Some aspects of business-to-business communications and enterprise resource planning systems in Greece.

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Abstract

In this dissertation the theoretical perspectives and the current condition in Greece in relation to the activity of the companies concerning business to business (B2B) communications and enterprise resource planning (ERP) systems are investigated.

The topic is considered very interesting, as the competitiveness of the companies depends upon the effective information flow in their various departments, as well as with their external associates. Moreover business to business communications and enterprise resource planning systems are current and very promising, since they have started being adopted by the Greek companies during the last three years.

In order to gather primary data a survey was conducted that was addressed to small, medium and large size companies in Greece. Sufficient secondary data were gathered, as in the early stage of the research, the study of the literature review revealed that there is a great amount of articles covering the theoretical approach of business to business communications and enterprise resource planning systems.

After deciding that the best way to collect accurate data was to conduct personal interviews in accordance to a relevant survey instrument, the questionnaire. Forty-three questionnaires from forty-three companies were gathered and SPSS was used to analyse them.

The issues under investigation in the survey are the reasons that lead the companies to decide to participate in a business to business digital market or to adopt an enterprise resource planning system, the advantages and the problems that have been created. Additionally, the existence of a statistically significant relation between the size of the companies and their decision to use business to business communications and enterprise resource planning systems was examined.

According to the empirical analysis most small and medium sized companies were not familiar to business to business communications or enterprise resource planning systems while large sized companies have adopted or at least tried to adopt business to business communications or enterprise resource planning systems.
I would like to express my sincere gratitude to my tutor Dr. Theodoros Alevizos for giving me the opportunity to become familiar to this interesting topic and for advising me during the whole period of preparing this dissertation.

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Introduction

This dissertation investigates the theoretical perspectives concerning business to business (B2B) communications and enterprise resource planning (ERP) systems. Also refers to the current condition in Greece in relation to the activity of the companies. Additionally refers to the problems that companies need to solve by the use of the above mentioned systems.

Since the implementation process of both business to business communication and enterprise resource planning systems has started for the Greek companies during the last three years, it would not be possible to determine if there was an increase in the amount of any of the economic elements of the companies due to the adoption of the one or both systems because some of the companies included in the sample adopted the communication system during the current fiscal year.

The dissertation is divided into three sections. In the first two sections the theoretic perspectives concerning business to business communications and enterprise resource planning systems are considered. In the third section the empirical analysis is presented.

In the beginning of the first section business to business communications are described. Then the business to business e-commerce model that has three forms and facilitates the collaboration between partners is presented.

Continuing the first section, vertical and functional hubs are presented, as they are two types of B2B digital markets, the vertical focus on the business process of one company and the functional focus on the business processes across different companies. Afterwards the structural analysis of B2B digital markets is presented, as there exist two mechanisms to mediate transactions between partners. The first one is the fixed pricing model, such as catalogue purchasing. The second one consists of three models, the auction model, the exchange model and the barter mode.
The first section, also refers to the description of data sharing, then to the basic presuppositions for the success of a b2b digital market, and later on to the role of the internet. The end of the first section refers to the b2b communications is use by the Greek companies describing the current condition.

In the beginning of the second section the internal communication problems that the companies are facing, that lead them to use enterprise resource planning systems are described. Afterwards the methods that are being used for the information collection in the inventory management, such as manual data collection, bar coding, radio frequency, machine vision and time and attendance systems that provide information accuracy and consistency are presented.

Following the second section, the installation process of enterprise resource planning system and the most important reasons that lead companies to use the enterprise resource planning systems are described. Some of the reasons are the integration of data through the different departments of companies and the standardization of the manufacturing process for the manufacturing companies. Then follow the hidden costs of the enterprise resource planning systems that are not usually identified until the installation process has been completed. In the end of the second section the current condition in the Greek companies in relation to enterprise resource planning systems is presented.

In the third section of the dissertation the empirical analysis is presented. In the beginning the research methodology is described where it is stated that the most appropriate way to collect more accurate data is the use of the personal interview method in accordance to a relevant survey instrument, the questionnaire. The type of sampling used for the selection of the target population was the simple random probability sampling where each member of the study population had an equal probability of being selected.

The survey presents the reasons that lead the companies to use business to business communications and enterprise resource planning systems. Also records the advantages and the problems that have been created by the use of the business to business communications and enterprise resource planning systems. Moreover it
examines if there is a statistically significant relation between the size of the companies and their decision to use business to business communications and enterprise resource planning systems.

It was decided that in this survey the conditions and the needs for business to business communications and enterprise resource planning systems should be examined of companies of different sizes and in different branches. That is because it is believed that companies of different size have different financial subsidiary abilities. Also companies from different branches were included, as a company that needs to use a business to business communication method may have partners from other branches.

The analysis of the structure of the questionnaire follows by referring to the form and the purpose of each question separately. Afterwards the hypotheses that need to be tested are presented, that are being developed in five levels. Continuing the statistical findings are interpreted, that consists of the frequency table analysis, the mean and median table analysis, the cross tab table analysis and the Pearson's Chi-square analysis.

According to the empirical analysis most small and medium sized companies were not familiar to business to business communications or enterprise resource planning systems and 9 out of 43 companies didn’t have access to the internet. While large sized companies have adopted or at least tried to adopt business to business communications or enterprise resource planning systems and they have access to the internet. Additionally the internal information system of small and medium sized companies didn’t cover all the departments of the companies. In 16 out of 43 responses the internal information system of the companies covered all the departments of the companies, which were large sized. Furthermore it was revealed that there might exist a statistically significant relation between the size of the companies and their decision to use ERP systems, but there doesn’t seem to exist a statistically significant relation between the size of the companies and their decision to use B2B systems.
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SECTION ONE:
Business to Business (B2B) Communications
In this section the theoretical perspectives concerning business-to-business communications, the structures and components and the condition in the Greek companies are explored.

1.1 B2B General Description

Electronic commerce represents a new way of conducting business transactions including buying, selling or exchanging products, services, and information, usually through communication networks such as internet, intranet and extranet. B2B is a part of the electronic commerce classified by the nature of business transactions, as in B2B digital markets both sellers and buyers are companies. Usually the companies decide to join a B2B digital market because they want to become more competitive, to be able to find easily new partners worldwide and to be found, and to gain experiences from the cooperation.

B2B digital markets cover a broad range of applications that allow companies to form electronic relationships with their distributors, resellers, buyers and other partners. They are sites on the Internet where suppliers issue their product catalogues and the buyers are connected in order to search products for their purchases. According to Sharma (2001) Companies that participate in B2B digital markets use the Internet in order to increase their suppliers and customers their supplier and customer involvement in order to enhance customer satisfaction and royalty.

According to Dou and Chou (2001) a B2B digital market typically offers a wide range of supplementary services as needed by the trading members, such as authenticating buyers and sellers and streamlining procurement workflow, electronic payment services, risk management, contractual and settlement services, conflict resolution, legal and logistic services.

1.2 B2B e-Commerce Model

The B2B e-commerce model according to Dou and Chou (2001), consists of the supplier oriented business model where most of the manufacture oriented electronic stores belong, the buyer oriented business model where big buyers which open their
own digital markets for potential suppliers belong, and the electronic intermediary market where buyers and sellers can meet and conduct businesses. Other business models include virtual corporations, networking between headquarters and subsidiaries and online services to businesses.

The B2B e-commerce infrastructure according to Seybold (2000), can provide to the company with effective communication between headquarters and subsidiaries by providing intranet-type online messaging. Also business networks influence B2B digital markets, as in each industry large companies are forming digital market alliances and soliciting their suppliers to join the preferred hub or digital market. Each company that joins a digital market presumably brings along dozens of suppliers.

1.3 Vertical and Functional Hubs

A hub, according to Sawney and Kaplan (1999) is a contextual digital market that can focus on one company, or it can focus on the business processes across different companies. According to these dimensions hubs resolve in to two primary types, the vertical and the functional. Together they form the domain of the B2B digital markets in e-commerce.

Vertical hubs are company focused and usually serve the company by automating and hosting corporation procurement processes and taking care of the other specific needs of the company.

The leading players in vertical digital markets are the company procurement officers and larger buyers that use the liquidity and transparency of digital markets to reduce shopping costs and time. Success of a vertical digital market may rely on the following attributes, according to Sawney and Kaplan (1999):

- Greater fragmentation among buyers and sellers.
- Creating a critical mass of key suppliers and buyers.
- Increasing domain knowledge and industry relationships.
- Creating catalogues and sophisticate searching.
- Adjacent vertical digital markets for leveraging or existing suppliers or buyer bases.
Functional hubs focus on automating the same business processes or providing the same functions across different companies. The expertise of a functional hub provider may suit a specific business process across vertical digital markets. Success on a functional digital market may rely in the following attributes, according to Sawney and Kaplan (1999):

- Increasing degree of process standardisation.
- Increasing process knowledge and workflow automation expertise.
- Complementing process automation with deep content.
- Increasing the ability to customise the business processes to respond to specific industry differences.

1.4 Structural Analysis of B2B Digital Markets

B2B digital markets can employ a variety of mechanisms to mediate transactions between participants. These mechanisms are separated into the fixed price models and the dynamic pricing models.

A fixed pricing model such as catalogue purchasing creates value by aggregating suppliers and buyers and works well when the demand is predictable and prices do not fluctuate frequently. The dynamic pricing models consist of the action models, the exchange models and the barter models. The action pricing model works well where non-standard or perishable products or services need to be sold among businesses that have very different perception of the value of the products. Exchange models require a real time, bid-ask matching process, as well as a settlement and clearing mechanism. Exchanges create value in markets where demand and prices are volatile by allowing businesses to manage excess supply and demand. Barter models are used to minimise currency risk in inflationary economies, according to Sawney and Kaplan (1999).

