Creating an Institutional Repository (IR) in Greece

need for information systems strategy?

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Abstract

The purpose of an Institutional Repository (IR) is to disseminate information to the public through technology networks. This entails numerous and complex Information System (IS) processes and a ‘state of the art’ Information Technology (IT) infrastructure, which need to be strategically managed to successfully meet an organization’s goals. Therefore, the focus of this research is to investigate and justify how Information Systems Strategic Planning (ISSP) is utilized by a Greek University when developing an IR. This study was based on the Technological Educational Institute of Athens (TEI-A).

The gathering of evidence involved reviewing key institutional documents and a qualitative case study research method using semi-structured interviews with open-ended questions. The interviewees were informed about the study beforehand and were required to sign a consent form to ensure ethical integrity. The analysis of this data was based on hermeneutics interpretive phenomenology with specific focus on the hermeneutic circle in ISSP.

In conclusion, the empirical findings and analysis showed that ISSP is essential when creating an IR as provides order in the chaos relating to IS and IT processes. This is done through ISSP continually reassessing each of its stages to ensure best practices are being applied.

*Keywords: Information Systems Strategic Planning, ISSP, Institutional Repository, IR, University, Greece, hermeneutic circle.*
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<th>Meaning</th>
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<td>DL</td>
<td>Digital Library</td>
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<tr>
<td>E-Book</td>
<td>Electronic Book</td>
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<td>E-Conference</td>
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<td>EU</td>
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<td>IR</td>
<td>Institutional Repository</td>
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<td>IS</td>
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<td>IT</td>
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<td>OJS</td>
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<td>OPAC</td>
<td>Online Public Access Catalogue</td>
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<td>OpenDOAR</td>
<td>Directory of Open Access Repositories</td>
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<tr>
<td>PEST</td>
<td>Political, Economic, Social, and Technological</td>
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<tr>
<td>SWOT</td>
<td>Strengths, Weaknesses, Opportunities, and Threats</td>
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<tr>
<td>TEI</td>
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1. Introduction

This section includes background, research problem statement, research aim and objectives, topic justification, scope and delimitation.

1.1 Background

Nowadays the majority of organizations rely radically on their Information Systems (IS) (Ward and Peppard, 2002). This is because IS plays a determinant role in the organization’s success creating though new opportunities for gaining competitive advantage (Avison, 1997; Mentzas, 1997; Ward and Peppard, 2002; Pai, 2005). The IS refers to the processes where people exchange information within an organization, while the Information Technology (IT) is the technology infrastructure like hardware, software and telecommunications networks by which these processes are fulfilled (Avison, 1997; Ward and Peppard, 2002). The IT is an important aspect of Information Systems because it is the means by which the IS can be deploying (Chaffey, 2009) as it refers to automated procedures which store, produce and disseminate information.

More or less all the organizations have developed a IS/IT business strategy in order to create leverage towards their competitors (Ward and Peppard, 2002). According to Avison (1997), Casidy (2006), and Altameem, Aldrees and Alsaeed (2014) strategic planning is an important IS success factor in order for an organization to meet its objectives. The Information Systems Strategic Planning (ISSP) known also as Strategic Information Systems Planning (SISP), Information Systems Planning (ISP), or Business Systems Planning (BSP) is integral part of business strategy (Alter, 1996; Avison, 1997; Ward and Peppard, 2002). In this master thesis, Information Systems Strategic Planning (ISSP), will be prefered the term.

The reasons motivating the development of the IS strategic plan may are related to the benefits provided by a plan in comparison to other IS activities. For instance, priorities are set in order for a company to handle the ongoing growing IS processes. Thereby a smooth work flow can be developed by identifying IS and IT opportunities aiming to add business value and thus to create competitive advantage as well as to reduce cost and effort over life cycle. This work flow can be achieved through the alignment of “the IS direction and priorities to the business direction and priorities” (Casidy, 2006, p. 4).

As far as concerns the profession of digital librarian, they not only should deal with information but also to handle contemporary IT services by which they should
manage and organize digital objects stored either to Digital Library or Institutional Repository (Sreenivasulu, 2000). The latter is also known as Digital Repository or Digital Commons (Li and Billings, 2011). Lynch (2003, p.2) claims that an Institutional Repository is:

“a set of services that a University offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members”.

According to Palmer, Teffeau and Newton (2008, p. 142) an IR retains “intellectual output of their scholars and support open access trends in scholarly communication”.

Therefore, an IR involves both IS and IT concepts as they diffuse information to the public through technology networks, and they also entail numerous processes which should be managed in order to successfully meet the organization’s goals.

1.2 Research Problem Statement

Scientific academic works are constantly increasing. In the most cases, researchers gain access to these works through paying international databases. Alternatively, researchers can also access scientific academic works through Institutional Repositories (IR). The main difference between these sources is that online resource databases collect the scientific material from all over the world, whereas the IR of a University only stores the intellectual output of its faculty and students, which is freely accessible.

Currently, more and more universities are using IR to disseminate their intellectual output. Over time it has become clear that when organisations are developing their IR they were faced with a number of issues and challenges. For instance, when developing an academic IR these issues and challenges were: content recruitment (Crow, 2002; Hixson, 2005; Mark and Shearer, 2006; Li and Billings, 2011), service provision, protection of intellectual property, copyright policies (Mark and Shearer, 2006; Palmer, Teffeau and Newton, 2008), digital preservation (Jantz and Giarlo, 2005; Lynch and Lippincot, 2005; Li and Banach, 2011), information technology infrastructure, scientific output deposit which entails collaboration between librarians and faculty, (Crow, 2002; Christian, 2008; Palmer, Teffeau and Newton, 2008), and partnerships (Li and Billings, 2011). According to Cristian (2008) and Palmer, Teffeau and Newton (2008) these issues occur due to the lack of awareness of what an IR is and its contribution to society. Another problem is the inadequate funding to support this attempt, which in turn puts in jeopardy the sustainability of the IR owing to there not being adequate financial resources either to implement the state of the art information technology equipment, or to provide maintenance and digital preservation
over long term. It is clear that there is a need for universities to be more strategic in the planning stages of their repositories so as to overcome these issues and challenges.

1.3 Research Aim

Regarding the procedures involved in the creation of an IR is a dual issue as it relies mostly on IT infrastructure in order for deploying IS processes. This is because, the creation of an IR has changed the way of how scholarly output is stored, organized and then diffused to the public in national and international level. Likewise, the preservation of its digital content keeping its authenticity over long term (Giaretta, 2011) has been also changed. So, according to Jashapara (2002) Katsioloudes (2006) Matthews and Matthews (2013) strategy is about to control and to successfully adjust in changes occurred mostly by IT evolution. However, an organization in order to pass smoothly from one system to another or to install a new one, and also to organize efficiently the involved IS processes, a strategy should be set. Also, as far as concerns the successful accomplishment of an organization’s IS goals and objectives (Ward and Peppard, 2002), an ISSP should be developed and aligned with organizations’ strategies (Robson, 1997; Casidy, 2006). Therefore, the IS challenges mentioned in the research problem area above may be probably handled by a development of Information Systems Strategic Planning (ISSP).

So, the aim of this study is to justify the use of Information Information Systems Strategic Planning (ISSP) when developing an IR.

1.4 Research Question

The type of this research is qualitative case study. The case study answers to the questions which start with “how” and “why”, and its role can be exploratory, descriptive or explanatory (Rowley, 2002; Yin, 2003; Baxter, 2008).

So, one research question was generated by taking into consideration the type of research, i.e. case study, the problem statement and the aforementioned formulated aim:

How does a University in Greece utilize Information Systems Strategic Planning when developing its Institutional Repository?
1.5 Case study: Technological Educational Institute of Athens

The research will be conducted in the Technological Educational Institute located in Athens, Greece. A project for the development of digital institutional repository started in 2011 and it ended on May of 2015.

The Technological Educational Institute of Athens (TEI-A), through the project “Development of Digital Services of the TEI-A’s Library”, which was run by the business plan “Digital Plan”, has been created the Institutional Repository (IR) of the TEI-A. It developed structures and practices that allow its continuity over long term.

The IR is called “Hypatia”. It consists of the intellectual property of the members of the TEI-A like research and academic production as well as students’ theses and research aiming to disseminate this content over the national and international scientific society in a digital form.

Likewise, a distinct digital archive collection was developed. Thereby, the history, the administrative processes, the activities of the members of the TEI-A, the infrastructure, and the role of the TEI-A are presented. This attempt aims to demonstrate the evolution of the technological education in Greece focusing on the history of the Institute by starting from its establishment up to recent years.

Moreover, the technology infrastructure a platform that hosts e-books, e-journals and e-conferences was also part within the same project. Furthermore, the printed scientific journal that is published by academics of the TEI-A, they were digitized so as to continue their circulation in a digital environment.

The total funding of the project was 952.000 euros. The government organization “Digital Plan” was the main funder of this project through European Union subsidy. In few instances, the TEI-A supported the project financially through its own resources whenever there was a need for.

The Institutional Repository of the TEI of Athens is an online database where digital objects are stored. These digital objects composed from works produced by the members of the TEI-A like electronic and digitized journals of which the copyrights holds the TEI-A, peer reviewed scientific papers excluding from any legal restrictions, e-theses, and archive historic materials. Afterwards, they are retrieved, accessed and disseminated via the World Wide Web (WWW) to the public in a national and international level.

Furthermore, a typical characteristic of an IR is that it supports self-archival services. To put it in other words, the members of the TEI-A are able to submit their own
scientific output by themselves using personalized services. The common metadata schemas and the models of interoperability that was adopted by the TEI-A ensure the effective operation of management, availability, accessibility, dissemination and preservation of the diversity of its digital content.

The IR was named “Hypatia” in honour of the Neoplatonist Alexandrian philosopher of the 4th AC century, Hypatia. Hypatia is known for her philosophical, mathematical and astronomical knowledge as well as for her involvement in the technological artefacts like the astrolabe. She was the leader of the Neoplatonic School at Alexandria, which courses were available to everyone without making any religious distinction. Hypatia was murdered by a group of fanatic monks owing to her stable position in terms of the support of truth against to any attempt of silence. For this reason, she became symbol in favour of promotion and dissemination of the scientific knowledge for the benefit of the society at large.

The project consists of three (3) different but interwoven subprojects which aim to the development, the enrichment and the demonstration of the IR as remarkable point for the promotion of the digital services of the TEI-A’s Library. More specifically, the first subproject aimed to the development of the “IR Service and Digital Library (DL) of the TEI-A” through the actions:

a) Expand IR’s services through the creation of self-archive facility and the emulation of several metadata from an obsolete system to the new one.

b) Enrich the content of the IR with the intellectual production of the members of the TEI-A.

c) Creation of a historical archival collection including digitization and documentation of archive materials.

The second subproject is related to the development of the electronic publications including e-books, e-journals, and e-conferences.

The last subproject includes the practices related to the verification of the intellectual copyrights of the digital materials.

Through these actions the main goal of the creation of the IR of the TEI-A is the continuous collection, management and dissemination of the research output of the members of the TEI-A to the national and international scientific society.

The IR of the TEI-A consists of a great amount of the research and academic production of the academic members of the Institute. The benefits of the “Hypatia” are described below as they are presented in the official reports:
The dissemination of research output of the Institute.
It demonstrates and enhances the scientific picture of the Institute not only to prospective students, professors, but also to the active partners and researchers of the TEI-A.
The collection of the research output to a central point and the long-term preservation of the digital data.
The collection of the research output of the members of the TEI-A to a central cyber space helps to depict all the scientific fields affiliating with the TEI-A.
The percentage of publications within the “Hypatia” is a pivotal criterion for the evaluation of the professor regarding the advancement in their academic career.
Opportunities for partnerships and subsidy.
Collection and dissemination diversity of educational resources to the students of the TEI-A.
It enables the creation of online scientific accounts for developing electronic curriculum vitae which can be indexed or retrieve from other scientific databases.
Support the courses’ structure by proposing text-books or additional literature reading.

Finally, the Hypatia’s relies on DSpace which is open source software. It implemented based on Dublin Core and OAI metadata schemas providing though interoperability with other existing IRs in Greece.

1.6 Topic Justification

In a wider perspective, the digital repositories they can be seen as a chest in which treasure is kept; which, in turn, can be translated to one’s country’s culture. So, by asking if it is essential to create digital repositories, it is like asking if the preservation of our culture is worth taking.

However, since few years now the majority of European countries are dealing with economic recession. The European Commission is the major funder for fixed-term projects. This situation facilitates these countries, including Greece, to develop their culture.

Just as the technology is constantly increasing, so does the cost. For this reason several efforts have been made in workplaces to follow technology evolution with the minimum cost. For instance, Universities, Institutes, Museums and other organizations in Greece in order to develop digital repositories aiming to collect and diffuse their intellectual output they rely on European Commission which, in turn, supports these development endeavours by making “direct financial contribution in
the form of grants” (European Commission, 2015). Such an example is the Technological Educational Institute (TEI) of Athens which through the project “Development of digital services of the library of the TEI-A” (DigitalPlan, 2011) has created the Institutional Repository “Hypatia”. Through this project the TEI of Athens not only included publications of its academic community but also created a distinct collection of its historical archive.

So, the creation of an IR entails a set of processes which should be managed in order to meet successfully the organization’s goals and objectives. This raises the question how is Information Systems Strategic Planning is utilized from a University when developing an IR?

Nevertheless, even though there is literature for the digital repositories in Greece, the majority of scientific research focuses on information security and ethical issues such as Open Data, self-archiving, intellectual property, and e-publications policies etc. (Monopoli et al, 2002; Chantavaridou, 2009; Koulouris et al., 2013; Kyriaki-Manessi et al., 2013). Thereby, there is a lack in literature regarding an ISSP approach in creation of an IR. This is because the freely dissemination of information via Internet to the public raises ethical concerns about the protection of intellectual property rights and digital preservation over long term taking maybe for granted the IS strategic processes related to the creation of an IR. Moreover, it may also be more challenging for the researchers to involve with the electronic publication policies, and customization services such as self-archiving.

As a consequence, the contribution of this study is to examine whether Information Systems Strategic Planning (Ward and Peppard, 2002; Casidy, 2006) is involved in processes of the creation of an IR and how it is utilized aiming to add knowledge within the fields of the Information Systems Strategic Planning.

1.6.1 Audience of the research

People who are interested about this study will be not only librarians and software engineers but also professors, lecturers, scholars, researchers, students, publishers, and managers of IS projects. This is because all of them are involved in the access and interaction to information distributed via online database.

