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October 2007

DISSERTATION:

International cross-border study on the potential strategic opportunities for Irish and French manufacturing SMEs to use E-procurement

Words count: 16,553

Dissertation Supervisor: Michael Flynn

International cross-border study on the potential strategic opportunities for Irish and French manufacturing SMEs to use E-procurement.

A dissertation submitted in part fulfilment of the requirements for the award of the Master of Sciences Degree (MSc.) awarded by the University of Wales, Cardiff, United Kingdom.

Submitted by Charles Jaunie, Portobello College, October 2007

ABSTRACT

The Internet phenomenon has brought considerable opportunities for industrial firms to maximise their existing purchasing processes. Initially, this paper explores the strategic business opportunities that “e-procurement” provides to manufacturing small and medium size enterprises (SMEs) with a review of the theoretical background of the subject.

It then uses empirical research from a sample of 23 Irish and French manufacturing SMEs to analyse if this category of firms are currently grasping the opportunities that e-procurement provides.

The research also identifies which exactly are the benefits as well as the inherent issues associated with e-procurement for both current users and non users of these “new” web-based business processes.

Finally, the paper suggests some recommendations to achieve further progress in e-procurement adoption and exploitation by manufacturing SMEs according to the results previously found.

ACKNOWLEDGEMENTS

I would like to acknowledge many people for helping me during my dissertation process.

First of all, I would especially like to express my deepest gratitude to my supervisor, Michael Flynn, for his generous time and commitment. He continually guided me during this process and assisted me with excellent suggestions.

I am extremely grateful for the assistance, generosity and advices I receive from Mr. Gerry Connygham, lecturer in Portobello College, Dublin, and Mr Brice Malm, Purchasing Consultant in Paris, and lecturer in the Pau Business School of Management. Their assistance helped me to develop an accurate questionnaire and to identify the best lines of research.

I owe a special note of gratitude to Shay Lynch to have always followed me during this year and to have been present every time I needed it. I would also like to take the opportunity to thank all my teachers during my Master's year in Portobello College, Dublin.

Finally, I would like to thank my family, who were always supporting me and encouraging me with their best wishes. A very special thank to my uncle for his patience and for his time. His help and suggestions have made a difference.

GLOSSARY

Auction: mechanism for fixing a price. Two main types of auctions exist. In ascending auctions, bidders openly increase their bids and the highest bid wins. In reverse auctions (also called sourcing or procurement auctions), the bidders are the suppliers and offer ever-lower prices; the supplier with the lowest price usually winning the contract.

B2B (Business-to-business): Commercial activities involving only businesses.

B2B e-market: Any Internet site, where several sellers and several buyers come together to conduct trade (traditional definition).

B2B platform: all Internet-based technical solutions that aim at facilitating the establishment of new trading relationships between companies or at supporting existing relationships (more than e-markets).

B2B portal: Any B2B platform that can be used via a web browser.

Consortium e-market: A B2B Internet platform that has been funded and operated by a number of industry players, buyers or sellers. Typically, the owners also use this platform.

EDI (Electronic Data Interchange): Old and established standard for exchanging electronic documents between businesses.

Horizontal e-market: A B2B Internet platform focused on a certain range of products that are used by many industries, e.g. office supply.

Manufacturing: generally refers to industrial production, in which raw materials are transformed into finished products on a large scale.

MRO products: Maintenance, repair and operating equipment, e.g., office supply, machine oil, towels, etc.

Reverse auction: see auction.

RFI (Request for information): A buyer asks a potential supplier for basic information about company and products before he is invited to submit a bid or participate in an auction.

RFP (Request for proposals): A buyer asks for proposals and price quotes for a contract, e.g. a project service. The suppliers have to suggest how the project could be conducted and have to provide a price quote for their own proposal.

RFQ (Request for quotes): A buyer asks for price quotes for a clearly defined product or service.

SME: small and medium-sized enterprises, according to EU definition enterprises with fewer than 250 employees. SMEs are also called SMBs (small and medium-sized businesses). “Manufacturing SMEs” are therefore small and medium firms with operations related to the industrial production of products.

