regarding communication, sharing, and mostly, problem recognition and problem solution.

4.5 Summary

In this chapter, the findings collected during the implementation methods of observation and interviews were presented. Subsequently, the thematic analysis (Braun and Clarke, 2006) was used by dividing data into four (4) themes, which are “Library knowledge”, “Knowledge sharing”, “Knowledge management weaknesses” and “Future challenges”. In the first theme, the knowledge in library as explicit and tacit was defined. The explicit includes guides, policies and other documents, while the tacit is determined by employees’ experience and knowledge acquired through personal education and skills development. In the second theme, knowledge sharing is identified by approaching people, involving in the process, methods and tools. The third theme focused on KM weaknesses, divided into people, and systems and resources. Finally, in the last theme future challenges are identified by being categorized in the library’s role, the employees’ role and KM challenges. During the empirical findings presentation, the actual employees’ answers from the interviews were included. However, their names are not revealed, since their anonymity must have been ensured, following the ethical considerations, mentioned in chapter 2.
5. Discussion and Analysis

In this chapter, the results of data analysis and empirical findings will be presented and analyzed. The discussion will be based on the two (2) research questions mentioned in chapter 1, through the analysis of the themes arose by thematic analysis (Braun and Clarke, 2006) in chapter 4, in conjunction with the scientific literature (table 5).

Research questions and empirical findings

<table>
<thead>
<tr>
<th>RQ1</th>
<th>What are the academic libraries perspectives in their new role as digital learning centers, with focus on knowledge, knowledge management and knowledge sharing?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>Explicit Tacit</td>
</tr>
<tr>
<td>Knowledge sharing</td>
<td>People Methods Tools</td>
</tr>
<tr>
<td>KM weaknesses</td>
<td>Employees Systems and Resources</td>
</tr>
<tr>
<td>RQ2</td>
<td>What are the anticipated future challenges of KM practices in academic libraries’ role?</td>
</tr>
<tr>
<td>Future challenges</td>
<td>Library’s role Employees’ role KM role</td>
</tr>
</tbody>
</table>

Table 5

The most essential element for effective KM is the identification of the existing knowledge in the organization, and assessing what and where knowledge assets contribute to the successful performance of organizations’ various processes (Wiig, de Hoog and van der Spek, 1997). Actually, knowledge assets refer to the integrated organizational skills and expertise that make an organization more competitive (Chung and Yoon, 2015). In this study, we based the work on Nonaka and von Krogh’s (2009) organizational knowledge creation theory that recognizes explicit and tacit knowledge in a continuum flow.

In the library environment, KM contributes, in principle, to library operational effectiveness by improving access to information resources and promoting service innovation through methods and tools that facilitate knowledge creation, sharing and dissemination across the library (Koloniari and Fassoulis, 2016). However, knowledge sharing needs organizational support and personal willingness. On the one hand, missing organizational policies and procedures – which may organize knowledge through forms of organized knowledge bases and experiences of other librarians and experts – lead to individuals-employees’ inability to get access to both tacit and explicit knowledge that remain in other people’s minds. On the other hand, lack of communication and collaboration channels between employees decrease the efficiency and effectiveness of communication and knowledge sharing activities. In addition, lack of ICT impedes the development of KM policies and strategies and knowledge-sharing capabilities of library staff (Parirokh, Daneshgar and Fattahi, 2008).
In the new knowledge economy and digital age, the academic library’s role is refined as learning and knowledge centers. They need to develop further their services and strategies for providing access to electronic and digital resources in conjunction with their mission and goals, linked respectively with those of their patron institutions (Aghoghovwia, 2014). At this point, academic libraries are being pushed in ICT use for enhancing the rapid collection, storage, organization and sharing of information and knowledge resources. Moreover, ICT eliminates communication barriers and enhances open communication and social collaboration (Koloniari, et al., 2015).

In this framework, librarians’ role is being expanded from the limited activities of identification, acquisition and organization of explicit knowledge or information to managing the tacit knowledge and expertise of library’s members (Roknuzzaman and Umemoto, 2009). To conclude, KM role is identified by its ability to elicit organizational memory by capturing the organizational knowledge and preserve it for contingent future use in order to ensure the improvement of library operation and consequently, better services provision (Gandhi, 2004).

The following research questions are critical to understanding the KM implementation in NTUA Central Library and the Department of Information and Users’ Services. However, it must be taken under consideration that this research has a clear peculiarity with respect to the objective data analysis, as arise from the relation of the researcher with the research object. In qualitative research is expected by the researcher to affect in a way the process, though, the question that arises does not concern the denying of the “human touch” but the adoption of a framework for the subjectivity assessment. More specifically, the objectivity is ensured when the researcher’s knowledge is identified as partial and established, when his/her influence is evaluated and shared and finally, his/her subjectivity is not ignored (Malterud, 2001).

In this case, as member of the library staff, it was expected by my side that I could not prevent my personal effect during the research. Thus, I invested to objectivity through my attempt to discuss through sharing with the participants my personal point of view, in order to evaluate its level of correctness. On the other hand, the data interpretation, as an integral part of qualitative research, lead to knowledge based on data, empirical material and theoretical frameworks (Malterud, 2001). In other words, my intention was to retain the research objectivity through:

- Identification of personal influence of research and subjectivity, but limited through assessment and sharing with the participants
- Data interpretation
  - Empirical substance
  - Theoretical frameworks, on which the data analysis and interpretation was based.

5.1 Research question 1
What are the academic libraries perspectives in their new role as digital learning centers, with focus on knowledge, knowledge management and knowledge sharing?

In the first research question, the knowledge, knowledge sharing and knowledge weaknesses will be analyzed in practice, as the core elements that determine the new role of NTUA Central Library as a modern knowledge center. Bellow, three (3) specific sub-questions will define the answer for the basic research question.
5.1.1 What is the Department’s knowledge?