1.7 Scope and Delimitations

More and more Universities are creating Institutional Repositories so as to assemble the intellectual output of their members in a cyber space aiming to diffuse, to reuse, and to preserve it over the time. The digital repositories have been also created in
order to collect and diffuse information for different Designated Communities supporting and maintaining the digital materials’ authenticity over long term (Giaretta, 2011). However, the Institutional Repositories in order to meet organizations’ Information Systems (IS) goals and objectives, several IS processes should be conducted.

So, the scope of this study is to identify how the ISSP is utilized when developing an IR in a Greek University.

Additionally, limitations of this study will be mentioned here. For example, the research was conducted in one University located in Athens, Greece, excluding other national Universities that have already established an Institutional Repository. The selected area of this research was carried out in the west suburbs of Attica, in Egaleo city where the University is located. The name of the University is “Technological Educational Institute of Athens (TEI-A)”.

Furthermore, the theoretical approach of the Information Systems Strategic Planning (ISSP) concept narrows down the study on a specific field.

Besides, the research was conducted within a specified time-period, just in one and a half semester. This is a major factor that limits the content and the length of this master dissertation by narrowing the time schedule of the collection and the analysis of the data. Finally, the theoretical approach will be based mostly on both printed and electronic scientific resources such as peer-reviewed papers and books.

As far as concerns delimitations, the study does not focus on the cost and risk assessment, the digitization services or other computer engineering issues.
2. Literature Review

In this section concepts definition and theoretical frameworks are presented.

2.1 Concepts and definitions

2.1.1 Institutional Repository (or Digital Repository)

Nowadays, where information is rapidly increasing, it is more essential than in the past for the Educational Institutions to manage their intellectual assets and output. Significant and ongoing attempts provide availability to academic resources in national and international level. So, there is a need for storage and managing the diversity of the academic intellectual outputs and related assets (Heery and Anderson, 2005).

In order to gain better understanding to the concept Institutional Repository (IR) there is a need to make an etymology explanation. So, the first word “Institutional” refers to the community which works under specific University premises, and the word “Repository” refers to a place where data are organized, stored, and preserved. Regarding the users to whom an Institutional Repository addresses are called Designated Community (Giaretta, 2011).

So, Lynch (2003, p. 2) describes that:

“An Institutional Repository is a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members”.

Moreover, Barton (2004, p.10) state that:

“An institutional repository is a database with a set of services to capture, store, index, preserve and redistribute a university’s scholarly research in digital formats”.

In other words, an IR of a University is an online locus in which its intellectual production is collected, stored and distributed to the public in a digital form. The Institutional Repositories provide equal accessibility to its members. An IR can support research, learning, and administrative operations. For this reason the content of the digital repositories, apart from academic publications such as scientific journal articles, consists of whole courses, e-theses, e-learning objects and teaching materials, images or data (Heery and Anderson, 2005) and administrative data.
To raise the ranking of University’s IR, the faculty, and students should contribute by submitting their intellectual works (Allard, Mack and Feltner-Reichert, 2005). This is why the exposure of intellectual output is the primary reason for persuading academics to place their publications in the IR of the University of which they are members (Pinfield et al., 2002; Cullen and Chawner, 2010). For this reason, the IRs provide access to a wide range of resources (Heery and Anderson, 2005) like preprints, postprints, publishers versions and technical reports (Buehler and Boateng, 2005). This is a convenient way for accessing and searching peer-reviewed scholarly outputs which also gives the opportunity for these works to be used and cited more and thus the reputation of their authors will be increased over the time because of they will gain recognition (Buehler and Boateng, 2005; Cullen and Chawner, 2010). Therefore, the IRs are online databases where the content is deposited regardless the content creator, owner or third party; they are also include both data and metadata which are provided for harvesting and are openly distributed unless there are legal limitations (Heery and Anderson, 2005).

2.2 Review and Analysis of previous Institutional Repository research

There have been carried out a lot of studies concerning the development and the policies of the Institutional Repositories and issues related to their provided services. To name few in a national level (Monopoli et al., 2002; Chantavaridou, 2009; Koulouris et al., 2013; Kyriaki-Manessi et al., 2013), and in an international level (Lynch, 2003; Barton, 2004; Heery and Anderson, 2005; Lynch and Lippincott 2005; van Westrienen and Lync, 2005; Jones, Andrew and McColl, 2006).

According to van Westrienen and Lynch (2005, p. 1), and Hirwade and Hirwade (2006, p. 147) the Coalition for Networked Information (CNI), the UK Joint Information Systems Committee (JISC), and the SURF Foundation in the Netherlands hosted an international level “the current state of deployment of institutional repositories (IRs) in the academic sector, and to explore how national policies and strategies were shaping this deployment”. So, they hosted an international conferenced which its subject was “Making the Strategic Case for Institutional Repositories”. In this conference Lynch and Lippincott (2005) mentioned that thirteen nations took part in providing data of deployment of the IRs in their countries.

These data provided knowledge about the deployment of IRs in higher education, software implementation such as DSpace, open-access movement as well as self-archiving process, institutional policies, and strategic planning Lynch and Lippincott (2005).
Moreover, Jones, Andrew and McColl (2006, p. xv) define that:

“The Institutional Repositories provide an opportunity for an Institution to share its intellectual wealth with the worldwide community of scholars, allowing all interested readers access to the discoveries and insights produced by its members”.

For this reason, the best place for an IR of a University to be settled is the library. However, given that all over the world there are numerous IRs, they provide diversity due to their various disciplinary owing to that they address to different Designated Communities (van Westriemen and Lynch, 2005). As a result the use of the IRs differs as well according to Barton (2004) in the following ways:

- Scholarly communication in context of e-prints and self-archiving
- To store educational resources
- Electronic books, conferences, journals
- Electronic dissertations and thesis
- To manage collections of research documents
- To maintain and preserve digital objects over the time
- To raise the university’s prestige by gathering in a common accessible cyber place encouraging open access to academic output
- Add value to the role of the University’s Library
- To acquire knowledge management techniques
- To offer opportunities for research assessment

So, each University modifies the services of the IR based on its culture, and the needs and the demands of the community that serves. For this reason the endeavor of creating an IR entails a lot of customized services which complicates the whole procedure.

Barton (2004) states that a University before proceeds to create an IR, it should make an assessment of other national and international IRs regarding services, functionality, security, copyrights. To determine also its needs; to calculate the budget needed by evaluating cost; to develop policies regarding open-access dissemination, and preservation of the digital material, and to frame a timeline. Moreover, relying on these tasks it has to determine a team with required skills as well. Apart from these, technology, and marketing (Buehler and Boateng, 2005) are two more issues that a University has to take into consideration.

By taking the aforementioned into account several issues emerges concerning the identification and management of the IS processes related to the creation of an IR.
2.3 Theoretical Framework

2.3.1 Strategic Planning

According to Jashapara (2004, p. 92) the concept of the strategy as a plan is more about control, giving the power to managers to “determine the effective strategy for the organization” aiming to accomplish the organization’s mission, vision, and goals. Chaffey (2009) states that strategy determines organization’s future direction and actions. He also notes (2000, p. 295) that “strategy is formulated based on vision and objectives, so it is necessary to frequently revise it and revise them”.

Katsioloudes (2006), and Matthews and Matthews (2013) in their research argue that the strategic planning focuses on change which is designed to be adopted in organizations’ environment. Due to the evolution of the technology and the natural evolution of society nothing remains stagnant. Everything is constantly changing. People change; Economic changes; Technology changes; Sciences change, and the humanity should adopt these changes in order to be a part of a whole new system. Bryson (2011, p. 74) argues that “the strategic planning is designed to help public and non-profit organizations (and communities) respond effectively to their new situations”. Moreover, Ward and Peppard (2002), and Thomson and Martin (2005) mention that the key of business strategy is that an organization can be seen in smaller sections which are known as “Strategic Business Units” (SBUs); and for business planning is to set business objectives. A strategic plan composed by several steps: i) mission statement, ii) values and guiding principles, iii) vision statement, iv) forecast, v) goals and objectives, vi) activities, vii) measures and outcomes (Ward and Peppard, 2002; Katsioloudes, 2006; Matthews and Matthews, 2013).

Johnson and Scholes (2008) and Chaffey (2009) say that the business strategy determines the future direction and the scope of an organization over the time, achieving also competitive advantage. Strategic planning defines and implements the strategies of an organization, and facilitates decision-making process and thereby it enhances competitiveness to each business unit (Mintzberg, 1994).

Several questions raised regarding the development of business strategies: i) where are we now?, ii) Where are we going?, iii) How did we get there?, iv) How do we measure success?, v) How did we do?, and vi) How can we improve? (Mentzas, 1997; Ward and Peppard, 2002; Casidy, 2006) (see figure 2.1). In the first phase the managers estimate the current situation proceeding to the second phase where they set organization’s goals. Afterwards, they express the desired outcomes. The fourth stage involves the development of strategies/plans/alternative plans needed to meet the outcomes. Moreover, several measures and techniques are essential to be determined so as to implement the strategies/plans helping both measure success and
implementation processes. The stage of strategy implementation involves research planning, actions/execution and controls in order to meet strategic goals (Chaffey, 2002). The final stage refers to monitoring of the practices and results aiming to assess results corresponding to organization’s goals and desirable outcomes.

In these stages an organization should clearly define its vision, mission, and values according to its goals. Furthermore, it should make an analysis of its internal (SWOT analysis) and external (PEST model) competitive environment to identify strengths, weaknesses, opportunities and threats (Ward and Peppard, 2002; Jashapara, 2002).

However, in order for an organization to stimulate and improve decision-making process should have developed an efficient Information Systems. This is because information, and at a greater extend, information systems and information technology are the keys for an effective decision-making process (Thomson and Martin, 2005).

![Figure 2.1: Strategic Planning Cycle (inspired by Casidy, 2006 and Huff et al., 2009)](image)

### 2.3.2 Information Systems Strategy

Information Systems is a group of organized procedures that facilitates several processes of an organization. It is a system that combines both human resources and technology infrastructure. A system can be considered a combination of people, objects and procedures (Avison, 1997). The IS should be in accordance to the needs of the organization and also its implementation should meet the end users’ needs. Information Technology can provide opportunities to IS as it is the means by which the IS can be developed. The IT is an important aspect of Information Systems because it is the means by which the IS can be deploying (Chaffey, 2009) as it refers to automated procedures which store, produce and disseminate information.
Ward and Peppard (2002, p. 1) argue that:

“in order to manage information systems and information technology (IS/IT) strategically, it is helpful to understand how the role of technology-based Information Systems has evolved in organizations”.

To enhance this statement it worth mentioning that an IS strategy in order to be developed, it is necessary the business strategies to be prior defined so as to rely on, and in turn to influence them (Robson, 1997; Casidy, 2006; Grant, Hackney and Edgar, 2010; Wager, Lee and Glaser, 2013). So, when there is IS business alignment in an organization, then business strategies lead to distinctive IS strategies (Casidy, 2006). Thereby, the business process efficiency is enhanced and, in turn, the business value proportion is strengthened as well, providing though benefits to organization (Ward and Peppard, 2002; Casidy, 2006).

Moreover, according to Ward and Peppard (2002, p. 44) an IS/IT strategy determines:

“the organization’s requirement or “demand” for information and systems to support the overall strategy of the business”. They also state that “IT strategy is concerned with the outlining the vision of how the organization’s demand for information and systems will be supported by technology”.

2.3.3 Information Systems Strategic Planning

Ward and Peppard (2002, p. 120) argue that:

“once that strategy has been formulated, an implementation plan can then be constructed—IS/IT planning. The IS/IT strategy process refers to both formulation and planning”. […] “the emphasis on ‘planning’ probably originates as a consequence of portraying IS/IT as part of the implementation of the business strategy—IS/IT investments were planned once the business strategy had been formulated”.

The aforementioned argument is illustrated to the following figure.

![Figure 2.2: IS/IT strategy process (Ward and Peppard, 2002)](image-url)
King (2015) claims that the concept of Strategic Planning for Information Systems was introduced in 1970. He also mentioned that the researchers focused on the transformation or even better “alignment” of business strategy to IS strategy.

To this point it is worth mentioning that in the research literature based on Alter (1996), Avison (1997) and Ward and Peppard (2002) there are several terms for referring to the concept of IS/IT Strategy. To mention few: “Strategic Information Systems Planning” (SISP), “Information Systems Planning” (ISP), “Information Systems Strategy Planning” (ISSP), and “Business Systems Planning” (BSP). In this master thesis, Information Systems Strategic Planning (ISSP), will be preferred the term.

According to Pai (2006, p. 106) the ISSP is:

“a managerial and interactive learning process for integrating information systems considerations into the corporate planning process, aligning the application of information systems to business goals, developing detailed information systems plans and determining information requirements to achieve business objectives”.

2.3.4 Alignment: from Business Strategy to ISSP

Due to the ongoing changing concerning both technology and society aspects, it is of a highly importance to keep up abreast with current situations, otherwise there is a danger to remain stagnate and obsolete. To remain the status quo will result in inconsistency with the current which is continuously changing and it will gradually lead to a dead-end. The Strategic Planning points out the situation of change which is designed to be adopted in the organization’s environment (Katsioloudes, 2006; Matthews and Matthews, 2013) (see figure 2.3, p.16).

Strategies according to Ward and Peppard (2002, p. 85) “are only a means to an end, to achieve anything they need to be implemented”.

Furthermore, they state that the formulation of ISSP is a complex issue (Robson, 1997) as it involves several processes which should be taken into account; highlighting that the contribution of human and technology resources is responsible for the achievement of the strategies.
So, by assessing current situation towards future goals that helps to determine where we are and where do we want to go. To his proactive plan an IS SWOT analysis and an orientation through IS PEST model can help to evaluate internal and external environment so as for and organization to accomplish its mission, vision, goals, and objectives (Jashapara, 2002; Ward and Peppard, 2002; Casidy, 2006).

A corporate Strategic Plan model consists of the following elements: i) mission statement, ii) values and guiding principles, iii) vision statement, iv) Forecast, v) goals and objectives, vi) activities, vii) measures and outcomes. Since the IS modifies Business Strategy there is an alignment which is depicted in the following figure, 2.4.