Vertical e-market: A B2B Internet platform focused on a certain industry.

Definitions have mainly been adapted from www.emarketservices.com

EXECUTIVE SUMMARY

Nowadays, in our increasingly global, dynamic and competitive business environment, manufacturing SMEs need to be “born-global” and to find ways to become internationally competitive. E-procurement appears to be an effective way to add value to businesses and to enhance their competitiveness. These solutions, which are more affordable, flexible and easy to implement than previous generations of technologies such as EDI, have the potential to increase the efficiency and the profitability of firms, even the smaller ones.

Different e-procurement alternatives exist and can provide both operational (e.g. reduced overall procurement costs) and strategic (e.g. greater control over procurement expenditure) benefits for a firm.

However, the research undertaken reveals that a vast majority of French and Irish manufacturing SMEs do not currently use e-procurement solutions within their business activity, and therefore do not seize the opportunities that they offer.

The investigation highlights the fact that it is often due to a lack of awareness and understanding of what is involved that manufacturing SMEs develop erroneous perceptions about e-procurement and its suitability for their business, which lead them to stay away from it. These results are even more noteworthy considering that SMEs which have currently implemented e-procurement processes within their activity are considerably satisfied with those.

Consequently, as none would argue that our future will be without the use of e-business, common initiatives from both the private and public sector have to be taken in order to improve this current situation. Governments, technology providers and institutions such as Chamber of Ireland or Enterprise Ireland could for instance work together to develop awareness-raising programmes and assistance projects to support the small and medium sized sector during its first steps of e-procurement adoption.

These measures would primarily focus on increasing the performance and the competitiveness of these firms, but as SMEs represent the vast majority of firms and significantly contribute to the GDP, economy and level of employment of a country, these measures would also contribute to enhance the level of development and growth of the country.

But more than that, these kinds of initiatives could simply enable SMEs to effectively grab the opportunities our Information Society is offering....

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Chapter 1: INTRODUCTION

Today, the business and more particularly the industrial world is increasingly characterized by a global, highly competitive, dynamic and fast moving environment and it is no more possible for any business entity to be “purely” domestic. Indeed, the increased competition from mainly Asian countries (e.g. China, India, Vietnam, etc) and the recent development of Information and Communication Technologies (ICT) have dramatically “flattened” the world, and every company, regardless of its size, its country of origin or its area of activity, is influenced in some way, positively or negatively, by the “globalization” phenomena. This is particularly true for manufacturing SMEs, which can not be anymore only “domestically” focus. One of their most important challenges nowadays is indeed to bypass domestic markets and to be “born-global”, by finding new ways to be more competitive internationally and to add value to their organizations at a global scale. This situation appears to be especially true in “small” countries such as Ireland, where the potential size of the domestic market is relatively restricted and limited.

It is widely agreed that a major factor of an industrial firm’s competitiveness comes from a constant research to reduce its costs. Indeed, “an organization’s supply chain can be viewed from a systems perspective as the acquisition of resources (inputs) and their transformation (process) into products and services (outputs) that are then delivered to customers” (D. Chaffey, 2002, p.218); and the less inputs a firm will have to pay for, the more it will increase its chances to be more competitive on the marketplace. Purchases are therefore important because they represent the first source of costs for a company, whatever sector of activity. The amount of purchases in an industrial firm, for instance, represents about 60 to 70 % of the turnover, which places the purchasing function as the most expensive activity of an organization, and therefore as one of the main opportunity for companies to improve their competitiveness. Moreover, rapid customer order fulfilment puts manufacturing firms at the heart of the supply chain performance. In today’s market, because of the globalization phenomena and of the emergence of an increased worldwide competition, SMEs must thus be cost-efficient to “survive”. That is why, because of their direct impact on the margin, the upstream supply chain activities of a manufacturing company (procurement and inbound logistics) have become strategic nowadays, and an optimised purchasing system has become critical to stay competitive.

