EDI AND GREEK SMEs. A MULTIPLE CASE STUDY IN THE CONTEXT OF TECHNOLOGY, ENVIRONMENT AND ORGANIZATION.
Abstract

Electronic Data Interchange (EDI) holds the potential to improve contemporary business operations, which are redefined frequently based on the demands of global competition. There are numerous EDI systems, which an enterprise can choose to adopt in order to meet its needs and goals. International literature demonstrates a variation of views regarding the adoption of new technologies, which differ according the size of each organization along with internal and external impediments and determinants. The use of EDI worldwide has gained a positive acceptance by commercial companies, industries and service providers, followed by rapid adoption mainly in the processes of large organizations. Conversely, the predictions of previous years' studies have not been materialized to the expected extent. In Greece in particular, there is low penetration and a reluctance to adopt EDI technologies by Small and Medium Enterprises (SMEs). This study is based on the theoretical framework of Technology, Organization and Environment (TOE). A qualitative multiple case study research design has been used, in order to provide further insights on the factors that affect the decision of Greek SMEs in adopting EDI technologies. The significance of the perceived direct and indirect benefits, the effects of the perceived financial cost and technical competence and the importance of industry and government pressure on corporate level, are analyzed and discussed. An empirical support of the low penetration of EDI in the Greek SMEs' community is also provided. This research contributes in the existing knowledge about EDI adoption decisions regarding Greek SMEs by providing a variation of views, further insights on how Greek SMEs behave and react during the current economic recession and a new cost factor that emerged within the analysis of multiple cases. Avenues for future research are recommended in order to expand this study's findings in the field of corporate IT innovation.

Keywords
Electronic Data Interchange, EDI Adoption, Greek SMEs, Technology, Environment, Organization (TOE).
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<th>Meaning</th>
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<tr>
<td>ASC</td>
<td>Accredited Standards Committee</td>
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<td>ANSI</td>
<td>American National Standards Institute</td>
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<td>EDI</td>
<td>Electronic data interchange.</td>
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<td>EDIFACT</td>
<td>Electronic Data Interchange For Administration, Commerce and Transport</td>
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<td>E-business</td>
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<td>GEMI</td>
<td>General Electronic Commercial Registry</td>
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<td>ICT</td>
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<td>IMF</td>
<td>International Monetary Fund</td>
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<td>IS</td>
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<td>TOE</td>
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1 Introduction

In this chapter, the background of the topic is being presented, followed by the research problem and the research questions. Afterwards the aims and the objectives of the research are presented, followed by the topic justification and the scope and limitations of this research. The chapter concludes with the presentation of the structure of the thesis.

1.1. Background

Nowadays enterprises are obliged to operate in an intensely competitive environment, which includes both opportunities and threats. However, business development is closely related to the use of Information and Communication Technologies (ICTs) which play a significant role in corporate advancements. Moreover companies, small or big, in order to remain competitive and sustainable have to take the appropriate decisions focusing on how they can improve their use of Information Systems (IS) and Information Technology (IT). Corporate decisions that refer to the adoption of new technologies are often intertwined with a variety of factors, which are not identical worldwide, but differ from one country to another. In addition, the adoption of Electronic Data Interchange (EDI) has been widely accepted as an essential tool with which an organization is capable to reduce the labour intensive errors, to perform faster transactions and to optimize the business processes through the exchange of business documents (Chau, 2001). International literature demonstrates that the benefits of EDI have been acquired by a huge number of businesses worldwide, enhancing their strategic goals and improving their operation performance (Germain and Dröge, 1995; Angeles and Nath, 2000; Narayanan, Marucheck and Handfield, 2009). However, in contrast with the aforementioned fact, Chau and Hui (2001) support that the penetration of EDI in small sized enterprises in comparison with large ones, is and will remain at a quite low level for as long as the IT complexity remains unhandled due to the lack of qualified staff in IT sector. Banerjee and Sriram (1995, p.29) state that an “ideal” EDI system should facilitate the creation of multiple automated processes of data transmissions between organizations with a minimal human interference.

The new trends in business development are certainly focused on information sharing, on collaboration among enterprises and in adoption of Electronic Services (E-services). The most attractive goal for a contemporary enterprise is to enable a strong presence in the global marketplace along with an optimal operation through automations and innovations. EDI technologies have been characterized by Unitt and Jones (1999, p.22) as the “grand-daddy” of electronic commerce (E-commerce), which is definitely an automated business process. Furthermore, while in the past there was an inspiration of a paperless firm anchored in automated procedures, the new business reality demonstrates advanced systems, with new features. Although the first EDI solutions emerged in 60s (Witte, Grünhagen and Clarke, 2003), there is a permanent status of use until today with different forms and functions based on the same logic of facilitating the corporate transactions (Asher, 2007). Furthermore, the benefits of EDI are also rooted in Interorganizational Systems (IOS) and thus this technology is anticipated that will be used extensively as well in the future (Narayanan, Marucheck and Handfield, 2009). Ramdeen, Santos and Chatfield (2009) in a recent study found that Internet based EDI (or web based EDI) render affordable solution for Small and Medium Enterprises
(SMEs) that face the challenge of the high cost in acquiring new expensive integrated systems.

1.2. Research Problem and Research Questions
This research is associated with the impediments that Greek SMEs faces in order to adopt EDI technologies. Although it has been argued that EDI provides both strategic and operational advantages in enterprises, Greek SMEs shows reluctance towards to this direction (Eurostat, 2012). This has an effect on limiting their competitiveness and on a weakness to reap the benefits of EDI. Besides the benefits of EDI there are also many barriers as argued by Weber and Kantamneni (2002). In their study they indentified many barriers of EDI on corporate level, such as technological barriers, lack of the managerial commitment, lack of available resources, lack of trust between corporate partners, lack of partners' capabilities and so on.

European Community has supported an extensive legislative framework for the use of electronic methods in business transactions (European Commision, 2007). More specifically the given Commissions’ decisions regarding EDI, Electronic Invoicing (E-Invoicing) and Electronic Commerce (E-Commerce) sets a powerful framework, which includes a better communication and cooperation in the European business world between trading partners.

There is a quite visible need to approach this specific problem of Greek SMEs, which show reluctance in adoption of EDI technologies, although it is widely accepted that EDI can offer them positive results. Kuan and Chau (2001) in their study proposed a perception based model for EDI adoption, which incorporates the Technological, Organizational and Environmental (TOE) context. This model includes several factors and parameters that affect the decision of enterprises to adopt EDI. Regarding the technological context, they focused on the perceived direct and indirect benefits. Concerning the organizational context, they focused on the perceived financial cost and the perceived technical competence. In addition, concerning the environmental factors they focused on the perceived industry pressure and the perceived government pressure (A detailed presentation of the perception based TOE model and its parameters as well as its factors is provided in section 2).

Hence, given the above and by doing a reasonable interconnection of the research problem with the theoretical framework of TOE, a need came forth to answer the following research questions:

1. How do the technological, organizational and environmental factors affect the decision of Greek SMEs to adopt EDI technologies?

2. Why EDI technologies have a low penetration in Greek SMEs?

1.3. Research Aims and Objectives
In this study, the basic aim is to provide further insights and to give substantive responses regarding the factors affecting the decision of EDI adoption by Greek SMEs. Furthermore, this study aims to find out why EDI has a low penetration in Greek SMEs. Many times the real factors are not easily detectable but their importance is valuable and decisive. In this direction, the perception-based model that has been developed by Kuan and Chau (2001) will be a helpful theoretical tool in identifying the real impediments and determinants of EDI adoption by Greek SMEs. Also by grouping the factors under
the umbrella of the perception based TOE model and separating our findings in the technological, organizational and environmental factors respectively, we can attain a wider and more easily understandable context of meaning. The objective of this study is to provide a better and deeper understanding of the factors that affect the decision of Greek SMEs to adopt EDI along with a clear explanation of the low penetration of EDI. Greek business reality is in a continuously changing context and has been evident that it has a sensible balance as for instance according to World Bank (2012) the ranking on the ease of doing business in Greece is very low in relation to other European countries and even more in global level.

Thus, it is reasonable that in order to be able to achieve the aims and the objectives of this study we have to explore them in a systematic and flexible way analyzing:

1. The perceived direct and indirect benefits within the technological context.
2. The perceived financial cost and the perceived technical competence within the organizational context.
3. The perceived industry pressure and the perceived government pressure within the environmental context.

1.4. Topic Justification

The importance of this research is associated with the adoption of EDI by SMEs in Greece, which is equivalent to E-Commerce and E-invoicing implementation. SMEs are indeed those that add a great value in the Greek economy, employing in parallel a large share of the total human resources (European Commission, 2012). Moreover, the new trends of the global business world focus on the characteristics of innovations that a contemporary enterprise must utilize in order to become more robust and sustainable in the global business community. This also involves the flexibility of the available resources, the exploitation of the technological opportunities, the lowering of operating costs, the acquirement of partnerships that yield a stronger mutual benefit and the advanced communication level among clients and corporate partners, which produce high gains of valuable knowledge.

Furthermore, looking towards the new business reality in Greece that has been created due to the financial crisis, the changing context in doing business is constantly effecting the majority of enterprises. Especially, the economic recession along with a series of economic measures that are applied by International Monetary Fund (IMF), has lead in an uncertain and unstable business environment (Koutsoukis, Sklias and Roukanas, 2012). The economic crisis besides the consequences that has in the Greek society, has also generated a variety of problems in Greek marketplace causing in parallel a significant reduction of the number of Greek SMEs (European Commission, 2012; Kaplanoglou and Rapanos, 2013; Makkonen et al., 2014).

In this context, the Greek entrepreneurship and the actions of Greek businesses more than ever become the centre of interest for research for a wide range of sciences. The specific topic of EDI adoption within informatics includes multiple orientations, which are certainly linked with people, communication, society, behaviour, information and technology (Dahlbom, 1996). Based on the perception based TOE model the orientation of this study is not limited in the simple presentation of possible findings but also focuses on attaining a deeper explanation and understanding. The updated findings, which are more relative to the current situation of the Greek market, can certainly be very helpful for further research on informatics.
1.5. Scope and Limitations

Greek SMEs, as already mentioned, are indeed the backbone of Greek economy, occupying a great volume of human resources and contribute highly in the economic development of Greece. Moreover, it is worth noting that the population of Greek SMEs differs a lot from the average population of SMEs in Eurozone. In actuality the total population of the enterprises in Greece consists of 703,648 micro enterprises with a share of 96.6%, 21,586 small enterprises with a share of 3.0%, 2,649 medium sized enterprises with a share of 0.4% and only 399 Large with a share of 0.1% (European Commission, 2012). This is a considerable difference regarding the exact definition of Greek SMEs in relation to other European countries’ SMEs. Greek SMEs are indeed smaller than it can be relatively assumed but in contrast they hold a share of 99.9% of the total number of Greek enterprises’ population. According to the Commission Recommendation of 6 May 2003 (Article 2), as SMEs are identified those which employ less than 250 employees having a total turnover less than 50 million Euro and/or their annual balance sheet total is less than 43 million euro. Thus in this research the term SMEs may carry more weight in micro and small enterprises than in medium and our delimitation will be both in the number of employees (less than 250) and in the annual turnover (less than 50 million Euro).

The selected area for this research is the wider north and east suburb of Attica where several companies prefer to locate and operate. In addition, this study has limitations both in time and resources and a limited number of studied companies. Furthermore, the theoretical approach of this study is limited on the perception based TOE model that has been developed by Kuan and Chau (2001). This means that the specific parameters within the TOE model, which are related only in the decision of Greek SMEs to adopt EDI are examined. Any possible issues and barriers of EDI systems and other stages as for instance EDI system planning, development, implementation, integration with other systems, operation, acceptance and so on, are not examined.

Furthermore, this study holds a technological optimistic view based on the assumption that EDI systems are those that hold the potential to improve contemporary business operations and needs. This assumption does not mean that EDI systems cannot create various problems in enterprises, since those systems are connected with human interactions and acceptance. Therefore, the problem formulation along with the aims and the objectives of the present study is focused on the positive outcomes that EDI systems can provide (Kuan and Chau, 2001; Iacovou, Benbasat and Dexter, 1995; Walton, 1994). The above limitations imply that the collected data and the results of this study cannot provide an overall generalisability beyond the aforementioned delimitations.

1.6. Structure of the Thesis

This thesis consists of eight chapters. The second chapter includes a literature review of the topic along with definitions, models and theories that are important for this study. Chapter three presents the research method that has been selected for conducting this study. Subsequently, chapter three provides details on the selected methodological tradition and the methods used for data collection and analysis. Furthermore, in chapter four, there is a presentation of the data collected and in chapter five, there is performed the analysis of the empirical findings. Chapter six provides a detailed discussion. Chapter seven provides answers to the research questions and draws useful outcomes. Finally, in chapter eight there are presented the authors' reflections on the entire work.
2. Literature Review

This chapter presents relative literatures in the topic of EDI. More specifically this chapter includes a literature review of EDI studies along with definitions and meanings. The perception based TOE model is analyzed in detail. The TOE model constitutes the basic theoretical framework for the study.

2.1. Concept and Definition of EDI

The way, in which enterprises operate, plays a significant role both in relations with customers and partners. Their possible willingness to adopt IT innovations, is foremost a strong incentive to improve their corporate dealings. The exchange of documents is one of the most common operations, which is performed daily and pertains to orders, delivery notes, invoices and so on. Usually when a company exchanges a significant number of documents then more than ever the need to find alternative ways in which can accelerate the entire procedure is generated. Printing documents in paper and sending them via post or fax, is a simple but time and money consuming process whether we talk about imported or exported corporate documents. Also during the whole process, we cannot overlook that the import of all these documents in the system is done manually by employees through a data entry (typing) procedure for both customers and suppliers. Another equally important parameter is the storage and archiving of documents, which require the employment of staff and the provision of appropriate repositories and maintenance. Many authors argue that the elimination of paper documents helps firms to overcome errors that are associated with the human factor along with increasing their productivity and reducing their costs (Ratnasingam, 2001; Vijayasarathy and Tyler, 1997; Chau, 2001).

The use of EDI by enterprises in the 60s may have been in its infancy, but until then many implementations of EDI systems were performed steadily and the improvements in business operations and processes were recognized. Although the use of this technology was spread worldwide, the vision of a paperless office was a forthcoming feature. The advantages of EDI adoption were obviously associated with the organizational effectiveness, the low operating costs and the faster transactions. The strategic importance of EDI is therefore closely tied in the concept of how a company can use IS in order to meet the corporate strategic objectives. Concerning the interorganizational relations, EDI networks gradually became an interesting basis of cooperation. The exchanged data between organizations started to show an increasing course. The variation of different IS/IT systems and software, the different design and operability of each system and the variation of the embedded applications of each member-company, created the need to be introduced syntax standards, accepted formats and accepted rules of exchanged data (Salminen, 1995).

Furthermore, Commission Recommendation 94/820/EC of 19 October 1994 defines EDI as “the electronic transfer, from computer to computer, of commercial and administrative data using an agreed standard to structure an EDI message”. In addition, the EDI message is defined as a message, which “consists of a set of segments, structured using an agreed standard, prepared in a computer readable format and capable of being automatically and unambiguously processed”.

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2.2. EDI Standards and Trends

There are plenty of guidelines and standards, which have been introduced globally from the past until today. The most important are: UN Layout Key for Trade Components, TDI (Trade Data Interchange), ASC (Accredited Standards Committee) X12, ANSI X12 and EDIFACT, with different versions and components that were relevant to every forthcoming need, which was generated worldwide (Salminen, 1995). The purpose of creating each protocol was to find a common way of electronic communication worldwide and a compatibility mode between corporate IS. The expansion of the internet worldwide, introduced a new era in EDI. Web based technologies started to adopt EDI in various ways, generating new ideas, new applications and services that supported more complex, transmissions of data and corporate transactions. Downing (2002) found that companies, which used web-based EDI instead of traditional EDI, had a greater performance in all corporate processes that were connected with the use of IT. However according to Downing (2002), the use of web-EDI, requires higher investment costs and a long-term commitment between corporate partners than traditional EDI.

2.3. Choice and Analysis of the Theory

The decision of an enterprise to adopt or not technological innovations depends on several factors, which cannot be predetermined with a simple process and cannot be considered as absolute. This thought derives from the fact that each organization is unique and consequently there is a complexity of views, ideas and questions on how the decisions are undertaken. Downs and Mohr (1976) argue that every organization classify the features of each innovation in different categories which depends on how the innovation is perceived every time. Moreover, in order to be able to explore the theoretical lenses of this research, a prior extensive and detailed study of literature has been carried out, which is related to the specific topic.

Tornatzky and Fleischer (1990) have developed in their study the TOE framework, which has been applied in many studies associated with IT innovation adoption. There were distinguished, three aspects of Technology Organization and Environment that affect the innovativeness of companies. The technological innovation according to Tornatzky and Fleischer (1990, p.11) is defined as “development and introduction of knowledge-derived tools, artifacts, and devices” which once used, can positively affect the future. Moreover the Tornatzky and Fleischer’s (1990) TOE framework has been examined and used by various studies on EDI adoption (Seyal, Rahman, and Mohammad, 2007; Kuan and Chau, 2001; Oliveira and Martins, 2010).