The three critical dimensions for digital markets according to Seybold (2000), are customer identification, market reach and competitive intensity. Customers play many different roles in B2B digital markets, including end users, influencers, decision makers, buyers and maintainers. Identifying the right customer group should be the highest priority for sellers in the digital market. The market reach for a seller in a
digital market depends on the market making mechanism of the digital market. While the seller can only reach a limited number of buyers in its extranet, it can reach a much broader set of potential buyers in the open digital markets. Companies that intend to move into the digital market need to survey the market and identify their current competitors. Determining the ways that competitors compete, especially with e-commerce initiatives and new products, is vital to a new company’s success. In a company’s extranet there may be less competition among sellers because the access of this network is limited to approve suppliers only. On the other hand, competition on open digital markets can be quite intensive since potential sellers may come from anywhere in the world to join the network with low entry barriers.

1.5 B2B Data Sharing

The flow of information between parties, according to Coyle, Bardi and Langley (1999), in a supply chain is crucial for carrying out an effective and efficient transition of consignments. To provide effective support for the functioning of the logistics channel, the overall information systems architecture must be capable of linking or coordinating the information systems of the individual parties into a cohesive whole. Each company’s information system should support both proprietary and shared data, the proprietary data should be accessible only to those employees who have legitimate internal business needs and the shared data should be available to the ones that have a need to know, through a contract or standard to which all parties agree.

The data sharing between parties in the supply chain, according to Copal and Cypress (1995) is of fundamental interest, and the flow of information is essential for carrying out an effective and efficient movement of consignments. Development in information and communication technology has made it possible to integrate the supply chains so that the links between suppliers, producers, customers and third parties have been easier to establish. In order to make this links feasible the companies must develop the information system in accordance with standards and communication technology that the other parties can agree to.
Establishing electronic links with the suppliers and customers, according to Perfett (1992), enables companies to transmit and receive purchase orders, invoices, and shipping notifications with much shorter lead times than previously, which gives potential to speed up the entire shipping transaction. The most common technology for moving such messages between larger companies is electronic data interchange (EDI), meaning the structured data, by agreed message standards, is transferred from one computer to another, by electronic means. However, there exists a barrier through which smaller companies are not able to break like the cost of implementing EDI communication technology, and the cost of installation is often out of reach for many small and medium-sized companies. These companies rely on telephone and fax for their business communications. According to Stefansson (2001), although data interchange technology has been around for more than thirty years, it has not reached the small and medium-sized companies to any significant extent. According to Stefansson (2001), the result of the research in more than twenty case studies implies that smaller companies run the risk of being permanently excluded from integrating their logistic operations in the supply chain, however, the advent of the Internet and concepts of e-commerce open up new perspectives for small and medium-sized companies.

The Internet makes electronic business affordable even to the smallest companies, according to Perfett (1992). Companies of all sizes can communicate through the public Internet, networks for company use only (intranets) or for use by a company and its business partners (extranets), and private Vans. The Internet provides a new technology for doing EDI. Ultimately, many companies plan to adjust their EDI programs to Internet solutions, but in the meantime Internet technology increases the number of protocols that the business must support. As a result, companies have moved and are moving from traditional EDI translators to EDI gateways, which then serve as a single management interface for the EDI system. This serves the smaller companies as well, since they do have an interest in signing up for such gateways to enable communication with their often much bigger customers.
1.6 The Basic Preconditions for the Success of a B2B Electronic Digital Market.

A B2B electronic digital market has to support at the same efficient way the companies regardless of their size. The products and the services must live up to the expectations and the needs of each company without need of special high priced technological infrastructure or huge investments.

Regardless of the basic products and services, Stefansson (2001), a B2B digital market must support other services as well, like logistics and payments. This will lead to an enlargement of the benefits for the companies that are participating in the B2B digital market.

In the framework of worldwide competition, Stefansson (2001), a B2B digital market has to be cooperating with other B2B digital markets world wide, providing to the participating companies the ability to have access to worldwide marketplaces.

1.7 The Role of the Internet

According to Sharma (2001) the impacts if the Internet on B2B marketing strategies is based predominately on how companies utilize the Internet for marketing to their customers.

The capabilities of well-known Internet, with the World Wide Web (www) initiative, contribute as an inexpensive method of business communication. The rapid take-off of the Internet and the exponential growth in its use are chiefly due to the following factors, according to Pertigo (1997):

- Public domain code and protocol specifications.
- Large heterogeneous installation base, providing users with the ability to browse data independent of the computing equipment used.
- Ease of use.
- Good browsing capabilities.
- Availability of inter-protocol gateways, making it compatible with many other existing protocols.

According to Sharma (2001) the evolution of B2B digital markets over Internet involved five stages. The first stage involves information since companies provide information to their customers. The customers visit the Internet site in order to obtain information, to conduct some transactions and to become acquainted to the company. In the second stage knowledge is involved when the company starts to collect more information on its customers, like preferences, attribute importance, channel preferences, purchase cycle and purchases. The third stage involves conversations, since digital markets exist in order to begin two-way conversations that may occur before or after transactions. The Internet is used in the same way that written letters and telephone conversations were used in the past. In the fourth stage conversations are converted in relationships, since companies that participate in digital markets use the Internet in order to develop relationships with their customers through communication and design of the interaction platform. In the final fifth stage the e-commerce is involved since companies transact through Internet rather than any other mean. The company that participates in a B2B digital market ties all the systems together in order to reduce costs related to transactions. Reduction in costs associated with repeated transaction increases the efficiency and effectiveness of relationships.

The Internet can contribute and support EDI communication in several ways. Although it is reliable, low cost, accessible, supportive of high-bandwidth communications, and technically mature, there are still some valid concerns relating to the use of the Internet for EDI. These concerns revolve primarily around security, message tracking, audit trails and authentication. The most obvious ways of contributing are, according to Pertigo (1997):

- The use of EDI over Internet, where companies, instead of using direct telecommunications between them, receive and send EDI messages over the Internet. The negative consequences are mainly approval of acceptance and security issues.
- To send EDI messages with e-mail. Then the EDI message is enveloped in an e-mail message automatically and sent by a well-established message system.
This brings higher security than EDI over Internet as the e-mail systems involve high-security systems.

- By directly using Internet pages for information exchange. This might involve static information pages as well as timetables, price lists and so on. More suitable for the purpose of data sharing is to allow users to key in information. This can provide service concerning booking and information about shipments.
- A mapping of the contents of an EDI message to a text file or an Internet site for use by non-EDI established partners and the opposite. The Internet site can be used for just viewing, printing or even direct input to the Internet accessible database.

The direct uses of Internet for information exchange are numerous, according to Cooke (1999). Such e-business exercises can be classified into two categories, one with static information as in vertical hubs that has been analysed earlier, and the other with dynamic information as industrial hubs. In the first case, information such as timetables, price lists, technical specifications are more substitute for printed material, previously sent out to customers. The main benefits are possibilities of more frequent updating and global distribution, more or less to everyone having Internet access. When using Internet more dynamically, it is often an extension of an extranet, where registered customers can book orders, get price quotations, and make inquiries about available capacity and price based on volume and time. A link from the Internet to the EDI backbone module can then easily be established by making these sites in an extended markup language (XML) format.

### 1.8 B2B Communication in Use by Greek Companies

It is known that the idea of e-commerce and especially B2B is quite new for the Greek companies. The business experience has shown that the vanguard-leading company in a field gains in the long run the most substantial benefits. The commitment of the shareholders of BE (Business Exchanges S. A.) company (Vodafone, HOL and SETE Investment S. A.) to invest in B2B field is a great promise of growth. Moreover Business Exchanges S. A. through [www.be24.gr](http://www.be24.gr), creates and builds electronic B2B
digital marketplaces in the area of Balkans. The goal of the company is to provide to all its clients vanguard enterprise solution in the field of Electronic commerce [11].

One of the most known firms in B2B projects is Diinekis Software S. A. that offers a wide range of solutions for companies. Diinekis Software S. A. has taken over a project concerning the first pilot program about electronic public inventory control for the needs of the Ministry of development. Subcontractors of this project are the firms CosmoONE, the first horizontal marketplace in Greece and the firm Microsoft Hellas. Some of the customers and partners of Diinekis Software S. A. are: the National Bank of Greece, the Central Bank of Greece, the Commercial Bank of Greece, Probank, EFG Eurobank – Ergasias, Ote, Peiraios bank, Otenet, Cosmo One, Cosmote, Telestet, and Delta Singular [12].

Additionally, another known company, Offistore Superstore has developed a private B2B electronic marketplace (exchange) based on the B2B electronic marketplace platform i@Marketplace, of Information Systems Impact. Offistore Superstore was founded by the multinational Offistore SA and the greek ATTALUS SA - a manufacturer of high quality binding and laminating systems and one of the largest exporters worldwide, covering a production space of nearly 25.000 m² with six local factories, and a recent one in China, exporting 90% of its production to more than 90 countries. It is one of the biggest chains in Greece in the office supplies retail sector. Its catalogue - of about 8.000 products- includes general office supplies, PC’s hardware and software as well as mobile devices. Offistore Superstore has strategically moved to e-Commerce as an alternative channel to increase sales and enrich customer relations through a number of value-added services. Information Systems Impact’s i@Marketplace was chosen as a well-known, reliable and scalable solution for flexible B2C and B2B implementation. The plan aims to provide a friendly, robust and secure electronic digital marketplace for the consumers but also support a number of B2B customers through personalized services like customized order forms, order status tracking and personalized commercial policy, so that Offistore Superstore’s partners and big accounts could also benefit by using the application [13].
Furthermore another company providing solutions of enterprise recourse planning and business transactions (B2B) is Velti.net. Velti.net was created in order to provide to the Greek companies with the needed solutions for the exploitation of the opportunities offered in the area of B2B worldwide. Velti.net gives the ability to its member to make electronic business transactions of goods and services by providing integrated solutions and technological platforms of B2B transactions. B2B transactions are offered to large-sized firms and industries and multinational corporations as well as to retailer suppliers of goods and services [14].