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**Figure 2.3: Hierarchy of strategies (inspired by Robson, 1997)**

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So, an ISSP evaluates the changes in a specific environment by setting priorities of IS goals and objectives aiming to fulfil IS mission and vision statements towards these ongoing demands. The ISSP is proactive rather than reactive by forecasting internal strengths and weaknesses as well as external factors related to possible opportunities and threats, and thereby it can communicate effectively the new IS vision to the existed or new stakeholders. It also strikes a happy medium by dividing desires into two categories: desirable and feasible, and thus it can address major issues in a long term goal. While in the same time it can focus on short term wins so as to assure that the goals can be met. This is another effective way for changes to be managed. Moreover, by setting priorities based on IS mission, this can improve practices and resources and also decision-making process related to strategic, action and individual.
2.4 Summary

The evolution of Institutional Repositories (IRs), or else Digital Repositories, creates changes to a University giving it the leverage to increase its competitiveness among other Universities in a national and international level regarding the scholarly communication about the goal of the IR which is the collection of the scholarly output in a digital form.

Moreover, the evolution of Information Systems (IS) and Technologies (IT) in an organization is an opportunity for change in which it will have to adjust so as to gain advantage in its competitive environment. This can be seen as a motivation to focus on the more effective and efficiency strategic approach of conducting processes for the creation of an IR. The IS/IT strategy (aka Information Systems Strategy) cannot be separate from the business strategy. The IS relies on business strategy and influences it by defining more precisely its objectives and goals.

So, the management and implementation of the creation of an IR is a part of an Information Systems Strategic Planning. In the first phase there is an evaluation of the current situation of the organization regarding its vision, mission and goals. In other words, the managers of the organization pose questions like “Where we are now?”, and “Where we want to go?”. In the second phase the external (PEST) and internal (SWOT) environment is assessed in order to lead to the third phase which is the formulation of the IS strategy. The other question which is raised is that “How to get there?”. The IS Strategic Planning (ISSP) is the medium to develop in detail information systems plans and to determine information requirements so as to accomplish business objectives. Finally, future goals are necessary to be set in order to monitor IS business processes and to improve them based on IS/IT evolution.

Figure 2.5: The IS/IT strategic model a modified version (Ward and Peppard, 2002)
3. Methodology

In this section are discussed: the methodology approach, the research critics, the data collection, the data analysis, ethical considerations and the validity of the research.

A researcher starts conducting a research because of a problem emerged or the raise of a research questions. The very first thing that a researcher is called to determine is the methodology which is going to adopt according to the problem or the research question of a particular scientific field. In other words, the design of the structure based on which he/she is going to conduct his/hers research and then to present it in a written form.

3.1 Hermeneutics

Palmer (1969) states that hermeneutics is at the heart of the three humanistic disciplines: philosophy, theology, and literacy interpretation and criticism. It considered a sufficient theory of literacy interpretation, which is a broad conception of interpretation. The hermeneutics is a method focused on “decipher” (i.e. interpret) the text and thus to provide textual meaning.

Its etymology derives from the Greek word “ερμηνεύω” “hermeneuein” which means “to interpret”. The word “hermeneuein” places its origin with the Greek deity Hermes who was the “messenger of the gods”. A Latin translation similar to “hermeneuein” is the word “sermo” which means “to say”. Hermes before communicate Gods’ message to mortals he should first understand what it was about. Hermes though should translate, articulate, i.e. interpret, one word and another so as to provide explanation and clarifications about Gods’ intentions (Palmer, 1969; Butler, 1998).

Palmer (1969) argues that people in a daily basis receive information which in order to understand it they interpret the words and gestures of what they hear, read, and/or feel. For this reason he claims that “interpretation is then, perhaps, the most basic act of human thinking” (Palmer, 1969, p. 9).

According to Bleicher (1980) and Butler (1998, p. 285) there is an increase in approaching the discipline of Information Systems through the application of hermeneutics as it is “a valid interpretive approach for research on the phenomenon of IS development”. Moreover, Bleicher (1980, p. 1) determines hermeneutics as “the theory or philosophy of the interpretation meaning”. Therefore, the interpretivism approach on the development process in IS it may be the most appropriate philosophical perspective for studying a contemporary situation (Butler, 1998).
Hermeneutics can be twofold: i) it underlies philosophical ground for interpretivism, and ii) it is a useful mode of making sense of textual data (Bleicher, 1980; Myers and Avison, 2002; Selamat and Hashim, 2008).

Additionally, Taylor (1976, p. 153) states that:

“Interpretation, in the sense relevant to hermeneutics, is an attempt to make clear, to make sense of an object of study. This object must, therefore, be a text, or text-analogue, which in some way is confused, incomplete, cloudy, seemingly contradictory—in one way or another, unclear. The interpretation aims to bring to light an underlying coherence or sense”.

3.1.1 Paradigms

Despite the fact that the research will be either qualitative or quantitative it should rely on a philosophical perspective in order to provide validation to the research and to provide also help in the selection of the most appropriate research method (Myers and Avison, 2002).

The three paradigms: positivist, interpretive and critical research show how a researcher thinks based on a set of philosophical assumptions. According to Klein and Myers (1999), and Myers and Avison (2002) researchers tend to use interpretive philosophical methodology in studying Information Systems. Interpretive philosophical assumptions define the meaning-making interactions of humans focusing on social exploration (Myers and Avison, 2002).

More specifically, in the positivist research the reality is given with more objective way, being described by measurable properties. It also stresses its attention to quantitative data using statistical tools and packages which are necessary techniques for collective data following a logical flow while researchers attempt to test theory (Myers and Avison, 2002).

The interpretive research according to Klein and Myers (1999) and Myers and Avison (2002) aims to understand phenomena through the meaning that people assign to them. So, it focuses on social constructions such as language, consciousness, and shared meanings which are the key for researchers to have access to real-life circumstances in order to get better insight of both reactions and influences. Regarding the interpretive research in IS field, Walsham (1993, p. 4-5) states that:

“Interpretive methods of research aim at producing an understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context”.

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Moreover, according to Myers and Avison (2002, p. 7) the researchers that choose the third philosophical assumption known as critical research assume that:

“social reality is historically constituted and that it is produced and reproduced by people” “[...] It is seen as being one of social critique, whereby the restrictive and alienating conditions of the status quo are brought to light”.

For this reason, it seeks to be emancipatory, by eliminating the causes of alienation and domination.

The interpretive paradigm (see figure 3.1) according to Myers (1995, p. 56) “the text [to be interpreted] is social and political action: case study notes, interviews and documents that record the views of the actors and describe certain events”. Butler (1998, p. 291) argues that “social action, like a text, is a meaningful entity that must be construed as a “whole”, however, an understanding of the “whole” begins with an interpretive examination of its constituent “part” – this again introduces the concept of the circle of understanding”, i.e. hermeneutic circle.

![Figure 3.1: Interpretive method (by Moller and Chaudry, 2012)](image)

### 3.2 Research Methods

Research methods help researchers to follow a safe path guiding them to select methods relevant and appropriate for their research resulting though in valid outcomes. Thereby, researchers before proceed to conduct their research, they should firstly choose what research method is more suitable according to what they try to find out.
The most common distinction between researches is a) qualitative and b) quantitative. These two research methods help researchers to get a better understanding and studying in social and cultural, and natural phenomena respectively.

Qualitative research method examines social and cultural phenomena helping researchers to delve further in the meanings that people give in the social and cultural contexts; gaining, thereby, a better understanding of the social influence that people have got from the environment they live in (Myers and Avison, 2002). “How”, “How come”, “What” are few of the research questions that researchers ask seeking for answers based on their problem. Moreover, the typical elements of the qualitative research methods are that there is a natural flow during the inquiry and they are not guided by any researcher’s opinion or intention. Interviews, observation, documents, handwritten notes, transcribed data (audio/video), are techniques that researchers use to collect data for their inquiry, including their personal impression and reaction. The focused group which participates in a qualitative research composes a small sample comparing to quantitative research method (Myers and Avison, 2002; Cresswell, 2008).

On the other hand, quantitative research method investigates natural phenomena carrying out surveys, laboratory experiments, numerical methods (Myers and Avison, 2002), using questionnaires, cards, logs, and statistical analysis (Cresswell, 2008) in order to collect data. It is common this research method to address to a large number of people due to the main concept is that the more quantity of sample, the more quality the results will have.

Taking into account, the aforementioned elements of these two research methods, even though there are distinctive differences between them, there is no debate which of the two is better. This is because both methods serve equally their purpose according to what the researchers try to find out based on their research questions or a problem. Additionally, both research methods let the researcher to approach a scientific field and to focus on it. When they are used separately, they provide different kind of results; but when they are combined (mixed research method) they can enhance the validity and the reliability of the results. As a consequence, the choice of the research method depends on the aim of the researcher based on research questions or a problem of a particular scientific field.

So, given that the aim of this master dissertation is to examine a contemporary phenomenon (i.e. the creation of an IR) based on the meaning-making of the people involved to, the more suitable research method is the qualitative research method. For this reason is worth mentioning that qualitative research may be ether positivist,
interpretive or critical “depending upon the philosophical assumptions of the researcher” (Myers and Avison, 2002).

3.2.1 Qualitative case study

Creswell (2003) based on previous researchers states that there are four most known types of approaches in qualitative research such as: action research, case study, ethnography, and grounded theory.

A case study, according to Yin (1994, p.13), “investigates a contemporary phenomenon within its real-life evident, especially when the boundaries between phenomenon and context are not clearly evident”.

In the beginning the case study aims to examine social phenomena (Searle, 1995; Myers and Avison, 2002; Rowley, 2002; Yin, 2003), however, over the years it is accepted as a type of approach within the IS community (Klein and Myers, 1999).

Additionally, a single case study design refers to the investigation of a single organization using a single research subject. For instance, for the purpose of this master dissertation a contemporary situation is examined, i.e. single research subject: the creation of an IR within its context, i.e. case study: organization - Technological Educational Institution of Athens, Greece. In the single case study the phenomena or organization cannot separated from its environment.

3.3 Data Collection methods

A case study research in order to answer how and why questions, data should be collected from multiple sources such as interviews, observation, documents, artifacts relying on previous literature review aiming to compare contemporary situations to historical ones (Stake, 1995; Cresswell, 2003; Baxter, 2008).

To carry out this research, data has been gathered from two techniques: i) interviews and ii) documents.

The interviews were recorded and transcribed aiming not to lose any information and thus to provide reliable results (Cresswell, 2008; Yin, 2003; 2009). Additionally, researcher’s impressions and reactions are also useful to be mentioned aiming to provide a holistic overview of the situation investigated. Documents also constitute part of the data collection process.
3.3.1 Disposition of the Data Collection process

The disposition of the data collection process is structured as the following:

i. **Literature review:**
   - Semi-structured interviews and their benefits.
   - Reviewing documents.

ii. **Interviews in this study**
   - Brief presentation of how the interviews were conducted.
   - Analytical presentation of the interviewees’ answers (see Appendix C, p.71).

iii. **Documents as empirical findings**
   - Institutional: documents conducted by the society of the Institution.
   - Administrative: documents conducted by a minor part of the institutionalized society.

3.3.2 Semi-structured interviews

Several methods of data collection are used in qualitative research, but the interviews are the most appropriate qualitative technique to gather information so as to answer the research question(s).

According to Walsham (2006) interviews have mainly an interpretive nature, given that the researcher receives and collects information which he/she should interpret in order to provide insights of the investigated topic. He further states that the time is an issue that the researcher should take into consideration due to the fact that the participants of the interview have probably demanding schedule and they may give answers on a rush. For this reason, Walsham (2006) points out that it is essential for the researcher to make interviewees feel relax and comfortable by eliminating any suspiciousness concerning ethical issues related to the interview such as confidentiality and anonymity as well as to welcome them by describing briefly the topic of the research and by making ice-breaking question. However, this procedure does not take too long. Additionally, it is very important for the researcher to stop interviews before the estimated time even though some of interaction time will be lost in spite of irritating interviewees when they are clearly pressured due to that they have busy agenda. As a result, owing to the fact that the participants may not able again to arrange interview, this is a technique that facilitates to gather as much information is needed as the participant can freely express his/hers thoughts – opinions.

In 2006 Cohen and Crabtree state that the researcher develops before the interview semi-structure questions which they describe as the “interview guide”. Semi-structured interviews allow the participant to express opinions through open-ended questions, unlike the structured questions which mostly used on quantitative methods.
The latter has a predetermined rigorous structure of questions which are asked to each participant in the same order, while the semi-structured interviews have a natural flow of discussion between the researcher and the participants (Aliaga and Gunderson, 2000).

3.3.2.1 Benefits of Semi-structured interviews

Semi-structure interviews give the sense of flexibility as the interviewers don’t have to follow the interview questions as they were formulated. They can diverge and encourage also to interviewees to be more descriptive if they want so. Thereby, they latter can express freely their thoughts in their own way.

According to Corbetta (2003), and Cohen and Crabtree (2006) the benefits of the semi-structured interviews are:

i) Both interviewer and interviewees are engaged to an interview.

ii) The interviewer divides his/hers questions according to several topics of the investigating field, and

iii) The interviewer has the possibility to be flexible and make deviations during the conversations, when he/she deems that is appropriate.

3.3.3 Interviews in this study

As far as concerns the research setting, the sample was limited to four persons involved in the project of the creation of the Institutional Repository of the Technological Educational Institute of Athens, Greece.

Additionally, if I was focusing on their background and their responsibilities in the project, the people involved in the creation of the “Hypatia”, they would be easily recognized. So, in order to protect their anonymity the findings focus on their personal statements, opinions, and thoughts. This is why in the following table there is no mention of their faculty or department of the TEI of Athens in which they work for.

General information of the interviewees and interview’s process is summarized to the following table - 3.1.
### Table 3.1: General information of the interviews and interviewees profile

<table>
<thead>
<tr>
<th>Participant</th>
<th>Interview date</th>
<th>Interviewee's Background</th>
<th>Medium of Communication</th>
<th>Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>26/04/2015</td>
<td>Computer Scientist</td>
<td>Skype</td>
<td>Laptop – no headset, camera, speakers</td>
</tr>
<tr>
<td>2</td>
<td>27/04/2015</td>
<td>Librarian</td>
<td>Skype</td>
<td>Laptop – no headset, camera, speakers</td>
</tr>
<tr>
<td>3</td>
<td>22/05/2015</td>
<td>Mechanic Engineer</td>
<td>Skype</td>
<td>Laptop – no headset, camera, speakers</td>
</tr>
<tr>
<td>4</td>
<td>25/05/2015</td>
<td>Librarian</td>
<td>Skype</td>
<td>PC – headset, camera, speakers</td>
</tr>
</tbody>
</table>

These people are two librarians and two computer scientists who are involved with the project of the creation of “Development of digital services of the library of the TEI-A” (i.e. Hypatia). There are also two more persons involved to the development of this project as IS managers but their agenda was very demanding and it was impossible interviews to be arranged.