Furthermore, another commonly cited study of EDI adoption in small firms is the Iacovou, Benbasat and Dexter’s (1995) paper. Iacovou, Benbasat and Dexter (1995) through a multiple case study of seven firms in Canada identified three major factors that influence the EDI adoption. The first factor according to their study is the organizational readiness, which is certainly relevant with the low levels of IT sophistication of small firms and the low resources both financial and technological. The second factor is the perceived benefits both direct and indirect. The major direct benefits are about the operational effectiveness and strategic advantages that are available through the adoption of EDI. The indirect benefits can be encountered in the dealings with other companies and in the improvements of the organizational processes. The third factor according to Iacovou, Benbasat and Dexter (1995) is the external pressure that a firm receives in order to adopt EDI. The environmental pressure both
from competitors and from partners certainly guides enterprises to take the appropriate decisions in order to become more competitive, to continue to follow the developments in business sector and to improve the relationships with other firms.

Thus, Kuan and Chau (2001, pp.510) based on Iacovou, Benbasat and Dexter’s (1995) paper and also in studies of Tomatzky and Fleischer’s (1990) and in Downs and Mohr (1976), provide the following perception based model which is presented in the following figure 1 and include the TOE factors. It has been argued by Oliveira and Martins (2010, p.1338) that the TOE model provides the most valuable “starting point” in aim to study the adoption of corporate technological innovations. Moreover Oliveira and Martins’s (2011) recent study of literature review of IT adoption models, argues that one of the most widely accepted models in the international literature in examining the factors that determine the IT adoption at firm level, is the framework of Technology, Organization, Environment (TOE). In addition, the study of Kuan and Chau (2001) is focused on the decision making process of small firms to adopt EDI excluding from their research the implementation procedures and possible issues. Therefore, the unit of analysis for their survey was at the organization level and six factors were tested using also a logistic regression technique. Since the specific study was performed with the selection of twenty-four variables within a survey based research approach, a Likert-type scale was used to measure the effect of the variables in the decision of the firms. Their research performed in 575 small enterprises in Hong Kong. Based on the following model of figure 1, the theoretical context of this thesis is illustrated.

Figure 1.Edi Adoption Model (Adopted by Kuan and Chau, 2001, pp.510).
2.3.1. Technological Context

The adoption of EDI by enterprises has been argued that it is connected with the technological benefits that can certainly offered (Kuan and Chau, 2001). The perceived benefits of technology have different weight in the decision making process from one company to another. For some companies the perceived benefits can be more important than others, or have less weight in their decision than others. The technological context within the aforementioned perception based model includes the perceived direct and indirect benefits of EDI adoption by enterprises. Regarding the factor of the perceived direct benefits Kuan and Chau (2001) had selected to investigate specific research items that had effect in the decision of enterprises to adopt EDI. Data accuracy, data security, improvements on operation efficiency, facilitation on application processes and reduction on clerical errors were the basic items under investigation concerning the direct technological benefits. More specifically the selected items that are related to the perceived direct benefits of their research were measured with a seven-point Likert-type scale from strongly disagree (1) to strongly agree (7) and are the following:

1. Improve data accuracy.
2. Improve security of data.
3. Improve operation efficiency.
4. Speed up application process.
5. Reduce clerical errors.

Indirect technological benefits were distinguished under investigation research items as the organizational image, the competitive advantage, business practices, customer services and relationship with business partners. Concerning the factor of the perceived indirect benefits Kuan and Chau (2001) in their research measured with a seven-point Likert-type scale from strongly disagree (1) to strongly agree (7) the following items, which had been identified as important in the decision of companies to adopt EDI.

1. Improve organization image
2. Improve competitive advantage
3. Benefit other business practices
4. Improve customer services
5. Improve relationship with business partners

2.3.2. Organizational Context

The organizational context according to Kuan and Chau’s (2001) study has also a significant influence in the decision of companies to adopt EDI. Both the perceived financial cost of the investment and the perceived technical competence of a company are certainly major factors that deal with a forthcoming decision of IT adoption. About the perceived financial cost as a factor that affect the decision of EDI adoption, Kuan and Chau (2001) in their study identified as important the following measurable items such as set-up, running and training costs. The following items were measured with a seven-point Likert-type scale from strongly disagree (1) to strongly agree (7).

1. High set-up costs
2. High running costs
3. High training costs
Regarding the perceived technical competence of a company as a factor that affects the decision of EDI adoption Kuan and Chau (2001) in their study also measured the following items with a seven-point Likert-type scale from very bad (1) to very good (7), which are related to the corporate decision to adopt EDI:

1. Performance in providing IT support
2. Experience in supporting EDI software
3. Expertise in supporting EDI software

2.3.3. Environmental Context
The adoption of EDI is also interwoven with the corporate environment that firms operate in. Kuan and Chau (2001) in their study focused on the perceived industry pressure and the perceived government pressure as factors that affect the decision of EDI adoption. Business partners, competitors and government were found that more or less could have effects on the decision making process of EDI adoption. While every company is likely to perceive differently the industry pressure and the government pressure, Kuan and Chau (2001) in their study measured respectively different items both for the factor of the perceived industry pressure and for the factor of the perceived government pressure. It is worth noting that in their study they include the ValuNet. ValuNet is a governmental system (in Hong Kong) that enterprises are obliged to use in order to submit import and export declarations. This system supports only the function of EDI and the use of this system is mandatory. In addition, a deadline by government has been given, according to the study of Kuan and Chau (2001) and companies must be prepared to be EDI-capable in order to use this governmental application. Regarding the factor of the perceived industry pressure the items that were measured with a seven-point Likert-type scale from no influence at all (1), to very strong influence (7) are the following:

1. Requested by important business partners.
2. Requested by majority of business partners.
3. Recommended by important business partners.
4. Recommended by majority of business partners.
5. Important competitors using or soon to be using ValuNet.
6. Majority of competitors using or soon to be using ValuNet.

Concerning the factor of the perceived government pressure Kuan and Chau (2001) measured with a seven-point Likert-type scale from no influence at all (1), to very strong influence (7) the following two items:

1. Progressive mandatory measures introduced by the government (e.g. cessation of diskette submission scheme, etc.)
2. Closing of paper-receipt counters.

The following table 1 summarizes the factors and the items of the study of Kuan and Chau (2001).
Table 1. Factors and Items within TOE Model. Adopted by Kuan and Chau (2001).

<table>
<thead>
<tr>
<th>Context</th>
<th>Factors</th>
<th>Items Measured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>Perceived Direct Benefits</td>
<td>Improve Data Accuracy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improve Security of Data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improve Operation Efficiency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Speed Up Application Process</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduce Clerical Errors</td>
</tr>
<tr>
<td></td>
<td>Perceived Indirect Benefits</td>
<td>Improve Organization Image</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improve Competitive Advantage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Benefit Other Business Practices</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improve Customer Services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improve Relationship with Business Partners</td>
</tr>
<tr>
<td>Organization</td>
<td>Perceived Financial Cost</td>
<td>High Setup Costs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High Running Costs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High Training Costs</td>
</tr>
<tr>
<td></td>
<td>Perceived Technical Competence</td>
<td>Performance in Providing IT Support</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Experience in Supporting EDI Software</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Expertise in Supporting EDI Software</td>
</tr>
<tr>
<td>Environment</td>
<td>Perceived Industry Pressure</td>
<td>Requested by Important Business Partners</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Requested by Majority of Business Partners</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recommended by Important Business Partners</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recommended by Majority of Business Partners</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Important Competitors Using or Soon to be Using ValuNet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Majority of Competitors Using or Soon to be Using ValuNet</td>
</tr>
<tr>
<td></td>
<td>Perceived Government Pressure</td>
<td>Progressive Mandatory Measures Introduced by the Government</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closing of Paper-Receipt Counters</td>
</tr>
</tbody>
</table>
2.4. Analysis of Previous EDI Studies

A large number of studies in the past have been conducted worldwide concerning the EDI adoption by small, medium and large enterprises. Thus, at this point an analysis of the most important findings through literature is presented. A previous study conducted within marketing and logistic channels, a pressure between corporate partners was illustrated, in order to comply with new technological advancements (Walton, 1994). More analytically it was found that EDI adopters in logistic channels which have enough power to control a large share of the logistic industry, impose a kind of economic penalty to non-EDI adopters that wish to execute transactions by paper documents and not electronically. This fact implies a coercion that may have two distinct effects. The first effect could be the discontinuation of the cooperation and the second effect could be a rapid decision to invest in EDI technologies in order to survive in the competition. Moreover, in the aforementioned study of Walton (1994), it was found that companies that had not adopted EDI were confronted by the problem of demand uncertainty.

Vijayasarathy and Tyler (1997) studying the retail industry found that the potential benefits of EDI adoption can arrive in a quick time, if between cooperating companies there has been implemented an EDI system which includes all commonly used corporate transactions between them. In addition, they claim that the implementation of an interorganizational system that can support multiple transactions between corporate partners needs a big effort in order to operate properly. Possible system malfunctions, difficulties in use, acceptance and education must be considered carefully.

Chau and Hui (2001) based on an empirical research attempting to define the determinants of EDI adoption in small firms, describe a new framework, which has little differences with the framework of Kuan and Chau (2001), and it is based on seven hypotheses. This framework includes the basic research pillars of EDI adoption TOE model. These pillars are represented more analytically in three categories. The first category is about the characteristics of the EDI innovation including the perceived direct and indirect benefits of EDI adoption. The second category is related to the external influence that a company receives from the external environment. This category combines both the governmental policies and the corporate partners that influence directly the EDI adoption. The third presented category is relevant with the organizational readiness in order to adopt EDI. This category incorporates the prior firm's experience in EDI systems, the perceived support from the vendor that is necessary in order to have an optimally function, and finally the perceived costs which is also very important for the final selection and decision.

Moreover a past empirical study investigating the automotive industry sector conducted in Spain, found that the choice of a company to adopt EDI derives from the willingness to cooperate with suppliers and customers in a more efficient and effective manner, which additionally increases the commitment of a closer cooperation and interdependence between firms (Sanchez and Perez, 2003). Concerning the supply chain both in automobile industry and in retail industry, there is a convergence of findings that can be regarded as a general finding, if we take into consideration that different researches have been conducted in different countries and in different times (Sanchez and Perez, 2003; Walton, 1994). This convergence of findings is inherent with the strengthening of the cohesive bonds among companies and the intercompany strategic alliances.
3. Methodology

This chapter presents and discusses the research methodology of this study. More analytically, this chapter explains the path that was followed in this study, by setting out the methodological basis, in order to address the research questions of this thesis. In other words, in this chapter is described in detail the “how” of this research, referring on the philosophical position, the methodological approach and the techniques for data collection and analysis. Validity, reliability and ethical considerations are also discussed.

3.1. Philosophical Position

Information systems research community as argued by Myers and Avison (2002), shows a growing interest in interpretive philosophical assumptions because continuously there is a need in enriching the knowledge in information systems research field. Interpretive researchers derive important evidence where they attempt to give a deeper understanding of social phenomena, which arises by human experiences and interactions. Walsam (2006, pp.320) highlights that interpretive researchers have a subjective point of view about phenomena as their assumptions concerning the reality, are relevant with the meanings and actions of people as social beings, where their meanings are derived from "intersubjectivity rather than objectivity". Walsam (1995, pp.78) argues that interpretive researchers in IS field are trying to "access to people's thoughts, views and aspirations" in order to provide rich insights about their perceptions on the utilization of IS in their life.

This study is exploratory in nature and holds an interpretive philosophical position as the objective of this study is to provide a better and deeper understanding of the factors that affect the decision of Greek SMEs to adopt EDI and to explain the low penetration of EDI in Greek SMEs. Thus, the decision of enterprises to adopt or not technological innovations is obvious that is relevant with the subjective point of view of people and specifically the ones that are decision takers and cannot be absolute since it depends on a wider diversity of factors, thoughts, choices, views and circumstances.

3.2. Epistemology, Ontology and Methodological Approach

In this part, different ways of thinking are examined which are related to the epistemology and ontology of the research and the path that a researcher follows in order to provide answers on the research questions of the study. Epistemology is inherent with the philosophical underpinnings of the researcher, on what is reasonable to study and how the outcomes of knowledge, could be useful for the science and thereafter for the society in general (Yin, 2011). According to Willig (2008, p.13) epistemology answers the question “how can we know?”.

Saunders, Lewis and Thornhill (2009) argue that ontology is related to the meaning of reality and truth for a researcher, on how this reality is being understood by the researcher. Alternatively according to Willig (2008, p.13) ontology gives answer to the question “what is there to know?” Regarding the social sciences where researchers investigate social phenomena, the ontological assumptions, which are linked with the nature and the essence of reality, could be perceived and understood by a subjective or an objective point of view. The objective point of view usually is intertwined with
quantitative research methods. Conversely, the subjective point of view is usually inherent with qualitative research methods. According to Creswell (2009), the quantitative research methods use a deductive reasoning in contrast with the qualitative research methods that use an inductive one.

Quantitative research method is the collection and measurement of quantitative data, which usually is conducted through survey-based inquiries or experimental researches (Creswell, 2009). Quantitative data are frequently collected within a standardized form (e.g. questionnaires) which includes a number of pre-determined variables to be examined. Quantitative data are numeric data that are analyzed with statistical methods in order to provide comparisons between variables and generalized outcomes, depending on the size of the population examined. The use of qualitative studies is interconnected with the verification of theories and with hypothesis testing (Creswell, 2009).

Qualitative research method as supported by Myers and Avison (2002) is more familiar within the social sciences and it is particularly used in understanding social and cultural phenomena, which are complex and cannot be objectively measured or explained in an absolute form. Willig (2008) supports that the qualitative research is designed to provide meanings that are assigned to events and phenomena, as well as a deeper understanding in subjective perceptions and beliefs, rather than to create predictions or cause and effect determinations. Qualitative research can be implemented with different techniques and several sources of data such as questionnaires, interviews, observations, and documents, however a lot depend on the design of the whole research, the logic that is being followed, the possible limitations in time and resources and the targeted objectives (Myers and Avison, 2002; Hart, 2005).

Therefore, it is obvious that the qualitative approach is suitable in the present study, since the purpose of this research is to achieve further insights and to give substantive responses, regarding the factors affecting the decision of EDI adoption by Greek SMEs, along with an interpretation of the low penetration of EDI in Greek SMEs. Also taking under consideration that this research deals with the provision of meanings and understandings regarding the decision of SMEs the qualitative research is the most appropriate, since it is compatible with the ontological and epistemological perspectives of the present study. Regarding the underlying motives and decisions of how do Greek SMEs behave and act in a constantly changing context, it seems that their actions and behaviours have a nature of subject matter. Therefore, it is impossible to be measured. Conversely, it is entirely reasonable to be interpreted, through the utilization of a qualitative approach.

3.3. Research Strategy
Creswell (2009) distinguishes different types of strategies in qualitative research, which varies depending on the nature of the study, however in each research there is a need of a careful consideration of choices regarding the elements of the study. More specifically Creswell (2009) refers to different strategies of inquiry such as narrative research, phenomenological research, action research, ethnography, grounded theory, case study and so on. The case study according to Yin (2009) is an empirical study that investigates a real-life phenomenon where the need for further knowledge is deemed necessary and specifically when complex contemporary problems need a better understanding.
3.3.1. Case Study
Yin (2009) supports that case study has a unique ability to incorporate a research problem where limitations between phenomenon and context are not predefined in an absolute form. In addition, he distinguishes three different conditions in relation with different research methods where the selection of the case study research, depends on three conditions. The first condition is related to the form of the research question stated, the second condition has to do with the control that a researcher has on the behavioural events of the study and finally the third condition, deals with the focus of the study, if it is on contemporary events or not. Moreover, the research methods that are presented and have a clear relevance on the aforementioned conditions are the following: experiment, survey, archival analysis, history, and case study. Figure 2 presents the comparative table.

Figure 2. Comparative Table with Relevant Situations for the Selection of the Appropriate Method of the Research. Adopted by Yin (2009, pp. 9).

<table>
<thead>
<tr>
<th>Method</th>
<th>Form of Research Question(1)</th>
<th>Requires Control of Behavioral Events? (2)</th>
<th>Focuses on Contemporary Events? (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>How, Why?</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Survey</td>
<td>Who, What, Where, How many, How much?</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Archival Analysis</td>
<td>Who, What, Where, How many, How much?</td>
<td>No</td>
<td>Yes/No</td>
</tr>
<tr>
<td>History</td>
<td>How, Why?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Case Study</td>
<td>How, Why?</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Therefore, it is clearly understood that case study is the preferred research method for the present study where the three conditions mentioned above and pertain to case studies are maintained. More specifically there is a need to answer on “how?” and “why?” questions. In addition, in this study, there is no relevance with controlling behavioural events and the emphasis is centred to contemporary events, since IT innovations in business world is a subject of concern. The changing context that Greek SMEs operate and the parameters within the TOE framework that affect the decision to adopt EDI denotes a real-life contemporary situation.