The electronic marketplace of ONIA.NET is based on the special needs of the retail sector. Specifically, ONIA NET acts as an intermediary between supermarkets and their suppliers, using a modern model of electronic marketplace to support exchange of information and transactions. Through the wide range of services offered, the company addresses the needs of big chains and of smaller independent supermarkets, of big as of small suppliers as well as, of wholesalers and special collaborators providing different service packages for their special requirements. In the first phase of ONIA-NET's pilot operation the following companies are participating: Group of Supermarkets Veropoulos, Elgeka, Procter and Gamble, and others [15].

Another company ARCHIMEDIA S.A. has participated in various projects based on EDI and XML technologies to provide B2B services in the food chain industries in Greece [16].

B2B e-commerce solutions are also provided on a case-by-case basis. The e-commerce platform can be customized and integrated with existing corporate information systems in order to provide an appropriate solution for business needs that can be tightly coupled with the company customer's present infrastructure. Emphasising the business part of e-business, ARCHIMEDIA S.A. can electronically enable the business processes of two companies and streamline supply chain interaction in order to reduce operational costs and simplify transactions [16].
SECTION TWO: 
Enterprise Resource Planning (ERP) Systems
In this section the theoretical perspectives concerning ERP systems, the structure, the hidden costs and the condition in the Greek companies are presented.

2.1 Problem Description and the Solution Provided by the ERP Systems

An organizational competitiveness depends upon the effectiveness of information flow and subsequently the material flow. Information systems especially computer based ones greatly contribute to the effective communication within an organization, and with its associates whether it could be manufacturing or services. For companies to be competitive they need to have access to the right kind of information at the right time. An Enterprise Resource Planning (ERP) communication system can help to improve the communication within an organization. It is useful to refer to some of the business procedures of companies, like sales process and order taking and shipping.

When a customer places an order, the order starts moving through the various departments of the company in order to be executed. No one in the company is able to know what the status of the order is at any given point, since there doesn’t exist an integrated internal information system covering all the departments of the company, that causes delays and lost orders.

ERP automates the tasks involved in performing a business process—such as order fulfilment, which involves taking an order from a customer, shipping it and billing it. With ERP, when a customer service representative takes an order from a customer, he or she has all the necessary information to complete the order (the customer's credit rating and order history, the company's inventory levels and the shipping documents trucking schedule). Everyone else in the company sees the same computer screen and has access to the single database that holds the customer’s new order. When one department finishes with the order it is automatically routed through the ERP system to the next department. To find out where the order is at any point, one need only to log into the ERP system and track it down. With luck, the order process moves through the organization, and customers get their orders faster than before. ERP can apply to the other major business processes, such as employee benefits or financial reporting, according to Mashari and Zairi (2000).
2.2 Information Collection in Inventory Management Systems

Global companies are depending more and more on their information system infrastructure for strategic advantages. The main challenge, according to Mashari and Zairi (2000) remains in building a credible global information system infrastructure that changes at individual locations when integrating those technologies with the enterprise network. There is a need to take into account the characteristics of an organization or a business model when selecting an information system. However certain changes to the business process as well as to the information system are inevitable for the successful application of information technology in a business environment.

A central focus in the information technology strategy development is the consideration of compatibility between the hardware and the software components in an organization. It can help companies facing problems of order tracking and stock management.

For inventory management to be current to managers, the information or data must be accurate, complete, economical, reliable, relevant, timely and secure. ERP packages use a number of utilities, general tools and methods to preserve the characteristics of data as mentioned above.

Manual data collection, according to Mandal and Gunasekaran (2001) is one of the most widely used methods for entering data into an ERP package. In fact most automated data collection methods require some of manual operation to make them meaningful. For example swipe cards employing bar code technology require the user to manually swipe the card at the appropriate time. A system can only be said to be truly automatic if it requires no user intervention at all. Industry keyboards or touch screens at strategic positions throughout a factory floor are popular manual data collection systems. Workers indicate the start and finish times of jobs and machine down time by answering prompts from the data collection terminals.
Bar coding is widely used. The operation of such codes, according to Mandal and Gunasekaran (2001) is fairly simple. There is a range of numbers under the actual bars of the code. The first two digits consist the code for the country of origin of the product. Then the next four or five digits are the code number for the company manufacturing the product. Then the next four or five digits are the code for the actual product. The last one is a check digit. When the laser screen scans the bar code, the light beam from the scanner picks up the interference of light transitions between the bars and the spaces. These signals are translated by the scanner into a code number, which is then transmitted to a computer. The computer translates the code and can perform any specific operation for the product or part represented by it, for example it can remove it from stock. This is a universal code to ensure that all companies comply with a standard method. The selection of the appropriate code is determined by the end application.

The goal of the radio frequency data collection system, according to Mandal and Gunasekaran (2001) is to improve the methods of transferring data to and from collection terminals and the controlling application. This technology is particularly useful for mobile applications that cannot be tied down by a hard-wired system. In reality radio frequency systems are data collection networks that are connected by radio waves rather than cables and allow statistical information to be passed to the host computer in real time. Most radio frequency systems resemble a laptop computer, and are nothing more than a personal computer placed inside a protective case so it can be used in industrial environments. An example is the case that terminals are designed to be mounted on trucks or work lifters to keep mobile workers collected to the data collection network.

Radio frequency networks, according to Mandal and Gunasekaran (2001) operate on the same principal of traditional hardwired networks. The difference is that the host computer is wired to a radio frequency unit, communicating with individual workers’ terminals through radio signals. Radio frequency can make business more efficient by providing up-to-the-minute data collection networks on areas such as inventory and work in process.
Machine vision technology, according to Mandal and Gunasekaran (2001) is limited used in the job environment at the present, while it seems exciting for the future. Machine vision requires detailed referencing to match measurements in pixels to dimensions in the real world, and the variable nature of the job shop environment is a limiting factor. As a measurement for the process industries there are many applications possible but the biggest limitation of machine vision in its capital cost.

Over the years many systems have been developed to record the time a worker actually spends to work, and if necessary, how much time is spent on jobs done during a day. The objective of time and attendance system (T/S), according to Mandal and Gunasekaran (2001) is simply to collect employee time-worked data. Originally this data was required almost solely for payroll purposes, but the advance of computer systems, and the development, automation and integration of such systems into ERP software, has allowed them to produce a range of useful measures. Hard written time cards are a simple method of time and attendance data collection. An advance of the manual time card system was its automation through a punch card arrangement. The development of a bar code technology enabled this system to advance to the swipe card systems that are more popular nowadays. This system eliminates time-wasting collection and reading of physical time cards, which is an advance in the data collection method. The system does not allow the collection of time spend on jobs throughout the day, as swipe card systems are generally designed to replace punch cards, and are usually set up at some central location, away from the work stations. It must also be noted that the swipe card, or similar systems, also does away with the employee’s physical record of time worked. This can make the implementation of such systems a difficult task, and time saved for the payroll office can be wasted many times over on the shop floor by employees manually keeping track of their times themselves in case of a possible computer error.

Advanced T/S, according to Mandal and Gunasekaran (2001) generally use some form of bar code reading or other computerized technology such as touch screens, or even finger scanning to record punching. Because of the speed and the efficiency of this data recording technology it is also possible to record time spend on jobs throughout the day with such a system. This data can then be integrated into a company’s plant, nation or worldwide information system.
Companies that install ERP do not have an easy time of it, according to Koch, Slater and Baatz (1999). A complete installation combining all the departments of a company takes about a year and for the project to reach its final purpose about five years. Short implementation periods have a catch of one kind or another as the company may only use the financial pieces of the ERP system (in which case the ERP system is nothing more than a very expensive accounting system), or the implementation may be limited to a small area of the company. To do ERP right, the ways that the company functions will need to change and the ways people do their jobs will need to change too. The important thing is not to focus on how long it will take, because real transformational ERP efforts usually run between one to five years on average, but rather to understand why a company need its and how will it use it to improve its business processes.

The most important reasons that lead companies to undertake ERP are, according to Koch, Slater and Baatz (1999):

- To integrate financial data, as the Chief Executive Officer (CEO) needs to understand the company's overall performance. Finance has its own set of revenue numbers, sales have another version, and the different business units may each have their own versions of how much they contributed to revenues. ERP creates a single version of the truth that cannot be questioned because everyone is using the same system.

- To standardize manufacturing processes. Manufacturing companies, especially those with an appetite for mergers and acquisitions, often find that multiple business units across the company make the same widget using different methods and computer systems. Standardizing those processes and using a single, integrated computer system can save time, increase productivity and reduce headcount.

In the race to fix these problems, companies often lose sight of the fact that ERP packages are nothing more than generic representations of the ways a typical company does business. While most packages are exhaustively comprehensive, each industry has its quirks that make it unique. Most ERP systems were designed to be
used by discreet manufacturing companies (who make physical things that can be counted), which immediately left all the process manufacturers (oil, chemical and utility companies that measure their products by flow rather than individual units) out in the cold. Each of these industries has struggled with the different ERP vendors to modify core ERP programs to their needs, according to Koch, Slater and Baatz (1999).

It's critical for companies to figure out if their ways of doing business will fit within a standard ERP package before the implementation begins. The most common reason, according to Koch, Slater and Baatz (1999) that companies walk away from highly expensive ERP projects is that they discover that the software does not support one of their important business processes. At that point there are two things they can do: They can change the business process to accommodate the software, which will mean deep changes in long-established ways of doing business (that often provide competitive advantage) and differentiation of important peoples' roles and responsibilities. Or they can modify the software to fit the process, which will slow down the project, introduce dangerous bugs into the system and make upgrading the software to the ERP vendor's next release excruciatingly difficult, because the customisations will need to be torn apart and rewritten to fit with the new version.

2.4 The Hidden Costs of ERP

The following areas of ERP are most likely to result in budget overrun, according to Koch, Slater and Baatz (1999).