Initially, through the research, I tried to identify knowledge as defined by the Department of Information and Users’ Services. My intention is to record this knowledge by categorizing it and perceiving its specific features, in order for me to apprehend the methods that the Department uses to manage it, the problematic areas and finally, to conclude to better solutions. In this context, I recognized the three (3) types of knowledge, as introduced by De Long and Fahey (2000), such as human, social and structured knowledge that may include both explicit and tacit knowledge. As explicit knowledge is defined the “formal and easy to communicate to others” and includes policies, rules, specifications and formulas, while tacit knowledge is the personal knowledge included in human minds and which is difficult to formalize and to communicate (Kumar, 2010).

In the current case, the Department produces daily knowledge and records it through the production of various documents (guides, policies, reports, etc.). This explicit knowledge is connected, to some degree, to the tacit knowledge acquired from the employees through both their personal efforts to develop their skills and their personal experiences. The employees’ tacit knowledge is formed mostly from their tacit skills as presented in figure 4. The tacit knowledge of librarians working in reference services “represents a substantial resource” (Slater, 2008). Slater (2008) mentions the hours spent by librarians answering difficult questions during their life work and their inability to respond always to users’ requirements. “No single librarian has total recall of the entirety of this pool of knowledge” (Slater, 2008). In addition, Randall and Rouncefield (2006) give their own aspect regarding tacit knowledge and they characterize it as “local knowledge” connected with the “knowledge of local aspects” of an organization and its environment, and the importance of personnel knowledge and skills. The point here is that, whether or not knowledge is explicit or tacit, it is not equally available to all members of an organization at the same time, both for technical and cultural reasons.

![Tacit knowledge](image)

Nonaka and von Krogh (2009) claim that the conversion of tacit knowledge to explicit is an extremely complicated process. According to Nonaka and Takeuchi (1995), tacit knowledge conversion to the explicit is called the “externalization process” and they define it as “a quintessential knowledge creation process in that tacit knowledge becomes explicit, taking the
shapes of metaphors, analogies, concepts, hypotheses, or models”. In this case, the knowledge can be written down, taped and become tangible (Dalkir, 2005). The importance lies in the ability of extracting knowledge and as soon as it is externalized, making it tangible and permanent. Then, it can be shared easily and provide advantage to the organization (Dalkir, 2005).

Regarding the Department’s tactic, it seems that it has achieved, up to a point, the transfer of employees’ tacit skills by recording knowledge, communicating it and sharing it both to their colleagues and external collaborators as well as to their users, through practices, such as written guides and policies (fig. 5).

\textit{Tacit to explicit knowledge}

![Figure 5](image)

Another process identified in the Department that influences its knowledge management processes is “combination”, which concerns the conversion of explicit knowledge to explicit knowledge (Nonaka and Takeuchi, 1995). In this case, new knowledge is not created; hence, it is a combination of either already existing knowledge or explicit knowledge. For instance, a computer-based tutorial may arose by the combination of concepts and/or the conversion of explicit knowledge that leads to a new form of teaching or transferring new content (Dalkir, 2005).

Practically, the Information Literacy service applied in the Department of Information and Users’ Services arose through the explicit knowledge developed during the service design and evolved in an integrated web-based teaching service addressed to librarians and library users as well.

5.1.2 How is the knowledge shared?

After identifying knowledge in the Department of Information and Users’ Services, the next question concerns knowledge transference among different categories of stakeholders. Onifade (2015) mentions that knowledge is a “distinct commodity” of which value is enhanced by knowledge sharing among people. He also points out that libraries will have the opportunity to provide better quality services to their user when their employees share knowledge among them
In the same context, Parirokh and Fattahi (2005) claim that knowledge sharing in academic libraries can contribute to organizational learning improvement. An interesting example is given by Anna and Puspitasari (2013), who likened knowledge sharing to a cake. They focus on the importance of someone bringing a cake and leaving with a bigger one, rather than cut it in little pieces and share them to people. Consequently, knowledge sharing is characterized as a teamwork for achieving a common goal with the best results (Onifade, 2015).

People

Proceeding to our study through the data analysis, five (5) categories of people were recognized, who share knowledge between themselves and across the Department. Below, are presented the specific categories (fig. 6):

- Department staff
- Other library’s Departments
- External collaborators (e.g. system librarian, computer scientist)
- Users from university community
- Other libraries (Greek and foreign)

Knowledge sharing participants

Methods

Based on Nonaka and Takeuchi’s (1995) “Knowledge Spiral Model”, four (4) modes of knowledge conversion are identified. Firstly, we identify the two (2) modes of “externalization process” and “combination” mentioned above in Research Question 1. In this particular research question, the other two (2) modes are used as process of knowledge conversion and
sharing. Therefore, “socialization” consists of the process of converting tacit knowledge to tacit knowledge and enables the knowledge sharing through face-to-face and social interactions. Mostly, it includes methods for achieving mutual perception and understanding, such as brainstorming, teaching and guiding methods (Dalkir, 2005). Socialization is an easy process to transfer knowledge in a more flexible environment, where sharing ideas and experiences is not being written, but it remains in participants minds “through observation, imitation, and practice” (Dalkir, 2005).

The fourth and last mode Nonaka and Takeuchi (1995) mention for knowledge conversion is “internalization”, which allows the conversion of explicit knowledge to tacit. Internalization is strictly connected with “learning by doing” (Dalkir, 2005). In fact, it recommends the use of knowledge, experiences, best policies and lessons learned – through the conversion processes of socialization, externalization, and combination – to embed and become individual’s tacit knowledge (Dalkir, 2005).

Regarding the Department of Information and Users’ Services’ methods for sharing knowledge among its employees, we see that the socialization and internalization processes are adopted. Teaching and guided methods are used for achieving transferring tacit knowledge, such as workshops, personal training, training seminars, brainstorming and personal collaboration through personal contact. During the interviews, the opinion that people have knowledge and they tend to keep it internally as a “personal thesaurus” was mentioned. On the basis of this understanding, the Department handles this phenomenon through formal and informal meetings by urging participants to express their opinion and share their knowledge and experience. In this context, the consultation and test methods, as well as guides and policies’ sharing enable participants to get in touch with previous recorded knowledge, apprehend it and develop it by embedding a process of self-learning.