This study has been designed according to the recommendations of Yin (2009). Yin (2009, pp.24) states that the research design constitute the “logic” that interconnects the collected empirical material with the conclusions and the research questions and he further states that “research design deals with a logical problem and not a logistical problem” (pp.27). Thus, it is beneficial for the present study to embody the following recommendations of Yin (2009, pp.24):

- Identify the case study design (single, multiple, holistic, embedded).
- Define the units of analysis and the likely cases to be studied.
- Develop theory, propositions and issues underlying the anticipated study.
- Define the procedures to maintain case study quality.
The above recommendations are also inherent within the following five components of the research design where according to Yin (2009, pp.27) are essentially important: 1. the questions of the study, 2. the (possible) propositions, 3. the units of analysis, 4. the logic linking of data to the propositions and 5. the criteria for interpreting the findings of the study:

1. The questions for this study are: a. How do the technological, organizational and environmental factors affect the decision of Greek SMEs to adopt EDI technologies? and b. why EDI technologies have a low penetration in Greek SMEs?

2. The propositions of the study (in a theoretical basis) would certainly be, the major elements derived by literature and can be separated as follows:

- The perceived direct and indirect benefits within the technological context,
- The perceived financial cost and the perceived technical competence within the organizational context,
- The perceived industry pressure and the perceived government pressure within the environmental context.

All aforementioned propositions are seamlessly linked with the theoretical context of the perception based TOE framework.

3. The units of analysis for this study are six Greek SMEs (the decision of SMEs to adopt or not EDI in corporate level e.g. people that have a direct involvement in decisions for adoption of IT innovations).

4. All collected evidence is inherent within the theoretical framework of the perception based TOE model of EDI adoption and the abovementioned propositions of the study (Appendix 1 and 2). This means that this study in order to collect evidence follows a standard and structured framework.

5. The interpretation of the findings of this study is relying in the above theoretical propositions of the perception based TOE model of EDI adoption. According to the findings of this study, possible potential differences in views between different companies will be highlighted.

3.3.2. Multiple Case Selection
Yin (2009) distinguishes case study research as single and multiple. Single case studies are focused on one case and multiple case studies are focused on multiple cases, which can be assumed as single, or multiple experiments respectively. Since the answer of the research questions of this study need to provide convincing conclusions to its target audience, it is imperative that multiple cases are used to offer robust and reliable results that can be drawn from literal replications and logical conclusions helping the researcher to provide generalizable outcomes (Yin, 2009). Also Yin (2009, pp.58) states that ”the greater certainty lies with the larger number of cases”. Therefore, a multiple case study research strategy has been adopted. However, given the contextual nature of the multiple case study research and the critics that case studies continuously have received, Yin (2009) suggests that having two or more cases in a study, eliminates the possible misconceptions of the study.
In order to be able to investigate the effects of the parameters within the TOE model and to provide substantive responses of the low penetration of EDI in Greek SMEs, six enterprises constitute the source of analysis for this research. The rationale for selecting different enterprises - cases and therefore involved stakeholders on decisions regarding IT innovations, derives from the nature and the purpose of the study to provide deep levels of understanding through contrasting perceptions of different people. In addition, it is worth noting that the activities of the enterprises as well as their size vary. All six enterprises are operating in a common geographical context having therefore a common influence from the local socio-political and financial events.

3.4. Data Collection
The main evidence (primary data) for this research derives through face-to-face semi-structured interviews with one participant each time, conducted with people who maintain a direct involvement in the decision on the adoption of new technologies in each company. Face to face, semi-structured interviews offer to the researcher the ability to collect valuable information, but also to elicit in depth answers from the responders. Yin (2009) argues that the most important source of evidence for a case study research is interviews. Two separate interview guides in conjunction with the perception based TOE model for EDI adoption of Kuan and Chau (2001) have been developed for EDI-capable enterprises and non EDI-capable enterprises respectively within the same theoretical structure, following a common interview procedure. Furthermore, in this part it is worth mentioning that data collection from interviews was performed in Greek language, since it is the national language of Greece and all participants comply under this option. All interviews were conducted in place and time set by participants.

Secondary data sources for this research such with extra information about the companies are collected from companies’ web sites, published documents, published annual reports, newsletters and promotional leaflets. Additionally, the collected evidence was carefully transcribed and translated from Greek to English. Furthermore, an extensive literature review has been made and relevant literature cited in scientific articles of journals and books regarding EDI adoption has been studied and collected. Both primary and secondary data were collected in order to maintain information richness for this study.

3.5. Interview procedure
The interviews were conducted during the period from 21 March 2014 to 31 March 2014. The criteria for the size of the companies were maintained on micro, small and medium sized. Both of six companies employ less than 250 persons, their total turnover is fewer than 50 million Euros and their annual balance sheet total is less than 43 million Euro. Furthermore, each company’s headquarters are located on the wider north and east suburb of Attica.

The number of companies, the date of the interviews, the activities of the companies, the size of each company, the interviewees' position in the involved companies as well as the capability of each company in EDI technologies are presented in the following Table 2.
Table 2. Conducted Interviews for this Study

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Size</th>
<th>Interviewee</th>
<th>EDI-Capable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company 1</td>
<td>21/3/2014 Trade &amp; Constructions</td>
<td>Micro</td>
<td>Manager</td>
<td>No</td>
</tr>
<tr>
<td>Company 2</td>
<td>22/3/2014 Imports &amp; Trade</td>
<td>Medium</td>
<td>IT Manager</td>
<td>No</td>
</tr>
<tr>
<td>Company 3</td>
<td>24/3/2014 Service Provider &amp; Trade</td>
<td>Small</td>
<td>General Manager</td>
<td>No</td>
</tr>
<tr>
<td>Company 4</td>
<td>26/3/2014 Real Estate</td>
<td>Small</td>
<td>Sales Director</td>
<td>No</td>
</tr>
<tr>
<td>Company 5</td>
<td>27/3/2014 Trade &amp; Service Provider</td>
<td>Small</td>
<td>CEO</td>
<td>Yes</td>
</tr>
<tr>
<td>Company 6</td>
<td>31/3/2014 Food Processing and Distribution</td>
<td>Micro</td>
<td>Manager</td>
<td>No</td>
</tr>
</tbody>
</table>

Before each interview, there was an introduction to the researched topic and the theme of this thesis. All participants were informed about the aims of the study. The nature of the thesis was explained to each interviewee in every detail. In addition, they were kindly asked, whether they had some misunderstandings in the questions stated, to request further clarifications. All participants were sincere thanks for their valuable time spent. All participants understood that their participation was voluntary based. They were informed for the estimated time of the interview, which lasted about 40-60 minutes. All participants were kindly asked to give their permission to record the interview in the digital audio recording medium. They understood that all collected data would be used exclusively for the purposes of this research. They understood that their contribution on this thesis would be important. All participants informed that the researcher would use the recorded material solely for the purpose of this thesis and that the researcher would possibly quote or use excerpts of the recorded material to paraphrase in the thesis. It was also clearly understood from all participants that access to the content of the interview would only have the author, the tutor and the examiner of this thesis. They understood that the material will be transcribed and will be safely maintained until the completion (rated and published) of the thesis and then will be destroyed. They ensured about confidentiality and privacy but also for their right to withdraw from the interview at any time. All participants informed that there is a chance the researcher to communicate again with them in case there would be a need to confirm the validity of data provided. A consent form for participation in interview was signed by all interviewees and the researcher in two copies (one for the researcher and one for interviewee).

There are two interview guides and are separated in four parts. While all companies except company 5 are non EDI-capable, all questions to the participants regarding the decision performed in future tense and for the participant of company 5 all the questions performed in past tense as the specific company is already EDI-capable. The first part includes general questions, the second part includes questions about the technological factors, the third part includes questions about organizational factors and the fourth part includes questions about the environmental factors. The introduction of each interview
began with a brief kindly asked question to the interviewees to introduce themselves and to give some details about their professional experience, their education and if they do not prefer to use honorific's in the style and the form of discussion, in order to feel more comfortable. A detailed presentation of the interview guides for both EDI capable and non-EDI capable enterprises can be found in Appendix.

3.6. Data Analysis
There are many strategies on analyzing case study evidence, which are related and driven by the purpose and the nature of the study respectively. However, the most significant argument is the sufficient and detailed presentation of the important collected evidence in order to provide an integrated study, in a meaningful and comprehensible manner, without any existing ambiguity. This study has six different cases and the analysis of empirical data will be performed based on the relevant theory of Technology, Organization and Environment. Each case is a "standalone entity" as argued by Voss, Tsikriktsis and Frohlich, (2002, pp. 213). Thus this thesis will use the concept of within case analysis (Voss, Tsikriktsis and Frohlich, 2002; George and McKeown, 1985) attached on the theoretical perspectives of Kuan and Chau’s (2001) perception based TOE model of EDI adoption. As argued by Yin (2009, pp.130) the most preferred strategy in case study analysis is "by relying on the theoretical propositions of the study". It is reasonable that respondents could have different claims regarding the decision of EDI adoption in each enterprise and a tendency in subjectivity and possible biases. Studying in depth the relevant TOE model within cases and highlighting in addition the potential differences across cases, useful conclusions and meanings can be drawn regarding the studied Greek SMEs. Therefore, the first part of the analysis will focused on the technological context, analyzing the detailed parameters of the perceived direct and indirect benefits of EDI providing the effects and the importance on the decision of studied SMEs to adopt EDI. The second part will focused on the organizational context analyzing the detailed parameters of the perceived financial cost and the perceived technical competence, providing the effects and the importance on the decision of SMEs to adopt EDI. The third part will focused on the environmental context analyzing the detailed parameters of the perceived industry pressure and the perceived government pressure, providing the effects and the importance in the decision of SMEs to adopt EDI. The possible common views and meanings and additionally the major differences across cases, which are emerged through the detailed study of the six cases, are also interpreted and discussed.

3.7. Quality of the Research
Hart (2005) demonstrate that there is no restriction on the choice of how a researcher will develop a study, if it is designed to offer high quality, valid and reliable findings. Robson (2002) supports that there are multiple realities in the context of interpretive qualitative research which have to be established, in order to be able a researcher to construct the meanings of knowledge. These meanings cannot be established in advance, since there is a need of appropriate thorough testing of collected evidence.

Although the main criticism of case study research are based on the lack of robustness and the weakness on wide generalisability of findings, there have been taken certain specific measures, in order to overcome possible challenges. Willig (2008, pp.16) supports that qualitative data are collected and many times analyzed in real life circumstances and therefore qualitative studies have a “high ecological validity”. Furthermore, Yin (2009) indicates four criteria, which are appropriate in order to
produce high quality research studies. These are the construct validity of the study, the internal and external validity and the finally the reliability.

3.7.1. Construct Validity
Construct validity refers to the appropriate operational measures that have been determined in order to study the concepts of a research (Yin, 2009, pp.40). Regarding the construct validity of this study, there have been already highlighted the theoretical framework of perception-based model for EDI adoption which incorporates the Technological, Organizational and Environmental (TOE) context. All data sources for this study have been meticulously selected. Primary data evidence from face to face semi-structured interviews were carefully transcribed, translated, studied, checked and used. Also secondary data evidence from multiple sources were meticulously collected, studied, checked and used.

3.7.2. Internal and External Validity
Internal validity is related to the establishment of valid interconnections between the concepts of the study (Yin, 2009). The internal validity of this study have been established by keeping a careful logic design from the beginning until the end, following in parallel the theory but also through a detailed presentation of empirical findings and an extensive analysis in the corresponding chapter.

External validity is inherent with the generalization of findings for a study (Yin, 2009). In this study Greek SMEs are researched, which operate in a constantly changing environment. In particular, Greek SMEs operate in a difficult economic climate, where the concept of doing business is confronted with many problems. Furthermore taking into consideration that the present study is based on the theoretical lenses of the TOE model and more particular in the effects of TOE in the decision of SMEs to adopt EDI, the study evidence is in conjunction with theory. Moreover, Oliveira and Martins (2011) argue that TOE framework has been widely used in IT adoption studies such as adoption of internet, websites, e-commerce, ERP, E-business. This means that the present study has the probability to provide some useful generalizations in IT adoption sector primarily in the area of decision in corporate level.

Furthermore, it is worth noting that the primary data for this study were collected through face-to-face semi-structured interviews by people who maintain a direct involvement in the decision on adoption of new technologies in each company. This means that their opinions and thoughts have a major weight in corporate decisions. Also the contrasting perceptions of people in each case and the multitude of ideas from EDI-capable and non EDI-capable Greek SMEs constitute the validity of this research. Of course, in order to ensure both the internal and external validity of this research several other validation procedures have been engaged as well as the data source triangulation and the replication logic both for primary and secondary data as suggested by Yin (2009). The collected data and the findings of this study cannot provide an overall generalisability beyond the aforementioned delimitations of the study as referred in section 1.5.

3.7.3. Reliability
Yin (2009, pp.40) notes that reliability refers to the way in which the main “operations” of a research as for instance the “data collection procedures-can be repeated, with the same results”. In order to ensure high reliability standards for this research the process of data collection is presented with every detail. In addition, the interview guides for
EDI-capable and non EDI-capable enterprises can be easily found in an analytic form in appendix section. In this way the opportunity to another researcher to be able to reproduce this study in every detailed step is given. Much more the opportunity to reproduce this study with other methods is given, as well as all details of previous study of Kuan and Chau (2001) are separated and presented in table 1 in section 2.

Moreover, both of interview guides follow the same detailed structure and if we consider the fact that were applied in each interview respectively this fact shields the reliability of the results. Also in order to minimize the possibility of errors in data collection procedure all interviews were recorded in a digital medium after the permission given from the interviewees, along with notes taken in a notebook before, during and after each interview. This means that the final transcriptions of data used in the rest of the study are correctly and meticulously collected and used with high reliability standards. Finally, all secondary data collected provide an extra guarantee in the reliability of this thesis.

3.8. Ethical Considerations
This research was conducted under the ethical considerations for privacy and confidentiality of the participants and the companies. This was the reason that the real names of both participants and companies have been replaced with fictitious names such as company 1 and participant 1. All participants were informed about the purpose of the study. For their participation gave their consent. In addition, their participation was voluntary based and they was ensured to feel free to withdraw. All interviews were recorded in a digital medium after their given permission and all collected data used exclusively for the purposes of this research. The protection of all participants and therefore all companies from harm or any kind of damage have been maintained by presenting only specific information needed in this study, but also by securing all the digital records and transcriptions of the interviews.
4. Empirical Findings

Through this chapter, the empirical findings from six in-depth face-to-face, semi-structured interviews are presented. The interviews had duration from 40 up to 55 minutes. The notes taken before and after interviews are also used in each case, in order to fulfil the collected evidence.

The first part of the 6 interviews, which includes further details about companies, descriptions about the corporate IT background, the opinions of interviewees about EDI and the thoughts of interviewees about the benefits of EDI, can be found in Appendix. Additionally, in table 3 are presented details about the companies and the conducted interviews.

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity &amp; Trade</th>
<th>Size</th>
<th>Interviewee</th>
<th>EDI-Capable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company 1</td>
<td>21/3/2014</td>
<td>Micro</td>
<td>Manager</td>
<td>No</td>
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<tr>
<td>Company 2</td>
<td>22/3/2014</td>
<td>Medium</td>
<td>IT Manager</td>
<td>No</td>
</tr>
<tr>
<td>Company 3</td>
<td>24/3/2014</td>
<td>Small</td>
<td>General Manager</td>
<td>No</td>
</tr>
<tr>
<td>Company 4</td>
<td>26/3/2014</td>
<td>Small</td>
<td>Sales Director</td>
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<tr>
<td>Company 5</td>
<td>27/3/2014</td>
<td>Small</td>
<td>CEO</td>
<td>Yes</td>
</tr>
<tr>
<td>Company 6</td>
<td>31/3/2014</td>
<td>Micro</td>
<td>Manager</td>
<td>No</td>
</tr>
</tbody>
</table>

Since interviews performed with the same logic following the perception based TOE model for EDI adoption of Kuan and Chau (2001), the six basic elements will be the pillars for each case in this chapter.

Starting from the Technological context in section 4.1 will be reported the elements perceived direct benefits and perceived indirect benefits. Follows in section 4.2 will be reported the elements perceived financial cost and perceived technical competence within the organizational context. Finally, regarding the environmental context will be reported in section 4.3 the perceived industry pressure and the perceived government pressure.

All these aforementioned elements are inherent with the decision of Greek SMEs to adopt EDI. In the next sections, an effort has been done to quote the relevant parts that answer the interview guide questions for each company. Consequently, by this practice, it could be easier for the readers to understand what effects have each parameter in the decision of enterprises to adopt EDI.
4.1. Empirical Findings Concerning the Technological Factors

4.1.1. Perceived Direct Benefits

**Improve data accuracy**

Interviewee 1 supported that the nature of the activities of the company is inherent with the data accuracy, regarding the accuracy in measures such as height, depth, width, colours, etc.