“Technology is vital to supply chain management since managing relationships with suppliers, customers and intermediaries is based on the flow of information and the transactions between these parties” (D. Chaffey, 2002). Indeed, the development of technology applications has caused fundamental changes within the business world facilitating new models of supply chain management, and it has brought considerable new opportunities for organisations to reduce their costs, to add value and to be

more competitive in their purchasing activities. Thus, “electronic communications can be used to enhance the value chain by making value chain activities such as procurement more efficient” (D. Chaffey (2002), and purchases have become even more strategic because of the apparition of electronic tools and processes such as:

- **ERP (Enterprise Resource Planning)**, which is designed to help a company integrate all of its manufacturing finance, production, distribution and other internal business functions into one information system (such as SAP, BAAN, MRP, MRP II). ERP and Supply chain management softwares include here concepts such as demand forecasting tools and planning capabilities to coordinate various activities.
- **EDI (Electronic Data Interchange)**, which can be defined as “a technique, based on agreed standards, which enables computers in different organizations to successfully send business or information transactions from one to the other” (Lysons, 2000). “A considerable saving on postage, stationery and staff processing time is claimed for EDI ; and further savings are due to shorter lead times, which lead to lower stocks” (Baily et al, 2000).

However, the diversity and cost of implementation of these electronic tools “seemed to have prevented it from becoming the easily available hook for globally connecting suppliers and customers” (Turban et al., 2006), and although for example EDI was able to link up the companies, “it never really took off as small and medium-sized companies could not afford an EDI link to each partner they worked with” (D. Amor, 2002). Indeed, EDI, which creates one-to one relationship between businesses that have well-established practices, has been proven to be costly, difficult to implement (because it requires highly structured and proprietary technology to send transaction documents) and to be unable to leverage implementations across multiple trading partners, even though a lot of efforts have been done by vendors to standardize as much as possible EDI transactions. ERP softwares, which allows corporations to manage resources strategically, have also been a very costly expenditure for SME companies to justify, and “although ERP applications provided significant improvement by integrating all internal applications and processes, theses applications were not built to provide web-access or functions to work with external partners” (Rayport and Jaworski, 2002). The financial cost of these tools (due to the high implementation, customization and training expenses associated with these processes) was thus one of the main reasons why SMEs have been discouraged to integrate these tools.

Monczka and Carter (1998) have recognized some of the main indicators of an opportunity to implement EDI as being:

- “a high volume of paperwork transactions of documents”
- “numerous suppliers”
- “a long internal administration lead time associated with the purchasing cycle”

Therefore, MNEs’ activities appeared to fit much better with the implementation of these electronic processes.

Moreover, these IT tools were proved to provide “packaged software applications which were hard to customize, and companies were often forced to change the way they conducted activities in order to conform to the best practices embedded in the software” (Porter, 2001). ERP and mainly EDI have created a considerable force for “standardized activities” and companies were forced to adapt their ways of doing things to the different softwares. That is mainly why SMEs have been reluctant to use and to integrate these processes within their activity because that would have partially meant to lose their flexibility which represent their main competitive advantage within the business world.

Thus, these electronic tools, and particularly EDI, which were expected to deliver such a global standard, have proved to be more suited to larger scale businesses than SMEs.

However, the Internet appears to provide a better technological application than previous generations of IT such as EDI did. Indeed, “because Internet is an open platform with common standards, companies can tap into its benefits with much less investment than was required to capitalize on past generations of information technology” (Porter, 2001). Internet architecture, together with other improvements in software architecture and development tools, has therefore turned IT into a far more powerful tool and it is now much easier to customize packaged internet applications. Rayport and Svokla (1996) contend that the Internet enables value to be created for a firm by gathering, organizing, selecting, synthesizing and distributing information in an efficient way (the processing is machine-based or virtual rather than paper based) and at a relative affordable price. D. Chaffey (2002, p.230) argued that Internet technology provides a more efficient and a lower cost communications structure to do business, and the use of e-business technologies to enhance supply chain efficiency “is always increasing in importance because it offers a viable strategy for increased profitability” (Talluri et al, 2005). Thus, the Internet has opened “affordable” opportunities for every firm to maximize their supply chain activities and/or their procurement processes, and Swaminathan and Tayur (2003) explained that firms now can use the Internet not only to develop highly-integrated supply partnerships or to diversify their supply base and hedge risks, but also to obtain for example lower costs through auctions.