In the same framework, the Department develops similar methods for sharing knowledge with external collaborators. Meetings with employees from other Departments, as well as external partners, such as system librarians, computer scientists and other libraries, are promoted for transferring knowledge. Personal meetings, various workshops, training seminars and brainstorming meetings are selected for mutual exchanging information and capturing knowledge, in order for the Department to integrate knowledge in its operation and improve its services.

Teaching and guiding methods are also used for transferring knowledge between users who form University community, as are scheduled or non-scheduled seminars and meetings. The Department aims both to promote and guide users regarding the library services and also to get feedback from users for improving and adjusting its services for covering their needs. For instance, during the IL service design, the employees used feedback, coming from meetings with academic courses supervisors, as well as the results from students written tests, after IL courses completion, which led to service’s redesign in some particular parts.

It is obvious that the Department of Information and Users’ Services’ role is bidirectional. It can be understood in terms of a cycle of knowledge. On the one hand, it constitutes the knowledge provider, since it shares its knowledge and provides services through its integrated and structured information resources. On the other hand, it is the receiver, obtaining knowledge from external collaborators; it “listens” to its users’ needs, captures their knowledge and uses it for ameliorating and providing back to them more developed knowledge and services (fig. 7).
Tools

For presenting the tools and techniques used by the Department of Information and Users’ Services for sharing knowledge, I used the categorization of Rollet (2003) as presented in Dalkir’s book (2005). Rollet (2003) identifies two (2) categories of knowledge sharing and dissemination technologies, such as communication and collaboration technologies. However, Dalkir (2005) claims that it is difficult to distinguish those, since communication and collaboration are intertwined. It is observed that frequently, employees use their tools simultaneously for covering both the needs of communication and collaboration without understanding this particular distinction.

As communication tools, e-mails, telephones, fax, videoconferencing, chat rooms, and text messaging (SMS) are commonplace. The communication can be dyadic, when occurs between two (2) individuals or group, when more than two (2) participate in the process (Dalkir, 2005). For instance, the telephone call is mostly dyadic communication, while e-mails and videoconferencing can be both dyadic and group type. Another distinction can be the synchronous and asynchronous communication that concerns the real-time and the communication without the use of an external clock signal, respectively. Videoconferencing, chat rooms, and telephone calls are synchronous type of communication, while SMS, e-mails and fax are asynchronous (Dalkir, 2005).

Regularly, communication technologies are integrated into collaboration technologies, which are designed to support work group through communication, cooperation, coordination, solving problems and negotiation (Dalkir, 2005). At this point, another distinction is mentioned that concerns the work group collaboration and it includes the groups that work together at the same time or different times and the groups that work together in the same place or different places. In this context, e-mail is a work group or groupware application that besides the communication support, it enhances collaboration through forwarding messages, mailing groups’ creation and files attachment. It operates as a synchronous or asynchronous tool that supports both the face-to-face and distance collaboration, as well. (Dalkir, 2005).
In our case, the Department uses communication and collaboration technologies that include telephone calls, SMS, e-mails, fax, skype for videoconferencing, and the social media – mostly Facebook. The Department's communication and collaboration processes include both real-time and non-real-time features, as well as face-to-face and distance characteristics. Dalkir (2005) describes workflow systems for enhancing the collaboration in an organization through document routing. In the Department, this process is realized via email, where the employee sends a report for approval to the supervisor, the supervisor proceeds to corrections and then he/she send it back to the employee or he/she forwards the approved document to the library staff. However, since the Department’s employees work together at the same place/office, it is observed that in some cases, the workflow for sharing knowledge is achieved through personal contact and files are sometimes exchanged in print format, ignoring the relevant technologies of communication and collaboration.

The use of a library’s website for uploading mostly guides that address library users – but may be used by the library staff as well – can be characterized as a networking technology. Moreover, on the same website, the integrated service of IL is included by providing access to both employees and users as well, for informing about IL and for providing processes that allow users to learn and test their knowledge, as well. Certainly, it does not cover the description of a knowledge portal or knowledge repository (Dalkir, 2005); therefore, it is a web-based shared workspace that allows, on one side, the Department to store its knowledge and provide it simply codified, and on the other, visitors to capture and apprehend this knowledge.

According to Dalkir’s (2005) classification, development of blogs is included in the content creation phase. However, the Department used this tool to support the IL service, in order to upload updated information, publish it and share it with the library staff and the users as well. Besides, many libraries and librarians use blogs to publish information and supporting communication with their users and colleagues as well (Dalkir, 2005). Nevertheless, in the case of the Department, the development of a blog to share knowledge did not yield the expected outcomes and was abandoned as a dysfunctional tool. Its nature as an open diary, where the information is published chronologically (Dalkir, 2005) and its particular potential for collection classification went unrealized, and revealed significant weaknesses in searching, detection and retrieval of sources.

5.1.3 What are the identified problems in managing knowledge?

Proceeding to the third question, my intention is to identify what the problems are that the Department of Information and Users’ Services faces daily in managing the knowledge acquired. As mentioned in the previous chapter of “Empirical Findings”, I divided the problems between employees, and systems and resources weaknesses. However, frequently, people interact with systems; hence, this interaction influences the KM practices. Yaacob, Jamaluddin and Jusoff (2010) claim that ICT have created a knowledge society the impact of which is evident everywhere, especially in developing economies. In this context, the librarians’ role contributes to filling the digital gap – which is enhanced through the information and knowledge expansion in quantity and accessibility – by sharing and referring to knowledge (Yaacob, Jamaluddin and Jusoff, 2010).