Interviewee 2 stated that “the most important parameter to adopt EDI regarding customers or suppliers... is the integration of EDI system with our current ERP system”. He continue, telling that “many times we are supposing that we will have data accuracy, but finally there are so many software based systems surrounding the main ERP system which contribute in having errors in data. Because we have the human factor, in that cases, whenever, ultimately is a utopia the how to implement something neither utopia is the EDI implementation. But, finally most important is the how to implement something. Therefore an important factor is the correct integration with our ERP and to be fully compatible.... and every move towards to integration of external data to internal ERP system must be carefully implemented with the above stated procedure”.

Interviewee 3 supported that data accuracy is very important for their company justifying the importance by the thought that "in the field of activities there are fast changes, that you have to be careful and direct active, you cannot be behind of those changes”.

Interviewee 4 stated that ” We have applied certain procedures in electronic interchange, as far as possible...but...Greek public services are not ready to accept electronic documents...and to respond correctly”. He continue telling about the data accuracy “certainly, we have the sender and the receiver that they have to agree...” and he also gave an example of a certain problem (experience) that they recently had in sending corporate documents and certifications to the public service of “General Electronic Commercial Registry (G.E.M.I.)”.

Interviewee 5 responded that ” It was very important...it is related with the avoidance of errors.....it was very important....”.

Interviewee 6 explained that “the use of technology absolutely can contribute in the accuracy of data...insomuch it is more difficult to have errors due to computers rather than those due to human......so I think that it is very important for us”.

**Improve security of data**

Interviewee 1 supported that data security is very important for their case especially in payments.

Interviewee 2 responded that “for sure all transactions have to be safe.... it is very important after NSA’s story and other security related issues worldwide... and it is also a request from the administration of the company, to obtain high security standards”.
Interviewee 3 argued that data security is very important for their company.

Interviewee 4 answered that “We do not have confidential documents... we are not a kind of <secret service>... we do not have classified documents... all of our transactions are clear... data security is not very important for us... but maybe for other enterprises in other sectors like investment companies-banks". He continues telling that, "Anyway all electronic devices (computers), I believe that does not provide an absolute security. Security depends on how every company take the appropriate security measures".

Interviewee 5 explained that “In our case was not on high priority...in our case....in other cases -other companies maybe yes....I just mean that somehow or other...we sent the invoices by post before EDI implementation...so in such cases security is not important...I mean that anybody could see those invoices.”. In addition, he wanted to verify if the question was only about the decision for EDI adoption and not for other security issues, in order to be sure that he is giving the correct answer.

Interviewee 6 answered that “Data security is an issue for computers...and if we can consider that all systems in banks and generally all systems that operate in the Internet are closely related with data security....it is obvious that even in corporate (level) is important....there is a use of many methods like for example cryptography.....in order to ensure the security”

**Improve operation efficiency**

Interviewee 1 made a judgement with the cost of implementation of “high philosophy” IT systems, where nowadays small enterprises “suffer” and “hesitate” those costs. In addition, he gave an example that under other (possible better) conditions in the market, EDI would be important on the operation efficiency of company 1.

Interviewee 2 answered that “of course, the possible selected choice to adopt EDI incorporates the operation efficiency of a company”.

Interviewee 3 provided a quick answer “of course”.

Interviewee 4 answered that “You cannot wait, if you do not modernize your company, you lost the train, competitors are waiting...everything that is not renewed, dies”.

Interviewee 5 explained that “It was very important....in our decision...very simple....because there is an improvement on operations not only for us but also for the receiver.....”.

Interviewee 6 answered that “ It is related with the cost....I wish to have....a different situation....I wish to have a financial comfort...to invest in technology....and in all sectors of our company not only in IT...it is important but...”.

**Speed up application process**

Interviewee 1 mentioned that they are searching ways to improve the application processes mainly regarding the customer service.
Interviewee 2 answered that “the adoption of EDI certainly offer faster application process, at the certain time we are use CSV files from suppliers, we are now in the middle of this route in a kind of a supposed semi-EDI procedure. We have understood the importance and the benefits... and we schedule to proceed to more automated processes this period”.

Interviewee 3 provided a quick answer “of course”.

Interviewee 4 answered that “it is very important, as you told you before time equals to money” and he continue giving an example, regarding classic mail and e-mail.

Interviewee 5 answered that “of course it was important, I have already mentioned it in previous discussion...all of those factors were very important”.

Interviewee 6 answered that” Of course, it is important for us” and he continue giving some examples concerning the use of IT.

**Reduce clerical errors**

Interviewee 1 answered that "of course” providing an example of an actual event that happened to a customer.

Interviewee 2 stated that ”we mentioned a lot of things in previous questions, of course the reduction of the involvement of human, in data entry and data exchange is very important. But also the danger exists when there is a need of manual imports of data, so it is preferable in implementations to try to design something fully automated but always tested lot of times and we have also to consider a certain agreement in data exchange with partners (regarding the structure of files exchanged)”.

Interviewee 3 answered that “usually through the use of EDI errors are reduced, there are many safeguards in keeping away the errors and specifically when there is an automated electronic import of data…. then you have not a data entry process...it is very helpful in reducing human errors”.

Interviewee 4 answered that “It is important and also is important to have less employees, less corporate expenses...less costs and so on”.

Interviewee 5 answered that “I have already mentioned it as very important”.

Interviewee 6 answered that “yes... because in all systems you get exactly what you have imported before...so human factor is important”.

**4.1.2. Perceived indirect benefits**

**Improve organization image**

Interviewee 1, argue that it is important to have a good image as far as “we can provide services to customers, fast and correct...without discomforts”.
Interviewee 2 stated that “In the first stage, we are trying to contact our suppliers. Regarding our customers we have an e-shop which provide to them the opportunity to track their orders or to buy products, it is important for our next step (meaning the organization image) because now we are focused on back office, the front end will be important in the future”.

Interviewee 3 responded that “Yes it is very important for us…. because we leave in an internet era…so if you provide a good image outside the company….it is very helpful”.

Interviewee 4 answered that ” Surely…it is a modern way of thought… and an efficient one”.

Interviewee 5 answered that ” Yes it was important, you provide a better image outside of your company, you facilitate also other’s (regarding partners) procedures, you strengthens your relationships with other companies either he is customer or supplier…and this (practice) reflects on the corporate image”.

Interviewee 6 answered that “it has not a big importance for us… we are a small company trying to survive…..of course if you have such systems you offer easiness to your clients …”

**Improve competitive advantage**

Interviewee 1 answered that it is important to have “an absolute customer satisfaction”….where a big percentage of sales is conducted with the help of “the word of mouth from satisfied clients”.

Interviewee 2 answered that” By providing better services to customers, it is absolutely a competitive advantage, our efforts are focused on this anyway. But the competitive advantage comes when you can study your customers' interaction through some automated applications”.

Interviewee 3 answered that “It is beneficial…. because you are one step front of the competition and others see you in a better position while they are trying to adopt innovations…”.

Interviewee 4 answered that “It is important…. as I told you before about modernization…you disappear… from the map of the market….you cannot compare typewriter with the computer”.

Interviewee 5 answered that “It was part of our thinking….before we decide….that you could earn such a benefit….we have also see it in practice”.

Interviewee 6 answered that “there is a shift on those technologies. All transactions tend towards there…on an electronic form…so all companies are trying to adopt innovations to be competitive…in each case it is advantageous….the important thing is the existence of a healthy competition… and all companies to be able to…use those innovations…it is very important for us too”.

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Benefit other business practices

Interviewee 1 besides the customer satisfaction and trust, he also referred in the participation of the company in internet advertising web sites and the importance of the “confirmation” of what exactly seeks in the internet a modern client.

Interviewee 2 stated that “with abovementioned responses I think we have cover this question”.

Interviewee 3 explained that “in the new era you cannot use old fashioned ways of communication…while technology offers high levels of innovations”.

Interviewee 4 explained that “I think that it is not very important…maybe it is important for enterprises in a different sector…”.

Interviewee 5 explained, “it was also a piece of our thoughts….of the entire decision”.

Interviewee 6 answered that “If there is a better image outside of a company, then ok. I cannot think or describe something else”.

Improve customer services

Interviewee 1 respond that “it is enough important at the moment that you engage customer, product and satisfaction” referencing in addition to possible errors made which has as a consequence “not adequately served the customers”.

Interviewee 2 mentioned that “Our objective is the better customer service and that is the reason that we provide services such as the tracking one, to customers through our web site, which is enriched and updated often. Also we are trying to build more improved B2B services, incorporating the web site with our ERP….by moving in Azure some pieces and we are investing also in networking infrastructure and in internet lines so as to have a better image outside, towards to the customer”.

Interviewee 3 responded that “It is the next step in all procedure it is important because client is being served immediately, when he has a need..So when you have all of these you have happy customers...which this is the objective of every company”.

Interviewee 4 answered that “Taking into consideration that speed is significant…it is important for us”.

Interviewee 5 answered that “Yes it was a piece of thoughts.... regarding the profitability on handling procedures....better customer services are on a high importance”.

Interviewee 6 answered that “In our case.... our clients are not directly coupled with technology...concerning other partnerships, yes…it is sure that you can improve partnerships...with technology you can certainly have better results, I am sure about this “.
**Improve relationship with business partners**

Interviewee 1 responded that “It will be an ideal situation but lot of business partners are small companies” and possible in case that company 1 and its partners can adopt an EDI system he referred that “it will be beneficial for all”.

Interviewee 2 responded that “Apparently all previous stated thoughts are related on the improvement of the relationship with business partners both for customers and suppliers”.

Interviewee 3 answered that “in our field of activities it is very important, because speed is an advantage for a company. We have stopped cooperation with companies that are not directly responding in our needs. This has been done not because there were not beneficial, but because they were very late, for example when you ask for a price and you do not receive a fast (in the same day) answer, then you have left behind your work and the requests from customers are disappeared...you understand that it is very important”.

Interviewee 4 answered that “Of course it is important, that’s why we have adopted similar practices.... regarding digital documents....I believe that is worth doing those kind of changes...have a specific gravity (in the decision)”.

Interviewee 5 gave a positive answer.

Interviewee 6 answered that “Yes, but in every case has to do with whom do you cooperate....when there are (collaborators) young people, they understand the importance of technology, and because they are more familiar. Older people are not...they don’t like computers or it is difficult for them...you can save time (with technology)...and use it for something else”.

**4.2. Empirical Findings Concerning the Organizational Factors**

**4.2.1. Perceived Financial Costs**

**Set-up costs**

Interviewee 1 responded that in case of an investment on an EDI system, “if you can reduce the time in order fulfilment, increase the quality in customer satisfaction, increase the quantity of sales, then the return of investment will be great. In such cases (of investments) you are expecting the benefits”. He also explained that the setup costs are not very important as important are the “familiarizing of the simple users with the new system”. He further made a reference that “small companies does not employee qualified users” and it is important the new system, to incorporate an “easiness in use”.

Interviewee 2 responded that “We have adopt virtualization about five years , we had made predictions that are and will be beneficial, so concerning the setup costs of both software and servers is very low for our current situation. If we think that we have already shoulder this cost...regarding extra equipment as for instance the bar coding that we are implementing this time, it is not very high, but the cost of software is much higher. Mainly there are hidden costs, there is a need of collaboration of employees
with this implementation which certainly is a high cost for our company, related to time and in work that they left behind them, in order to help developers to understand what exactly they want”. He continue saying that “the cost of hardware is in, acceptable levels for us, but the cost of software and the cost of employees hours are high and many times not acceptable basically for small enterprises, for medium-sized (enterprises) is also difficult accepted but not unachievable”.

Interviewee 3 responded that “Maybe the setup cost seems high, if you do not make small steps”. Furthermore, she gave an example “on how to eat an elephant”, explaining that can be made by “only one bite a time. So it is preferable to make a schedule, not to be focused on the entire cost, but to be focused on the long-term profit and the future benefits, else you do not take the decision”. She continues telling “there are small steps with low cost and if you reach a certain point, then you realize that...for instance we have not purchase printer paper for a long time ago....then you understand the importance”.

Interviewee 4 responded that ”I think that it is better to ask .... if the setup costs and the entire investment.... yield into multiple...benefits... Do you put 2 and you earn 10 ?...or... do you put 10 and you earn 2?...that is important...but I think that the cost is low in relation with the offered outcomes”.

Interviewee 5 responded that “it was important. But in our case...the cost was very low...it is not based on traditional EDI, because if it was based on traditional EDI, the cost would be prohibitive.....we could not made this move.....in our case the cost was accessible...the ROI was for our case only six months....so our decision was direct”.

Interviewee 6 responded that “When there is an assistance from state, like previous year’s co-financing programs it is ok. We have an example where most of small enterprises had replace and renew their equipment....maybe you have the will but you cannot respond ...but also have to do with the nature of an enterprise...for some maybe it is high for others not. In my opinion and for our case the cost it is not disproportionate, regarding our turnover...I think that it is not unreachable”.

Running costs

Interviewee 1 mentioned that they have not a good experience in IT support from IT companies because the running costs are “disproportionately big”. In addition, he mentioned that the running costs must be calculated “after the second year” (of a new system implementation where problems start) and if it is possible to have a "consolidated view of the cost from the beginning (before system implementation) it will be better”.

Interviewee 2 answered that “If you implement an EDI system the running costs of the company in accordance with the running costs of the EDI, this generate a profit, so you can for instance use the free staff involved in previous work, to be more productive in other business functions”.

Interviewee 3 answered that ”The running costs are much lower than expected....because all people think that this cost will be very high but in reality it is not high....you can just think that many times companies have already pay for or purchase software that they have never use it, or they certainly have forget about it....”.
Interviewee 4 answered that "I believe that is low regarding the benefits and the total performance offered.....it is like the car...you have to repair it... in order to be able to move...".

Interviewee 5 answered that “The running costs are lower than our previous business costs....much lower... however it is not a considerable cost....logically...it is not important”.

Interviewee 6 answered that “You can find in the Greek market very expensive software and also very cheap. There are plethora of IT vendors...I have personally chose for our company a cheap one and a simple one to do our job....an easy one so everybody, all members of our company, can use it....but it depends on your needs every time...in my opinion the running costs are not high”.

Training costs

Interviewee 1 argues that “If employees need lots of hours to be trained in the new system, it will be a significant problem for our company” and he continued telling that “it is preferable to have an easy - understandable rather than a complicated system for our users”.

Interviewee 2 answered that the training cost must be “Included in the overall cost” and he highlighted that “our experience shows that it is depending on the final decision”.

Interviewee 3 answered that “No, it is the lower cost I believe....the whole project could be considered high but I think that people nowadays are familiar with computers...then this cost is very low... in relation to the cost of the whole investment”.

Interviewee 4 answered that ” For sure, every company seeks to recruit people that have good knowledge in computers..., that's the truth...and if you consider the fact that computers are a part of our lives...”.

Interviewee 5 explained that “It was very low....we had thought about it before we took the decision...but in reality, concerning our case the training costs were low”.

Interviewee 6 answered that “I think it is not a very high.... not very important in order to affect your decision”.

4.2.2 Perceived Technical Competence

Performance in providing IT support

Interviewee 1 answered that “It is clearly important” because “we criticize a software from the direct benefits...on what, how and when we can receive the expected benefits...if it is simple it is ok for us ....if it is complicated (in use) we have a major problem”.

Interviewee 2 explained that “At the present time we have not any problem in supporting our internal needs, if there exists a need, we outsource some services. For
instance our web site is totally outsourced....we have cooperation with developers, which they place their work in Azure (as mentioned before). Some services are kept internally, others outside, depending on our needs every time... but of course we have not a problem to support the entire system....the support on the corresponding EDI software is totally a work of the software vendor and it is related to the support agreement”.

Interviewee 3 answered that ”We have a high performance but I want to give you an objective response....by implementing an EDI system, the software vendor (service provider) has the appropriate knowledge... not you....this means that you don't want to have high level IT performance..... The installation and the implementation must be done from experts and then you'll not have any problem...so I think it is not very important”.

Interviewee 4 answered that ”Of course...it is important...but if we judge the benefits and.... the usefulness, then....you can see that maybe could be necessary...so....you decide”.

Interviewee 5 answered that “Of course, it was very important. If there was a need to employ one person to do this work...I wouldn't do that...but in our case, a simple user can use this system easy....but ok... every six months there is a need to check if the system is ok....it is not very difficult”.

Interviewee 6 answered that “I think it is not very important...in our case you need 2 or 3 computers, so it is ok.... it is not something amazing...in older times maybe...”.

Experience in supporting EDI software

Interviewee 1 answered that they do not have a big experience and they are expecting “simple and accessible things” and he continued “if they have difficulties in using new software” then “it will be a big problem for us”.

Interviewee 2 answered that “As I stated before it is the work of software vendor not our work”.

Interviewee 3 answered that “You do not need high levels of support if the implementation is correctly performed.... you need support only if there is a problem, usually you pay monthly or yearly......and it's ok”.

Interviewee 4 answered that ”It is very important for us, but as I told you the benefits are more important”.

Interviewee 5 explained that” I can say that ...no, because experience does not make any difference...the experience does not need to be high....”

Interviewee 6 answered that “I don't think so...if you are interesting in use it...then ok”.