Indeed, e-procurement, which has been defined by Turban et al. (2004) as the use of web-based technology to support the key procurement processes (including requisitioning, sourcing, contracting, ordering and payment), is currently one of the most discussed topics in supply management, with the potential to change dramatically the way purchasing is carried out (Morissey and Pittaway 2004, Buvik 2001, Rigby and Zook 2002, and Kraljic 1993). E-procurement seems now to provide important strategic opportunities for manufacturing SMEs, by keeping the flexibility they need to “survive”, and by having the power and the potential to eliminate “traditional” constraints such as time, distance, location or transaction costs. Internet enabled capabilities for a firm provide the opportunity to make the procurement processes “much more efficient through low cost and improved speed, with a little special software (e.g. catalogue software) or hardware needed to set up such activities” (Thomson and Singh, 2001). This new business medium offers many benefits to businesses such as cost reduction, high reliability, convenience, improved services and relationship building. Indeed, e-procurement allows online ordering and order tracking and inventory management, helps organizations to reduce their costs by making manuals and technical documentation available online to trading partners/customers, speed up the development and approval processes, reduce the need for meeting and can improve business relationship (because of the close collaborative working through for instance an extranet support). Thus, e-procurement solutions seem to deliver a much higher return for less investment than past electronic business-to-business transactions did, which is much more appropriate for industrial SMEs.

Nevertheless it is important to counterbalance these benefits as many of the early claims about e-procurement have been exaggerated and overestimated during the Internet “boom” at the beginning of the 2000’s. Frequently, the costs and the efforts needed to use such Internet services have been understated, but nonetheless B2B Internet trading technologies still do provide significant benefits for companies, included SMEs.

For many companies, the use of Internet technologies has become a routine task for their procurement processes, but it seems that only a few percentages of firms, mainly only MNEs, have seized this opportunity. Indeed, evidence suggests that little is being e-purchased by firms in general and buyers are having difficulty in making e-procurement decisions (Hawking et al., 2004; Leonard and Spring, 2002 and Wyld, 2002). In a report published in 2001 by the University of Ulster, Irish SMEs were said “to be lagging behind in e-commerce and e-business performance”. The survey was sent to 800 firms in the whole of Ireland (400 in Northern Ireland and 400 in the Republic), and the report revealed that even if 88% of these companies have access to the Internet, only a very few of them are really using ICT for business purposes. Consequently, most of the SMEs do not meet the challenges of the “Information Society”, and nearly only larger enterprises are grasping the opportunities offered by the ICT development. This is unfortunately too often due to the ignorance of what is involved or to the mistaken

belief that their business is not suitable for doing business through the knowledge economy. These findings are even more disturbing when we know that SMEs represent in every country the large majority of business entities.

Consequently, e-procurement, which seems to be a relatively easy and “cheap” way to add value and to get an international competitiveness for SMEs, appeared to have been neglected and underused for some “unclear” reasons, such as a lack of awareness and understanding of the opportunities.

The goals of my dissertation are explicitly to give accurate answers to the following questions:

- What is exactly meant under the term e-procurement, which still appears to be “fuzzy” and “vague” for many people and organizations?
- What kind of different e-procurement solutions are available to SMEs and what are the concrete benefits and advantages of such solutions?
- What are the main weaknesses and drawbacks of such processes for SMEs?
- What purchases could be taken on-line by SMEs and where does e-procurement fit in their corporate strategy?
- Which manufacturing SMEs are currently using web-based solutions for their purchasing activities?
- What are the main barriers to e-procurement adoption for SMEs nowadays?
- What can be done to increase the development of these practices?