The interviews were conducted in April – May 2015 with the use of Skype. The interviewees located in their homes during the interviews that lasted between 1 ½ to 1 hour. An informed consent was sent via mail to each interviewee separately in order to inform them about the research and the ethical related issues that would be preserved. The interviews were recorded with the use of both android application and skype-video-call-capture software. I also kept handwritten notes. In parallel with and after the collection process I was transcribing the data in order to provide more qualitative and accurate results.

As regards the interview questions were the same for all of the interviewees. They provided different answers and thereby the qualitative nature of this study was enhanced. The sections that the interview questions were divided are the following: Interviewee’s background (ice-breaking), Project’s background, Project’s current situation, Information Systems Strategic planning, Organization’s environment (resources, capabilities, needs, feasibility etc.), Future goals, General / Other. The first section was created only for making the participants to feel comfortable by introducing them smoothly to the interview process. The answers given to the rest of the sections are presented in detail at the Appendix C, p.71.

### 3.3.4 Documents review

In order for the researchers to enhance reliability of the data collection they should combine qualitative data collection techniques (Cresswell, 2008; Yin, 2009).
Documents review, may not constitute a great part in the data collection process (Marshall and Rossman, 2006) but they help the research to gain deeper insights regarding the background of the organization, and the project, i.e. the reason of its development, its processes etc. The material of the documents review could be individual, institutional, organizational and official documents, reports, project’s logs, records, archive documents, funding proposals, newspapers, cards and more (Corbetta, 2003).

The “institutional documents” according to Corbetta (2003) are produced by the society of an Institution, and in their majority consists of written text. As a result, institutional documents review can shed light upon the institution which is examined and thus to provide empirical data for the research as well as the “administrative documents” which represents a slice of the society that belongs to the institution.

All the interviewees when asked whether there was any ISSP implemented to organize the processes related to the project, they answered positively. More specifically, they referred to the announcement of the project. There are three volumes, 100 pages each, in which all ISSP stages are described in depth. Moreover, they briefly referred that it was obligatory for all the involved persons into the project to submit administrative documents in a specific period according their responsibilities. These administrative documents were conducted individually by each person involved in the development of the project.

- **Institutional Documents**
  The first volume (A) includes all the stages of the ISSP. The second volume (B) includes financial dimensions regarding the development and the implementation of IR’s IT infrastructure. Customization of services according to the demands and needs of the TEI of Athens are described in the third volume (C). Finally, apart from the aforementioned, all these volumes include information about digitisation and documentation standards, copyright policies, and development of a platform for electronic publications and electronic conferences as well as description of best practices.

- **Administrative Documents**
  Each person involved in the project had to conduct administrative documents in order to describe the IS processes that were conducted by this person in a specific period (i.e. in one, two or three months, half or a year-period). There were involved in the project more than 20 persons. Six of these persons produced administrative documents montly for two and a half years, namely 180 documents in total. Adding the administrative documents conducted by the other members of the project the total numbers over 250 documents consist each of 30 pages at least. These documents are not classified and thus I could gain access to them. However, due to the short period
within the research was carried out it was impossible all of these administrative documents to be read thoroughly. In order to collect as much relevant data as it was possible, a selection was made and the majority of them were read. So, in order for their content to be clarified I will name few of the responsibilities described in these administrative documents concerning IS procedures.

- Construct work-flows and communication mechanisms
- Find, collect and gather scholarly and administrative material
- Copyright policies: protection, intellectual property rights.
- Built IT infrastructure: DSpace, Ontologies, digital preservation etc.
- Monitoring of IS processes, best practices.

3.4 Data Analysis

As it is already mentioned, the hermeneutics are used in the analysis of the empirical material to gain a better understanding of humans’ sayings, actions, and motivations; explaining though the relationship between humans, organization and Information Systems. Moreover, hermeneutics makes sense of text or text analogue that tends to be contradictory because of being complicated, incomplete or vague (Myers, 2013).

According to Lichtman (2013) the data analysis starts in parallel with the data collection process, in contrast to quantitative research methods were the data analysis starts right after the data collection is completed (Ιωσηφίδης, 2003). Lichtman (2013) also states that qualitative analysis has no a defined end like the quantitative analysis where the research creates tables, charts or statements about hypothesis. However, the researcher who conducts a qualitative analysis he/she perceives that the collected data are adequate by the time there are no interviewees or place to observe. He further claims that coding analysis help researcher to analyze his/hers data by categorize them into themes in order to find differences and similarities that help them to answer the research questions.

So, the interpretation of the collected data provides a deeper insight to the investigating topic. Initially, at the data analysis process, the techniques of data collection like notes, video and audio recording are gathered and organized so as to proceed to the transcription process in a form of a text. So, the researcher after gathering the respondents’ answers, he/she should interpret them in order to makes sense of their sayings.

3.4.1 Applying Hermeneutics in analysis

The main focus of Hermeneutic interpretive phenomenology, which is relied on Heidegger’s philosophy, according to Crist and Tanner (2003, p. 202) is:
“A qualitative research methodology used when the research question asks for meanings of a phenomenon with the purpose of understanding the human experience”.

A researcher conducting a qualitative research should first understand and interpret of what people say; what people do; and why (Myers, 2013). The concept of “text-analogue” can be anything can be seen as a “text” like a culture, and organization (Myers, 2013) as well as social and political action (Heidegger, 1962; Ricoeur, 1974; Thompson, 1981; Butler, 1998; Corbetta, 2003). Myers (2004, p. 107; 2013, p. 185) states that:

“Hermeneutic circle is a fundamental concept in hermeneutic philosophy” which “is dialectic between understanding of the text as whole and the interpretation of its parts, in which descriptions are guided by anticipated explanations”.

More specifically, Gadamer, (1976, p. 117) argues that:

“It is a circular relationship. . . The anticipation of meaning in which the whole is envisaged becomes explicit understanding in that the parts, that are determined by the whole, themselves also determine this whole”.

The aforementioned argument is illustrated to the following figure.

![Figure 3.2: Basic form of the hermeneutic circle, modified version (by Ajjawi and Hings, 2007)](image)

Bontekoe (1996, p. 3) describes hermeneutic circle as:
“The circle has what might be called two poles—on the one hand, the object of comprehension understood as a whole, and, on the other, the various parts of which the object of comprehension is composed. [...] The object of comprehension, taken as a whole, is understood in terms of its parts, and [...] this understanding involves the recognition of how these parts are integrated into the whole”.

So, hermeneutic circle is considered the pre-understanding of the phenomenon where researcher can provide meaning of the text through interpretation of “the parts of the text (words) in the context of the whole (sentence and paragraphs) and conversely the whole in terms of the parts” (Moller and Chaudhry, 2012, p. 14).

In the following figure 3.3, it is presented how hermeneutic method is applied in this study.

![Figure 3.3: Application of Hermeneutics in this study (inspired by Butler, 1998)](image)

**3.4.2 Coding Analysis**

According to Leech and Onwuegbuzie (2007) and Myers (2013) there are several approaches of qualitative analysis. The most common used type is the constant comparison analysis known as “coding” (Leech and Onwuegbuzie, 2007). Myers (2013, p. 167) argues that a researcher “as soon as they start coding a piece of text
they have already started to analyse it” as “coding is analysis”. Lichtman (2013) named this phase 3Cs of analysis (figure 3.4), where the researcher moves from Coding to Categorizing and then to Concepts / Themes. In other words the researcher “moves from the raw data to meaningful concepts” (Lichtman, 2013, p. 197).

Lichtman (2013) also claims that the codes might be ranged from 80 to 100, which then will be organized into 15 to 20 categories which in turn will end up to 5 to 7 concepts or themes. “However, themes can also be derived from the literature”. This argument has been supported by Myers (2013, p. 167).

Figure 3.4: The three Cs (Lichtman, 2013)

3.5 Trustworthiness of the research

Lincoln and Guba (1985), and Schwandt, Lincoln and Guba (2007) state that the trustworthiness of a research is needed for the assessment of its worth. The criteria that establish trustworthiness are: a) credibility (internal validity), which provides confidence to the ‘truth’ of results, b) transferability (external validity), referring to the applicability that have the results in other contexts, c) dependability (reliability), is related to the repetition and consistency that have the results and finally d) confirmability (objectivity), showing that the research holds a neutral position throughout the inquiry and the results provided by unbiased answers of the interviewees.

3.6 Ethical Considerations

The interviewees were informed beforehand about the techniques that are going to be used throughout the interview respecting as well as their anonymity. It is an essential
ethical issue an informed consent to be given to the participants so as to take their permissions before the conduct of the interviews. It includes the following issues related to the research: the topic, the aim, the research questions, the contribution of the research, the participants’ rights about interview, the issues of confidentiality, and other issues relating to the flow of the interview. The informed consent is attached to the appendices section of this master dissertation.

However, as it is already mentioned, the location of the interviewer and the interviewees is different which creates an issue concerning how the informed consent can be delivered to the latter. Given that all of the participants are familiar with the use of technology, the informed consent was sent separately via email to their personal mail accounts so as for them to get informed about the content, and the aim of this research as well as about the ethical issues that might arise during the data collection data process.

The participants gave their consent to engage in the research by printing and signing the informed consent and then they scanned it in order to send it back to me via email. In the same email they gave me their personal Skype accounts in order to add them in my Skype contacts so as to be able to call them. I respect their anonymity by deleting their accounts after the completion of the Skype interview.

Besides, the written informed consent the participants were orally informed as well that they were able to withdraw from the interview wherever the feel that they want to as well as not to answer a question if they feel uncomfortable. Moreover, consent was asked for recording the session. They were also assured that their anonymity will be ensured and the data that will be gathered both by tape-recording and handwritten will be used for academic purpose only. After the transcription process the participants have the possibility to check the results and outcomes of the inquiry and they were informed about as well.
4. Analysis and Results

In this chapter the empirical findings are being analysed. Hermeneutics is used as a data analysis method. This chapter concludes with the presentation of the results derived from the analysis.

The concept of hermeneutic circle, where the qualitative researcher pre-understands the “whole” in order to provide meaning by interpreting its “parts”, can be used in this study in two parallel ways (Butler, 1998).

Firstly, the researcher should prior gain knowledge about the “whole” concept of the investigated case study concerning what Institutional Repository (IR) is as well as what the Information Systems Strategic Planning (ISSP) is. The “parts” of this whole concept are the interpretation of the ISSP stages, i.e. how ISSP can be utilized when a University developing an IR.

Secondly, in order for the researcher to come up with results she should reduce the size of their data provided both through interview and document reviewing process by making a coding analysis (Myers, 2013). Thereby, she can conclude to meaningful concepts through the identification of themes and categories of these data (de Gagne and Walters, 2010). This mechanism is a reductionist – analytical dialectic (Butler, 1998). Here, the hermeneutic circle is employed by understanding the whole “text” (transcripts) derived from collected data; and by interpreting its parts (words) aiming to conclude to themes and then reflect on these (Moller and Chaudry, 2012).

In the end of this chapter, the results derived from analysis are presented; concluding with a figure 5.1 (p.40) in which the themes which have been occurred from the reductionist analysis are depicted as well.

4.1 Institutional Repository (or Digital Repository)

An Institutional Repository (IR) is an online database with “a set of services” (Lynch, 2003, p. 2; Barton, 2004, p. 10) like storing, indexing, preserving and disseminating digital materials to the University members. These materials consist of scholarly output, e-theses, administrative documents and historical objects which are distributed in digital format.

The literature on the role of IR confirmed my initial perspectives (pre-understanding) about what an IR is. By relating the statements of Lynch and Barton to my experience my pre-conception was that an IR is different from a Digital Library as it hosts the output of its members such faculty, students and administrative staff. Moreover, its
content is stored and distributed in digital form maintaining its authenticity over the
time.

The data collection process was a medium to enhance that perspective. All of the
interviewees when were asked to describe the content of the project they argued that
the IR of the Technological Educational Institutional of Athens (TEI-A) located in
Greece consists not only of academic works and electronic theses but archival
collection such as administrative documents, video and old laboratory instruments as
well. However, before start the data collection process I didn’t know is that the IR of
the TEI-A is a remarkable endeavor as it is the first in Greece that is composed by all
of these materials. This is because, the IRs mainly consist of e-theses and in few cases
of academic works. The latter doesn’t constitute part in many IRs because it is
difficult to persuade scholarly to submit their scientific output. This is also a challenge
for a University IR. Another distinctive aspect of this IR is its Information System
(IS) services which it offers to the end users. It relies on the state of the art IT
equipment in order for harvesting and disseminating its material to national and
international level. More specifically, the fourth interviewee stated that:

“the harvesting of the academic research to Europeana where numerous digital
collections of museums, libraries, archives, and multi-media collections are
harvested. This will raise the ranking of the TEI-A among other national and
international universities”.

The overall impression is that the “Hypatia”, the IR of the TEI-A, is a good example
of what an IR is as it includes all these digital objects that an IR of a University can be
composed of and also it disseminates its content both to national and international
level.

4.2 Strategic Planning, Information Systems Strategy and Information Systems
Strategic Planning and their alignment

The overall agreement from the theoretical framework such as Robson (1997), Ward
and Peppard (2002), Casidy (2006), and King (2015) is that Information Systems
Strategic Planning (ISSP) relies on pre-determined business strategies and then
influence them in order for organization’s IS goals and objectives to be accomplished.
This process is known as alignment or integration of the ISSP to Business Strategy
(BS).

Before conducting the research I didn’t remember that ISSP defines and influence IS
goals and objectives of BS. So, my initial assumptions have been modified since I
made a literature research and gain empirical experience through case investigation.
Given that the data analysis is an ongoing process and starts with when data is collected (Lichman, 2013) I realized that all of the participants of the course of interview were familiar with the above theoretical concepts and their integration as they were many times before in charge of managing IS projects.

Moreover, they mentioned that an ISSP was development and employed when they developing the IR “Hypatia”. My initial perspectives have been shaped as I didn’t expect either all of them to be familiar with the concept or an ISSP to be implemented. Then I felt confident that I will collect sufficient data for this research which might add knowledge regarding the IS strategic approach of the creation of an IR in Greece.

Throughout the data collection and analysis processes based on the interviewees responses my horizons were constantly changing and enriched. During the investigation of the ISSP in terms of the creation of “Hypatia” I realized that all of the stages of the ISSP were developed and implemented dealing with challenges as are presented in the problem statement of the introductory chapter of this thesis. Furthermore, there are developed monitoring success practices in order to provide improved services in the future.

Reviewing, the general opinion of this part of the analysis is that the ISSP was utilized according to the theoretical framework.