- Training is the cost that is usually completely overlooked, as it is consistently underestimated. Training expenses are high because workers almost invariably have to learn a new set of processes, not just a new software interface.
- Another often underestimated cost is the test of the links between ERP packages and other corporate software links that have to be built on a case-by-case basis. A typical manufacturing company may have add-on applications for logistics, tax, production planning and bar coding. If this list also includes customisation of the core ERP package, expect the cost of integrating, testing and maintaining the system will increase heavily the cost. As with training, testing ERP integration has to be done from a process-oriented perspective.
Instead of plugging in data and moving it from one application to the next, veterans recommend running a real purchase order through the system, from order entry through shipping and receipt of payment - the whole order-to-cash with the participation of the employees who will eventually do those jobs.

Another cost, data conversion, appears when corporate information move, such as customer and supplier records, product design data and the like, from old systems to new ERP ones. Companies often deny their data is not complete and reliable until they actually have to move it to the new client/server set-ups that popular ERP packages require. Consequently, those companies are more likely to underestimate the cost of the move. But even complete and reliable data may demand some overhaul to match process modifications necessitated by the ERP implementation.

Additionally another underestimated cost appears to be data analysis, since usually the data from the ERP system must be combined with data from external systems for analysis purposes. Users with heavy analysis needs should include the cost of a data warehouse in the ERP budget and they should expect to do quite a bit of work to make it run smoothly. Refreshing all the ERP data in a big corporate data warehouse daily is difficult, and ERP systems do a poor job of indicating which information has changed from day to day, making selective warehouse updates tough. One expensive solution is custom programming.

Moreover another high cost is the need for consultants, when users fail to plan for disengagement, consulting fees increase significantly. To avoid this, companies should identify objectives for which its consulting partners must aim when training internal staff.

It is accepted wisdom that ERP success depends on staffing the project with the best and brightest from the business and information system. The software is too complex and the business changes too dramatic to trust the project to just anyone. A company must be prepared to replace many of those people when the project is over.

The need for the continuing support from the implementation teams does not end after the implementation process is being completed. Most companies intend to treat their ERP implementations as they would any other software
Once the software is installed, the team will be scuttled and everyone will go back to his or her day job. But after ERP, the team is too valuable, because they have worked intimately with ERP, they know more about the sales process than the salespeople do and more about the manufacturing process than the manufacturing people do. Companies can't afford to send their project people back into the business because there's so much to do after the ERP software is installed. Just writing reports to pull information out of the new ERP system will keep the project team busy for a year at least. Unfortunately, few information system departments plan for the frenzy of post-ERP installation activity, and fewer still build it into their budgets when they start their ERP projects. Many need more money and staff immediately after the go-live date, long before the ERP project has demonstrated any benefit.

Some company expect to gain value from the application as soon as it is installed. Most companies do not gain some profit from the installation and the use of the application until they have been using the application for some time and can concentrate on making improvements in the business processes that are affected by the system.

Even if a company installs ERP software for the so-called right reasons and everyone can agree on the optimal definition of a customer, there are inherent difficulties of implementing something as complex as ERP. The packages are built from database tables, thousands of them, that information system programmers and end users must set to match their business processes, each table has a decision that leads the software down one decision path or another. By presenting only one way for the company to do each task a company's individual operating units are integrated under one system. But figuring out precisely how to set all the switches in the tables requires a deep understanding of the existing processes being used to operate the business. As the table settings are decided, these business processes are reengineered, ERP's way. Most ERP systems are not shipped as a shell system in which customers must determine at the minutia level how all the functional procedures should be set, making thousands of decisions that affect how their system behaves in line with their own business activities. Most ERP systems are reconfigured, allowing just hundreds—rather
than thousands-of procedural settings to be made by the customer, according to Koch, Slater and Baatz (1999).

2.5 ERP Systems Used by the Greek Companies

According to EVERDINGEN, Y., Hillegersberg, J. and Waarts, E. (2000), in a research in ten European countries, where Greece was not included, many large companies have already adopted ERP systems and are planning the next step of how to use the installed ERP infrastructures as foundations for e-business. Most of the small and medium sized companies still have to make the decision to employ ERP.

Until 1999 ERP technology was not widely used by the Greek companies. Few companies, especially large ones, had applied, or at least tried to apply some ERP communications. This situation was formed due to the following factors, according to Ioannou (2000):

- The Greek companies did not realise the need to reform their ways of doing business according to ERP technology, since the competition pressure was not so obvious as it recently is.
- The vast majority of the Greek firms, even when it realized those need, was not able to adopt this new technology due to the lack of the necessary organising infrastructure and resources for such an important investment.
- The lack of well educated and experienced personnel of the production and consulting companies representing the Greek market lead to the need for the adoption of well educated and experienced personnel from abroad mostly for training purposes, thus there was a great increase in the cost of implementation of the ERP applications.

The above factors led a small number of companies to adopt an ERP application until 1999. This situation altered in the last 3 years. The Greek companies seem to have realized and understand the use of ERP applications, in accordance to the integrated study for the restructure of the business processes, because those companies must be able to compete in today's strictly competitive environment. The current ERP systems, in contrast with the ones used in the past, are installed and function in less
complex network infrastructures like Windows NT, thus decreasing significantly the cost of buying and maintaining the hardware and the software equipment.

One of the most known firms in Greece Logic Dis provides an ERP system called Solution I ERP system and another called Solution II ERP with the purpose of integrating the software system of large companies of the public and the private sector based on Omega technology.

MAX for Windows of Kewill ERP is one of the most known Windows NT ERP systems according to the magazine Manufacturing Systems, with applications in about thirty countries including Greece, according to Triantafillou (1999).

Baan firm has developed a product called Baan IV, a system of applied software for the coverage of all the functions of Baan's client companies. It is using ERP technology in accordance to Dynamic Enterprise Modelling (DEM) philosophy, according to Triantafillou (1999).

Softecon company offers an ERP application called J. D. Edwards OneWorld, providing an integrated solution to the Greek companies. OneWorld is network centric and object-oriented, according to Triantafillou (1999).

Oracle application is a complete series of applications that have been developed based on the relational database of Oracle (Oracle RDBMS) and objectives, functions and patterns called Oracle Applications Object Library. Oracle RDBMS offers powerful attributes and data integrity and data redundancy, according to Triantafillou (1999).

The ERP of Quality & Reliability firm, called ORAMA 2000 is a product that has been fully developed by this company. The system addresses in medium and large sized companies with sales over two million and nine thousand euros annually, according to Triantafillou (1999).

Another company called Unixfor has developed a system called E. R. A (enterprise retail application that supports all the business processes in business environments with multiple storage spaces. It uses a central data base for all the information
concerning the company and it separates the company functions into complete set-ups in which more than one departments are involved, according to Ioannou (2000).

Delta Singular is the distributor for Greece and Cyprus of the enterprise application, constructed by Platinum Software Corporation. Platinum SQL is offered to medium and large sizes companies that need to be competitive with a fully integrated information system. One of the ERP solutions of the company Deltasingular, is adopted by Marinopoulos. All the Supermarkets of the firm have access through Internet to the back office of all the existing applications (orders and shipments). Solution II ERP is used by the company METAXAS DIAGNOSTICS. Front office integrations of the working environment through access to Omega Com objects with the back office information system of the Solution II ERP [22].

SAP is internationally known as one of the leading companies in sales of integrated solutions. Its product R/3 has been used in more than the thirty four percent of the companies internationally. The main difference of the system SAP R/3, in consideration to some other products in the market, is based on the client / server architecture, providing at the same time a unique way of data administration. The users are implementing all the necessary data once in the main system and all the fields of the software applications are notified. In this way the most accurate information is achieved in the less time with the lower cost, according to Triantafillou (1999).

Unisoft developed the system Unisoft Atlantis that focuses on large-sized companies with increased demand of data organization and administration and with special automation needs, according to Triantafillou (1999).
SECTION THREE:
Empirical Analysis
In this section the research methodology, the questionnaire, the hypothesis, the test and the results that derived from the empirical analysis are presented.

### 3.1 Research Methodology

In order to gather the data for this research it was decided to collect primary and secondary data. For the collection of primary data a survey was conducted that was addressed to small, medium and large size companies in Greece. Sufficient secondary data were gathered, as in the early stage of the research, the study of the literature review, the internet, the articles, the books and the research papers, revealed that there is a great amount of articles concerning the business to business communication systems and enterprise resource planning systems.

The purpose of this survey is to investigate the reasons that lead the Greek companies to participate in a business-to-business digital market, the reasons that lead them to use an enterprise resource planning system and the advantages and problems that derived. This survey was addressed to small, medium and large sized companies that may or may not be familiar to the business to business and the enterprise resource planning systems. According to Evergingen, Hillegersberg and Waarts (2000) the companies that are categorized as small sized occupy up to fifty employees, the companies that are considered as medium sized occupy up to one thousand employees and the companies that are considered as large sized occupy more than one thousand employees. In Greece a different scale is in use as the companies that are considered as small sized occupy up to fifty employees, up to two hundred employees they are considered medium sized, up to five hundred employees they are considered large sized, and over five hundred employees they are considered huge sized.

The study population consists of companies that produce and trade goods and services. In order to collect a sufficient amount of responses, it was decided not to focus on a specific branch since B2B and ERP systems are not so commonly used and in B2B digital market companies from different branches may participate.
It was believed that the best way to collect more accurate data was to use the personal interview method in accordance to a relevant survey instrument, the questionnaire. It was decided to use the personal interview method in order to secure a common understanding of the questions. Also it was decided to design a questionnaire because obtaining the opinion of the respondents in specific issues was of great importance. The questionnaire consists of qualitative and quantitative questions. The type of sampling used, was the simple random probability sampling where each member of the study population had an equal probability of being selected.

In order to select the sample, it was decided to gather a list of all the companies whose headquarters were located in Macedonia, Thessaly and Sterea region, provided by the Camper of Commerce of each region. The list was numbered from the first to the last company, and numbers from the list were randomly picked. The process was repeated until the desired number of the companies, one hundred and fifty, was selected.