Every organization creates and receives information and records it during its daily operation. The importance of this transaction is defined by the organization’s identification of information
and knowledge assets, their storing and recording, sharing and maintaining. In this framework, the knowledge must be shared among employees through their collaboration for developing a common knowledge management system (Yaacob, Jamaluddin and Jusoff, 2010). Gandhi (2004) mentions that a reference librarian possesses knowledge regarding processes and resources which are accessible only if he/she decides to share them with his/her colleagues through formal and informal methods.

- Employees
  - Reference services

In the case of the Department of Information and Users’ Services, the weaknesses identified are mostly connected with lack of knowledge and experience. As mentioned during the interviews, “not everyone knows what to do”. This phenomenon appears mostly at the reference and circulation desk, where different employees, with different knowledge and expertise skills are involved. This weakness lies on some workers’ inability to get the appropriate information, embed it and transform it to knowledge and experience. It can be thought of as a problem of “organizational learning” (Easterby-Smith, Crossan and Nicolini, 2000). The idea of the “learning organization” emerged from systems thinking, represented by theorists such as Peter Senge (1991) and emphasized the ‘five disciplines’, including systems thinking, personal mastery, mental models, shared vision, and team learning. The library, despite its overall effectiveness, is not yet the complete ‘learning organization’. Many employees have a different perception of knowledge and its dissemination, which reveals weaknesses in apprehending new knowledge. Finally, lack of communication between employees and lack of willingness to share or receive knowledge were mentioned by interviewees as relevant.

Regarding the concept of organizational learning, it started from the point of view that when learning occurs, knowledge is created through conversation and interaction between people by following the process of education and experience (Easterby-Smith, Crossan and Nicolini, 2000; Wang and Ahmed, 2003). However, the goal of a learning organization is to focus on evaluating, managing and enhancing the individual development of its employees (Wang and Ahmed, 2003). As mentioned above the NTUA Central Library has not been transformed yet into a learning organization. In an ideal learning organization, dialogue between groups or individuals produces organizational learning and enhances the attempt of identifying better ways of understanding, learning and coexisting with each other. Moreover, dialogue is not limited in understanding and/or producing collective action, but it promotes learning that arises by the different perspectives of the participants (Easterby-Smith, Crossan and Nicolini, 2000).

Nevertheless, the Department of Information and Users’ Services has not reached yet these results. For instance, regarding the reference services, the Department faces the challenge of cooperating with employees with different organizational backgrounds and different perceptions of service provision. In this framework, the cooperation is characterized by the employees’ discreet identity, which allows them to share different perspectives, though, they remain isolated or non-communicating. Instead, the learning process may allow them to change their relationships by promoting involvement in power relations. (Easterby-Smith, Crossan and Nicolini, 2000).

According to Gandhi (2004), reference librarians are the experts in their subject domains and are willing to share their knowledge. In the case of the Department, this role is not identified; all librarians, actually, provide services at the reference desk. Sometimes, the service provision
is vague and the librarians operate at will. However, according to the participants in our research, the development of a reference policy will improve this situation and clarify some vague points.

Gandhi (2004) mentions the necessary elements for a library to develop KM initiatives for reference services. More specifically, he identifies the following steps:

- Clarify the goal and mission of a library when providing reference services
- Identify essential and core knowledge for providing or improving services
- Identify the experts (who has the appropriate knowledge and if nobody has it, how to acquire it)
- Set processes for knowledge use, in order to improve library’s goal and mission
- Set specific processes for reference librarians to:
  - Identify available knowledge
  - Identify the experts (those who have the special knowledge)
  - Identify how to use knowledge under specific conditions
  - Identify how to use it through capturing as a knowledge artifact
  - Make it available and accessible to others
  - Redefine it for future processes

Consequently, in our particular case, the NTUA Library needs to redefine its organizational structure by implementing a KM strategy and build new schemes with particular roles and tasks that will commit the participants to follow compulsory procedures. In this framework, the weaknesses mentioned above, such as lack of knowledge, different perception and weakness in apprehending new knowledge will be eliminated. This expectation is enhanced by the perception that knowledge and knowledge processes are connected with the library’s mission, function and strategy. In this context, a coherent KM strategy will allow both the library and the Department of Information and Users’ Services to deepen its knowledge structures and ensure that the organization instils a learning culture. In addition, the (reference) librarians will play a new role of managing “corporate memory” by becoming real “knowledge workers”. They will evolve their role from that of organizing information for providing access to that of possessing knowledge as core element for providing services through highly developed skills and expertise (Gandhi (2004).

> Communication and collaboration

Other weaknesses that were identified during the research were problematic communication and lack of motivation among employees. There are many cases, where employees have knowledge gaps that derive from the weakness of communicating and knowledge sharing in reality. I refer again to the missing KM strategy in the Department and therefore, in the library. An organized strategy would create a system, not necessarily a KM software – it is commonly known that Greek academic libraries face financial issues – that would encourage collaboration and communication, and provide an archive of communal knowledge (Slater, 2008) and promote the learning organization. However, the lack of IT personnel – there is only one computer scientist, who is charged with many tasks – makes the process difficult. The outdated methods of communication, such as e-mail, phone calls, fax and SMS cannot support the development of communication and collaboration processes.