4.3 Results

This section provides results which have been derived from the analysis of the collected data. In general, sufficient information are collected and analyzed through hermeneutic interpretive phenomenology which was applied both as theory and method. Regarding the transcription of the data, it was read and examined again and again till to reach to a refine and accurate outcome. The results were classified into primary and secondary factors, i.e. themes and subcategories respectively. It is important to be mentioned that the factors are intertwined with each other. The results are illustrated at the end of this chapter.

From the literature review and empirical findings, Information Systems Strategic Planning (ISSP) is seen as an important approach for managing successfully both Information Systems (IS) and Information Technology (IT) procedures related to the creation of an Institutional Repository (IR). During the collection process the common point which was emerged it was that all of the interviewees were familiar with the concept of Information Systems Strategic Planning (ISSP) as they have worked before in IS projects.
The interviewees provided information of how ISSP was utilized in the creation of “Hypatia”. They point out that the elements of the ISSP that they firstly examined first were related to the evaluation of the organizational environment, i.e. internal and external. The former involves the evaluation of the internal strengths and the weakness of the Technological Educational Institute (TEI) of Athens as well as the opportunities and threats that may occur by external factors. These elements are also known as SWOT analysis.

For example, the answers that provided in relation to the SWOT were that the (S) strong point of the IR is its state of the art equipment, personalized services and that experts worked for this project to be completed. These experts were hired for a fix-term period. This is one of the (W) weakest points of the project according to the participants. This is because, as there are no expertise employees to support the project, and now the library’s staff is engaged with the responsibility to provide this support. Nevertheless, the library’s staff based on empirical findings is not well-skilled on digital services. On the other hand, given that the “Hypatia” was relied on International Standards and consists of both intellectual scientific output and archival material makes it unique and it considered by the participants that it may offer (O) opportunities for collaboration in a national and international level which in turn will be a sparkle of hope for the project owing to that the TEI-A is (T) threaten by the economic difficulties of the country which consist it incapable to support financially the project by hiring experts to continue the development of the IR.

To this point it worth mentioning that the first interviewer told that a wider perspective of the SWOT is the PEST model by which the political, the economic, the society and the technological environment were assessed as well, and thus my initial assumption was modified again.

So, in terms of the strategic element PEST, the analysis indicated that the (P) political system is the major responsible and dominates to other IS strategic elements. One of the participants said that the:

“Political forces are the ones that move the strings at all fields of a country. As far as concerns, educational system plays vital role because the elected people in the Ministry of Education are responsible for the resources and the quality of the education”.

Moreover, the interviewees stressed that the political forces not only impacts the (E) economy but also the quality of the educational resources as well. Concerning the second aspect, i.e. the economic factor, its influence it is three fold according to the analysis of the empirical findings. So, apart from the difficulties in hiring new expert employees to continue the project, the financial resources have been decreased as well
building barriers in job openings for new professors; which in turn has indirectly impact to the project, due to the fact that elder professors retire and are not replaced by new ones, this inevitably raised the working hours of practicing professors creating thus a demanding agenda. The interviewees told me that, this is considered challenge regarding the minor contribution of the academics of the TEI-A to the “Hypatia” project. Besides that the economy affects education which in turn is interwoven with the society (S). The more educated people there are, the more development will be. Finally, the third point that influenced by the economy is technology (T). The TEI-A will face problems in the future as there are not adequate financial resources to provide IT support to the IR for updating the software (DSpace) or for integrating new technologies which aim to provide personalized services and serve people in special needs. This element raises concerns to the interviews and they worried about the viability of the “Hypatia”.

Finally, when the interviewees asked whether success measures have been employed, they positively answered. Success indicators according to the participants were applied and they provide statistical results. Thereby, the success of the outcome can be measured based on the IS mission statement.

The themes and subcategories derived from the reductionist analysis are listed in the Table 4.1, p.39). According to Myers (2013, p. 167) “themes can also be derived from the literature”. So, based on this statement the themes derived from the analysis are two: Institutional Repository (IR) and Information Systems Strategic Planning (IS). To put it in a nutshell, the research was based on the investigation of the creation of an IR focusing on the utilization of the ISSP. Thereby, this is can explain how these two themes were derived. Furthermore, each of these themes can be divided to more sub-themes or else sub-categories. For example, the aim of the IR is to disseminate freely its digital content to the public in a national and international level based on state-of-the-art IT infrastructure.

As far as concerns the stages of the ISSP are listed in the first column of subcategories which are related to the evaluation and analysis of each stage separately. In the second and third subcategories are described what issues were included in the analysis and in turn what are the results that came up from. Moreover, the third subcategory provides more details about the relation of the IR and the ISSP concerning their involved issues. In other words, based on the results, the ISSP was utilized to evaluate the current situation of the IR of the TEI of Athens “Hypatia” focusing on the factors that influence its internal and external environment. This evaluation helped to identify the issues involved in the creation of the IR and to boost the smooth work flow in the other ISSP stages. Concluding, by setting measures in order to evaluate success and then to lead to future goals according to the IS mission.
Table 4.1: List of themes and subcategories

<table>
<thead>
<tr>
<th>Themes</th>
<th>First Subcategory</th>
<th>Secondary subcategory</th>
<th>Third subcategory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional Repository (IR)</td>
<td>Dissemination of information</td>
<td>National and international level</td>
<td>IT infrastructure</td>
</tr>
<tr>
<td>Information Systems Strategic Planning (ISSP)</td>
<td>1) Project’s current situation</td>
<td>Institutional Repository (IR)</td>
<td>Case study</td>
</tr>
<tr>
<td></td>
<td>External: PEST</td>
<td></td>
<td>Educational Scope: Government, Educational Resources, Educational personnel, Educational IT Infrastructure</td>
</tr>
<tr>
<td></td>
<td>Internal: SWOT</td>
<td></td>
<td>IR’s issues: Content, Copyright policies, Dissemination level, Expertise knowledge, maintenance Collaborations, Economic difficulties</td>
</tr>
<tr>
<td></td>
<td>3) Information Systems Strategic Planning processes</td>
<td>IS mission, goals, objectives, desirable goals, activities, IT infrastructure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4) Future goals</td>
<td>Success measures, monitoring process</td>
<td>New goals are set according to IS mission and the results derived from monitoring process</td>
</tr>
</tbody>
</table>
The involved issues related to the creation of an IR and the utilization of ISSP are linked each other. This relation of how ISSP influences the creation of an IR is illustrated into the following figure 5.1. This representation is emerged from reductionist coding analysis and its results. The full-color boxes are the themes which were derived from coding analysis and literature. The boxes with the green and blue thick line are the first and second subcategories respectively. The arrows show the link between the themes and subcategories. In the dashed boxes are the issues listed in the third subcategory (see Table 4.1, p.39). So, the following figure illustrates the themes and subcategories presented in the Table 4.1.

![Diagram](image)

Figure 5.1: Hermeneutics in Information Systems Strategic Planning (inspired by Butler, 1998)
5. Discussion and Analysis

5.1 Information Systems Strategic Planning and Institutional Repository

Nowadays, people rely more and more on the technology not only to facilitate their daily and business’s tasks but also to gain access to more information in order to enhance their research. This is because they prefer to obtain information with the click of a mouse (Arms, 2000) than to visit the premises of a library. According to Afuah and Tucci (2003) the Internet provides universality by shrinking and enlarging both time and space. More specifically, the internet increases the pace that a user can have access to information without being the time or the location burdens anymore in comparison to traditional library’s services. In 2003 Lynch describe that the scientific output of the members of a University can be managed and disseminated through an Institutional Repository (IR). In addition to this, Barton (2004, p. 10) stated that “an institutional repository is a database with a set of services to capture, store, index, preserve and redistribute a university’s scholarly research in digital formats”. To put it in other words, an IR of a University is an online database in which the majority of its intellectual collection is collected, stored and distributed to the public in a digital form. To this point it’s worth clarifying that even though the IRs were established to distribute scholarly’s output freely to the public there are copyrights that must be preserved. So, there are two roads for an IR to distribute its content: the green and golden road. The green based on publishers’ policies, available in SherpaRomeo for journals, and they allow some papers to be distributed in pre or post-print version, i.e. before or after scientific review; protecting, though, the publisher’s version. The golden road refers to the publication of journals that the University holds the copyrights.

Reviewing, the distinctive difference between an IR and the Digital Library (DL) is that the former collects and disseminates intellectual capital of one or multiple organizations (Crow, 2002) providing “open access” availability to its digital content, unless there is any legal restriction (Heery and Anderson, 2005). While the latter is a gateway to electronic resources such as e-books, e-journals provided by scientific databases (MacColl, Jones and Andrew, 2006) like PsycINFO, PubMed, ProQuest etcetera.

However, an IR gains reputation when its collection increases. For this reason, it is essential for the University to urgent the attention to its faculty and students that they should submit their intellectual production (Allard, Mack and Feltner-Reichert, 2005) to the IR. The exposure of scientific products is a great incentive for the academics to place their works to the University’s IR. This is because the publications are accessible to more researchers than ever before (Heery and Anderson, 2005) who in turn can use them for new researches by citing the author(s) enhancing thus the
latter’s recognition (Cullen and Chawner, 2010). In 2005 van Westrienen and Lynch mentioned that an international conference was held with the title “Making the Strategic Case for Institutional Repositories” aiming to be discussed the current situation of the deployment of an IR. The same year Lynch and Lippincott mentioned that at this conference, thirteen nations took part in, showing that more and more attempts are conducted by Universities over the years to collect in an online place the scientific works, which produced by its members, providing free access to the public worldwide (Jones, Andrew and McColl, 2006, p. xv).

Moreover, the use between the IRs differs because they provide various services (Barton, 2004; van Westrienen and Lynch, 2005) based on the Designated Community they address to (Giaretta, 2011). To name few of the most common use of an IR is to store: educational resources; dissertation and thesis; scientific electronic publications; and also to enable self-archiving which is one of the distinctive services provided to the users. However, because of the culture and the scientific fields of a University, and the needs and the demands of its Designated Communities may differ, the University, initially, should identify the procedures related to the creation of an IR as well as to assess the internal and external factors that may impact on this attempt (Barton, 2004, p.11). Finally, the success is another factor that plays significant role to the creation of an IR and it should be measured as well.

Johnson and Scholes (2008), and Chaffey (2009) stated that the strategic framework helps an organization to determine its future direction and its scope acquiring meanwhile competitive advantage. More specifically, the identification and the organization of the processes related to the creation of an IR can be formulated through the development and implementation of a strategic planning process. Based on Mintzberg (1994) statement, the strategic planning facilitates decision-making process and defines the strategies of an organization providing competitive advantage to each unit.

Furthermore, given that the creation of an IR at a University is something new, this entails a lot of status quo procedures to be changed and the members of the University should be adapted to the new situation. Katsioloudes (2006) and Matthews and Matthews (2013, p. 2) in their research argue that the strategic planning focuses on change which is designed to be adopted in organizations environment; and according to Bryson (2011) “the strategic planning is designed to help public and non-profit organizations (and communities) respond effectively to their new situations”. Moreover, Ward and Peppard (2002), and Thomson and Martin (2005) mention that the key of business strategy is that an organization can be seen in smaller sections which are known as “Strategic Business Units” (SBUs); and for business planning is to set business objectives. However, in order for an organization to stimulate and improve decision-making process should have developed an efficient Information
This is because information, and at a greater extend, information systems and information technology are the keys for an effective decision-making process (Thomson and Martin, 2005). Information Systems (IS) is a group of organized procedures that facilitates several processes of an organization. It is a system that combines both human resources and technology infrastructure. Furthermore, Ward and Peppard (2002) state that the formulation of Information Systems Strategic Planning (ISSP) is a complex issue (Robson, 1997) as it involves several processes which should be taken into account; highlighting that the contribution of human and technology resources is responsible for the achievement of the strategies. The evaluation of IS in business is a challenge to be managed. So, IS strategy in order to be developed, it is necessary the business strategies to be prior defined so as to rely on and then to influence them by determining more precisely the IS objectives and goals of the business supported by technology. Therefore, not only the managers should not separate the IS strategy from business strategy, but also they should focus on the alignment of business strategy to IS strategy.

So, by taken into account these statements a University through the development of the ISSP can both identify and organize the processes that should be conducted for the creation of an IR. The three first steps of the ISSP involve mission statement, values, and vision statement of an organization (Kotter, 1996; Ward and Peppard, 2002; Casidy, 2006; Matthews and Matthews, 2013). Through these steps the University can communicate effectively to its members its desires, what is should be achieved, and how it should be implemented providing feasible activities in order to create an IR. It worth mentioning, that the mission and vision statements should inspire people to comply with. The next step is for the University to assess its internal strengths and weaknesses of its current situation comparing to the opportunities offered by an external environment as well as the possible threats (IS SWOT analysis) in a wider perspective of an external political, economic, social and technological environment (IS PEST model) (Ward and Peppard, 2002; Casidy, 2006), this helps to determine “what is most likely to occur in the future” (Matthews and Matthews, 2013). The specific intentions that the University wants to must be achieved should be based on the mission statement. For this reason, it is essential to determine clearly the objectives so as to accomplish the desirable goals (i.e. the creation of the IR). For example, the objectives of the TEI-A were a) the state of the art equipment, b) partnership with a Third Party Company, c) to hire expert personnel, and d) training process. Afterwards, daily planned activities help staff to be consistent with the mission statement. According to Matthews and Matthews (2013, p. 52) the following questions can be used in order to evaluate these activities; i) “Are we doing the all possible right or best activities?”, ii) “To what extend do these activities are accomplished?”, and finally c) “Do all of these activities comply with and help to achieve the mission statement?”. These questions also help in monitoring the processes of the daily activities of the staff in order to propose alternatives when there
is a need. Finally, indicator measures are useful tools (Matthews and Matthews, 2013) which evaluate the success of the outcome. More specifically, the desirable goal investigated case is the creation of the IR named “Hypatia”. According to empirical findings each month the new employees submit in a written form their fulfilled activities. The success of these activities was measured by Scientific and Administrative Committees in relation to the desirable level of their performance. Moreover, the software of the IR (i.e. DSpace) provides services that enable to export logs and statistics in order for the TEI-A to measure the success of fulfilled activities in of a particular period.

5.2 Information Systems Strategic Planning and Other domains

The IS strategy is a framework that can be implemented in several business not only to a University which aims to develop an IR. The increasing capabilities of Information Technology stimuli organizations to re-evaluate the use of their Information Systems as they provide opportunities for change and innovation as well as to support and keep update the strategic objectives and goals of the business. This is why a strategic management of IT has been regard as a vital aspect of a business strategic planning as it affects business performance (Wilkin and Cerpa, 2012).