This dissertation is organized as follows: I will focus the Chapter 2 of my dissertation on a precise literature review of the topic, which will carefully and clearly describe e-procurement, its background and its different processes, the potential benefits and strategic opportunities for SMEs to use them, while at the same time pointing out various weaknesses and drawbacks of such applications. This chapter will relate to the general theory surrounding “e-procurement” through the collection and the use of secondary data, and it will therefore represent the academic and the “desk” research of the dissertation. Although the topic is relatively “complex” by its nature, I have decided not to go too deep in a meticulous description of the different processes, and I have more focused my attention on the business side of the topic rather than on the technical one.

Chapter 3 will then present the methodology I used to build a survey to analyse if about 6 years after the survey of the University of Ulster has been done, things have changed about the relationship between SMEs and ICT, by focusing on the procurement activities. This survey will collect primary data to give an “up-to-date” picture of the situation by analysing if these “new” web-based ways to purchase are

currently used within Irish and French SMEs and if not, to analyse the reasons why. The international comparative facet of this study will show us if there are any differences within the two countries about the use of these “recent” processes. This survey will also try to identify potential paths for extending or facilitating e-procurement activities to SMEs. The Chapter 4 of my dissertation will show a complete and clear illustration of the questionnaire results, followed within the Chapter 5 by comments and a discussion of these findings.

Finally, we will draw up a conclusion to highlight the implications of the research results for the future as well as the main areas for further researches on the topic.

Chapter 2: LITERATURE REVIEW

Introduction:

In this chapter we will focus on reviewing existing literature about e-procurement with a major concern on their suitability for manufacturing SMEs. This chapter, which represents the “desk” research of this dissertation, is divided into four different sections:

- A general definition of e-procurement and of what is meant behind the term.
- The description of the different products which can potentially be purchased through e-procurement.
- The analysis of the different e-procurement alternatives that can be used for SMEs.
- The presentation of the main benefits and drawbacks of these processes.

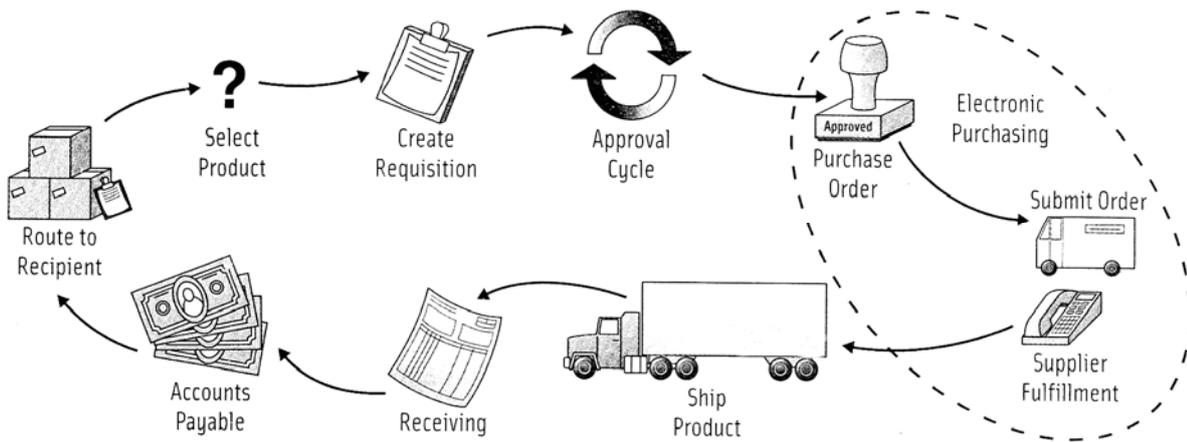
2.1 E-procurement: definition and main characteristics