Nevertheless, apart the KM system missing, the employees’ reluctance to communicate, collaborate and share knowledge is mentioned. We referred to lack of motivation. Gandhi
(2004) suggests that people react often negatively in sharing knowledge with their colleagues by influencing their communication and collaboration processes. He gives some explanations regarding their reluctance to sharing knowledge (Gandhi, 2004), which also appears in the Department of Information and Users’ Services:

- Don’t have time
- Participate in projects with low interest regarding their skills
- Afraid of competition
- Have low self-esteem for contributing to a team project
- Don’t trust their colleagues
- Afraid of their contribution impact
- Take information from managers with whom collaborates

Yaacob, et al. (2011) claim that staff valuable knowledge and experience must be valued and shared. They suggest that libraries should promote and encourage their employees for sharing knowledge and expertise. They also mention the libraries’ need to provide employees with motivation for intensifying their willingness to share knowledge and expertise. (Yaacob, et al., 2011). In this context, the NTUA Library should acknowledge the employees who share their knowledge and expertise by offering them specific rewards and incentives. According to Jain (2013), rewards operate as good motivators for employees to build organizational trust among their colleagues. Based on previous researches, Jain (2013) claims that the more the employees receive rewards, the more they trust the organization and they are willing to collaborate under a KM strategy. Besides, according to Easterby-Smith, Crossan and Nicolini (2000), in the context of organizational learning, the exchange of knowledge and expertise is depended on “social and affective relations”. Therefore, trust, social assurance, reliability and personal interests affect the level of knowledge and expertise sharing. In NTUA Library, the training incentives for supporting the employees’ educational progress, such as approval of participation in seminars and conferences, and post-training seminars (e.g. Erasmus) could be essential motivators for urging staff to share their knowledge and expertise. On the other hand, for some employees the professional recognition, which may be achieved through library’s internal restructuring, could also motivate employees to proceed to develop their collaboration and communication skills through knowledge sharing and expertise.

**Systems and resources**

Other issues identified by the Department of Information and Users’ Services as weaknesses in managing knowledge are the systems of ILS and ILL. Both are developed by Heal-link for supporting services provided by the majority of Greek academic libraries. The problematic area is detected in the insufficient manuals and the lack of technical support. These particular weaknesses affect the employees’ collaboration between them and the external collaborators, and their attempt to provide high quality services. For instance, their systems’ malfunction lies in their defective operation and the dependence on external partners’ contribution. Various reports, updates, system “bugs” and system failure, and employees' requirements are subject to the partners’ availability. This entire problematic situation, inevitably, affects the Department’s internal collaboration and communication by provoking situations with intensities.

More specifically, since there is no KM system to record the various system issues that arise daily, the employees are not always informed about them. Consequently, when they finally face the problem, they do not know how to resolve it and who to contact; and this provokes confusion and delay in tasks accomplishment. At this point, a new weakness is revealed that is relevant to
the employees’ roles and tasks. We mentioned above the KM initiatives for reference services and the “Identify the experts” was one of them. This is essential also, for the entire library’s operation. A stored list with employees’ roles and tasks, skills and experiences would decrease the time spent to detect the appropriate person for providing the appropriate service.

To conclude, the weakness that we recognize as essential in Department’s operation is the lack of developed ICT tools. Certainly, the employees uses some ICT tools, mostly for covering communication needs. Therefore, the majority of the Department’s needs, such as knowledge collection, storage, classification, organization, retrieval and dissemination are not sufficiently achieved. Jain (2013) mentions that ICT provides KM initiatives in both “by connecting people with information/knowledge contents and by connecting people with people”. Consequently, ICT is considered necessary for KM implementation in academic libraries and its insufficiency influences the success of KM (Jain, 2013).

More specifically, the tools that the Department needs for developing KM initiatives could be:

- a knowledge repository or document management system or KM system to collect all the explicit knowledge and support the knowledge dissemination
- document sharing tools (e.g. google drive)
- website features, such as “Ask a librarian”
- instant messaging
- a blog for covering communication needs with users (upload articles, news and new acquisitions) (Mahmood and Richardson, 2011)
- RSS tool for enabling users to receive content from library’s blog or web page (Mahmood and Richardson, 2011)
- more social media (e.g. LinkedIn, Pinterest)

**KM weaknesses**

![KM weaknesses diagram](image)
5.2 Research question 2
What are the anticipated future challenges of KM practices in academic libraries’ role?

The second and last research question examines the anticipated future challenges that the library and its staff are called to face, through the KM challenges. More specifically, in this section, I refer to the library’s role, the employees’ role and the KM role.

❖ Library’s role

The library’s role, as a social organization is traditionally connected with information and knowledge. However, in the digital era, where a new digital environment has been established, the knowledge role has become more significant by supporting digital libraries activities or digital material management (Roknuzzaman and Umemoto, 2009). The last years, NTUA library has developed its collections by enriching the resources with digital material (online databases, books, journals, articles, grey literature). This fact allows library to operate in a remotely mode and provide online access to its collaborators by creating a new workplace. In this framework, the library needs to redefine its services provision according to the knowledge requirement by users, and provide them through analyzed information by ensuring that it “provide the right information, at the right time to the right people” (Yaacob, Jamaluddin and Jusoff, 2010).

The academic libraries’ role is to support the academic community; hence, their development is strictly connected with the community’s development as well. NTUA Library aims to support its parent institution mission, which is linked with education, and knowledge provision and equipment of its students and researchers. Consequently, the library’s role is to support University’s activities, such as teaching, learning and research (Jain, 2013). In this context, the NTUA library develops an educational role that aims to have well-informed and updated users regarding the resources and services that it provides; and how they can be accessible. On the other hand, the challenge of the library to become a learning environment will operate as a protective wall for its users, aiding them to recognize the web “traps”- unreliable, biased and inaccurate resources. Information Literacy courses enhance the library’s educational and guidance role by guiding users to get access on stored information and knowledge and “evaluate the validity and reliability of information obtained from unfamiliar sources” (Blair, 2002).

The last years, the relationship between libraries and users has changed via the introduction of ICT tools and Web 2.0. Academic libraries provide services remotely through their websites, where their users have the ability to remotely access their resources, communicate and participate in various activities. The capabilities developed by Web 2.0 promote communication, conversation, information sharing and collaboration across the online community (Kim and Abbas, 2010). The NTUA library uses social networks by having account on Facebook, Twitter, Instagram and YouTube. Through these pages, the library attempts to follow the current period’s trends for developing strong links with its users and enhancing the mutual communication, collaboration and knowledge sharing. Furthermore, these applications are the tools for promoting its work and informing community about its activities. Mavodza and Ngulube (2011) consider that library through internet communication technologies “can provide a collaborative learning environment” that will focus the University community’s attention to the library. At this point, the NTUA library should exploit this competence for promoting its services and facilities to the community (Mavodza and Ngulube, 2011).