Expertise in supporting EDI software

Interviewee 1 answered that “We are trying to maintain a satisfactorily level in IT use to cover our needs, but of course there are limits that we cannot exceed”. 
Interviewee 2 answered that “We have an internal expertise but as I mentioned before, it is not very important as far as there will be a specific agreement with the software vendor, so, we can forget it”.

Interviewee 3 responded, “I think that we'll not have any problem....considering our staff”.

Interviewee 4 answered that “ It is also very important in our decision but....we have covered it.... with previous questions”.

Interviewee 5 answered that “ you don't need to be IT expertise....I can answer like a simple user....we had not an expertise in supporting the EDI software....users and supporters of our system had not a previous experience or expertise in EDI.....”.

Interviewee 6 answered that” In my experience it is not important...I use the existing software and I have not any problem...there is not a need in supporting it”.

4.3. Empirical Findings Concerning the Environmental Factors

4.3.1. Perceived Industry Pressure

Requested by important business partners

Interviewee 1 answered that “Similar enterprises are facing serious problems of survival” and it is unlikely to “have a certain request” while there is a “shrinking market”.

Interviewee 2 responded that” Some communication solutions have been asked from important business partners and we have also some deadlines for implementation. So this is the request from important business partners and it is very important for our decision, it's so simple to get out of the market if you do not adopt those kinds of innovations”. He continue telling “It is important to think about that in earlier times and not in last minute....in our case we are pressed both from customers and suppliers to make those movements, so we have to respond correctly”.

Interviewee 3 answered that “Of course I believe that we will use it (EDI), it could be a positive incentive....”.

Interviewee 4 answered that “Our decision would be affected positively, we have already made some moves .....and if you consider the fact that business world make moves on this direction....on automated computerized solutions....for example newspapers are going to disappear....you can read them directly from internet....In my opinion all enterprises and possibly business partners apply the same practice as time is money, less employees, less costs...”.

Interviewee 5 answered that “ In our case I think that would not influence our decision... but didn’t happened.....the implementation was of our own initiative....so you can understand that if we were asked...there would ... a reinforcement....”.
Interviewee 6 answered that “In every case I would ask about the cause...I would think about it...I would ask about the reasons...if there were important reasons then ok...but in our case we are cooperate with micro enterprises”.

**Requested by majority of business partners**

Interviewee 1 answered positively by putting a certain condition that “If the market situation will be improved”.

Interviewee 2 explained that “If you are waiting the majority, you have lost the game... few and important are enough to make you move to interchange with them”.

Interviewee 3 argued that, “The same as before, we will use it”.

Interviewee 4 answered shortly” very important again”.

Interviewee 5 answered that “Definitely,...would have done..in that case”.

Interviewee 6 answered that” I would raise concerns...about this...I don’t know....it is difficult to give you an answer...”.

**Recommended by important business partners**

Interviewee 1 answered that “it is very positive to have important business partners that have the willingness to adopt such technologies. Then it will be easier for us to respond positive”.

Interviewee 2 answered that “it is sure that all companies are trying to improve their procedures and we, as a company, we want to correspond fast to their needs or recommendations...”.

Interviewee 3 answered that” Then of course, I give a positive answer”.

Interviewee 4 answered that ” It is not very important for us, I m looking to see what is better for our company and not other companies....if it is beneficial for our company then ok.... else I don't care about other companies...”.

Interviewee 5 answered that “It would be important....it is in the field of good cooperation and better corporate image...if a partner ask you to do something and you don't do it...it is not a good business relationship at all”.

Interviewee 6 answered that “ I will certainly arouse interest ....to become more competitive...to see this innovation...to obtain more information...for instance this period I am focused on an x-van system for our company....it is very important for us to implement it”.

**Recommended by majority of business partners**

Interviewee 1 answered that “then of course, because in ideal circumstances we will have the chance to make a fast depreciation of the investment”.

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Interviewee 2 answered that “it's simple as I told you, you have lost the game....this time we are trying to make our system and the... corresponded services provided by this system more reliable”.

Interviewee 3 answered that “then we'll have persuade ourselves that we have to do it (adopt EDI)”.

Interviewee 4 answered, “Logically yes....it is good to rely on excellent partnerships.....but rules always take precedence...on what is the most advantageous for your company and not others....the starting point is always our company”.

Interviewee 5 answered that ” You could not, then do something else”.

Interviewee 6 answered that “In that case yes, we can not constitute an exception”.

**Important competitors using or soon to be using Governmental network**

Interviewee 1 answered that “We have already a corresponding experience from Greek ministry of economics where the completion of tax statements is performed electronically. We have used to perform governmental transactions electronically and this is not something new”. In addition, he added regarding the competitors, “They would be obliged to do it, as all companies, so there is not any difference, you do it or you close your enterprise”. He also added that “ we are going to this direction...to perform our transactions with government only electronically regarding taxes, declarations and so on... government promotes this direction to have a direct contact with our State electronically”.

Interviewee 2 responded that “ There is not any kind of an alternative thought, you are illegal if you are not use it, so you are forced to do it”.

Interviewee 3 answered that” We will be affected very much, in case that this governmental system be on-line. If government take a certain decision, then all companies are obliged to follow”.

Interviewee 4 answered that “ In my opinion, as told you before, it is not very important what competitors are doing...if we can see the benefits, as we have already see them with corresponding practices, then we will be in the first position...on adopting....we are trying to modernize our company as better as we can every time”.

Interviewee 5 answered that “In Greece, when there is a governmental decision, you have to do it, either you cannot....so you have not a different choice”.

Interviewee 6 answered that ” If there was little changes in the existing governmental system ...then yes...if there was a new system...then we would not be affected....”.

**Majority of competitors using or soon to be using Governmental network**

Interviewee 1 answered that “If you expect the majority, you have not a competitive advantage, you are behind of them”.

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Interviewee 2 responded that “It is imperative to do it as you told you, if you have asked by government you are obliged to do this, there is no matter about your competitors at all”.

Interviewee 3 gave a positive response by answering that "the same as before”.

Interviewee 4 explained that “ It is not very important, I explained that before”.

Interviewee 5 explained that” Personally I would not wait the competitors….I would try to be in an advantageous position in relation with competitors...to use it as a competitive advantage”.

Interviewee 6 answered that “if there was a 99% percentage of participation, then of course...in every case I would think about the reasons....it is difficult to follow…”.

4.3.2. Perceived Government Pressure

Progressive mandatory measures introduced by the government

Interviewee 1 answered that “Greek government does not give you time limits or alternative choices. This means that you are obliged to follow specific directions, to do what they want and not what you can do. Therefore it is absolutely obvious that either very small companies are obliged to have the ability to manage electronic transactions” and he added that it is a kind of “a destiny driven ability”.

Interviewee 2 answered that “if there is a certain direction from government, then you could not do something else…” and he continue telling, “if you have asked to submit company’s sales or purchases in electronic form, you cannot do something else”.

Interviewee 3 answered that “I think that all companies will run to adopt EDI, searching to find out how exactly this could be done. All companies must be compatible with the requests of the government”.

Interviewee 4 answered that “I believe that current governmental network needs a lot of work in order to be ready for Greek enterprises. If you consider the fact that G.E.M.I. is not ready after going online for 1 year....to receive electronically our documents....they decide, it depends on them...we are ready but unfortunately....we are going back in the past ”.

Interviewee 5 answered that ” A direct effect and... also big...because...as I told you before you have not an alternative choice...at least from past experiences..I know that you can’t do something else...the government’s tactics for years are the same...there are also economic penalties....”.

Interviewee 6 answered that” Yes, we will comply...regarding the improvements in the existing system, my opinion is positive...if this change would be done progressively... it would be much easier for all companies and therefore for us”.

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Closing of paper-receipt counters

Interviewee 1 answered that “We cannot do something else because we will have not an alternative solution. This will be an important cost, a disproportionate cost in relation with the current activities of our company this specific time”. Moreover, he added, “the major problem is the cost and if we are obliged we will try to do this whether the last minute”.

Interviewee 2 responded that “You simply follow the requests from government...it is the same as previous year’s adoption of fiscal printers (comply with Greek tax law) where companies were obliged to follow...you chose if you are legal or illegal... that's the point of view”.

Interviewee 3 explained,” Our decision in EDI adoption would be positive... of course yes”.

Interviewee 4 explained, “If you comply with governmental requests you don’t have any problem....else for those that are not comply....then, they will have serious problems”.

Interviewee 5 answered that “If you have deadlines, you can't do something else...if there is not a deadline...then... you do it in the last minute”.

Interviewee 6 explained that ”In my opinion.... if there is for example a six month period to make some changes in your corporate system ...then it is reasonable to do this...we could comply on this…”. 
5. Analysis

In this chapter, the empirical data of multiple cases are analyzed, according to the theoretical framework of the perception based TOE model of Kuan and Chau (2001).

5.1. Analysis of studied cases

At this part will be analyzed the empirical evidence from six cases which have been presented in the previous section (4), in relation with the context of Technology Organization and Environment, on corporate level, following therefore a “within case analysis”. Regarding the context of Technology, the perceived direct and indirect benefits will be analyzed. Concerning the Organization context, the perceived financial cost and the perceived technical competence will be analyzed. In addition, regarding the context of Environment, will be analyzed the perceived industry pressure and the perceived government pressure. More specifically, different points will be examined, on how important they are and what effects they have in the decision of Greek SMEs to adopt EDI. Each case in this study constitutes an enterprise with different activities, different nature of business and different technological, organizational and environmental reactions. This means that specific factors have different effects and importance in the decision of each enterprise to adopt EDI and therefore, the point of view of each interviewee in the decision of EDI adoption, many times could be diverse. Furthermore, common views and major differences across cases, which are emerged through the analysis of the six cases, are also discussed. Additionally, as already mentioned, in this study five of the six enterprises are non-EDI capable and only one (company 5) is EDI capable.

5.1.1. The Context of Technology

The context of technology is the first one that will be analyzed regarding the perceived direct and indirect benefits, as illustrated in the following table 4.

Table 4. Technological Context. Source: Developed for This Study Based on Kuan and Chau (2001).

<table>
<thead>
<tr>
<th>Context</th>
<th>Major Elements - Factors</th>
<th>Importance &amp; Effects on Decision</th>
<th>Evidence</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Improve Security of Data</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improve Operation Efficiency</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Speed up Application Process</td>
<td>Reduce Clerical Errors</td>
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<tr>
<td></td>
<td>Perceived Indirect Benefits</td>
<td>Improve Organization Image</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Improve Competitive Advantage</td>
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<td></td>
<td></td>
<td>Benefit Other Business</td>
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</table>
Perceived Direct Benefits
The improvement of data accuracy regarding the decision for EDI adoption was found that it is very important for all cases. The interviewee from company 1 supported that the nature and the activities of this company are closely related with the accuracy of data, highlighting the accuracy in measurements and colours. Furthermore, the interviewee from company 2 explained that the data accuracy is related with the correct integration of an EDI system to the existing ERP system, adding also the elimination of human interference. The importance of data accuracy also was highlighted by interviewee of third and fifth case, while for the interviewee of fourth and sixth case, it seemed like something normal and feasible.

The improvement of data security, regarding the decision for EDI adoption had actually major contrasts. For company 2, company 3 and company 6 the improvement of data security has a high importance and specifically for company 2 is requested additionally from the company’s administration. Conversely, for company 1 the improvement of data security is important only for the payments. For company 4, the improvement of data security has a low importance, regarding the fact that they do not have classified documents. For company 5, which is an EDI-capable company, the improvement of data security was not important. The interviewee 5 explained that before the implementation of the EDI system, all invoices were sent by post and therefore the security in posted documents was absent.

The improvement of operation efficiency, concerning the decision of SMEs for EDI adoption was found that it is very important for the majority of cases. Conversely, interviewees of company 1 and company 6, demonstrated the importance of operation efficiency by their willingness of a better market condition and a better economic situation respectively in Greece. It is obvious that economic crisis and the difficulties of SMEs in investing in new IT systems, sometimes can leave behind the importance of the improvement of operation efficiency, as far as some of them try to cope with the already existing systems. Interviewee from company 2 argues that the adoption of an EDI system incorporates the operation efficiency. In addition, interviewee from company 4 argues that technological innovations (modernization) are inherent with the operation efficiency and that companies must be careful, given the competition. Furthermore, regarding the EDI capable enterprise, the interviewee highlights the importance of improvement in operation efficiency, not only for EDI capable companies but also for their partners.

The faster application processes regarding the decision of SMEs for EDI adoption, was found that has a major weight for all cases. Interviewee 1 supported that it has importance in the improvement of customer services. Interviewee 2 supported that they have already understood the importance of faster application processes and that they are scheduling to proceed to more automated processes. The interviewees of company 3, company 5 and company 6 argued about the importance of the faster application
processes, while the interviewee of company 4 added that he follows the opinion “time equals to money”.

The reduction of clerical errors regarding the decision for EDI adoption was found that it is very important for all cases, both for EDI capable and for non-EDI capable enterprises. The importance and the effects of the reduction of clerical errors were justified with the elimination of human involvement in data entry process and with the large number of safeguards that exist in those systems. Furthermore, the connection of the reduction of clerical errors with the reduction of the overall company’s costs was highlighted by the interviewee 4. Finally, interviewee 6 provides a logical explanation, based on the fact that, computerized systems have the ability to maintain and assure the imported data.

**Perceived Indirect Benefits**

The improvement of organizational image was found to be extremely important for most of SMEs, in their decision to adopt EDI. More specifically, the importance was connected with the better image outside of the company, on the better impression and perceptions that is provided to customers and corporate partners. It is worth mentioning that the CEO of EDI capable company emphasized the importance that EDI can facilitate the procedures of corporate partners. For company 6, the improvement of organizational image, is not very important for their decision to adopt EDI, concerning the fact that the existing difficult economic circumstances, are pushing small enterprises to be focused to survive, rather than to provide a better corporate image. So it seems that maybe, the improvement of the corporate image could be perceived as a kind of “luxuriousness” in difficult economic circumstances, when the survival of an enterprise is at first priority.

The improvement of competitive advantage was found to be extremely important for all of studied cases, in their decision to adopt EDI. Concerning the non-EDI capable enterprises, there was different justifications such as the absolute customer satisfaction and advancement in front of the competition. Also there was mentioned the possible danger of getting out from the competition and the significance of the existence of a healthy competition, where all enterprises could have the opportunity to adopt technological innovations. Furthermore, the interviewee from company 2 highlighted the importance of studying customer’s interaction, within the context of business intelligence systems, as a significant capability for companies that can invest in further automated applications. Finally, concerning the EDI capable company, the importance of the competitive advantage, it has been already confirmed and realized with the adoption of EDI.

The improvement on other business practices was found that it is important for the majority of the cases, in their decision to adopt EDI. Regarding company 1, other business practices are inherent with the customer satisfaction and trust. Furthermore the interviewee of company 1 referred to the advancements of internet, where their participation in advertising web sites provide them valuable information about purchasing habits of Greek consumers. It is worth noting that the specific thought referred also by the interviewee of company 2, as important parameter on the competitive advantage. Interviewee from company 3 argues that the new ways of communication offer corporate advancements and the interviewee from company 5 argues that the improvement of other business practices was a piece of their thoughts regarding their decision for EDI adoption. Conversely, interviewee from company 4
explained that the improvement of other business practices could not have importance for their decision in EDI adoption, providing a reference that it could be important for other enterprises in different sectors. Finally, interviewee from company 6 linked other business practices with the better organizational image.

The improvement of customer services, regarding the decision of enterprises for EDI adoption seems to have a big weight for the largest number of cases. An interesting example was given from interviewee 1 referring on the engagement of customer, product and satisfaction. Interviewee 2 and 3 linked the improvement of customer services with the business objectives and the better corporate image. Furthermore, interviewee 4 referred on the significance of speed on corporate procedures and the interviewee 5 referred on the profitability on handling corporate procedures. Unfortunately, the improvement of customer services was not important for company 6, regarding the fact that the major percentage of their customer base is micro enterprises and that they are not directly coupled with technology.

The improvement of relationships with business partners regarding the decision for EDI adoption was found that it is very important for all cases. Whether it could be reality in different economic situations or in “ideal circumstances” concerning micro and small sized companies as referred from interviewee 1, it seems that the improvement of relationships with business partners is a common point of interest in all cases. An important example was given from interviewee 3, regarding the interruption of cooperation with partners, which had slow response on their requests, although those partnerships were profitable enough. Finally, interviewee 6 was highlighted the contrasts that exist in technology acceptance between younger and older people in enterprises.

5.1.2. The Context of Organization
The context of organization includes the perceived financial costs and the perceived technical competence as illustrated in table 5.

Table 5. Organizational Context. Source: Developed for This Study Based on Kuan and Chau (2001).