Lee, et al. (2015) claim that SISP is critical component in decision-making process regarding the constantly increasing costs of healthcare and healthcare technologies. Moreover, health policy, quality of service and care are another investment issues that should be dealt in a hospital (Wager, Lee and Glaser, 2013). So the IS investments in healthcare industry constitutes IS and IT fundamental components which need to be handled by an ISSP so as to meet health organization’s goals and objectives. ISSP can be implement at every business on an organization that use technology for collecting, organizing, storing, interpreting, distributing and reusing information. So, small-medium enterprises (SMEs), Libraries, Government, public sectors, like banks, military, policy etc. (Casidy, 2006; Grant, Hackney and Edgar, 2010), logistics (Bowersox, Closs and Cooper, 2002; Stock and Lambert, 2001; Arvidsson, Holmström and Lyytinen, 2011), electronic businesses, (Pant and Ravichandran, 2001) and more, by investing in the state of the art equipment, i.e. new technologies, gain a competitive advantage among their stakeholders and marketplace at large.

5.3 Information Systems Strategic Planning and Ethics

Ethics is part of philosophy that refers and copes with the principles of what is right and wrong. Ethics apply in human life in general and not particular in Strategic Information Systems. It deals with the difficulty in choices and decisions of humans of what is good or bad (ACM, 1992; Ess, 2009).
Aristotle in the second book of the “Nicomachean Ethics” stresses the attention to the definition of the concept of the “moral virtues” (Aristotle, n.d; Τζωρτζόπουλος, 2010; Αθανασόπουλος, 2013). Moral virtue belongs to the “willing” part of the soul and it describes the character of the human (Αθανασόπουλος, 2013). Senses exist in humans as inborn attributes and thus they obtain abilities before to proceed to corresponding actions. However, Aristotle further argues that humans obtain moral virtues right after practicing them as it happens with techne. The concept of techne describes the action and practice, and the next stage where knowledge expresses as wisdom based on experience is defined by Aristotle as prhrones (prudence). Additionally, he supports that when people know what is right they always lead to do it. He also taking more into consideration the aspects related to humans’ nature regarding acting and accepting moral responsibility (Αθανασόπουλος, 2013).

ACM (1992), Robson (1997), and Grant, Hackney and Edgar (2010) mentioned that there is a professional code of ethics for organization by which all members must comply with. Briefly mentioning that IS issues that pose ethical dilemmas concern privacy, accuracy, property and access of information. So, IS management should dealt with this decisions in order to articulate an Information Systems management code of practice.

5.4 Critique of Research Methods

As it is mentioned at the methodology chapter research methods, i.e. qualitative and quantitative, are considered good and serve their purposes according to what a researcher tries to find out.

A qualitative approach was chosen for the purpose of this study. However, there are sceptics about this research method claim that due to the fact that the data gathered from a small sample the analysis process has limitations of comparisons and thus it refers to specific phenomenon rather than to be put in a general context. Moreover, the data collection and data analysis processes are inextricably depended on the researcher’s communication skills and perception respectively. For this reason the results can be considered biased by the researcher’s intentions or perceptions which affect findings’ reliability (Myers and Avison, 2002; Ιωσηφίδης, 2003; Taylor, 2005; Cresswell, 2009).

Additionally, according to Eno and Dammak (2014, p.1) the usability of the case study as a research design is a great academic debate concerning its reliability. The sceptics of this research strategy claim that case study lacks of rigor, and it generates undependable and narrow results which affect reliability of the findings. More specifically, they state that the case study research by the time a case study research examines only one situation or object instead of comparing multiple phenomena, its
results do not be accurate and reliable given that they are driven by the intention of
the researcher to prove their primary aim. Punch (2005) stresses that there is difficulty
in determine the definition of case studies. So, Eno and Dammak (2014) claim that the
contradictory of the usefulness and reliability of case study approach may start from
the paucity of conventional definition. Abecrombie et al. (2000, p. 34) state that:

“The detailed examination of a single example of a class of phenomena, a case
study cannot provide reliable information about the broader class, but it may be
useful in the preliminary stages of an investigation since it provides hypothesis,
which may be tested systematically with a larger number of cases”.

While, on the other side of the spectrum, the quantitative research methods are
considered more reliable due to the fact that the researchers follow a rigorous
predetermined plan in which the most crucial decisions have been taken into
consideration before the research is carried out. Another difference is that in the
qualitative method the research topic is sufficient depicted in advance. To this point it
worth mentioning that objectivity is the typical attribute of the quantitative research as
the researchers strive to conclude to accurate measures and their analysis focus on
particular natural problems by using structured questionnaires, and survey tools for
numerical data collection. Furthermore, they tend to forecast problems before they
emerged during the research process. Reviewing, all the elements in a quantitative
research seem to be well structured before the collection of the data unlike the
qualitative research where the research design conducted throughout the research as
data emerged (Thomas, 2003; Taylor, 2005; Cresswell, 2009).

Nevertheless, researchers continue to use this qualitative method providing successful
finding by making well organized and planned studies of contemporary situations
based on multidisciplinary fields of literature (Soy, 1997).

5.5 Critique of Results

There are several qualitative approaches which a researcher can employ for analysing
the collected data which in turn are derived from interviews, observations or both
(Litchman, 2013). Cresswell (2008) states that all research methods have limitations
and this is why he proposes a combination of different types of data so as biased
results to be mitigated. Moreover, the collected data will be analyzed by matching
techniques (Yin, 2003; 2009) such as documents, interviews, observations, and
researcher’s personal impression. However, the qualitative analysis has few
shortcomings in comparison to quantitative analysis.

For the purpose of this qualitative research, the hermeneutics theory used as a method
of analysis for gaining better understanding of what people say, do and why (Bleicher,
Moreover, given that the data collection and data analysis processes are inextricably depended on the researcher’s communication skills and perception respectively, the results can be considered biased by the researcher’s intentions or perceptions which affect findings’ reliability (Myers and Avison, 2002; Ιωσηφίδης, 2003; Taylor, 2005; Cresswell, 2009).

To become more specific, this research had a small size of sample. The study focused only in one University of Greece. But there are more Universities that can provide knowledge about the creation of an IR. Moreover, the interviewees were only four while more people were directly involved with the project, but their demanding schedule didn’t allow to arrange interviews.

Finally, the duration of the study concerning reading of previous studies, data collection process and data analysis was also limited due to the fact that it was conducted for the purpose of a master course. However, further research will include missed points of this research and the results of both researches can be combined in order to enhance their validity.
6. Conclusions

In this chapter, research questions are answered and general conclusions are drawn in order to fulfil the purpose of the study.

6.1 Summary of the Research Study

This study was delved into the field of Information Systems Strategic Planning (ISSP) aiming to justify the use of ISSP when a University developing an Institutional Repository (IR). The issues identified in this case study address the importance of the development of an ISSP in the creation of an IR as well as the difficulties emerge during its utilization. Thereby the findings provide sufficient help in understanding the complex nature and necessity of an ISSP when developing an IR.

6.2 Mapping Conclusions

In this section a solution is given to the research problem by answering the research question:

“How does a University in Greece utilize Information Systems Strategic Planning when developing its Institutional Repository?”

The main problem of the creation of an IR is:

- The organization and management of the constantly increase scientific work.

The challenges related to the creation of an IR are the following:

- Content recruitment
- Service provision
- Protection of intellectual property, and copyright policies
- Digital preservation
- IT infrastructure
- Collaborations (librarians with faculty members, and third parties)
- Lack of awareness of what an IR is
- Financial Resources.

The empirical findings and their analysis provided sufficient information to draw conclusions. So, based on the findings the conclusion that is drawn is that the people involved in the Technological Educational Institute of Athens (TEI-A) for developing an IR were familiar with the ISSP concept as they have worked before as project managers in similar Information Systems (IS) projects. Being aware of how to collect,
organize, store and manage the ongoing increasing scientific output of a University they developed an ISSP when developing the IR. They also mentioned that the IS strategy consists of several IS aspects linked each other and for this reason it is important to be managed strategically, otherwise cannot be meet the initial IS objectives and goals set by the organization.

They also mention how the ISSP was utilized in the case of “Hypatia”, i.e. the IR of the TEI of Athens, Greece, in order to deal with the aforementioned challenges. They faced difficulties in the communication of the IS vision to the faculty members and staff. The majority of them, they weren’t familiar with the concept of the Institutional Repository let alone of its contribution to the society. So, the managers, through the analysis of external and internal environment i.e. IS PEST and IS SWOT respectively, delegate responsibilities to the employees who also work for this project in order to persuade both faculty and staff about the benefits of this IR and why their contribution is necessary. Moreover, they should also take measures for the protection of Intellectual property and copyright policies. Because, even though the concept of an IR is to provide free accessibility to full text scientific works there are also legal restrictions that should be taken into account. Another difficulty was to deal with inadequate financial resources both when developing the IR and regarding its viability. The Information Technologies are rapidly developed and there is a need for an ongoing financial support in order to preserve the authenticity of the digital objects over long term. The financial resources play basic role to open vacancies for digital librarians so as to improve content recruitment process as well. In this case this is a significant barrier as there are not expert librarians to work exclusively for this project providing best practices, i.e. to enhance “Hypatia” viability. So, the inadequate financial support which is an external political aspect is a major internal threat for this IR.

However, apart from the difficulties they stressed its contribution to the society. The IR is the core dissemination of a University’s intellectual output to the public. The distinctive point of the “Hypatia” is that it is consists not only of scholarly works but also of e-theses conducted by both students and faculty members. Additionally, it consists of historical archives, instruments and objects of the TEI of Athens. Furthermore, several collaborations with other national Universities have been made and they hope for future ones as the IT infrastructure is based on the state of the art equipment and on experts’ knowledge. They designated the “Hypatia” as the milestone of the national IRs. All of the participants encourage Universities, Institutes and other organizations to develop an IR stressing the attention to these challenges in order for potential threats or difficulties to be prevented.

In conclusion, it derives from the empirical findings and analysis that the development of an ISSP it is necessary when creating an IR as it manages strategically both IS and
IT and thus it helps in fulfilling organization’s IS goals. However, it is of paramount importance all of the ISSP stages to be treated equally in order for having a successful outcome as they intertwine with each other.

6.3 Research Contribution

An IR is by definition within the field of Informatics and entails several IS processes which rely mainly on IT infrastructure in order to disseminate information to the public. Both and IS and IT processes are needed to be managed strategically in order to have successful outcomes. So, significant research contribution has been made in the area within the framework of Information Systems Strategic Planning. Developing and utilizing an ISSP in the creation of an IR plays a profound role to accomplish University’s IS objectives and goals. The major concern of ISSP is both the determination of IS goals and objectives and the development and implementation of strategies on a specific domain of the organization. The identification of ISSP stages and its implementation in an IS domain, like the creation of an IR, might add knowledge of how to utilize ISSP when developing an IR. This could also help other organizations, Institutions, Universities to conduct relevant IS projects preventing threats and enhancing their internal opportunities according there desirable and feasible outcomes.

6.4 Future research

As it is already mentioned into the chapter “5.4 Results Critique” of this thesis, the qualitative research methods have few shortcomings. Given that the sample of the collected data is quite small cannot provide generalization and it can be considered that the results are biased followed by the researcher’s intention. So, future research in order to enhance the validity of this research is to repeat the entire research process to more Universities that have established IRs. Furthermore, the research can be expanded and compare European Universities in order to investigate whether there are similarities and differences between the Universities.
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Appendices

Appendix A

Informed Consent

1. **Name of the person / persons who will implement the project, and e-mail address.**
   - Name: Angeliki Vos
   - Email: av222eh@student.lnu.se
   - Tel.: +30 698 007 68 58

2. **The project is implemented within the framework of a Master / Master Thesis.**

3. **Name of the supervisor of the project, institution and email address.**
   - Program: Master of Information System (2 year – 120 credits)
   - University: Linnaeus University, Sweden
   - Supervisor: (data will be available to supervisor through all steps)
     - Full name: Jamie Campos
     - E-mail: jamie.campos@lnu.se
     - Examiner: Christina Mörtberg
     - E-mail: christina.mortberg@lnu.se

4. **Involved parties in research:**
   - Librarians of the TEI of Athens
   - Computer Engineers of the TEI of Athens

5. **Study Title / Topic**
   Creating a Digital Institutional Repository (IR) in Greece: need for information systems strategy?

6. **Aim of the Research**
   The aim of this study is to justify the use of ISSP when developing an IR.
7. Description of the Research Project

The project’s title is the “Development of Digital Services at the Library of the TEI of Athens”. During this project a lot of people worked making significant attempts in order to create an Institutional Repository; a milestone of the Technological Educational Institute of Athens, Greece. However, the creation of an Institutional Repository is a complex attempt as it entails multiple processes and decisions related to Information Systems and Technologies. Is it necessary for people involved in such a project to develop an Information Systems Strategic framework in order to strategically manage these issues and thus to meet the desirable goals?

By taking the aforementioned arguments into account, the following question was generated:

*How does a University in Greece utilize Information Systems Strategic Planning when developing its Institutional Repository?*

8. Benefit of Research and Benefits to You

As a researcher, I might obtain a deeper understanding about the utilization of the Information Systems Strategic Planning on the creation of an Institutional Repository in Greece. To a greater extent, this master dissertation might bridge the gap in the literature in terms of the Information Systems Strategic Planning (ISSP) to the creation of an Institutional Repository (IR) in a University in Greece. Moreover, even though there are previous studies providing information about how to create Institutional Repositories, they have focused only on needs and demands of specific Universities located in other countries than Greece. As far as concerns people who are interested about this study, they won’t be only librarians and software engineers but also professors, lecturers, scholars, researchers, students, publishers, and other Universities due to the fact that all of them are involved in the access and interaction to information distributed via an online database. Therefore, this study might also encourage other universities to conduct in the future similar attempts.

9. Data Collection Methods for this study

- Interviews: open-ended questions, semi-structured
- Documents reviewing

10. Risk and Discomfort

I do not foresee any discomfort from your participation in research. For example: Sharing your personal information to third parties. If the interviewee has requested anonymity any material that may identify the interviewee or her/his affiliations in the
thesis, then the researcher may quit or paragraph material that obtained through the interviews in the thesis. Any given name of participants will be replaced by fictitious ones that will not bear any resemblance to the real names. Only gender and age of the interviewees will be listed.

11. Participant’s Rights about Interview
The interviewee can reserve her/his rights to edit or withdraw the interview. The interview is volunteer base and an interviewee / participant can leave the interview any time if s/he wants to without giving any explanation. Moreover, interviewees can also ask to delete date that researcher collected whenever they want.