During the interviews, participants referred to the need of implementing a new strategy in the Department of Information and Users’ Services and the library as well. The KM strategy is
defined by the organizational strategy, and this matching contributes to the development of library’s performance and knowledge creation (Koloniari, et al., 2015). In our case, it is essential for the library to redefine its organizational strategy and develop a well-organized KM strategy by identifying the KM initiatives that support its goals, reinforce its competitive advantage and add value (Koloniari, et al., 2015). In this frame, organizational culture should be adapted in the new challenges, as the organizational strategy, and support the KM objectives by adding values, such as collaboration, trust and condolence to errors (Koloniari, et al., 2015).

❖ Employees’ role

According to Kianto and Andreeva (2014), employees are those who possess a great deal of knowledge resources in a library. In a changing environment, where the role of libraries is redefined, as mentioned above, employees are called on to play their role, and influence, as well as be influenced by, the new reality. Yaacob, Jamaluddin and Jusoff (2010) claim that librarians “will be the knowledge managers of the future”. They will be integrated members of an organization by possessing “strong political positioning”, of whom the key role will be KM-oriented by providing processes regarding information sources selection, reduction – through evaluation – of large volumes of information, training in the use of sources and intranet development (Yaacob, Jamaluddin and Jusoff, 2010).

In the NTUA Library and especially, the Department of Information and Users’ Services, as our research object, the communication and collaboration between employees affect their operation as core issues. Employees retain their personal knowledge, called the tacit, that is difficult to share and communicate. However, in the new knowledge age, the communication of information is more than vital for organizations and their employees, through a context of knowledge management. In this context, the management of tacit knowledge enhances the gravity of human aspect by focusing on collaboration, where communication contributes to human minds connection through interaction (Tiwari, 2013).

Moreover, useful collaboration focuses on information and resource sharing through commitment and investment in these resources for achieving a common goal. The adoption of a collaborative model is vital for both the institutions and their libraries, in order to ensure their future existence and address some of the libraries problems (Tiwari, 2013). Therefore, knowledge should be shared across the library by its employees, who are able to develop a common KM system through collaboration (Yaacob, Jamaluddin and Jusoff, 2010). More specifically, in reference services, knowledge sharing among employees seems to be essential for preventing them from “reinventing the wheel very time” (Gandhi, 2004). The new challenge that the librarians of NTUA Library face is connected with their daily attempt to answer dozens of questions. However, according to Gandhi (2004), librarians manage to answer correctly only 50-60 percent of them. Undoubtedly, the knowledge sharing among colleagues would improve this procedure through methods of verbal communication, training processes or recording knowledge, where an expert system or tool could be used to handle this inconvenient situation by storing appropriate information resources and/or specific answers (Gandhi, 2004).

According to Kumar (2010), libraries should keep an electronic archive or database where the employees will be indexed and thus being searchable and accessible. The expertise should be rewarded and appreciated by superiors by providing them special incentives. For instance, the continuing education and participation in training procedures may become a motivation for NTUA Library’s staff to participate in knowledge and experience sharing processes; while, on the other hand, it would contribute to library’s knowledge renewal and expansion (Kumar,
Various seminars, discussion meetings, chat rooms through an intranet library, where knowledge and experience is shared, will enhance the employees’ regular update and also, will build a good working environment (Kumar, 2010). Through these practices, the employees’ confidence, self-esteem, skills development and sense of commitment will be enhanced and will lead to a well-organized knowledge environment.

Knowledge Management role

According to Dalkir (2005), KM “is not a technology-based concept”. The development of a KM system should be based, firstly, on people and their knowledge, the business objective and last, the technology that needs to be established. The greatest KM challenge is focused on people and cultural issues. Therefore, the KM development must be connected with the organizational culture and ensure the people’s convenience (Dalkir, 2005). Moreover, according to Tiwari (2013) the KM challenge for an organization is to determine and evaluate the possessed knowledge, which consists its intellectual capital.

Townley (2001) mentions that “Knowledge management emphasizes the human side of knowledge”. The employees’ tacit and explicit knowledge, and the embedded knowledge in services and products provided by academic libraries is defined as organizational knowledge. In this context, librarians must select the critical knowledge and use it for ensuring the library’s operation improvement and goals achievement. The NTUA Library, and the Department of Information and Users’ Services need to develop KM role for identifying and supporting the knowledge that will improve library’s and Department’s effectiveness. More specifically, KM processes may contribute to the Department’s creation of a knowledge repository, improvement of knowledge access by eliminating distance, enhancement of knowledge environment, and finally, management of knowledge as an asset. (Townley, 2001).

Moreover, KM role is characterized by its potential to capturing institutional memory. As mentioned above, the reference service provided by the Department of Information and Users’ Services are described as a demanding service, where librarians are called to face dozens of requirements daily. KM initiatives ensure the preserving of (reference) librarians’ memory by capturing their knowledge, wisdom and experiences and make this memory available for future use by conducing to employees’ productivity, efficiency and better user service (Gandhi, 2004).

To conclude, academic libraries are experiencing an explosion of information, where knowledge is “the key to competitiveness” (Yaacob, Jamaluddin and Jusoff, 2010). Library staff must identify the knowledge regarding users and how to improve the services provided (Yaacob, Jamaluddin and Jusoff, 2010). In academic libraries, KM role is to capture, analyze, organize, store and share information resources. These KM initiatives correspond to NTUA Library staff concerns about resource management improvement for offering users with high-quality services by strengthen communication, use and knowledge creation (Yaacob, et al., 2011).