It was decided to conduct personal interviews by arranging appointments with the chosen companies. It was also decided to collect only one questionnaire from each company. Due to lack of time and money forty-three interviews were arranged, each interview lasted about thirty minutes, thereby forty-three questionnaires were gathered. Care was taken to build a user-friendly interface between the person that conducted the interview and the person that was being interviewed in order to obtain upfront answers.

The companies that replied were, PERLA SA, VEKO SA, CONTI SA, PAPADOPOULOS MARBLES, ELEFHERIADIS MARBLES, SOLAKIS MARBLES, CITROEN, MAZDA, ZOUMA EFGENIA, KARAFILOKAS KONSTANTINOS, I. TERPOUJKIDIS & SON SA, TURNAVITIS SA, ESTIA SA, ELVE ENDIMATON SA, ALSINCO SA, XALIVDOFILLON SA, PC SYSTEMS SA, SATO SA, RAINBOW COMPUTERS SA, JUMBO SA, KOTSOVOLOS PAEVE, SANYO HELLAS, VARVARESOS SA, FOLLIE-FOLLI AVEE, VEROPoulos ASSOCIATION, TOUTOUNTZIDIS XRISTOS SA, ANDREOU SA, PLAISSIO SA, MICROMEDIA MPRITANNIA SA, NTIONIK SA, DROMES PAPAPANAGIOTOU ABEEA, ALPHA BANK SA, NATIONAL BANK OF
3.2 Questionnaire Analysis

The questionnaire consists of open and close-end questions. The open-end questions are of great significance because they provided some unanticipated answers. The questionnaire is divided into four sections. The first section provides information concerning the person being interviewed. With the first close question the age of the respondent is known. With the second close question it is known how long this person has been occupied in this company. The previous two questions determine the years of working experience of each person being interviewed. With the third open question the position, which the respondent has in the company is known and with the fourth open-end question the place of work is known. The last two questions determine if the respondent has gained experience in a position placed in a specific location in the company.

The second section of the questionnaire provides some information concerning the company profile. With the first question the amount of annual sales of the company in Euros for the fiscal period 2001 is known. Since the implementation period of both systems for the Greek companies started in 1999 and is gaining new users every day some of the companies included in the sample probably adopted the systems recently. There is no interested in the amount of annual sales for previous fiscal years as the adoption of one or both systems is not efficient to determine if there was an increase in the amount of the economic elements of the companies. With the second question the number of the employees that are occupied in the companies is known. These two questions determine the size of the company. The third question provides some information concerning the existing communication methods. The fourth question informs about the departments that the existing internal information system cover. With the fifth close question it is known if the company has undertaken or if it is considering undertaking a business-to-business system. This question also indicates if
the person that fill in the questionnaire did it sincerely or on luck. That is because if
the answer to the fifth question is positive the person is asked to proceed with the
third section. If the answer is negative, or don’t know, the person being interviewed
will not proceed to any other section. With the sixth close question it is known if the
company has undertaken or if it is considering undertaking an enterprise resource
planning system. This question also indicated if the person that fill in the
questionnaire did it sincerely or on luck. That is because if the answer to the sixth
question is positive the person is asked to proceed with the fourth section. If the
answer is negative, or don’t know, the person being interviewed will not proceed to
any other section. Question seven records if the person that is being interviewed wants
to receive the results of this survey.

The third section of the questionnaire provides information concerning business-to-
business system. The first open-end question describes the reasons that lead the
company to participate in a business-to-business digital market. This question is open
ended because there might be obtained an unexpected answer. With the second
question it is known if the company is participating in a horizontal or a vertical
business-to-business digital market. In the third question the person being interviewed
was asked to fill in a priority list providing information stating the advantages of
participating in a business-to-business digital market and the importance of each
advantage. With the fourth question the opinion of the person being interviewed is
known concerning the difficulties in the implementation process of the system
business-to-business.

The fourth section of the questionnaire provides information concerning the enterprise
resource planning system. With the first open-end question it is known which
enterprise resource planning system the company has been using. The second question
provides information concerning the reasons that lead the company to use an
enterprise resource planning system. This question is open ended because it is
interesting to obtain an unexpected answer. With the third question become known
the tools that are used to preserve information data accurately and consistently. In the
fourth question the person being interviewed was asked to fill in a priority list
providing information stating the advantages of using an enterprise resource planning
system and the importance of each advantage. With the fifth question the opinion of
the respondent is recorded concerning the difficulties in the implementation process of the enterprise resource planning system.

3.3 Hypotheses to be Tested

According to Stefansson (2001), the result of the research in more than twenty case studies imply that smaller companies run the risk of being permanently excluded from integrating their logistic operations in the supply chain, however the advent of the Internet and concepts of e-commerce open up new perspectives for small and medium sized companies.

According to EVERDINGEN, Y., Hillegersberg, J. and Waarts, E. (2000), the result of a research in ten European countries, where Greece was not included, implies that many large companies have already adopted ERP systems and are planning the next step of how to use the installed ERP infrastructures as foundations for e-business. Most of the small and medium sized companies still have to make the decision to employ ERP.

In this survey we are interested in examining whether the size of the companies affects their decision to adopt a business to business communication system or an ERP system, according to the hypotheses indicated in following four levels:

- Is there a relation between the number of employees that are occupied in the company and the decision of the company to participate in a business-to-business digital market. Ho: there might not exist a statistically significant relation between these two variables. H1: there might exist a statistically significant relation between these two variables.

- Is there a relation between the amount of annual sales of the company and the decision of the company to participate in a business-to-business digital market. Ho: there might not exist a statistically significant relation between these two variables. H1: there might exist a statistically significant relation between these two variables.

- Is there a relation between the number of employees that are occupied in the company and the decision of the company to undertake an enterprise resource planning system. Ho: there might not exist a statistically significant relation
between these two variables. \( H_1 \): there might exist a statistically significant relation between these two variables.

- Is there a relation between the amount of annual sales of the company and the decision of the company to undertake an enterprise resource planning system. 
  \( H_0 \): there might not exist a statistically significant relation between these two variables. \( H_1 \): there might exist a statistically significant relation between these two variables.

- Is there a relation between the amount of annual sales of the company and the number of employees that are occupied in the company. \( H_0 \): there might not exist a statistically significant relation between these two variables. \( H_1 \): there might exist a statistically significant relation between these two variables.

### 3.4 Test and Results

In this survey in order to run the tests it was decided, to transform (recode) all open-ended questions into close end questions and, to use SPSS for windows application. It was decided to run frequency analysis tests, the tables can be found in the appendices, for the questions of one and multiple responses. Also it was decided to calculate the mean and the median for the quantitative questions. Additionally in order to test the previously mentioned hypotheses it was decided to conduct crosstabulation analysis and the test of independence by calculating Pearson Chi-Square. Also figures were created, which can be found in the appendices, which visualize the frequencies of responses in the questions. The form of the figures was pie.

Homogeneity, anova and regression analysis were not conducted since the sample is quite small as questionnaires from 14 companies were collected that were not familiar to the B2B and ERP systems, from 13 companies that were familiar to the B2B system but not to the ERP and from 16 companies that were familiar to the ERP system but not the B2B. But the most important reason for not running the tests was the fact that the implementation period of both systems for the Greek companies started in 1999 and some of the companies included in the sample adopted those systems recently, so it would not be possible to determine if there was an increase in
the value of the economic elements of the companies created by the adoption of one or both systems.

The number of employees and the amount of annual sales determine the size of the companies of our sample. It was decided to use the number of employees as a factor because 43 responses out of 43 questionnaires were gathered, while in the question concerning the amount of annual sales 21 responses out of 43 questionnaires were gathered. As small sized they are considered 15 companies that occupy up to fifty employees, up to two hundred employees they are considered 9 medium sized companies, up to five hundred employees they are considered 8 large sized companies, and over five hundred employees they are considered 11 huge sized companies.

Most companies of our sample have been using as communication methods fax and telephone, while Internet and e-mail are not so widely used especially from the small sized companies. Also the information system of the huge sized companies cover all their department, and on the other hand the information system of most small sized companies covers usually the accounting and the warehouse department. This finding holds with the findings of the research of Stefansson (2001) that states that the small and medium sized companies have only internal information systems, mainly in order to deal with administration and production oriented tasks, while their main communication methods are telephone and fax. The huge companies have advanced communication systems, and they can communicate using advanced communication methods.

The most important reason that lead the small sized companies of our sample, to participate in a B2B digital market, are the location of new potential partners, and then to become more competitive, to promote their products and to lower transaction costs while they don't seem interested into developing complete data. On the other hand medium sized companies consider as the most important reasons to become more competitive, to develop complete information and less important to find new partners. Large sized companies consider as the most important reason the location of new potential partners, then to become more competitive and to develop complete data and then the promotion of products. Huge sized companies consider as the most
The most difficult problem, that the small sized companies have been facing during the implementation process of a B2B system is considered to be the certain changes in the company business processes and then the accurate explanation of the business processes and the company requirements to the system programmers. The medium sized companies consider as the most significant problem the training and education of employees at different levels in order to live up to the new job requirements, and then the other three factors. The large sized companies considered as the most significant problem the training and education of employees at different levels in order to live up to the new job requirements and then the other factors follow. The huge sized companies considered as the most important problem the accurate explanation of the business processes and the company requirements to the system programmers, then the certain changes in the company business processes and the other two problems follow. According to Stefansson (2001), the problems that most companies are facing is that the investment is not in the communication module alone but in an information system that can support the information system that can support the input and output from such a data-sharing system, that comply with the findings of this research that one important problem is the compatibility between software and hardware components and the information systems of all partners.