<table>
<thead>
<tr>
<th>Context</th>
<th>Major Elements - Factors</th>
<th>Importance &amp; Effects on Decision</th>
<th>Evidence</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Running Costs</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Training Costs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perceived Technical Competence</td>
<td>Performance in Providing IT Support</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Experience in supporting EDI software</td>
<td>Company 1. - Company 2.</td>
</tr>
</tbody>
</table>
Perceived Financial Cost
The importance of set-up costs, in the decision of enterprises to adopt EDI, was found to have significant contrasts in many cases. More specifically the setup costs are perceived that have low importance for micro and small companies for different reasons. For the company 1 the importance is related with the easiness in use, for the company 4 the outcomes are more important in relation with the setup costs, while for company 6, the co-financing investing programs from state, constitute an important incentive for enterprises in IT investments. Conversely, for the EDI capable enterprise, the setup costs were perceived as high, because initially have been calculated as high, based on the traditional EDI systems. As explained by interviewee 5, they adopted a non-traditional EDI system, where the depreciation expense of the EDI system was performed in a short (six months) period. Furthermore, regarding the interviewee 2 the setup costs include high hidden costs and it is possible that for their case are perceived that have low importance. Concerning the fact that the specific company has already invested gradually in IS/IT sector for many years, it can be understood that there is already a specific IS/IT strategy for company 2. Finally, regarding the perceptions of interviewee 3, the setup costs may actually be high, but she explained that these costs must be understood as a long-term investment, until results become reality.

The running costs of an EDI system were found to have low effects in the decision of enterprises to adopt EDI, in most of cases. While for company 1 a previous experience with an ERP system, seems to be a kind of a barrier regarding their perception that running costs could be “disproportionately big”, the interviewee 6, supported that in Greek market there are plenty of choices on software vendors, separating the prices of software on the categories of expensive and cheap. Furthermore, there is a convergence of views among the responders of other companies, where the running costs are perceived low in comparison with the benefits of an EDI investment. More specifically responders identified the corporate profit that is generated by the use of an EDI system, the possible purchases of software that have never been used and the fact that the maintenance of corporate systems should be done at regular intervals, in order to be ensured their optimal functioning.

The training costs, for some of the cases appear to be quite significant in their decision to adopt an EDI system. In particular, for company 1 and for company 2 the training costs have a special importance in case that there is a need their employees to spend several hours in training. For company 1 the importance is focused in the easiness of use and for company 2 the training costs it is preferable to be calculated in the overall project’s cost. Regarding other cases, the importance of training costs is low because employees are familiar with computers. Hence, according to the CEO of the EDI capable company, the problem of training costs could be inconsiderable in cases that an EDI system does not require many hours of training.

Perceived Technical Competence
The performance in providing IT support was found that has different significance in the corporate decision for EDI adoption among studied cases. It can be argued that in some cases is not the primary concern, like company 2 that have high levels of technical competence or like company 6 that require a small number of computers in order to cover the corporate needs. Furthermore as argued by company 2 and company 3, the responsibility for the appropriate installation and operation of the EDI software, belongs to the software vendor. Regarding company 1 and company 4 the importance in providing IT support could be high, but the perceived benefits are also quite important.
Finally, regarding the EDI capable company, the low performance in providing IT support could also constitute an obstacle, but actually, after the implementation of their EDI system, the need in providing IT support is very low.

The experience in supporting EDI software in the decision of enterprises to adopt EDI was found that has different significance among cases. Regarding company 1 the importance is related with the simplicity of usage of the new software, while for company 4 may actually be important but most important are considered the benefits. For company 2 and company 3 the support is totally on vendor’s side possibly with the payment of a monthly or an annual subscription. It is worth noting that the CEO of the EDI capable company highlighted the fact that they did not need any experience in supporting their EDI software after the implementation of their EDI system. A respective view exists from the side of company 6.

The expertise in supporting EDI software for some of the cases appears to be quite significant in their decision to adopt an EDI system. Regarding company 1 and company 4, their low expertise in supporting EDI software is surely an obstacle in their decision for EDI adoption. For company 2 the agreement with the software vendor is still the major reason that the expertise in supporting EDI software is totally of nonexistent importance. Furthermore for the other cases the expertise in supporting EDI software, is seems that does not affect their decision for EDI adoption and it is also confirmed by the interviewee of the EDI capable company.

5.1.3. The Context of Environment

Table 6. Environmental Context. Source: Developed for This Study Based on Kuan and Chau (2001).

<table>
<thead>
<tr>
<th>Context</th>
<th>Major Elements - Factors</th>
<th>Importance &amp; Effects on Decision</th>
<th>Evidence</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Recommended by Important Business Partners</td>
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<tr>
<td></td>
<td></td>
<td>Recommended by Majority of Business Partners</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Important Competitors Using or Soon to be Using Governmental Network</td>
<td></td>
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<tr>
<td></td>
<td>Perceived Government Pressure</td>
<td>Majority of Competitors Using or Soon to be Using Governmental Network</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Progressive Mandatory Measures Introduced by the Government</td>
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<td></td>
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<td>Closing of Paper-Receipt Counters</td>
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</tbody>
</table>
Perceived Industry Pressure
The corporate decision for EDI adoption was found that could be certainly affected in case that possible, there was a request by important business partners. Regarding the perception of interviewees from company 1 and company 6, this possibility has a little chance to happen because in both of cases the majority of corporate partners are small or micro enterprises. For company 2, company 3 and company 4 a possible request by important business partners could have a major importance for those companies in order to respond positively in a corresponding request. Finally, for company 5 which is already EDI capable a request by important business partners could not affect significantly their decision but it could be only a positive “reinforcement” as argued by interviewee 5.

The probability of a request by the majority of business partners in the decision of enterprises to adopt EDI was found that had contrasting effects. For company 1 a request by the majority of business partners for EDI adoption, could only be happened under better market conditions. For company 6 a possible request by the majority of business partners would only raise some concerns but will not affect their decision. Conversely, for the major part of studied cases a request by the majority of business partners is definitely a reason to comply with partners’ request.

The probability of a recommendation by important business partners in the decision of enterprises to adopt EDI was found that could have significant effects for company 2, company 3 and company 5. More specifically for company 2, it is very important to correspond as fast as they can to the needs and recommendations of their corporate partners, while for company 5 this practice consolidates optimal corporate relationships. Regarding company 1 a recommendation by important business partners, it is easier to have a positive impact in the corporate decision. Conversely, for company 4 and company 6 a recommendation by important business partners could not affect their decision as far as they are focused on what is more beneficial for them.

The probability of a recommendation by the majority of business partners in the decision of enterprises to adopt EDI was found that have significant effects for all studied cases. Even for micro enterprises that have a slow response in adopting new technological innovations and for those enterprises that have received a major blow due to economic crisis. Primarily for all cases, there is a certain desire to have the ability to be compatible with technological advancements, by maintaining their competitive advantage especially when there are high levels of industry pressure.

The use of the governmental network from important competitors was found that could not have a big importance for the majority of cases in their decision to adopt EDI. More specifically, there is a common way of thought among most of cases that all enterprises have the obligation to follow the governmental directions. It appears to be usual the fact that every new governmental service, eventually becomes compulsory for all enterprises in Greece. It is worth noting that regarding company 4 the major concern is almost what is more beneficial for the company itself. Furthermore the interviewee from company 6, supported that it could be easier for them, if there were small changes in the existing governmental network.
The use of the governmental network from the majority of competitors was found that possible could have some effects for the minority of studied cases, in their decision to adopt EDI. A common way of thought that all companies are obliged to follow the governmental directions is appeared again, from the majority of interviewees. Usually when a large number of enterprises are using a governmental service in Greece, then the use of the specific service appear to become compulsory for all enterprises. It is worth noting that interviewee 4 insist that they are focused on what is better for their company, while for company 6, their decision could be affected only when the 99% is using a specific governmental service.

**Perceived Government Pressure**

The progressive mandatory measures that possible could be introduced by the government, was found that could have a serious effects on the decision of all studied cases in EDI adoption. More specifically a convergence of views that is derived by previous experiences is emerged and it is inherent with the obligation of enterprises to comply in any governmental request. Furthermore, it could be assumed that every change in the existing governmental tax system has the effect to put enterprises in a certain way to be directly compatible in every governmental request. So it may exceptionally be justified the fact that sooner or later every progressive mandatory measure that could be introduced by Greek government, is perceived as an already given legislative decision. This is the reason that even interviewee 6, refers to a progressive change and therefore a positive and easier compulsory with the governmental requests.

Moreover, in a given deadline (date for compliance) in which all companies are obliged to be EDI capable, there is certainly a reason for all studied cases to decide and adopt an EDI system. Either a period for adaptation or not has been given, interviewees agree that even in “last minute” they must be able to comply with the certain request. It is generally accepted the fact that being legal or illegal affects the operation of any business while the non-compliance fines are considerably high.
6. Discussion

At this part a detailed discussion, provide further insights in the major differences between cases, which are emerged through a variation of participants' perceptions. Useful associations between empirical findings and previous studies' evidence in the topic of EDI are also discussed.

The perception-based TOE framework was used in this study in order to provide a deeper understanding of the factors that affect the decision of Greek SMEs to adopt EDI. Furthermore the studied parameters within the TOE framework, was found to be very important in understanding the low penetration of EDI in Greek SMEs. In addition there was an analysis of all, common and diverse, perceptions that emerged through six case studies in detail. In particular, the diverse perceptions on corporate level are undoubtedly very important, in understanding the major impediments and determinants in corporate decision in each case.

However, each diverse perception is certainly inherent with the maturity of the studied companies in the IS/IT field. It can be understood that micro and small enterprises usually have not a high internal orientation on facilitating the business operations and performance by the use of IS/IT. This difference can easily be ascertained by the comparison of studied cases in the IS/IT level. For instance, the medium-sized company 2 besides the fact that employees IT staff, has already proceeded in several investments in the IS/IT field at regular intervals, having therefore a specific IS/IT strategy. This thought can also be reinforced by the fact that the specific company continues to make investments and have specific plans for new IS/IT implementations in the future.

In addition, by looking at the corporate IS/IT investments from another angle, it can be argued that over the years, possibly many implementations of IS in micro and small enterprises have been carried out in order to cover their basic operational needs or in order to comply with the given Greek tax legislation. By taking into consideration that the given Greek tax law and the wider tax system is “highly complex” and “non transparent”, the difficulties faced by Greek companies to comply with the given legislative framework are enough (Bitzenis, Tsitouras and Vlachos, 2009, p.695). As argued by Katsios (2006) the relevant tax system and all constant changes in tax legislation are indeed to limit the phenomenon of tax evasion in Greece, where the rates are extremely high.

Meanwhile, a considerable parameter could be the views held by business owners and managers in micro and small companies regarding the use of the IS/IT in business development (Ward and Peppard, 2002). It is also reasonable, that the nature of activities of studied companies and therefore the corporate requirements in IS/IT, has various effects in any possible decision for IT adoption. Many times SMEs fail to realize the benefits provided by investments in the IT field. This leads an enterprise to stay behind from the competition and to lose the chance to improve its position in the market. For instance, the operational effectiveness of a company can be realized, on the condition, of how effective it could be with or without the use of an information system, or how effective it could be, with a use of a better one. It is therefore necessary all corporate needs in IS/IT field, to be reviewed and redefined frequently.
Further to previous thoughts, it could be argued that the perceived direct and indirect benefits of EDI adoption within the technological context, for some cases are entirely important and for other cases not. While only one of the studied companies is EDI capable, especially for this company it could be argued that despite its small size, the views held by the CEO regarding the use of IS/IT are very positive. The technological benefits of EDI were also perceived even before EDI implementation and the only basic issue for this case could be found in the organizational context and more specifically in the perceived financial costs. Therefore, if there were not any chance to adopt a non-traditional EDI system, which it is certainly low in cost, then the implementation of a costly traditional EDI system would prohibit any decision for EDI adoption. Regarding the perceived technical competence of companies, it can be argued that maybe for some companies to be considered as a very important factor and for others not. However, it is common in Greece that the software vendor that provide an EDI system, to have the responsibility to maintain each system updated and functional, with a fee on monthly or annual basis. Many times, there is a specific agreement (support contract) between companies (e.g. software vendor and their customer).

The environmental context, which includes the perceived industry pressure and the perceived governmental pressure, it certainly can be argued that has considerable effects in the decision of enterprises to adopt an EDI system. More specifically the industry pressure for EDI adoption, it was found that for micro and small enterprises could have positive effects, but in actual fact it is difficult to be happened, since Greek micro and small enterprises has low levels of IS/IT maturity and the EDI systems are not easily found in micro and small enterprises. Possibly in case that a micro or a small company could be asked to adopt an EDI system by a bigger company as for instance by a big chain of Greek supermarkets, then the decision for EDI adoption would be certainly positive. By taking into consideration that a corresponding industry pressure could be happened in a SME and the sales would raise sharply, then the decision for adoption of an EDI system it is likely to be taken immediately.

Moreover, regarding the perceived governmental pressure in Greek SMEs it can be argued that all studied SMEs eventually are likely to comply with the goals of the government. It is also worth mentioning that SMEs perceives the governmental pressure as a given “law” and not as a simple pressure. This could be justified by the fact that so far there have not been open legislative frameworks especially as regards the business and tax law. Usually the Ministry of Finance in Greece takes a certain decision, the Greek parliament votes directly a legislative decree or a law and all companies are obliged to follow. Therefore, the legitimacy of each SME is certainly a major concern for corporate managers and owners and surely all enterprises prefer to operate legally.

The majority of studied cases in this thesis are non-EDI capable enterprises, which already represents the actual situation in Greek SMEs. It can be inferred that the same problematization has been indicated in several previous studies, where EDI adoption often meet in large sized enterprises (Kuan and Chau, 2001; Chau, 2001; Germain and Dröge, 1995; Iacovou, Benbasat and Dexter, 1995; O’Callaghan, Kaufmann and Konsynski, 1992.; Asher, 2007; Seyal, Rahman and Mohammad, 2007). Furthermore, non traditional EDI systems often come across in new EDI implementations due to lower setup costs in relation with the traditional ones, but also due to the lower running costs where the use of VANs, are not required (Asher, 2007). In this way typically could be addressed any possible impediment related with the perceived financial costs,
as far as the willingness of an enterprise to adopt EDI is positive. This thought can also be supported by the studied case of the EDI capable company.

This study provides several arguments against the penetration of EDI in Greek SMEs, which most of those are in accordance with the previous findings of Kuan and Chau (2001), but others are not. For instance while most of the perceived direct benefits of EDI found that are of high importance in corporate decision for EDI adoption, the improvement of data security had significant contrasting results. The contrasting results are generated because one of the habits of Greek SMEs is to send and receive the invoices by post, which certainly this practice does not provide security neither from the side of the sender nor from the side of the receiver. Especially for micro and small companies the existence of the physical document has an increasing importance as evidence of the transaction, because many of them do not maintain a double entry method in the accounting books, according to the Greek tax legislation.

In addition, there are not mentioned at all any kind of economic penalties for corporate transactions, which are performed between Greek enterprises with the traditional mode, which is in contrast with the findings of Walton (1994). Even there are not mentioned at all any small charge for the postage of sending invoices. The Greek tax legislation has been very strictly in economic penalties because of the high rates of tax evasion (Slemrod, 2007) and Greek SMEs are more attentive in every transaction by preferring to use traditional exchange of documents in a physical form rather than electronic. Vijayasarathy and Tyler’s (1997) previous finding about potential benefits of EDI adoption, which can arrive in a fast time, are already confirmed from the EDI capable studied case, where the depreciation expense of the EDI investment was performed in a short time.

Further to previous thoughts, a reasonable problematization could be generated by the reflections of Suzuki and Williams (1998). Many enterprises do not adopt EDI technologies and this fact does not mean that these enterprises resist. As they explained, the adoption and the resistance on corporate level need a detailed research as both of ideas sometimes can be regarded as contrary, but in fact are different without one presupposes the other. Therefore EDI adoption and EDI resistance depends on how each enterprise perceives the benefits and how each enterprise perceives the barriers of EDI and further any kind of IT innovations.

Finally, it can be argued that the current economic climate and the economic difficulties that Greek SMEs faces, act negative in financing any kind of investment. Surely, some of the priorities of studied cases are closer on the survival rather than the development. Therefore, there is clearly a fine line between moving forward in investing in new technologies or waiting hopefully the improvement of the current economic situation. However, the economic capabilities, the overall operating costs and the difficulties of the market seem that are attached in every thought about the future. Nevertheless, it seems that economic crisis force enterprises to try to find out the most appropriate business model that could help them to improve their status.
7. Conclusion and Future Research

This chapter concludes the research by drawing useful outcomes and by providing answers to the research questions. In addition, in this chapter, the implications of the study are presented and some useful recommendations are provided. Finally, the research contribution and the opportunities for future research are discussed.

7.1. Research Summary

The application of the perception based TOE model of Kuan and Chau (2001) in Greek SMEs was a very useful tool in understanding the importance of various factors in corporate decisions regarding EDI adoption. This model was applied in six cases, through a multiple case study research design. The major evidence for this study was collected through six semi-structured in depth interviews from people that have a direct involvement in the corporate decision regarding IT innovations. The perception based TOE model consists of the technological, organizational and environmental context. In each of these three contexts, various factors and reasons that could affect the decision of SMEs to adopt EDI have been explored. The aims of the present study are focused on the attempt to provide a deeper understanding of impediments and determinants in EDI adoption decision by Greek SMEs.