5.3 Summary

This chapter identifies essential parts of the study. The data that have been collected by the research methodology are presented and analyzed based on the published global scientific literature. It thus uses a knowledge management framework to identify and assess the degree to which the library in question meets the challenges that KM claims to address. It also identifies
specific elements in the KM process, notably the problem of ‘organizational learning’ to show where the library’s evolving processes remain weak. The chapter is divided in two (2) specific sections that “answer” the two (2) research questions, which define the study purpose. In the first research question, I used three (3) sub-questions to describe the knowledge of the Department of Information and Users’ Services by focusing in employees’ tacit and explicit knowledge. Moreover, in the second sub-question, I analyzed the importance of knowledge sharing by describing the methods and tools that the Department uses to transfer and exchange knowledge internally and externally among the entire library and the external collaborators (academic community, users, external partner and other libraries). The third sub-question identifies the Department’s weaknesses in managing knowledge as arose by employees’, and systems and technologies’ participation in the procedure of knowledge creation, storing and distribution. Finally, the second research question reveals the anticipated future challenges through the KM development and implementation by mentioning the library’s role, employees’ role and KM role as well.
6. Conclusion

In this final chapter, the concluded results of the research will be presented, summarized in the key points of the study. We recognized that knowledge is an essential element of every organization, including libraries, and KM is a tool for capturing, organizing and making knowledge available to stakeholders. Moreover, knowledge, as an asset provides competitive advantage to the libraries, while KM contributes to their services development and improvement.

6.1 Conclusions

The study was based on the research conducted in NTUA Central Library and focused on the operation of the Department of Information and Users’ Services. Through observation and interviews conducted among the Department’s employees, we reached to the following conclusions.

- The Department through its employees possesses a great deal of knowledge and is divided into explicit and tacit. We identified explicit knowledge, which includes guides, policies and various documents shared between the Department’s employees, employees from other Departments, library users, other libraries and external partners. The tacit knowledge was acquired by the employees’ personal attempt to develop their skills through studies, participation in workshops and conferences, and by their experience through their long-term cooperation with the library.

- The Department makes efforts to share knowledge between internal and external collaborators through formal and informal methods by using tools, mostly conventional (email, telephone calls, fax). It is understood by the research participants that knowledge and expertise sharing enhances the Department’s operation and contributes to the services development and improvement.

- It is well-understood that the Department’s role is user-oriented and its main goal is to cover the needs of academic community through communication and sharing of information and knowledge.

- The reference and circulation desk is the complicated section of the Department, where employees with different organizational and cultural background participate. At this point, we concluded that the library is lacking of organizational learning, since has not yet managed to transform the communication between employees into a learning process. For instance, their knowledge and information exchange through informal communication methods, such as daily dialogue, could have been converted to learning, which contributes to better understanding, learning and cooperating with each other.

- Another key point regarding reference services is identified in the librarian’s ability to respond to users’ questions. We mentioned a research (Gandhi, 2004), where the level of reference librarians, globally, who respond correctly in users requests, is estimated 50-60%. We do not know exactly the response rate of the Department of Information and Users’ Services; however, it has been observed that employees are missing basic information and knowledge, which affects the Department’s goal to respond in every users’ requests. That was explained on the one hand through the lack of learning
organization context and on the other, through the inability of (the reference) librarians to remember all the libraries resources.

- Consequently, the library and therefore, the Department of Information and Users’ Services are missing a KM strategy, that would contribute to the design of the KM procedures. In this framework, employees would become “knowledge workers” by possessing knowledge acquired though high-developed skills and expertise, and it will be used for providing better quality services.

- Another element of KM process is the usage of ICT tools for achieving communication and knowledge sharing between employees and among users. The library faces the lack of financial funding, which influences the acquisition of appropriate tools, which would enhance the knowledge storage and preservation, and the dissemination among different stakeholders.

- In future challenges the NTUA library’s role is redefined as a learning environment, which attempts to cover the users’ needs; a) by providing remote access to its resources; b) by guiding them in detecting and managing information; c) and by communicating and sharing knowledge through ICT practices. Finally, the library should redefine its organizational strategy by applying a KM strategy for achieving its goals and enhancing its competitive advantage.

- The librarians’ role is also redefined by becoming knowledge managers, who support knowledge acquisition and sharing through communication and collaboration methods. Moreover, they are able to develop further their skills and expertise by participating in KM process, where the motivation driven by confidence, self-esteem and sense of commitment will allow them to build a well-organized knowledge environment.

- Finally, KM will support employees to select the knowledge distributed in the Department and the library, to manage it, store it, preserve it and use it for improving their operation and achieving their goals.

6.2 Contribution

This study aims to present the current situation of the NTUA Central Library, one of the biggest Greek academic libraries with main focus on the Department of Information and Users’ Services. We mention the changing role of academic libraries and the concern regarding their future existence. For this reason, the study has a double goal; on the one hand, it presents the KM process in the NTUA Library by focusing on the Department’s organizational structure and the current methods that are used for managing knowledge. Through this identification, the study aims at the Department’s Manager and employees to perceive the concept of knowledge and KM process. Afterwards, we clarify to them their need to apprehend the importance of creating a KM strategy and adopt KM initiatives for improving the Department’s internal operation, for creating a stable working environment based on communication, collaboration and knowledge sharing, and finally for developing new and/or improving already existed services. This approach will enhance the library’s role in the changing environment and will motivate it to be adapted in the future challenges of knowledge preservation and data curation.

On the other hand, the study aims to add new data in the global scientific literature regarding KM perception in academic libraries operation and mostly in the reference services. Some researches have been conducted regarding KM in Greek academic libraries, as an integrated
research object, that mentioned above (Koloniari, et al., 2015; Koloniari and Fassoulis, 2016); however, we have not detected any research conducted in a specific Greek library. Therefore, this study will be an instance of KM function in the Greek educational (academic) environment under the prism of the financial crisis. Consequently, other educational organizations may use this study to examine their internal mechanisms and adopt the proposed methods and techniques of KM with view to improve their operation and services.