12. Access to Interview Material
The recorded material and original transcripts will be limited to the researcher who is conducting interviews, supervisor of the thesis and examiner of the research. In any case, the recorded material, transcripts and other material that will gather in this research and that may identify the participant will not be given to any outsiders or any agency.

13. Confidentiality
I understand the above explanation and agree with the statements above.
Yes ☐ No ☐

I understand that my participation in this research is volunteer based and I can withdraw from the research any time if I want without giving any explanation.
Yes ☐ No ☐

I understand that I can ask the researcher to remove my data any time I want without any explanation.
Yes ☐ No ☐

By signing this document I consent to participate in the research study and I allow you to use this data and information in your master thesis.
Yes ☐ No ☐

I agree with audio recording of data
Yes ☐ No ☐

By signing this document I consent to participate in the research about the demands and the ideas of care workers about information and communication technologies. Data/ information that I share with you that can use in your master thesis.

I want to keep my name anonymous
Date of interview: ____________
Place: ____________

Participant's Name: _________________________________________
Participant's Signature: _________________________________________
Researcher's Name: ___________________________________________

Signature: _______________________________________________
### Interviewee’s Background

1. Could you tell me few words about your background?

2. Could you tell me what was your role in the creation of the IR (Hypatia)?

3. How many others involved in this project? What are their backgrounds?

### Project’s Background

1. Could you briefly describe the content of the project?

2. Could you mention its benefits for the Institute (TEI-A)?

3. Do you believe that there is any disadvantage for the Institute? Please describe.

4. What are the sources of the funding for the project?

### Project’s Present Situation

1. In what stage is the Institutional Repository (IR) (Hypatia) at the moment?

2. What do you think are the advantages of the Hypatia? Explain.

3. What do you think are the drawbacks of the Hypatia? Explain.

### Information Systems Strategic Planning

1. Are you familiar with the concept of IS Strategic Planning? Please describe.

2. Was any ISSP implemented to organize the processes related to the project?

   2.2. if so, what were its steps?

   2.3. if not, why not?

3. What was the IS mission of the TEI-A?

4. What was the IS vision of the TEI-A?

5. How was the IS vision shared / communicated to people involved directly or not to this project in order to comply with?
6. What were the IS goals/objectives of the TEI-A which wanted to achieve through this project?

7. What are the processes that the TEI-A followed to accomplished its IS goals?

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8. *(only if the interviewee answered the 7.1, otherwise continue to the next question)*

Were developed any mechanisms for monitoring the practices?

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9. How do you measure success of what you are doing?

**Organization's Environment (Resources, Capabilities, Needs, Feasibility)**

1. Could you describe the Political forces?

2. Could you describe the Economic forces?

3. Could you describe the Social forces?

4. Could you describe the Technological forces?

5. What are the Strengths of the TEI-A related to this project?

6. What are the Weaknesses of the TEI-A related to this project?

7. What are the Opportunities of the TEI-A related to this project?

8. What are the Threats of the TEI-A related to this project?

**IS SWOT** *(internal)*

**Future goals**

1. What will be different after 3 or 5-year time?

2. How this change will impact on IR?

3. Are there any long term goals?

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<td>1. What would be your advice to those who want to proceed to the same attempt in order to encourage them or/and stress their attention about something?</td>
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Appendix C

Raw Data: Interviewee’s answers

2nd section:
Project’s Background – Organizational level

**Question 1: Could you briefly describe the content of the project?**

Interview 1 answered that “*the general aim of the project was to create a digital repository in which the academic works and archives of the TEI-A will be gathered, organized, and stored. […] The first aim was to depict the history of the TEI-A by creating an archival collection consists of video, old laboratory instruments et cetera. The second aim was to provide open access of the digital material at the members of the TEI-A, and at the Greek society in general*”.

Interviewee 2: The creation of an IR which will collect the intellectual output of the members of the TEI-A both academics and students, and to host the historic archive of the whole Institute presenting though the history of the TEI-A.

Interviewee 3: The collection of the sum of the academic and research production in a common place which can be stored, accessed, and retrieved.

Interviewee 4 answered that the content of the project is related to the creation of an IR which will be consists of academic output, student thesis, and archival collection.

**Question 2: Could you mention its benefits for the Institute (TEI-A)?**

The interviewee 1 mentioned six benefits of this project regarding its impact on the TEI-A. The respondent started by making reference to the services that are offered expand the boundaries and it addresses not only to the members of the TEI-A, but also to the national and international society that interests about the technological education fields. Moreover, “it” stated that contemporary tools of access, services like e-journal platform and ontologies respectively are also considered benefits of this project. This project affect also on the development of the country’s culture by providing knowledge of the self-archiving process through the availability of personalized services. Thereby, new employees are hired and trained who in turn trained faculty and staff of learning to use the services provided by the IR. Furthermore, another core benefit is that there is no precedent attempt in Greece. It is the first IR in which both intellectual output and historic archival are collected and disseminated. For these reason, these new capabilities could the advent of
collaborations or to inspire others to integrate systems in order to create united University IRs.

The second interviewee stated that this project will rank the academic and research output of the faculty all over the word through the national database “OpenArchives” and through the Europeana, and Google Scholar which is linked. Moreover, this project may offer opportunities of collaboration with national and international scientific communities. It also strengthens the services that the Library of the TEI-A provides at the moment. Furthermore, the intellectual output of the faculty will be increase as it is accessible via internet and thus in turn it benefits the whole organization. Finally, in a long term it will enhance the administrative services, the recognition and the teamwork of the TEI-A.

Interviewee 3: The collection of the intellectual output in a common place which will be researchable and retrievable, it benefits the augmentation of the research works of the faculty and thus it impacts the whole prestige of the Institute. This also may bring partnerships with local or foreign researchers.

The interviewee 4 focused on the harvesting of the academic research to Europeana where numerous digital collections of museums, libraries, archives, and multi-media collections are harvested. This will raise the ranking of the TEI-A among other national and international universities. This participant mentioned that there is a website\(^1\) which displays the rank of all the IRs in the world. The IR of the TEI-A is not included at the moment because the last research was made before the “Hypatia” to be available in the public.

**Question 3: Do you believe that there is any disadvantage for the Institute? Please describe.**

The first interviewee responded that even though there are difficulties in regards to that there is no any expertise support at the moment which provided till recently by hired staff or third parties, there is no disadvantage concerning this project.

Interviewee 2 answered that “there is no disadvantage to this project. This is because was run in parallel with e-class (internal educational platform) and services of the library. Although there were few instances of negative attitude towards this attempt mainly because it changed the status quo operations of both faculty and staff that have demanding schedule, they were eliminated as everything is an issue of familiarization.

\(^1\) Ranking web of repositories: http://repositories.webometrics.info/en
Interviewee 3: The only disadvantage that the third interviewee mentioned is that the implementation of the process concerning administrative and bureaucracy issues.

The last interviewee 4 responded that this project has only advantages because it modernizes the whole organization as it provides unique services friendly to the end user; disseminating in the same time the TEI-A’s intellectual output all over the world.

Question 4: What are the sources of the funding for the project?

All of the interviews answered that the European Union is the great funder of this project. Furthermore, the first interviewee stated that right now the TEI-A should financially support the project and only for one person who worked for a specific period has been found resources to provide support in documenting of materials which compose the collection of the IR. Finally, the interviewee 2 mentioned that the TEI-A co-support financially the project where the subsidy was delayed more than anticipated (more than 4 months) due to the bureaucracy procedures of the Greek Municipalities.

3rd section: Project’s Current Situation (focused on the project as such)

Question 1: In what stage is the Institutional Repository (IR) (Hypatia) at the moment?

Interviewee 1 claimed that the “Hypatia” is in a crucial point, especially in a dead-end, because there is no support from expertise both librarians and computer engineers.

Interviewee 2 stated that “more than the 50% of the desirable goal has been reached. The anticipated total of digital materials is approximately up to 20,000. [...] Policies related to open data access and copyrights of e-publications are established as well”.

Interviewee 3 and Interviewee 4 answered that the project is expected to be completed next month and so far it has an incrementing progress.

Question 2: What do you think are the advantages of the Hypatia? Explain.

Interviewee 1: a) the content of the IR, b) information logistics for informing and training staff and faculty to contribute to this project, c) enhance academic culture, d) the creation of a strategy in order to maintain the best practices over the time.
Interviewee 2: It encompasses International Standards which enable it to conform to other national Repositories. Moreover, several opportunities may be offered in long term.

Interviewee 3: a) Collaborations will be occurred, b) by the time the majority of the intellectual property is collected in the IR this enables both internal and external researchers to access and retrieve scientific works of the faculty and cite them in the new researches which in turn increases the popularity of the faculty.

Interviewee 4: a) Harvest to National and European databases, b) There is no other project similar to this concerning both the content and the services provided.

**Question 3: What do you think are the drawbacks of the Hypatia? Explain.**

The Interviewees 1, 3 and 4 responded that there is no any disadvantage concerning the project as such. The interviewee 2 state that the only disadvantage is not related to the “Hypatia” as such, but to the internal infrastructure of the TEI-A. The library’s staff cannot effectively support this contemporary project. They have not the expertise required knowledge. For this reasons, the continuance of the project it is estimated to have slow pace.

**4th section:**

**Information Systems Strategic planning**

**Question 1:** Are you familiar with the concept of IS Strategic planning? Please describe.

To this question it will be mentioned that all of the interviewees be aware of the strategic planning concept as all of them were once project managers or department managers. However, their answers, intentionally, do not present here. In terms of protecting their anonymity, it could not be mentioned to which projects and to what departments have worked as managers, because it would be easily recognized again.

| Question 2: Was any ISSP implemented to organize the processes related to the project? |
|---------------------------------------------|---------------------------------------------|
| 2.1 If so, what were its steps?            | 2.2 If not, why not?                        |

Interviewee 1 answered positively saying that “Yes there was. There is a detailed description of the steps on the proposal that was submitted to the ministry of education”.
Interviewee 2 stated that “there was a detailed structure of strategic planning procedures concerning the team, budget, work flow, short wins (i.e. three-month monitoring), percentage of success, etcetera. Otherwise, the project would not be approved by the government agents. “More information you can find to the submitted proposals”.

Interviewee 3: “Yes indeed there was a strategy developed and implemented throughout the project. I couldn’t be done differently. Otherwise, the project will not be fulfilled. The strategic planning is very important for the successful implementation of a project. Briefly mentioning the design of three sub-projects: a) the creation of an IR, b) the creation of e-publications (i.e. e-books), e-journals, and e-conferences platform”.

Interviewee 4 mentioned that at the very early steps of the project, a team worked together in order to develop a strategic planning cycle which facilitates all the practices related to the creation of an IR from the scratch and thus to meet the goal set.

**Question 3: What was the IS mission of the TEI-A?**

The first interviewee state that the mission was “The IR aims to provide services to the society of the TEI-A, to other Universities and to the Greek society at large”.

Interviewee 2 stated that the mission was “The creation of a digital repository which will collect and disseminate the research and academic productions of the community of the TEI-A as well as the historic archives and equipment of the TEI-A in digital forms”.

Interviewee 3 replied that “the mission of the TEI-A is to create an IR which will be the milestone of the Greek repositories not only to the Technological Education but in general”.

“The mission of the TEI-A was to create an incomparable IR which will collect the entire intellectual output of the academics of the TEI-A as well as its archival collection providing thereby a holistic picture both of intellectual and archival production of the TEI-A over the years” the interviewee 4 answered.

**Question 4: What was the IS vision of the TEI-A?**

“To be the first; to be the milestone of IRs in Greece. Even though there is a great gap comparing to other IRs in Europe and US, the vision is this IR “Hypatia” to go
beyond Greek boundaries by implementing ontologies at an international level. In other words, the vision is the IR to provide access in different and contemporary technical tools in order to increase its ranking and thus to gain international recognition” the first interviewee replied.

The interviewee 2 when was asked about the vision of the TEI-A responded that “The collection of the academic output, its dissemination and the creation of real metadata which can be used from the central service of the TEI-A, where the server exists, for long term preservation”.

Interviewee 3 stated that “the outcome of the IR to be not only educational but also positively impact on the research field in general”.

“The vision of the TEI-A concerning the creation of the “Hypatia” was to develop something unique aiming not only to disseminate the scientific knowledge and strengthen the prestige of the TEI-A but also to attract prospective students and offer opportunities for partnerships” the interviewee 4 responded about what the vision was.

Question 5: How was the IS vision shared / communicated to people involved directly or not to this project in order to comply with?

Participant 1 answered that “All the members of the TEI-A complied with the vision, especially the directly involved in the project like the scientific commission, the recruits, and the members of the TEI-A who submitted their works”.

The second participant mentioned that “The vision was communicated via mails, by telephone, and in person meetings. The President of the TEI-A wrote letters which were sent via mails to the whole community of the TEI-A. Moreover, the communication continued by phone or in person meetings”.

Interviewee 3: “The vision communicated via briefly meetings starting from the scientific committee to the hired personnel, and then the hired personnel, in turn, communicated the vision to the faculty and the staff of the TEI-A, sending also President’s letters via mails”.

When the fourth of the participants asked about how was the vision communicated, “it” responded that “Firstly, the scientific committee arranged meetings each month in order to inform the recruits about the mission and the vision of the TEI-A related to the project. After that, each of them has specific responsibilities to carry out. The main responsibilities of the librarian B, one of the recruits, were to communicate the vision to the faculty and the staff of the TEI-A so as to comply with and thus to
contribute by submitting scientific works and administrative archives respectively. The whole communication conducted via mails, by phone and/or through meetings”.

**Question 6:** What were the IS objectives/goals of the TEI-A which wanted to achieve through this project?

Interviewee 1 replied that “One objective focuses on the consistency of the documenting by starting from the former academic works continuing to the recent ones and then to be followed by the future researches. Other objectives were the publicity of the TEI-A; the implementation of new technologies; know-how procedures helped in training of the new employees. The goal of these objectives was to increase the impact of the IR and in the near future to provide data to the specialized scientific communities that interested in the history of the Technological Education in Greece”.

The interviewee 2 answered to this question that “The TEI-A wanted to increase its impact to the national scientific community, to strengthen its prestige in order to attract prospective students and new collaborations by creating an incomparable IR which will offer gradually new services to the end user”.

The third interviewee responded that the objectives and the goals of this project that the TEI-A set were “the implementation of the state of the art equipment in order to provide friendly services to the user and mostly aiming to create a robust IR concerning information security issues. These objectives can augment the rank of the IR starting in national level and afterwards in a European and internationally level”.