Although the existence of limitations in this study, it was found that the decision of enterprises in adopting EDI constitute the starting point in improving the operation performance, in maintaining the competitive advantage and in becoming more robust and sustainable in the global business community. Therefore, despite the low penetration of EDI in Greek SMEs, the significance of adopting an EDI system is highly perceived by most of the studied cases. It is argued that EDI provides both strategic and operational advantages in companies that already use an EDI system. More particular, in times of economic downturn the use of EDI can be considered as very important in reducing the operating costs of enterprises.

However, a new motivational factor in Greek SMEs emerged. This factor acts as a barrier in their decision for EDI adoption and it was found that it is related with the increased operational corporate costs. These costs are attached on the high rates of corporate taxes, the shrinking turnover and the low profits that many times could be negative. Therefore, the economic recession resulted on increased corporate costs, which can be perceived as a new cost parameter or a separate cost factor incorporated in the TOE model that needs further research. Especially for the Greek SMEs the high operational corporate costs were found that it is possible to determine the corporate decision for EDI adoption. This argument can also be verified with the report of the World Bank (2012) that highlights the increased difficulties in doing business in Greece. In this direction the imposed policies by IMF (Kaplanoglou and Rapanos, 2013), especially in the Greek tax system, reinforce the frustration in the Greek market and therefore the financial health of SMEs. Nevertheless, economic austerity conditions are those that redefine the actions and the decisions of Greek SMEs.
7.2. Final Conclusions

This part provides the answers of the research questions of the study. The empirical findings from multiple cases are used to provide the following answers based on the TOE model. As already mentioned, the use of multiple cases can offer robust and reliable results, minimizing possible misconceptions. Furthermore, the nature and the purpose of the present study are focused on providing deep levels of understanding through a variation of perceptions by different people. Therefore all participants, besides the fact that possibly have a tendency in subjectivity and personal biases, their beliefs and reactions in the context of technological innovation, constitute the base of the following given interpretation and answers to the research questions.

The first question of the study is: How do the technological, organizational and environmental factors affect the decision of Greek SMEs to adopt EDI technologies?

By studying multiple cases in the Greek business community, it has been shown that the perceived direct benefits in the technological context, such as the improvement of data accuracy, the improvement of operation efficiency, the speed in application processes and the reduction of clerical errors are very important in the decision of enterprises to adopt EDI. The improvement of data security, revealed major contrasts across studied cases. Regarding the perceived indirect benefits on the technological context, the improvement of the organizational image, the improvement of the corporate competitive advantage, the improvement of other business practices, the improvement of customer services and the improvement of the relationship with business partners have also a significant importance in the decision of enterprises to adopt EDI. Few exceptions appeared mainly from micro enterprises.

By proceeding in the organizational context, the perceived financial cost of an EDI investment, brought to light differing views on the importance to the decision on the adoption of EDI. The set up costs are of high importance for the majority of cases for various reasons. The running costs and the training costs have been shown that are of lower importance for the majority of studied cases. Their existence in the overall cost of investment is probably necessary to be taken into account. The existence of the non-traditional EDI systems, which have a total low cost in relation with the traditional ones, could be characterized as an important choice. Additionally, the perceived technical competence of studied companies has been shown that has significant effects in their decision to adopt EDI. Regarding the performance of companies in providing IT support, micro and small companies that have low technical competence shown that are more cautious in their decision, than others that employee IT staff, but surely there was very few exceptions. In addition, regarding the experience and the expertise of companies in supporting EDI software it can be argued that they could be inhibitory reasons for some of studied cases. It should instead be given greater importance, in the agreement with software vendors but also in the total coverage of corporate needs.

Moreover, regarding the environmental context, both the perceived industry pressure and the governmental pressure have an increased significance in the decision for EDI adoption for the majority of studied companies. It was found that when there is an increasing pressure from business partners either they are request or recommend the use of EDI, then the majority of SMEs have a certain willingness to follow. This is applicable even for those companies that are slower in responsiveness and acceptance of IT and for those that are centred upon them. Concerning the competition and in
particular the readiness of important and majority of competitors in using an EDI capable governmental system, the response of SMEs appears to be faster and more decisive. However, there is a certain general belief that the governmental pressure is more important considering the legality and illegality of companies. Thus, by proceeding in the governmental pressure, the distinction between legality and illegality brought to light the general point of view that exists across studied SMEs. Additionally, the general perception that the progressive mandatory measures and the given deadlines from the government, result in compliance with given governmental laws, it was shown as a common way of thought for studied cases.

The second question of the study is: Why EDI technologies have a low penetration in Greek SMEs?

Through the present study, there was an attempt to elicit useful knowledge about the low penetration of EDI in Greek SMEs. In the introductory part of interviews, besides the general questions asked to each interviewee, there was a primary attempt in understanding the low penetration of EDI. In accordance, this attempt was certainly reinforced with a detailed application of TOE model in studied cases. The empirical findings of the present study showed that usually micro and small companies have a low IT background, which can be interpreted as limited IT equipment and a small extent of available IT resources. Surely, this is in line on their size, while in medium sized ones it can be understood that possibly the existence of improved IT equipment and the existence of qualified IT personnel, could maintain high levels of IT background.

However, the nature and the area of activities determines the extent of IT usage, but usually SMEs are focused to cover the traditional business processes by the use of IT. The unsuitability of EDI in corporate transactions could be considered as an inhibitor, for instance, in cases of retail industry and in cases that existing corporate partnerships are non-EDI capable. Furthermore, the high costs in implementing an EDI system are certainly an inhibitor for the majority of SMEs and is related with the limitations in financing new investments. Often new investments by SMEs are calculated to produce high gains in a short time, which is not likely to happen in a traditional EDI investment. Moreover, empirical findings shown that there is a low managerial knowledge in the field of EDI and specifically in the availability of non-traditional EDI systems, which almost are more suitable with their financial capabilities. However it can be understood that the lack of qualified IT staff, the lack of awareness in IT innovations and the possible extremely busy working status, leaves no room in IS/IT strategizing and planning.

Additionally, many SMEs in Greece have shown a shift in using fixed telecommunications and also fax and emails in ordering interchange, as a manner that it is likely to be accessible by all, even from micro and self-employed companies whose number is fairly high in Greece. Concerning the governmental influences in the low penetration of EDI, it was found that the existing complicated tax law does not encourage the use of EDI and therefore the EDI investments. Furthermore, the existing governmental tax systems have not been designed to support any kind of EDI-based interchange, but are designed to support web forms for tax information statement and various web-based declarations. Finally, due to economic crisis, the development law and any kind of plan in motivating and co-financing SMEs to adopt IT innovations have been eliminated. Therefore any attempt is made by the private sector in the field of investment is based on its own incentives and competences.
7.3. Research Implications and Recommendations
This study has already generated serious implications in the field of corporate management and in particular for the management of SMEs, as regards their decision to adopt IT innovations. Through the application of the perception-based TOE model in Greek SMEs, there are emerged various problematizations on how Greek SMEs perceive the direct and indirect benefits of EDI and what is the importance of the perceived financial costs and the perceived technical competence in their decision to adopt EDI. In addition, this study creates a serious concern on how do Greek SMEs perceive the industry pressure and the governmental pressure and what effects they have in their decision to adopt EDI and alternatively any other kind of IT innovation. Therefore, a detailed examination of Technological, Organizational and Environmental factors are deemed necessary, in the proceedings of a corporate decision towards IT investments. Moreover, it goes without saying that the previous thoughts are applicable even for IT practitioners, in cases that they are asked to study and propose IT innovative solutions for SMEs. Therefore, the implementation of an EDI solution in SMEs, it is likely to carried out after a detailed examination of the TOE model, so as to have a primarily overview of the factors that are more important and have direct effects in enterprises.

Furthermore, throughout this study was found that the non-traditional EDI systems are more likely to be adopted by SMEs than traditional ones due to their low cost. This indication could probably be the major concern for EDI vendors and in a wider sense for business software vendors and developers. Many companies in Greece are already using an ERP system and many others are planning to implement a new one. In case that those software vendors promote the use of the non-traditional EDI system and offer it at low cost, then there is a chance for many companies to adopt it. A possible strengthening of the aforementioned thought could be the fact that software vendors could incorporate an EDI system in the existing ERP system that already promote and sell. In such case if the overall cost of the provided ERP system could keep within manageable proportions, then the overall corporate system theoretically would be more likeable to possible clients-enterprises. However, the way of thinking in IT investments as regards micro and small companies could probably be improved if there was a strong incentive from government and a better informing in the field of IT innovations in Greece.

7.4. Research Contribution
This research confirms the significance of the perception-based TOE model in studying the adoption of EDI in SMEs, on corporate level. The proposed perception based TOE model of Kuan and Chau (2001) previous study has a significant importance in studying the EDI adoption even nowadays, in a different country with different technological, socio-political and economic status, different business cultures and business opportunities. Additionally, this study provides a useful contribution for the academic community research. It would be very helpful for academic students and researches to try to explore and understand various ways of research and to perceive the corresponding outcomes in the field of science who are studying. For instance, it could be useful to extend and expand previous quantitative studies, by changing the research approach to qualitative, in order to fulfil previous findings or alternatively to provide further knowledge on the existing. The previous thoughts could possibly be in alliance with the reflections of Walsam (2012) and in particular with the contribution of the academic research in the field of informatics in a broader sense. Thus, it can be argued that researching in the field of informatics, is required an extensive understanding on the
relations across humanity, technology, communication, society, further political and economic events and a bigger thorough problematization of how the use of technology can deliver benefits. According to previous reasoning, it could possibly be concluded that there would be exist the intention for a better world with the use of ICTs (Walsam, 2012).

Further to previous thoughts, this research contributes in the existing knowledge about EDI adoption decision mainly by Greek SMEs, by providing a variation of views and new insights on how Greek SMEs behave and react during the period of economic downturn towards to IT innovations. In addition, this study provides an empirical support of the low penetration of EDI in Greek SMEs, along with the differences on corporate level between companies that have or have not a low IT maturity. Furthermore, this study provides an empirical access on the managerial attitudes in front of the corporate advancements that EDI could offer. By this way, it can be ascertained the importance of various factors in relation with the nature of business or the corporate activities, which are shown that are closely related with the final corporate decision. Finally, the new motivational factor that was found to affect the decision of Greek SMEs for EDI adoption could possible result in the improvement of the perception based TOE model.

7.5. Opportunities for Future Research
This study is limited in the context of the corporate decision for EDI adoption by Greek SMEs. The possible stages of planning, development, implementation, integration with other systems, operation and so on, have not been examined and therefore are proposed to be examined in the future. Additionally, regarding the Greek SMEs’ community, a future extensive research concerning the new cost factor is needed in the field of corporate decision for EDI adoption in other areas of Greece with similar structures as for instance in the town of Thessaloniki or other big towns of Greece. It would be useful all parameters within the perception based TOE framework to be examined to other European regions across various EDI studies, even with the new cost factor that emerged from the Greek studied cases. Furthermore, there is a need for a detailed future work in the field of IT innovations with the use of the perception-based TOE model, in order to be ascertained the usefulness of this model in a wider field. The field of IT innovations includes various innovative solutions such as E-business, E-commerce, M-commerce, and an extensive field of E-services, which are beneficial for business development. Therefore, a future work is suggested to enrich the knowledge of the factors that affect SMEs to adopt IT innovations and especially the new emerged cost factor. The new factor is possible to have corresponding effects in countries that face similar economic problems as Greece does.
8. Reflections

In this chapter, the authors' reflections on the entire study are presented.

This thesis deals with the factors that affect the decision of Greek SMEs to adopt EDI technologies, along with the low penetration of EDI systems in Greek SMEs. The concept of EDI in this thesis is considered as a technological innovation that enhances the strategic goals and improves the operational performance of enterprises. However, this argument cannot be considered as absolute. For example, many problems and barriers could emerge, during the implementation and use of new information systems in enterprises. Consequently, every corporate decision in adopting new technological innovations in IS/IT sector, requires a corporate strategic planning in IS/IT.

Corporate mission, vision and strategic objectives are indeed those that engage the nature and the operations of each enterprise and therefore the way towards to business development. The engagement of employees with information systems is certainly a major concern on how the use of those systems can derive benefits. Accordingly, the interactions of users and the acceptance of a new system need a further investigation in each case. A possible technological deterministic view of EDI concept can be used for instance as an initiator, in studying SMEs in countries with high penetration levels of EDI, even in studying large enterprises- adopters.

This thesis is a significant part in fulfilling the requirements for completing the Master Programme in Information Systems on Linnaeus University. From the beginning until the end of writing this thesis there was many challenges that came up and there was a need of a great effort to be addressed. The process of the present study in all stages was a pleasant and simultaneously difficult journey in the acquisition of experience and knowledge. Sometimes there was enough stress in thesis design, in conducting interviews, in meeting people, in studying scientific articles, books and other material, in meeting the deadlines, in addressing problems that was unexpected and so on. Under these circumstances the contribution and the support of specific people was very important in continuing this effort.
References


Commission Decision 2010/C 326/07 of 2 November 2010 setting up the European Multi-Stakeholder Forum on Electronic Invoicing (e-invoicing).


Proposal for a COUNCIL DIRECTIVE amending Directive 2006/112/EC on the common system of value added tax as regards a standard VAT return.


### Interview Guide. General Questions for EDI Capable SMEs

<table>
<thead>
<tr>
<th>Question</th>
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<tbody>
<tr>
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<td>Q2: Can you describe me the IS/IT background of your company? (For instance PC, software, internet use, infrastructure, collaboration-sharing with other enterprises, ICT services, emails, website, ERP system, CRM….. and so on.)</td>
<td>General Questions</td>
</tr>
<tr>
<td>Q3. What is your opinion about electronic data interchange, (for instance I can refer in e-commerce, e-invoicing, transactions, orders, sales, purchases etc).</td>
<td>General Questions</td>
</tr>
<tr>
<td>Q4: Do you think that EDI is important for your company? Why?</td>
<td>General Questions</td>
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</tbody>
</table>

### Interview Guide. Planned and in Depth Questions According to the TOE Framework - Based on the Study of Kuan and Chau (2001).

<table>
<thead>
<tr>
<th>Question</th>
<th>Category</th>
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<tbody>
<tr>
<td>Q5: Can you explain me the importance of the direct technological benefits of EDI for your company:</td>
<td>Technological Factors / Perceived Direct Benefits</td>
</tr>
<tr>
<td>a) What is your opinion regarding the improvement of data accuracy? i.e. for your decision to adopt EDI.</td>
<td>Technological Factors / Data Accuracy</td>
</tr>
<tr>
<td>b) What is your opinion regarding the improvement of data security?</td>
<td>Technological Factors / Data Security</td>
</tr>
<tr>
<td>c) What is your opinion regarding the improvement of operation efficiency?</td>
<td>Technological Factors / Operation Efficiency</td>
</tr>
<tr>
<td>d) What is your opinion regarding the higher speed in application process?</td>
<td>Technological Factors / Speed Up Application Process</td>
</tr>
<tr>
<td>e) What is your opinion regarding the reduction of clerical errors?</td>
<td>Technological Factors / Reduce clerical errors</td>
</tr>
<tr>
<td>Q6: Can you explain me the importance of the indirect technological benefits of EDI for your company:</td>
<td>Technological Factors / Perceived Indirect Benefits</td>
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<tr>
<td>Question</td>
<td>Factor</td>
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<tr>
<td>a) What is your opinion regarding the organization image? i.e. with the support of EDI.</td>
<td>Technological Factors / Organization Image</td>
</tr>
<tr>
<td>b) What is your opinion regarding the competitive advantage? When the EDI is in use, i.e. implemented.</td>
<td>Technological Factors / Competitive Advantage</td>
</tr>
<tr>
<td>c) What is your opinion regarding other business practices?</td>
<td>Technological Factors / Other Business Practices</td>
</tr>
<tr>
<td>d) What is your opinion regarding the improvement of customer services?</td>
<td>Technological Factors / Customer Services</td>
</tr>
<tr>
<td>e) What is your opinion regarding the relationship with business partners?</td>
<td>Technological Factors / Relationship with Business Partners</td>
</tr>
<tr>
<td>Q7: Do you think that the setup costs of EDI were an important factor in order to adopt EDI? Can you give me more details?</td>
<td>Organizational Factors / Setup Costs</td>
</tr>
<tr>
<td>Q8: Do you think that the running costs of EDI were an important factor in order to adopt EDI? Can you explain it?</td>
<td>Organizational Factors / Running Costs</td>
</tr>
<tr>
<td>Q9: Do you think that the training costs of EDI were an important factor in order to adopt EDI? Can you explain it?</td>
<td>Organizational Factors / Training Costs</td>
</tr>
<tr>
<td>Q10: Can you explain me if the performance of your company in IT support was an important factor so as to affect your decision in EDI adoption?</td>
<td>Organizational Factors / Performance in Providing IT Support</td>
</tr>
<tr>
<td>Q11: Can you explain me if the experience of your company in supporting EDI software was an important factor so as to affect your decision in EDI adoption?</td>
<td>Organizational Factors / Experience in Supporting EDI Software</td>
</tr>
<tr>
<td>Q12: Can you explain me if the expertise of your company in supporting EDI software was an important factor so as to affect your decision in EDI adoption?</td>
<td>Organizational Factors / Expertise in Supporting EDI Software</td>
</tr>
<tr>
<td>Q13: How do you think that your decision to adopt EDI could be affected if there was a request by important business partners?</td>
<td>Environmental Factors / Requested by Important Business Partners</td>
</tr>
<tr>
<td>Question</td>
<td>Environmental Factors / Perceived Government pressure</td>
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<td>-------------------------------------------------------------------------</td>
<td>--------------------------------------------------------</td>
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<tr>
<td>Q14: How do you think that your decision to adopt EDI could be affected if there was a request by the majority of business partners?</td>
<td>Environmental Factors / Requested by Majority of Business Partners</td>
</tr>
<tr>
<td>Q15: How do you think that your decision to adopt EDI could be affected if there was a recommendation by important business partners?</td>
<td>Environmental Factors / Recommended by Important Business Partners</td>
</tr>
<tr>
<td>Q16: How do you think that your decision to adopt EDI could be affected if there was a recommendation by majority of business partners?</td>
<td>Environmental Factors / Recommended by Majority of Business Partners</td>
</tr>
<tr>
<td>Q17: How do you think that your decision to adopt EDI could be affected if your important competitors were using or soon could be able to use a governmental network for declarations?</td>
<td>Environmental Factors / Important Competitors Using or Soon to be Using Valunet*</td>
</tr>
<tr>
<td>Q18: How do you think that your decision to adopt EDI could be affected if the majority of your competitors were using or soon could be able to use a governmental network for declarations?</td>
<td>Environmental Factors / Majority of Competitors Using or Soon to be Using Valunet*</td>
</tr>
<tr>
<td>Q19: If government introduced progressively some mandatory measures for EDI adoption, for instance a cessation of diskette submission scheme, etc., what effect you think it could have in your decision making process in relation with the EDI adoption?</td>
<td>Environmental Factors / Progressive Mandatory Measures Introduced by the Government (e.g. cessation of diskette submission scheme, etc.)</td>
</tr>
</tbody>
</table>

*Valunet is a governmental system that enterprises are obliged to use it in order to submit import and export declarations. This system supports only the function of EDI and the use of this system is mandatory. Also there have been given a deadline by government according to the study of Kuan and Chau (2001) and companies must be EDI-capable in order to use this governmental application.
Q20: Do you think that if there was a given deadline from the government, referred in the closing of paper-receipt counters, what effect could it have in your decision making process regarding the adoption of EDI?