The most important reasons that lead the small sized companies of our sample, to use an ERP system is considered to be the automation of the business processes, the communication within the organization and the on-line information. The medium sized companies consider as the most important reason the on-line information, then the data integration and the communication within the organization. The large companies consider as the most important reason the communication within the organization, then the data integration and in the end on-line information. The huge companies consider as the most important reason the data integration, then the on-line information and then the communication within the organization. The findings of this research comply with the findings of EVERDINGEN, Y., Hillegersberg, J. and Waarts, E. (2000), stating that the main reason for adopting an ERP system is the integration of several functional areas.
The small sized companies that have been facing problems during the implementation process of an ERP system consider all problems equally difficult. The medium sized companies consider as the most difficult problem the accurate explanation of the business processes and the company requirements in order to be granted by the new information system, and then the data conversion into reliable and complete according to the ERP system needs and the training and education of employees at different levels in order to live up to the new job requirements. The large sized companies consider as the most important problem the training and education of employees at different levels in order to live up to the new job requirements, and the accurate explanation of the business processes and the company requirements in order to be granted by the new information system. The huge companies consider as the most difficult problem the accurate explanation of the business processes and the company requirements in order to be granted by the new information system and then the compatibility between software and hardware components as well as the integration of the information system of the company. The findings of this research comply with the findings of EVERINGEN, Y., Hillegersberg, J. and Waarts, E. (2000), stating that one important problem is the compatibility between hardware and software and the information system of all the company partners and another one is the accurate explanation of the business processes and the company requirements to the system programmers in order to be granted by the new information system.

The small sized companies of our sample have been using Atlantis ERP from Unisoft. Medium sized companies have been using mostly Solution I ERP from Logicsis, large sized companies have been using mostly Orama ERP from Quality and Reliability. Huge companies have been using BaaN ERP from Delta Singular and Atlantis ERP from Unisoft.

The tools that are being used by the small sized companies to preserve data consistency are the manual data collection and bar coding, medium sized companies are also using manual data collection and bar coding and big companies are using manual data collection, bar coding, machine vision and radio frequency tools.
In order to determine if the number of employees that each company occupies affects the decision of the company to adopt a business to business communication system it was decided to run the test of independence. Therefore two hypotheses were created, according to the first hypothesis Ho: there might not exist a statistically significant relation between these two variables and H1: there might exist a statistically significant relation between these two variables. The significance of Pearson Chi-Square was equal to 0.309 since it is higher than 0.05 the null hypothesis Ho was accepted, so the hypothesis H1 was rejected.

In order to determine if amount of annual sales of the company affects the decision of the company to adopt a business to business communication system it was decided to run the test of independence. Therefore two hypotheses were created, according to the first hypothesis Ho: there might not exist a statistically significant relation between these two variables and H1: there might exist a statistically significant relation between these two variables. The significance of Pearson Chi-Square was equal to 0.586, since it is higher than 0.05 the null hypothesis Ho was accepted, so the hypothesis H1 was rejected.

In order to determine if the number of employees that each company occupies affects the decision of the company to undertake an enterprise resource planning (ERP) system it was decided to run the test of independence. Therefore two hypotheses were created, according to the first hypothesis Ho: there might not exist a statistically significant relation between these two variables and H1: there might exist a statistically significant relation between these two variables. The significance of Pearson Chi-Square was equal to 0.051, since it is close to 0.05 the null hypothesis Ho was rejected, so the hypothesis H1 was accepted.

In order to determine if amount of annual sales of the company affects the decision of the company to undertake an enterprise resource planning (ERP) system it was decided to run the test of independence. Therefore two hypotheses were created, according to the first hypothesis Ho: there might not exist a statistically significant relation between these two variables and H1: there might exist a statistically significant relation between these two variables. The significance of Pearson Chi-
Square was equal to 0.063, since it close to 0.05 the null hypothesis \( H_0 \) was rejected, so the hypothesis \( H_1 \) was accepted.

It was decided to run a cross tab and the test of independence, between the questions ‘What is the amount of annual sales of the company’ and ‘How many employees are occupied in the company’ in order to test the first hypothesis \( H_0 \) there might not exist a statistically significant relation between these two variables and \( H_1 \) there might exist a statistically significant relation between these two variables. The significance of Pearson Chi-Square was equal to 0.020, since it is lower than 0.05 the null hypothesis \( H_0 \) was rejected, so the hypothesis \( H_1 \) was accepted.

In order to examine the importance of each advantage created in a b2b digital market, the mean for each advantage was calculated. The advantage of higher priority was the transparency of prices, then the reduction of operating cost, then the catalogue issue-product searching, then the increase in the amount of sales in the market, then the better organization of promotions, then the electronic payments, then the effective and efficient movement of consignments, then the indications of product shortages, prediction of required order quantities, then the immediate information concerning new products and at last the improvement of communication & transaction processes between partners.

In order to examine the importance of each advantage created by the ERP system, the mean for each advantage was calculated. The advantage of higher priority was the reduction in ‘time to market’, then the human resource management, then the reduction of transactions costs, then the reduction of inventory levels, then the stock management, then the order tracking, then the real time information, then the automation of the software processes, then the production flexibility and the distinction between proprietary and shared data.
Summary and Conclusions

The ideas of business to business communications and enterprise resource planning systems are quite new for the Greek companies, until 1999 only large sized companies had used or at least tried to use these systems. The situation altered during the last three years since Greek companies seem to have realised the need to use such systems especially for competition purposes. Since the implementation period started for most Greek companies the last years, it was not possible to determine if there was any improvement in the economic elements of the companies created by the use of one or both systems.

The conclusions that came up from the research are:

- The most important reason that led most companies to participate in a B2B digital market was the location of potential partners with 47.6 percent. Then the need of the companies to become more competitive with 33.3 percent and in the end the promotion of products and services with 19 percent.
- The companies decided to participate in a B2B digital market mostly because they wanted to secure the transparency of prices, the reduction of operating cost, the catalogue issue and product searching.
- The changes in the company business processes seem to be the most difficult part in the implementation process of B2B communications (27.8 percent). The communication gap between system programmers and company staff during the requirements gathering phase seems to be equally difficult. This communication gap is apparently the reason for the difficulties faced during the training and education of employees at different levels in order to live up to the new job requirements (25 percent). Software and hardware compatibility problems account for the rest 19.4 percent.
- The most important reason that led the companies to undertake an ERP system was considered the integration of data with 70.6 percent, then the automation of the business processes with 23.5 percent. Last, with 5.9 percent only, the complete information.
- The companies decided to use an ERP system mostly because they wanted to secure the reduction in 'time to market', the human resource management, and the reduction of transactions costs.
The communication gap between system programmers and company staff seems to be the most serious problem during implementation process of an ERP system: 35.6 percent requirements gathering phase and 24.4 percent training and education. Next come, with 20 percent data conversion and software and hardware compatibility.

The small and some of the medium sized companies, 14 out of 43 companies, were not familiar to either B2B or ERP systems, while the rest of the medium sized companies and the large sized companies were familiar to one of the systems as 13 companies were familiar to B2B communications but not ERP systems and 16 companies that were familiar to ERP systems but not to B2B communications.

In Greece, various firms exist that provide different solutions for companies that are interested in participating in a B2B digital market or want to adopt an ERP system according to the size and the needs of each company.

According to the hypotheses that were tested it was concluded that there might exist a statistically significant relation between the size of the companies and their decision to use ERP systems, but there doesn't seem to exist a statistically significant relation between the size of the companies and their decision to use B2B systems. This conclusion is based on the investment abilities of the companies, since an investment in an adoption of an ERP system needs a lot of funds, but the adoption of a B2B communication system isn't so expensive.

From the research it is obvious that:

- 34 companies, out of 43 responding, stated that they are using e-mail messaging or Internet. The remaining 9 companies should decide to use Internet services and e-mail messaging, these technologies are easy to use, they provide good browsing capabilities, they are reliable, low cost and easily accessible. Moreover they appear to be of great use concerning updating and global distribution of catalogues, timetables, pricelists and technical specifications.

- Moreover all the companies that responded to the survey are using an information system to cover their needs concerning the accounting
department. Only 16 companies cover the administration department, 26 cover the financial department and 37 cover the warehouse. This shows that Greek companies seem reluctant in adopting an integrated information system. They should consider adopting an information system covering all the departments of the company, leading to an effective communication within the company and with its external associates as well. It is well known that companies became more competitive by having access to the right kind of information at the right time.

The following open questions remain for further research:

- Since the responses gathered were less than fifty and there did not exist the same amount of responses from companies of different sizes, further research, with a significantly larger sample, would probably bring a better view of the current investment ability of the Greek companies.

- Since currently the implementation period has not been completed yet, for the majority of the companies, this research can be considered preliminary. A new survey after some years will certainly reveal other unnoted requirements, advantages and problems.

- Moreover after the implementation process is completed it will be possible to know if these systems prove to be useful, and able to respond to their initial promises and the company expectations.
APPENDICES
APPENDIX 1: Questionnaire
Introduction

In this research we are interested in your opinion concerning business to business and enterprise resource planning systems, especially the reasons that led the company in which you are currently occupied, to adopt such systems, and the advantages and problems that occurred.

Your answers will be highly confidential. In the final part of the research we will compare your answers with the answers of some other companies.

We would like to ask you to find the time to fill in the following questionnaire (it will last approximately 15 minutes).

We would like to thank you in advance for your time. If you wish, we will send you the results.
First Section: Personal Information

A 1) How old were you on your last birthday?

1-20 □ 21-40 □ 41-60 □ over 60 □

A 2) How long have you been occupied in this company?

............................................. years

A 3) What is your current position in the company?

- Senior manager.
- Middle manager.
- Knowledge worker.
- Data worker.
- Operational manager.
- Worker.
- .............................................................. (please define).

A 4) You work in:

- The headquarters of the company?
- The warehouse
- Another location? .................................................. (please define).
Second Section: Company information

B 1) What is the amount of annual sales of the company?

B 2) How many employees are occupied in the company?

B 3) What are the main communication methods?

- Fax
- Telephone
- E-mail messaging
- ............................................................ (please define)

B 4) Which departments does the internal information system of the company cover?