6.3 Future research

Many studies have been conducted in academic libraries and other organizations worldwide. KM process has been recognized as essential part for the organizations operation over the last years. The libraries seem to adopt this concept later than the organizations, even though they are recognized as knowledge and information centers. Their engagement to new digital content of information resources, their services provision and their financing cuts left behind their interest in their organizational structure. Future researches should focus on the importance of libraries to change their internal organizational structure for becoming active centers of knowledge creation, organization and dissemination. Through this process, they will ensure their existence and survival and they will regain their central role in the educational and social environment. However, the same researches should take under consideration of the many libraries’ lack of administrative structure that could be able to set new structures and adopt or redefine new strategies. Consequently, more convenient methods of KM perception and implication should be proposed.
References


Appendix 1

Interview Questions

❖ Question 1
Does your Office successfully provide the services?
   b) What contributes to the success?
   c) Please mention some examples.
   d) Who participates?

❖ Question 2
What affects how the service operates?

❖ Question 3
Are your users satisfied with the services you provide?
   a) How do you understand their satisfaction level?

❖ Question 4
Do you identify any weaknesses? If yes, please specify.

❖ Question 5
What are the challenges you are calling to face?
   a) What are the KM challenges?

❖ Question 6
What do you think must change and/or develop further?
## Appendix 2

### Themes and codes

<table>
<thead>
<tr>
<th>Theme: The knowledge in Library</th>
<th>Theme: Methods for knowledge sharing</th>
<th>Theme: People participating in knowledge management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code: Explicit: Documents (guides, certifications, policies), e-mails archive, reports, invoices, brochures, system archives and statistics Tacit: Personal experience (getting feedback during projects, personal education (education (e.g. MSc), workshops, studying bibliography, participate on conferences, collaboration with other libraries, searching and checking international libraries’ policies)</td>
<td>Code: E-mails, phone calls, fax, skype, social media (e.g. Facebook), personal contact, brainstorming, blogs and integrated service on the library’s website Workshops (sometimes designed, based on international standards), training seminars, practice on services implementation, collaboration Tests for checking and gaining knowledge Documents in print and electronic format (on PCs, on the website and folders)</td>
<td>Code: Department staff, IT, external system librarian, externa staff of IT, other departments staff Users from university community Other libraries (Greek and foreign)</td>
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<table>
<thead>
<tr>
<th>Theme: Library changing roles</th>
<th>Theme: Problems to be solved</th>
<th>Theme: Solutions proposed</th>
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<tbody>
<tr>
<td>Code: Digital material Services and projects to be promoted Updated users Library’s educational role Supporting the community</td>
<td>Code: Not all employees know what to do Missing information (e.g. e-mails not read, not everyone knows where to find guides, post-it notes to inform staff of next shift that can be missed, resistance by some employees to learn new things and/or change previous processes) and flexibility Missing knowledge and experience Insufficient guides Incomplete communication and knowledge sharing between other departments (e.g. IT with librarians because of incomplete clarification of questions) Employees with low motivation to participate in knowledge</td>
<td>Code: A knowledge management system (e.g. a moodle) Frequent meetings among employees from different departments Information and communication improvement Greater availability (e.g. giving motivation to employees) Knowledge sharing based on experience (feedback from previous efforts) Staff participation in practice to understand the processes Studying models and international standards to obtain knowledge Feeling of confidence</td>
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sharing and accepting new processes
Weakness in understanding new processes
Different understanding in accomplishing a project
Missing information regarding employees’ knowledge and skills
Employees who rely on knowledge of others
Problematic systems and insufficient administration support
Not well-organized resources and problem in detecting the appropriate resource
Not well informed staff
Listening and taking under consideration colleagues comments for improvement
Developing skills
Collaboration with common goal
Availability, focus and substantial commitment
Using feedback to detect previous weaknesses and meliorate processes
Change strategic culture
Keep deadlines
Systems support
Collaboration between different departments
Better organization of resources
Well informed employees through guides
Updated guides and documents
Well-organized archive with basic information (passwords, important telephone numbers and other information) and easily accessible

Table 1

**Final themes**

<table>
<thead>
<tr>
<th>Theme: Library knowledge</th>
<th>Theme: Knowledge sharing</th>
<th>Theme: Knowledge Management weaknesses</th>
<th>Theme: Future challenges</th>
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<tr>
<td><strong>Sub-theme:</strong> Explicit knowledge</td>
<td><strong>Sub-theme:</strong> People</td>
<td><strong>Sub-theme:</strong> Employees</td>
<td><strong>Sub-theme:</strong> Library role</td>
</tr>
<tr>
<td>Documents (guides, certifications, policies), e-mails archive, reports, invoices, brochures, system archives and statistics</td>
<td>Department staff, IT, external system librarian, external IT, other departments staff</td>
<td>Not all employees know what to do</td>
<td>Digital material management</td>
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<tr>
<td><strong>Sub-theme:</strong> Tacit (local) knowledge</td>
<td>Users from university community</td>
<td>Missing information, knowledge and experience</td>
<td>Educational role (Updated users)</td>
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<tr>
<td>Personal experience (getting feedback during projects, personal education (e.g. MSc,</td>
<td>Other libraries (Greek and foreign)</td>
<td>Lack of motivation</td>
<td>Supporting the community</td>
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<td><strong>Sub-theme:</strong> Methods</td>
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<td>Different perception</td>
<td>Marketing role (Services and projects promotion)</td>
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<td>Lack of communication</td>
<td>New strategic culture</td>
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<td>Attracting more users</td>
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<td><strong>Sub-theme:</strong> Employees’ role</td>
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<tr>
<td>Weakness in apprehending new knowledge</td>
<td>Communication and collaboration and information improvement</td>
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<tr>
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<td>Knowledge sharing based on experience</td>
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<td>Insufficient guides</td>
<td>Staff training and practice</td>
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<td>Problematic systems and insufficient administration support</td>
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<td>Skills development</td>
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<td>Resource management improvement</td>
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<td>Prior knowledge use</td>
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<td>Distance problems</td>
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