Environmental Factors / Closing of Paper-Receipt Counters in a Specific Date.
# Appendix 2

## Interview Guide. General Questions for Non EDI Capable SMEs.

| Q1: Can you give me some details about your company like for instance activities, scope, employees, customers, goods, market etc? | General Questions |
| Q2: Can you describe me the IS/IT background of your company? (For instance PC, software, internet use, infrastructure, collaboration-sharing with other enterprises, ICT services, emails, website, ERP system, CRM ….. and so on.) | General Questions |
| Q3: What is your opinion about electronic data interchange, (for instance I can refer in e-commerce, e-invoicing, transactions, orders, sales, purchases etc). | General Questions |
| Q4: Do you think that EDI could be beneficial for your company? Why? | General Questions |

## Interview Guide. Planned and in Depth Questions according to the TOE framework - based on the work of Kuan and Chau (2001).

<p>| Q5: What do you think are perceived direct technological benefits of EDI: | Technological Factors / Perceived Direct Benefits |
| a) Do you think that data accuracy could be important in your decision to adopt EDI? Why? | Technological Factors / Data Accuracy |
| b) Is data security important in your decision to adopt EDI? Why? | Technological Factors / Data Security |
| c) Is operation efficiency important in your decision to adopt EDI? Why? | Technological Factors / Operation Efficiency |
| d) Is faster application process important in your decision to adopt EDI? Why? | Technological Factors / Speed Up Application Process |
| e) Is the reduction of clerical errors important so as to affect your decision to adopt EDI? Why? | Technological Factors / Reduce Clerical Errors |
| Q6: Can you explain me what you believe that are the indirect technological benefits of EDI: | Technological Factors / Perceived Indirect Benefits |</p>
<table>
<thead>
<tr>
<th>Question</th>
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<th>Notes</th>
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<tr>
<td>a) Do you think that organization image would be important in your decision to adopt EDI? Why?</td>
<td>Technological Factors / Organization Image</td>
<td></td>
</tr>
<tr>
<td>b) Do you believe that competitive advantage would be important in your decision to adopt EDI? Why?</td>
<td>Technological Factors / Competitive Advantage</td>
<td></td>
</tr>
<tr>
<td>c) Are other business practices important in your decision to adopt EDI? Why?</td>
<td>Technological Factors / Other Business Practices</td>
<td></td>
</tr>
<tr>
<td>d) Are better customer services important in your decision to adopt EDI? Why?</td>
<td>Technological Factors / Customer Services</td>
<td></td>
</tr>
<tr>
<td>e) Does the improvement of the relationship with business partners is important in your decision to adopt EDI? Why?</td>
<td>Technological Factors / Relationship with Business Partners</td>
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<tr>
<td>Q7: Do you believe that the setup costs of an EDI system in your company is an important factor in decision making? Can you explain it?</td>
<td>Organizational Factors / Setup Costs</td>
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<td>Q8: Do you believe that the running costs of an EDI system in your company can affect your decision? Can you explain it?</td>
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<td></td>
</tr>
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<td>Q9: Do you believe that the training costs of an EDI system in your company can affect your decision? Can you explain it?</td>
<td>Organizational Factors / Training Costs</td>
<td></td>
</tr>
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<td>Q10: Could you please tell me if you think that the performance of your company in IT support is a factor that could affect your decision in EDI adoption?</td>
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<td>Q11: Could you please tell me if you think that the experience of your company in supporting the EDI software could be probably a factor that will affect your decision in EDI adoption?</td>
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<td></td>
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</table>

Organizational Factors / Perceived Technical Competence
| Q12: Could you please tell me if you think that the expertise of your company in supporting the EDI software could be probably a factor that will affect your decision in EDI adoption? | Organizational Factors / Expertise in Supporting EDI Software |
| Q13: How do you think that your decision to adopt EDI is affected if there would be a request by important business partners? | Environmental Factors / Requested by Important Business Partners |
| Q14: How do you think that your decision to adopt EDI is affected if there is a request by the majority of business partners? | Environmental Factors / Requested by Majority of Business Partners |
| Q15: How do you think that your decision to adopt EDI is affected if there is a recommendation by important business partners? | Environmental Factors / Recommended by Important Business Partners |
| Q16: How do you think that your decision to adopt EDI is affected if there is a recommendation by majority of business partners? | Environmental Factors / Recommended by Majority of Business Partners |

For the next session of interview I have to clarify to the interviewee the Valunet (Governmental system).

*Valunet is a governmental system that enterprises are obliged to use it in order to submit import and export declarations. This system support only the function of EDI and the use of this system is mandatory. Also there have been given a deadline by government according to the study of Kuan and Chau (2001) and companies must be EDI-capable in order to use this governmental application.

<p>| Q17: How do you think that your decision to adopt EDI is affected if your important competitors are using or soon be able to use a governmental network for declarations? | Environmental Factors / Important Competitors Using or Soon to be Using Valunet* |
| Q18: How do you think that your decision to adopt EDI is affected if the majority of your competitors are using or soon could be able to use a governmental network for declarations? | Environmental Factors / Majority of Competitors Using or Soon to be Using Valunet* |</p>
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Appendix 3

Empirical findings from company 1

The first interview of this study took place in Friday 21 March 2014 at the headquarters of Company 1 at 09:30 and specifically in the office of participant 1. Before the interview begins there was a brief guided tour mainly in the showroom of the business where primarily presented the company’s products. A short explanation about the application of products in buildings was given. Extra materials such as promotional leaflets were also provided and were helpful in fulfilling the knowledge for the specific company and its products. The initial phase of the interview started with a brief introduce of the interviewee. He is an experienced person in management and business administration. He had studied management in France and he had worked in two French pharmaceutical companies for over than fifteen years. His professional career continues to Greece for many years. In company 1, he is working during the past seven years as manager in customer service and in parallel as responsible for the corporate branch network. By continuing the introductory part of the interview, he was kindly asked to provide some details about the company such as activities, scope, employees etc. Company 1 have been established in 80’s and until 2009 had a steadily development with large turnovers and a sufficient number of branches. Unfortunately, due to economic crisis in Greece the interviewee explained that the activities of the company have been minimized because the company’s activities are related with building industry. He claimed that the main reason for the reduction of activities is that “the building industry hit rock bottom”. He also explained that since new buildings are not constructed, the turnover has decreased and the wholesales in enterprises-building developers have been eliminated. In addition, he demonstrated that the company is now focused in retail and mainly on renovation of buildings. It is worth noting that the number of employees of the company has diminished to only nine employees and some of the company’s branches have been closed during the last three years. Regarding the IT background of the company, the interviewee described that in the headquarters of the company “there is a small network of 4 personal computers and 1 server”. The company uses an ERP system mainly for “invoicing, general accounting, monitoring of fixed assets and payroll”. Concerning the branches of the company, each branch is equipped with one desktop for general office works with broadband connection in order to be able to receive and transmit orders. In addition, he mentioned that the largest percentage of orders in company 1 performed by email and the use of fax has decreased. The next question was about his opinion for EDI. He responds that his opinion for EDI is “positive” and he continued telling, “EDI is used extensively from big enterprises and regarding small enterprises avoid the use of EDI due to high costs”. Moreover he claimed that EDI could be useful in small enterprises if the implementation of the whole system is done with low costs and if the use of those kind of systems is simple, referring to “simple users” (without special knowledge).
Appendix 4

Empirical findings from company 2

The second interview of this study took place in Saturday 22 March 2014 at the headquarters of Company 2 at 10:30 and specifically in the office of participant 2. Saturday was chosen from interviewee due to “enhanced” previous week program. The interview started with a brief introduce of the interviewee. He is the IT manager of the company. He has graduated a master's degree in IT and he worked in the specific company over than ten years. Continuing the introductory part of the interview, he was asked to provide some details about the company. Company 2 is a medium-sized enterprise and the main activities are import and distribution of products. This company employs about 60 persons. Furthermore, he mentioned that his contribution in the IT field of the company is important. Regarding the IT background of the company, he stated that “I received an embryonic situation in the server room....there have been a lot of changes in the IT sector of the company....now all infrastructure is new based on virtualization”. In addition, he continued telling that they use “VPN connections with foreign corporate partners”. Regarding EDI he stated that they make ”some moves towards to this direction” but they “do not have a full automated process yet”. Afterwards he asked about his opinion for EDI. He answered that “EDI as an idea and in practice, is that could help our company in many areas.... mainly in imports, in barcodes, in the tracking process of imported items, in product warranty process maintenance and in other things that we are thinking that we can implement in the future...”. He continue telling that “we can have a big change in speeding up some major application processes...either with suppliers and customers regarding orders and sales....and a faster response of entire company ”.
Appendix 5

Empirical findings from company 3

The third interview of this study took place in Monday 24 March 2014 at the headquarters of Company 3 at 13:10 and more specifically in the office of participant 3. The interview started with a brief introduce of the interviewee. The third interviewee is the general manager of the company 3. She is an experienced professional over 20 years in business economics and administration. She has graduated a bachelor in economics and an MBA. Continuing the introductory part of the interview, she was asked to provide some details about the company history, activities, employees etc. She answered that company 3 has founded at 80’s and during the last decade, there was a change in the legal form of the company, where company 3 was transformed in a S.A. Company 3 is focused on business to business transactions, providing mainly services to customers and also has in a lesser extent, a trading activity. The personnel of company 3 are about 15 people. The next general question asked was about the IT background of the company. She explained that the nature and the activities of the company are inherent with an extensive use of IS/IT. She continues telling that they have made big investments in this field such as servers, firewall etc., and she also stated that “we have high security standards”. The next general question was about her opinion about EDI. She explained that they are forced to exchange data mainly in an electronic form and that they often use e-mail and fax server for offers and orders. They also have started to receive electronic invoices in a PDF format. She explained that they did not have adopted EDI because of the “complicated Greek tax law and…. the difficulties arising...”. Next general question was about the importance of EDI for her company. She responded that “not only for our company, but for all companies…. because first of all EDI gives you the advantage of lowering the costs...and in difficult circumstances (regarding economic crisis) ...to be able to reduce your costs is the number one interest”.
Appendix 6

Empirical findings from company 4

The fourth interview of this study took place in Wednesday 26 March 2014 at the headquarters of Company 4 at 12:30 and more specifically in the office of participant 4. The interview started with a brief introduce of the interviewee. The fourth interviewee is the Director of Sales and Member of board of directors in company 4 for more than 15 years. He also asked to provide some details about the company. Company 4 construct and sale buildings, both commercial buildings and homes, in Greek territory. In previous years, the number of employees of the company were more than 20, but nowadays company 4 employees only 11 persons (not counting external collaborators such as builders, plumbers, electricians and so on). Company 4 has founded in 90’s and has constructed over than 300 buildings (homes and commercial buildings) in Attica and in Greek islands. The next question was about the IS/IT background of the company 4. He responded that “ We have layers, architects, civil engineers, notaries, accountants and all business chain of works…. needs an interchange of data….more details in invoices and so on, you can get from our accounting department….regarding our purchases about building materials needed for completion of our constructions..”..he continue telling that “ our architects use AutoCAD software, accountants use other software…. pure tax-related software, in the sales department we use internet, Microsoft office, e-mails and so on...we have about 7-8 PCs and some laptops...but all of these are depending on our corporate activities each time...”. The next question was about his opinion for EDI. He explained that “I believe that it is an innovation which helps to finish your work faster than usual, you save time and money”. He continue telling that “an average human brain can deeply understand that”. The next question asked was about the benefits of EDI for company 4. He explained that ” I think yes...and not only for our company but also for other companies, where you can save time and time equals to money....each innovation is valuable”.
Appendix 7

Empirical findings from company 5

The fifth interview of this study took place in Thursday 27 March 2014 at the headquarters of Company 4 at 14:00 and more specifically in the office of participant 5. It’s worth noting that this company is EDI capable. The interview started with a brief introduce of the interviewee. The fifth interviewee is the CEO of company 5. He have studied and worked in USA for over than a decade as IT consultant. He has also graduated an MBA. He runs his own business in Greece for a long time. He also asked to provide some details about the company. He said that “Nowadays our company employs about 15 persons” and he continue describing the commercial business activities and the portfolio of provided services to customers which extends in Greece. He also asked to provide the IT background of his company. He said that his company utilize an ERP system and they have a corporate network consisting of personal computers and servers. In addition, he mentioned that they have implemented a corporate web site. The next question was about his opinion for EDI. He answered that “ I believe that EDI, in a more simplified form than there has been up to now and not the traditional one. It can offer a cost reduction to SMEs, faster corporate transactions….can transform a company into more effective and productive regarding staff….also avoid errors…and avoid the needed time consuming in correcting those errors…. these are…. generally speaking”. The next question asked was about the importance of EDI for his company. He answered that “ I think that it is very important regarding the aforementioned reasons. We have already ascertained the benefits….for example if you have to sent by post 200 invoices…it is not easy…. you need an employee a whole day to prepare all this work….and if you calculate the costs for the post office and the cost of paper... and envelopes...you can understand…”
Appendix 8

Empirical findings from company 6

The sixth interview of this study took place in Monday 31 March 2014 at the headquarters of Company 6 at 10:00 a.m. Before interview starts, there was a brief sightseeing tour in the production line and a quick reference about the nature of business, which was held on the initiative of the interviewee, where the office that the interview conducted was very close with the production line. The interview started with a brief introduce of the interviewee. The sixth interviewee is a family member of company 6 (son of the company’s owner). His experience on food industry and therefore his family’s company is about fifteen years. Company 6 is a micro enterprise and employs 8 persons. The company’s activities are food processing and distribution and are focused only in B2B transactions. The majority of customers are micro enterprises. He also asked to provide the IT background of company 6. He said that the last ten years they use simple application software “old fashioned ms-dos” for orders and invoicing, which it is connected with the fiscal printer in order to comply with Greek tax law. They mainly have personal contact with customers but they also use e-mail and fax for communication. The next question was about his opinion for EDI. He answered that “There are external factors that are affect negatively an enterprise. I am in favour of technology…but unfortunately state mechanisms and governmental infrastructure do not help you, we all want to avoid bureaucracy……It is very important to have automated solutions (in your company)……in a broader sense of interchanging invoices or orders….payments…all in electronic form” and he continue giving an example related to web banking advantages. The next question asked was about the benefits of EDI for company 6. He explained that “ of course, not only for our company but also for other companies….we will like to have such systems and use them but…our partners does not have the initiative to use corresponding systems, so it will be unreasonable for us…”. However, he explained that they sent their monthly transactions to their accountant (bookkeeper) by exporting a file from their software and sending it by email, in order to be able their accountant, to record the transactions of company in the accounting books. By following this practice they do not provide the source documents that evidenced (invoices, payments and so on) the business transactions to their accountant, but only a file that contains in an analytical form the final business transactions. This process is done in order to comply with Greek tax legislation.