- Administration department
- Financial department
- Accounting department
- Warehouse
- ............................................................ (please define)

B 5) Has the company undertaken, or is it considering to undertake a business to business (B2B) system?

Yes □  No □  Don’t know □

If the answer is positive please fill in the questions in the third section.

B 6) Has the company undertaken, or is it considering to undertake an enterprise resource planning (ERP) system?

Yes □  No □  Don’t know □

If the answer is positive please fill in the questions in the fourth section.

B 7) Do you want to receive the results of this survey?

Yes □  No □
Third Section: Business to business

C 1) Define the three most important reasons that lead the company to participate in a B2B digital market.

a. ................................................................................................................

b. ................................................................................................................

c. ................................................................................................................

C 2) Is the company participating in a vertical or horizontal B2B digital market? 
(We consider as vertical the digital market focusing on one company, and as horizontal the digital market focusing on the business processes across different companies.)

C 3) Consider a scale of 1 to 10, where 8, 9 and 10 are the most important, 0, 1 and 2 are not so important and 3 to 7 are in between. What number would you give to each advantage created in the b2b digital market?

  • Improvement of communication & transaction processes between partners.
  • Reduction of operating cost.
  • Better organization of promotions.
  • Immediate information concerning new products.
  • Catalogue issue - product searching.
  • Transparency of prices.
  • Indications of product shortages, prediction of required order quantities.
  • Electronic payments.
  • Effective and efficient movement of consignments.
  • Increase in the amount of sales in the market.

C 4) What have the difficulties been, in the implementation process of a B2B system?

• Certain changes in the company business processes?
• The compatibility between software and hardware components as well as the information system of all partners?
• Training and education of employees at different levels in order to live up to the new job requirements?
• Accurate explanation of the business processes and the company requirements to the system programmers?

.........................................................(please define).
Fourth Section: Enterprise resource planning

D 1) Which ERP system has the company been using?

D 2) Define the three most important reasons that lead the company to use ERP:

D 3) Which are the tools used to preserve information data accurately & consistently?

- Manual data collection.
- Bar coding.
- Machine vision.
- Radio frequency data collection.

D 4) Consider a scale of 1 to 10, where 8, 9 and 10 are the most important, 0, 1 and 2 are not so important and 3 to 7 are in between. What number would you give to each advantage created by the ERP system?

- Reduction of inventory levels.
- Production flexibility.
- Real time information.
- Order tracking.
- Stock management.
- Distinction between proprietary and shared data.
- Automation of the software processes.
- Reduction in ‘time to market’.
- Reduction of transactions costs.
- Human resource management.

D 5) What have the difficulties been, in the implementation process of ERP?

- Data conversion into reliable and complete according to ERP needs?
- The compatibility between software and hardware components as well as the integration of the information system of the company?
• Training and education of employees at different levels in order to live up to the new job requirements?
• Accurate explanation of the business processes and the company requirements in order to be granted by the new information system?

....................................................................................................................................................(please define).
APPENDIX 2:
Tables
Table 1: How long have you been occupied in this company?

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>20</td>
<td>46.5</td>
<td>46.5</td>
<td>46.5</td>
</tr>
<tr>
<td>6-10</td>
<td>12</td>
<td>27.9</td>
<td>27.9</td>
<td>74.4</td>
</tr>
<tr>
<td>11-15</td>
<td>8</td>
<td>18.6</td>
<td>18.6</td>
<td>93.0</td>
</tr>
<tr>
<td>16-20</td>
<td>2</td>
<td>4.7</td>
<td>4.7</td>
<td>97.7</td>
</tr>
<tr>
<td>Over 20</td>
<td>1</td>
<td>2.3</td>
<td>2.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Mean: 7.44

Table 2: What is the amount of annual sales of the company?

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 2.000.000</td>
<td>5</td>
<td>23.8</td>
<td>23.8</td>
<td>23.8</td>
</tr>
<tr>
<td>2.000.001 to 20.000.000</td>
<td>8</td>
<td>38.1</td>
<td>38.1</td>
<td>61.9</td>
</tr>
<tr>
<td>Over 20.000.000</td>
<td>8</td>
<td>38.1</td>
<td>38.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: How many employees are occupied in the company?

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 49</td>
<td>15</td>
<td>34.9</td>
<td>34.9</td>
<td>34.9</td>
</tr>
<tr>
<td>50-199</td>
<td>9</td>
<td>20.9</td>
<td>20.9</td>
<td>55.8</td>
</tr>
<tr>
<td>200-499</td>
<td>8</td>
<td>18.6</td>
<td>18.6</td>
<td>74.4</td>
</tr>
<tr>
<td>Over 499</td>
<td>11</td>
<td>25.6</td>
<td>25.6</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 4: How old were you on your last birthday?

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-20</td>
<td>1</td>
<td>2.3</td>
<td>2.3</td>
<td>2.3</td>
</tr>
<tr>
<td>21-40</td>
<td>24</td>
<td>55.8</td>
<td>55.8</td>
<td>58.1</td>
</tr>
<tr>
<td>41-60</td>
<td>18</td>
<td>41.9</td>
<td>41.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 5: What is your current position in the company?

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior manager</td>
<td>3</td>
<td>7.0</td>
<td>7.0</td>
<td>7.0</td>
</tr>
<tr>
<td>Middle manager</td>
<td>6</td>
<td>14.0</td>
<td>14.0</td>
<td>20.9</td>
</tr>
<tr>
<td>Knowledge worker</td>
<td>1</td>
<td>2.3</td>
<td>2.3</td>
<td>23.3</td>
</tr>
<tr>
<td>Data worker</td>
<td>13</td>
<td>30.2</td>
<td>30.2</td>
<td>53.5</td>
</tr>
<tr>
<td>Operational manager</td>
<td>12</td>
<td>27.9</td>
<td>27.9</td>
<td>81.4</td>
</tr>
<tr>
<td>Worker</td>
<td>6</td>
<td>14.0</td>
<td>14.0</td>
<td>95.3</td>
</tr>
<tr>
<td>Seller</td>
<td>2</td>
<td>4.7</td>
<td>4.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
Table 6: You work in...

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headquarters</td>
<td>37</td>
<td>86.0%</td>
<td>86.0%</td>
<td>86.0%</td>
</tr>
<tr>
<td>Warehouse</td>
<td>5</td>
<td>11.6%</td>
<td>11.6%</td>
<td>97.7%</td>
</tr>
<tr>
<td>Outside</td>
<td>1</td>
<td>2.3%</td>
<td>2.3%</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>43</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>100.0%</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 7: Has the company undertaken or is it considering undertaking a b2b system?

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>13</td>
<td>30.2%</td>
<td>30.2%</td>
<td>30.2%</td>
</tr>
<tr>
<td>No</td>
<td>23</td>
<td>53.5%</td>
<td>53.5%</td>
<td>83.7%</td>
</tr>
<tr>
<td>Don't know</td>
<td>7</td>
<td>16.3%</td>
<td>16.3%</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>43</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>100.0%</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 8: Has the company undertaken or is it considering undertaking an ERP system?

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>16</td>
<td>37.2%</td>
<td>37.2%</td>
<td>37.2%</td>
</tr>
<tr>
<td>No</td>
<td>15</td>
<td>34.9%</td>
<td>34.9%</td>
<td>72.1%</td>
</tr>
<tr>
<td>Don't know</td>
<td>12</td>
<td>27.9%</td>
<td>27.9%</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>43</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>100.0%</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 9: Which ERP system has the company been using?

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>BaaN ERP (Deltasingular)</td>
<td>2</td>
<td>4.7%</td>
<td>12.5%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Atlantis (Unisoft)</td>
<td>2</td>
<td>4.7%</td>
<td>12.5%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Solution I ERP (LogicDis)</td>
<td>5</td>
<td>11.6%</td>
<td>31.3%</td>
<td>58.3%</td>
</tr>
<tr>
<td>Solution II ERP (LogicDis)</td>
<td>5</td>
<td>2.3%</td>
<td>8.3%</td>
<td>62.5%</td>
</tr>
<tr>
<td>Orama ERP (Quality&amp;Reliable)</td>
<td>3</td>
<td>7.0%</td>
<td>18.8%</td>
<td>81.3%</td>
</tr>
<tr>
<td>SAP R/3</td>
<td>2</td>
<td>4.7%</td>
<td>12.5%</td>
<td>93.8%</td>
</tr>
<tr>
<td>Unixfor</td>
<td>1</td>
<td>2.3%</td>
<td>6.3%</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
<td><strong>37.2%</strong></td>
<td><strong>100.0%</strong></td>
<td></td>
</tr>
<tr>
<td>Missing System</td>
<td><strong>27</strong></td>
<td><strong>62.8%</strong></td>
<td><strong>100.0%</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>43</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>100.0%</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 10: What are the main communication methods?

<table>
<thead>
<tr>
<th>Category label</th>
<th>Code</th>
<th>Count</th>
<th>Pct of Responses</th>
<th>Pct of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fax</td>
<td>1</td>
<td>43</td>
<td>35.8%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Telephone</td>
<td>2</td>
<td>43</td>
<td>35.8%</td>
<td>100.0%</td>
</tr>
<tr>
<td>E-mail messaging</td>
<td>3</td>
<td>34</td>
<td>28.3%</td>
<td>79.1%</td>
</tr>
<tr>
<td>Missing cases</td>
<td></td>
<td>Total responses</td>
<td>120</td>
<td>100.0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>43 valid cases</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 11: Which departments does the internal information system of the company cover?