The fourth interviewee responded to this question saying that “The innovative and personalized services that are offered by this IR were the TEI-A’s goal which achieved them through expertise knowledge concerning the technical structure and development of the IR”.

**Question 7:** What are the processes that the TEI-A followed to accomplished its IS goals?

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“The IR is still in progress at the moment” responded the first interviewee who continued by saying that “several processes, as it is already mentioned, are conducted in order for the faculty and the staff to comply with the vision and thereby to contribute towards a common goal which the publicity of the academic output and the archival collection of the TEI-A”.
The second interviewee answered that “the processes that the TEI-A conducted in order to accomplished its goal were first to hire expert employees (e.g. two librarians, one computer engineer, and administrative personnel) and then to outsource the development of the IR (i.e. DSpace) at a third party company which is expert in terms of the development customized software”.

The third interviewee mentioned briefly what the first and the second interviewees said and “it” also stated that “Apart from these processes I would like to point out that several activities also conducted in parallel with the development of the IR so as to be created a platform for e-conferences, e-journals and e-books which in turn raise the rank of the TEI-A in national and international level”.

The Interviewee 4 responded that “The collaboration with a third party company was one action in order for the aforementioned steps to be shaped. Also, the new employees, who were hired especially for this project, provide significant contribution to accomplish the goal”.

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The first interviewee answered to this question by enumerating the monitoring mechanisms: “a) support (i.e. technical and administrative), b) Scientific Committee, c) Administrative Committee responsible for assessing the quality of the project, approving monthly the progress of each employee (i.e. librarians, computer engineer, and administrative)”.

Interviewee 2 replied by saying that “there are several committees responsible to evaluate the progress of the project by checking each month the submitted documents where each of the employees conducted. In these documents they described what they conducted in a period of one month regarding their responsibilities”.

Interviewee 3 mentioned that apart from the new employees, there are professors who also submitted documents in which they described a holistic progress of a specific field. For example, they describe the entire mechanism of the development of the ontologies, the mechanism of communication etc. which submitted to the Committee of the TEI-A for approval as well”.

(only if the interviewee answered the 7.1, otherwise continue to the next question)
Finally, the fourth interviewee gave similar answer saying that “There was an administrative committee which was responsible to evaluate the progress of the practices through monthly examination of the tasks”. Moreover, “it” continued stating that “Before the administrative committee evaluates the progress, the scientific committee of the project arranged meetings each month in order to discuss queries and problems occurred during the implementation of activities”.

**Question 9: How do you measure success of what you are doing?**

The first respondent enumerated how the success can be measured stating that “The success is measured through specific dimensions: a) numbers related to the quality and quantity of the content, b) statics derived by other products of the same project such as e-conferences, e-journals and e-books, c) statistics showing the impact on the scientific community of the TEI-A concerning their contribution to the IR”.

Respondent 2 mentioned that “Success indicators showing the quantity of the submitted content; how many users visit the IR daily, weekly or monthly”. During the interview the respondent tried to export logs so as to provide real-time statistics to no avail. “It” stated that “due to the fact that the project has not totally completed yet this service is not still available”.

The Respondent 3 stated that “The total of the submitted content shows the success of the project”.

“Occasionally checks by visiting the website of the IR and/or statistical services can provide results for the success of the project” the fourth responded replied who continued by saying that “During the implementation of the project was set deadlines for specific operations. So, right after the end of this deadline the committee checks if everything is consistent with the goals”.

5th section:
**Organization’s Environment (Resources, Capabilities, Needs, Feasibility)**

This section is twofold: i) PEST model and ii) SWOT analysis

5.1 IS PEST model in terms of the Technological Education in Greece

**Question 1: Could you describe the Political forces?**

The first interviewee responded by saying that “There is a dramatic change concerning Political environment. It affects mostly the process of the selection and
election of new professors and the terms within their contracts”. “It” stated also that “Evaluation procedures have been stepped aside”.

Interviewee 2 after few clarifications, “it” mentioned that “It affects the publicity of the project and therefore the prestige of the TEI-A”.

The third interviewee asked for clarifications and then stating that “the political instability of Greece is constantly affecting the education system. Every four years with the election of a new minister at the Education Department, the education system has been received rudimentary changes”.

Interviewee 4 replied by saying that “Political forces are the ones that move the strings at all fields of a country. As far as concerns, educational system plays vital role because the elected people in the Ministry of Education are responsible for the resources and the quality of the education”.

**Question 2: Could you describe the Economic forces?**

The participant 1 stated that “the economic resources of the country decreased which in turn has a result less professors to be hired and by extension the active professors to have more and more demanding work schedule”.

On the other hand, the interviewee 2 stated that “the economic support by the EE provides the opportunity to Greece to develop its educational system, even though people are hired for a specific period”.

The third participant of the interview mentioned that “the economy is interwoven with the development mechanisms of a country. Just as other countries that are dealing with economic recession so does Greece relies more on funding in order to develop its educational system”.

Finally, the fourth respondent state that “The economic forces play profound role to the development of the educational scene. If there is no funding to support research or to sign contracts with great publishers such as Elsevier, Taylor and Francis, Willey etc. these eliminate scientific production. Furthermore, without funding continuously the level of recruit professors will be minimized while their retirement will be increase. As a result, without replacing retired professors the lack of knowledge in teaching will be the next step in the educational environment”.
**Question 3: Could you describe the Society forces?**

The first interviewee at first felt uncomfortable and declared that “it” do not want to answer. But after a while “it” mentioned that “the political and economic forces significantly affect the society in relation to the education. [...] For example, even though the education process has been improved, there is an obstacle concerning the employment in Greece. But I hope this is a temporarily situation”.

Interviewee 2 focused on the influence of similar attempts upon the society saying that “The development of the already provided services at the Tertiary Education in Greece leverages also the educational level of the courses and by extension it impacts the educational level of the country’s society”.

The third interviewee mentioned briefly that “every change in the educational environment has immediate impact on the society. For this reason, all the people who are directly involved to the educational system (government and teachers) can contribute to provide a bright future in educational environment by, for example, funding researches and improving and supporting educational mechanism”.

The fourth participant state that “As long as attempts are conducting regarding the development of a country, this inevitably has impact on the society in both cultural and educational manner”.

**Question 4: Could you describe the Technological forces?**

The first interviewee mentioned that “the technology is rapidly changing which affects as well the educational process. E-learning platforms, and educational databases based on intranet have been created as well as the educational laboratories have been equipped with the state of the art technology”.

The Interviewee 2 focused on the technology evolution regarding the Repositories mentioning that “DSpace is stable software in which numerous IRs rely on. For this reason, it is constantly developed providing revised versions in order to be responsive to the contemporary demands of the Repositories”.

“The technology is a perpetual increasing field. Its evolution affects, of course, the education system. More and more courses related to technology inventions and evolution added to the course outline of a department. For instance, courses regarding automation, XML, Java are few of them that added to the syllabus of several departments” stated the third interviewee.
The fourth interviewee mentioned that “Education has been affected by the technology evolution. More and more bachelors and master programs have integrated electronic platforms such as Moodle, BlackBoard, ItsLearning, Fronter, WebEx, Adobe Connect etc. in order to support e-learning education”.

5.2 IS SWOT analysis

Question 5: What are the Strengths of the TEI-A related to this project?

The first interviewee listed the strengths as such: “a) the only IR with aforementioned services, b) know-how procedures, c) scientific and archival content, d) ontology, e) e-conferences, e-journals and e-books platforms, f) copyright policies, g) preservation of digital material over long term”.

Interviewee 2 answered that “the collection of the scientific academic output is of the highest strength as well as that its content is researchable both Europeana and Google scholar which raises in turn the prestige of the TEI-A”.

Interviewee 3 gave a brief answer “Initially, the whole idea and its implementation and also the creation of one platform to collect a numerous academic and archival output”.

Finally, the fourth interviewee said that “one of its strengths is that the IR is “alive”. That is I want to say is that the IR is constantly being enriched by new collections which makes it viable and dynamic. Moreover, due to the fact that it was constructed by the state of the art technology it can support and modify its services by imitating services of international IRs, and thus will be a role model for other IRs in Greece to mimic its services and by extension its functionality”.

Question 6: What are the Weaknesses of the TEI-A related to this project?

The first interviewee mentioned enumerating the weaknesses: “a) economic difficulties, and b) Incapable of maintaining support mechanism”.

Interviewee 2 the only weakness that was mentioned was that “the IR is running in parallel with the Library’s OPAC”.

The third interviewee as a weakness considered the “small contribution from the members of the TEI-A, and there wasn’t a good administration about the scientific works”.
“Minor contribution in relation to the anticipated; and difficulties how to continue the project without having experts to work for” stated the fourth interviewee.

**Question 7: What are the Opportunities of the TEI-A related to this project?**

Participant 1 mentioned that “this project collaborations with other Greek Technological Educational Institutes and Universities; dissemination of knowledge; and attract the attention of the researchers interested in Technological Education which in turn can offer partnership or more citations of the scientific works”.

The second participant responded that “this project offered the opportunity to conduct in parallel the creation of a platform consists of electronic collections: e-books, e-journals, and e-conferences”.

Participant 3 mentioned only as opportunity the collaborations that were conducted for the implementation of the project and the ones that may occur after its completion.

The fourth participant apart from the partnerships answered that “A united library catalogue can be developed in order to modernize the library’s services. Furthermore, personalized services will be offered to each member who Sign-On to the IR aiming to provide customized collections for each user. In other words, faculty users will have the opportunity to submit by themselves their own publications and also to create a personal collection consists of their output. The latter service will facilitate the process of retrieving personal material”.

**Question 8: What are the Threats of the TEI-A related to this project?**

The first responded considered threat the following aspects: “a) economic difficulties, b) to stop contracts of the employees who supported the project, which, in turn, I assume that c) will impact on the contribution of the faculty. If they noticed that there is no support and their publications are not documented in the IR then they will inevitably stop contribute by self-archiving services. Because the self-archiving process followed by a librarian final approval for a publication to be visible and researchable to the IR providing the appropriate copyright policies”.

The second interviewee stated that as threat the limited skills of the personnel of the library. “After the end of fixed-term contracts of the hired employees the “Hypatia” should be support by the library’s staff. However, due to the fact that they do not have the required knowledge to do so, two trainings had held. In spite of these endeavors to train them I was wondering to what extend they are capable of supporting effectively the IR”.
The third interviewee expressed also few worries about “how this project will be continued after the withdrawal of expert employees? In my belief several potential obstacles might occur without having expertise support”. During the declaration of worries, the interviewee 3 also reflected that “This may be also a challenge to re-evaluate the practices”.

Finally, the fourth interviewee responded that “lacking of expertise technical and librarian support can be seen as threats, especially when both technology and copyright policies are constantly changing”.

6th section: Future goals

**Question 1: What will be different after 3 or 5-year time concerning the project?**

Interviewee 1 stated that “I wish economic recovery for Greece. Then it will be mature to adopt at a great extend the development that the financial support of the country’s repositories, especially in the Technological Education”.

The interviewee 2 saying cheerfully that “I wish I could foresee the future! However, I can state my worries about the unpredictable evolution of technology. I don’t know if the IR can be responsive or to adopt new technologies in order to be functional”.

On the contrary, the third interviewee mentioned that “the changes in the technology won’t affect negatively the “Hypatia” because its infrastructure relies on the state of the art technology which means that DSpace software has great potentials and can support upcoming updates”.

The fourth participant of the interview stated that “I hope a person to be hired in order to run effectively the operations of the “Hypatia”. Furthermore, it would be useful if new technologies are integrated to the IR like semantic tools to retrieve comments for the “Hypatia” from social media or to enable cross-citation”.

**Question 2: How this change will impact on IR?**

The first participant point out two aspects: “There is only one way to effectively accept any change in order for the IR to be functional. The first aspect is that there is a significant need of creating support mechanism, through of which the TEI-A b) is going to develop a strategy in order to face issues emerged”.

Interviewee 2 stated that “The IR relied on international standards in order to ensure its viability. Also, the long term preservation is another issue related to information security measures. So, I am certainly sure that the “Hypatia” will deal with
technology changes as experts computer engineers worked for this project to be successfully implemented”.

The third interviewee replied that “I don’t think there will be any negative effect causing from technology evolution. My only worry is about how this project will maintain its functionality without having people to provide technological support or to enrich the collections of the IR”.

The interviewee 4 answered that “If the “Hypatia” will be capable of integrating semantic tools and cross-citations services, this will increase its ranking by providing unique services in relation to other IRs”.

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<th>Question 3: Are there any long term goals?</th>
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The interviewee 1 answered positively saying that “Of course there are. One of them is to integrate new technologies in order to improve the usability of the IR by creating even more personalized services. Another goal is to provide services for people with special needs. How? By integrating technologies that supports voice reading and video in sign language”.

The second interviewee replied “To integrate more and more new technology services in order to continue preserving the digital materials and also to be functional according to the International Standards”.

The third interviewee stated that “the viability of the “Hypatia” is the utmost goal”.

Finally, the fourth interviewee mentioned that “A long term goal is for the “Hypatia” to have progress by adopting new technologies and by extension to provide new services”.

7th section: General / Other

Question 1: What would be your advice to those who want to proceed to the same attempt in order to encourage them or/and stress their attention about something?

“My advice is that to engage strategy concerning the following issues: the enrichment of the IR; what are the needs of the Designated Communities? Because these needs
will form the personalized services; and issues related to the preservation of digital materials” declared the Interviewee 1.

“The key is the strategic planning for the creation of an IR. For example, it is very important the effectively communication of the vision to the society of the TEI-A, and secondly to pay attention on the development of the copyright policies. So, best practices are vital to be developed in order to maintain viability of the IR” stated the second interviewee.

The third interviewee immediately responded “Yes! Of course!”. This participant focused also on the need of the development of the strategic planning concerning the practices related to the creation of an IR, and for this reason, “it” stresses that “It is very important to ensure in advance extra financial resources, good partners, especially, concerning economic and administrative issues”.

The last participant of the interviews highlighted the importance of having developed a robust strategic planning focusing more on the copyright policies saying that “I strongly recommend other to proceed in similar attempts. My advice is twofold. Firstly they should develop a strategy taking in advance into account all the aspects related to the organization, the outcome and the people that addresses to. Secondly, is of utmost importance to develop copyright policies about open access owing to the open access nature of the IR”.

**Question 2: Do you want to add something more about?**
The first interviewee has not mentioned anything more.

The second interviewee added that “the administration the project is a rough issue concerning financial resources and bureaucracy obstacles that may occur”.

“I don’t think that I have something more to say about it” answered the Interviewee 3.

The fourth interviewee didn’t state anything more.