<table>
<thead>
<tr>
<th>Category label</th>
<th>Code</th>
<th>Count</th>
<th>Pct of Responses</th>
<th>Pct of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration department</td>
<td>1</td>
<td>16</td>
<td>13,1</td>
<td>37,2</td>
</tr>
<tr>
<td>Financial department</td>
<td>2</td>
<td>26</td>
<td>21,3</td>
<td>60,5</td>
</tr>
<tr>
<td>Accounting department</td>
<td>3</td>
<td>43</td>
<td>35,2</td>
<td>100,0</td>
</tr>
<tr>
<td>Warehouse</td>
<td>4</td>
<td>37</td>
<td>30,3</td>
<td>86,0</td>
</tr>
<tr>
<td>Total responses</td>
<td></td>
<td>120</td>
<td>100,0</td>
<td>283,7</td>
</tr>
<tr>
<td>0 missing cases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 12: Define the three most important reasons that lead the company to participate in a B2B digital market.

<table>
<thead>
<tr>
<th>Category label</th>
<th>Code</th>
<th>Count</th>
<th>Pct of Responses</th>
<th>Pct of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitive</td>
<td>1</td>
<td>7</td>
<td>33,3</td>
<td>58,3</td>
</tr>
<tr>
<td>Partners</td>
<td>2</td>
<td>10</td>
<td>47,6</td>
<td>83,3</td>
</tr>
<tr>
<td>Product promotion</td>
<td>3</td>
<td>4</td>
<td>19,0</td>
<td>33,3</td>
</tr>
<tr>
<td>Total responses</td>
<td></td>
<td>21</td>
<td>100,0</td>
<td>175,0</td>
</tr>
<tr>
<td>31 missing cases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 13: What have the difficulties been, in the implementation process of B2B system?

<table>
<thead>
<tr>
<th>Category label</th>
<th>Code</th>
<th>Count</th>
<th>Pct of Responses</th>
<th>Pct of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process changes</td>
<td>1</td>
<td>10</td>
<td>27,8</td>
<td>76,9</td>
</tr>
<tr>
<td>Compatibility</td>
<td>2</td>
<td>7</td>
<td>19,4</td>
<td>53,8</td>
</tr>
<tr>
<td>Training</td>
<td>3</td>
<td>9</td>
<td>25,0</td>
<td>69,2</td>
</tr>
<tr>
<td>Requirement explanation</td>
<td>4</td>
<td>10</td>
<td>27,8</td>
<td>76,9</td>
</tr>
<tr>
<td>Total responses</td>
<td></td>
<td>36</td>
<td>100,0</td>
<td>276,9</td>
</tr>
<tr>
<td>30 missing cases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 14: Define the three most important reasons that lead the company to use ERP.

<table>
<thead>
<tr>
<th>Category label</th>
<th>Code</th>
<th>Count</th>
<th>Pct of Responses</th>
<th>Pct of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automation</td>
<td>1</td>
<td>4</td>
<td>23,5</td>
<td>26,7</td>
</tr>
<tr>
<td>Data integration</td>
<td>2</td>
<td>12</td>
<td>70,6</td>
<td>80,0</td>
</tr>
<tr>
<td>Complete information</td>
<td>3</td>
<td>1</td>
<td>5,9</td>
<td>6,7</td>
</tr>
<tr>
<td>Total responses</td>
<td></td>
<td>17</td>
<td>100,0</td>
<td>113,3</td>
</tr>
<tr>
<td>28 missing cases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 valid cases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 15: Which are the tools used to preserve information data accurately & consistently?

<table>
<thead>
<tr>
<th>Category label</th>
<th>Code</th>
<th>Count</th>
<th>Pct of Responses</th>
<th>Pct of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual data collection.</td>
<td>1</td>
<td>16</td>
<td>39,0</td>
<td>100,0</td>
</tr>
<tr>
<td>Bar coding.</td>
<td>2</td>
<td>16</td>
<td>39,0</td>
<td>100,0</td>
</tr>
<tr>
<td>Machine vision.</td>
<td>3</td>
<td>8</td>
<td>19,5</td>
<td>50,0</td>
</tr>
<tr>
<td>Radio frequency data collection.</td>
<td>4</td>
<td>1</td>
<td>2,4</td>
<td>6,3</td>
</tr>
<tr>
<td>Total responses</td>
<td></td>
<td>41</td>
<td>100,0</td>
<td>256,3</td>
</tr>
</tbody>
</table>

27 missing cases 16 valid cases

Table 16: What have the difficulties been, in the implementation process of ERP?

<table>
<thead>
<tr>
<th>Category label</th>
<th>Code</th>
<th>Count</th>
<th>Pct of Responses</th>
<th>Pct of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data conversion</td>
<td>1</td>
<td>9</td>
<td>20,0</td>
<td>56,3</td>
</tr>
<tr>
<td>Compatibility</td>
<td>2</td>
<td>9</td>
<td>20,0</td>
<td>56,3</td>
</tr>
<tr>
<td>Training</td>
<td>3</td>
<td>11</td>
<td>24,4</td>
<td>68,8</td>
</tr>
<tr>
<td>Requirement explanation</td>
<td>4</td>
<td>16</td>
<td>35,6</td>
<td>100,0</td>
</tr>
<tr>
<td>Total responses</td>
<td></td>
<td>45</td>
<td>100,0</td>
<td>281,3</td>
</tr>
</tbody>
</table>

27 missing cases 16 valid cases

Table 17: How many employees are occupied in the company? * Has the company undertaken or is it considering undertaking a b2b system?

Chi-Square Tests

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>3.596</td>
<td>3</td>
<td>.309</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>3.554</td>
<td>3</td>
<td>.314</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>.845</td>
<td>1</td>
<td>.358</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>36</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 18: What is the amount of annual sales of the company? * Has the company undertaken or is it considering undertaking a b2b system?

Chi-Square Tests

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>1.070</td>
<td>2</td>
<td>.586</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>1.092</td>
<td>2</td>
<td>.579</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>.420</td>
<td>1</td>
<td>.517</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>21</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 19: How many employees are occupied in the company? * Has the company undertaken or is it considering to undertake an ERP system?

<table>
<thead>
<tr>
<th>Chi-Square Tests</th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>7,754</td>
<td>3</td>
<td>.051</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>8,477</td>
<td>3</td>
<td>.037</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>5,564</td>
<td>1</td>
<td>.018</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 20: What is the amount of annual sales of the company? * Has the company undertaken or is it considering to undertake an ERP system?

<table>
<thead>
<tr>
<th>Chi-Square Tests</th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>5,534</td>
<td>2</td>
<td>.063</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>6,003</td>
<td>2</td>
<td>.050</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>2,116</td>
<td>1</td>
<td>.146</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 21: What is the amount of annual sales of the company? * How many employees are occupied in the company?

<table>
<thead>
<tr>
<th>Chi-Square Tests</th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>19,695</td>
<td>9</td>
<td>.020</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>24,781</td>
<td>9</td>
<td>.003</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>1,760</td>
<td>1</td>
<td>.185</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 22  The importance of each advantage created in a b2b digital market

<table>
<thead>
<tr>
<th>Improvement of communication &amp; transaction processes between partners.</th>
<th>Reduction of operating</th>
<th>Better organization of promotions</th>
<th>Immediate information concerning new products</th>
<th>Catalogue issue - product searching</th>
<th>Transparency of prices</th>
<th>Indications of product shortages, prediction of required order quantities.</th>
<th>Electronic payments</th>
<th>Effective and efficient movement of consignments.</th>
<th>Increase in the amount of sales in the market.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>9</td>
<td>3</td>
<td>8</td>
<td>8</td>
<td>4</td>
<td>2</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
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<td>4</td>
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<tr>
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<tr>
<td><strong>sum</strong></td>
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<td><strong>73</strong></td>
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<td>7.5</td>
<td>5.8</td>
<td>8</td>
<td>8.6</td>
<td>6.3</td>
<td>7.3</td>
<td>6.5</td>
</tr>
</tbody>
</table>
Table 23: The importance of each advantage created by the ERP system

<table>
<thead>
<tr>
<th></th>
<th>Reduction of inventory levels</th>
<th>Production flexibility</th>
<th>Real time information</th>
<th>Order tracking</th>
<th>Stock management</th>
<th>Distinction between proprietary and shared data</th>
<th>Automation of the software processes</th>
<th>Reduction in time to market</th>
<th>Reduction of transactions</th>
<th>Human resource management</th>
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</thead>
<tbody>
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APPENDIX 3: Figures
Figure 4: A 4) You work in:

Figure 5: B 1) What is the amount of annual sales of the company?

Figure 6: B 2) How many employees are occupied in the company?
Figure 7: B 3) What are the main communication methods?

![Diagram showing communication methods]

Figure 8: B 4) Which departments does the internal information system of the company cover?

![Diagram showing department coverage]

Figure 9: B 5) Has the company undertaken, or is it considering to undertake a business to business (B2B) system?

![Diagram showing B2B system consideration]
Figure 10: B 6) Has the company undertaken, or is it considering undertaking an ERP system?

Figure 11: B 7) Do you want to receive the results of this survey?

Figure 12: C 1) Define the three most important reasons that lead the company to participate in a B2B digital market.
Figure 13: C 3) How important is each advantage created in the b2b digital market?

Figure 14: C 4) What have the difficulties been in the implementation process of B2B system?

Figure 15: D 1) Which ERP system has the company been using?
Figure 16: D 2) Define the three most important reasons that lead the company to use ERP.

Figure 17: D 3) Which are the tools used to preserve information data accurately & consistently?

Figure 18: D 4) How important is each advantage created by the ERP system?
Figure 19: D 5) What have the difficulties been in the implementation process of ERP?
REFERENCES

   Industrial Marketing Management, (February), Volume: 31, 77-84.


   http://www. psgroup.com/doc/products/2000/3/P56P3-16-00CC/PSGP3-16-

   September, 4-6.


   118.

   integrating of supply chains’, International Journal of Production Economics, 
   (November), Volume: 75, 135-146.

   IPTS Report, No.12, The European Commission, Joint Research Centre, Seville, 
   Spain.


BI BIBLIOGRAPHY REVIEW


DIMITRIADIS, E. (2002) provides information concerning the input of data and data analysis according to the SPSS package. APOSTOLOU, T. (1991) provides information concerning the empirical analysis and the interpretation of the statistical results.