“Today, the emergent ideas connected with quality, responsiveness and the elimination of waste have focused attention on the supply-chain, and hence on supply” (Baily et al, 2000). The importance of purchasing activities within a company, especially manufacturing ones, is large, mainly due to the fact that “it is seen as an area for adding value, not simply reducing costs” (Baily, 1998). The terms purchasing and procurement are often used interchangeably, but as Kalakota and Robinson (2000) indicate, procurement has generally a broader meaning. According to them, procurement refers to all activities involved with obtaining items from a supplier, and this includes purchasing but also inbound logistics such as transportation, goods-in and warehousing before the item is used. E-procurement has then, been defined by D. Chaffey (2002) as the “electronic integration and management of all procurement activities including purchase request, authorization, ordering, delivery and payment between a purchaser and a supplier”. Talluri et al. (2005) have defined it as “the IT systems that companies can use in the automation of their procurement processes”. Contrarily to some common ideas, e-procurement is not new, and electronic procurement systems exist for decades with mainly Electronic Data Interchange (EDI) applications. However, because of their costs and their lack of flexibility, these systems did not bring important opportunities for SMEs to add significant value to their business activity.

But things have changed with the apparition of the Internet, with sourcing technologies emerging during the dot-com era, and e-procurement solutions becoming “more affordable, flexible and easy to

implement” (Metz, 2002). Indeed, “a wide selection of e-procurement software packages and other infrastructure are now available at a reasonable cost” (Turban et al, 2004). E-procurement solutions can play today “a key role in improving purchasing processes in enterprises through automating requisitions and purchase orders for goods and services, decentralizing buying, connecting to suppliers directly, and improving employee compliance with preferred supplier policies” (Forrester research, 2007).

The electronic procurement process within the supply activity of a firm can be illustrated through the following model:



The e-procurement process

Source: Adapted from E-Business: Roadmap for success (1999) by R. Kalakota and M. Robinson

According to A. Fisher (2000), e-procurement is even “more than simply putting purchasing decisions online, and its functions also include suppliers and buyers into the purchasing network and rethinking of business processes such as transactions”.

Rayport and Jaworski (2002) explain that e-procurement can be utilized to purchase both products and services, a product procurement generally requiring an e-catalogue of items for sale, and the procurement of services generally involving a request for information or proposal (RFI or RFP)¹. Thus, in most of the case, the implementation of e-procurement needs the presence of a software to allow the automation of the buying and replenishment process and to reference the associated e-catalogue(s). P. Richer (2004) explains that these e-catalogues, which actually represent the basis of e-procurement, are the wave of the future because they ensure data integrity and cost reductions in communications between partners. They are furthermore today available at a low-cost, which provide

¹ See Glossary p. 5

huge opportunities for SMEs to use them within their business activity. Suppliers have thus today the opportunity to build an e-catalogue at a relatively low-price to sell their products through the web, and this can help buyers to motivate their supplier “community” to move into e-procurement.

But to totally understand e-procurement, we first need to identify what are the different types of products that businesses buy, and how they buy them.

2.2 Products purchased via e-procurement:

Rayport and Jaworski (2002) explained that a typical business must purchase a wide variety of products and services, and these can be divided into two broad categories:

- **The strategic products and services** (also called direct materials), which are directly involved in core business activities such as production and delivery. These are often referred as the “production-related procurement” and are critical to the operation of a business. Direct procurement of strategic products and services, such as raw materials, components and parts, occurs in manufacturing settings only.

- **The non-strategic products and services** (also called indirect materials), which are supporting the business, but which are not part of core business activities. These are referred as “non-production related procurement” and include office supplies, furniture, information systems, MRO² goods and a range of services from catering and buying travel to professional services such as training or consulting. These low-value items (because they do not involve proprietary know-how and are not critical to competitive differentiation) are required and managed on a daily basis to run the day-to-day business, but do not contribute directly to the primary inputs and outputs from which the organization obtains its revenue stream. The MRO are particularly important in manufacturing because they are needed by employees to run the organization day to day, and thus are common and frequent purchases of small amounts generating a large number of invoices.

Then, the second important distinction in business purchasing is how products and services are bought. According to D. Chaffey (2002) and S. Kaplan (2000), these products are bought through two different ways:

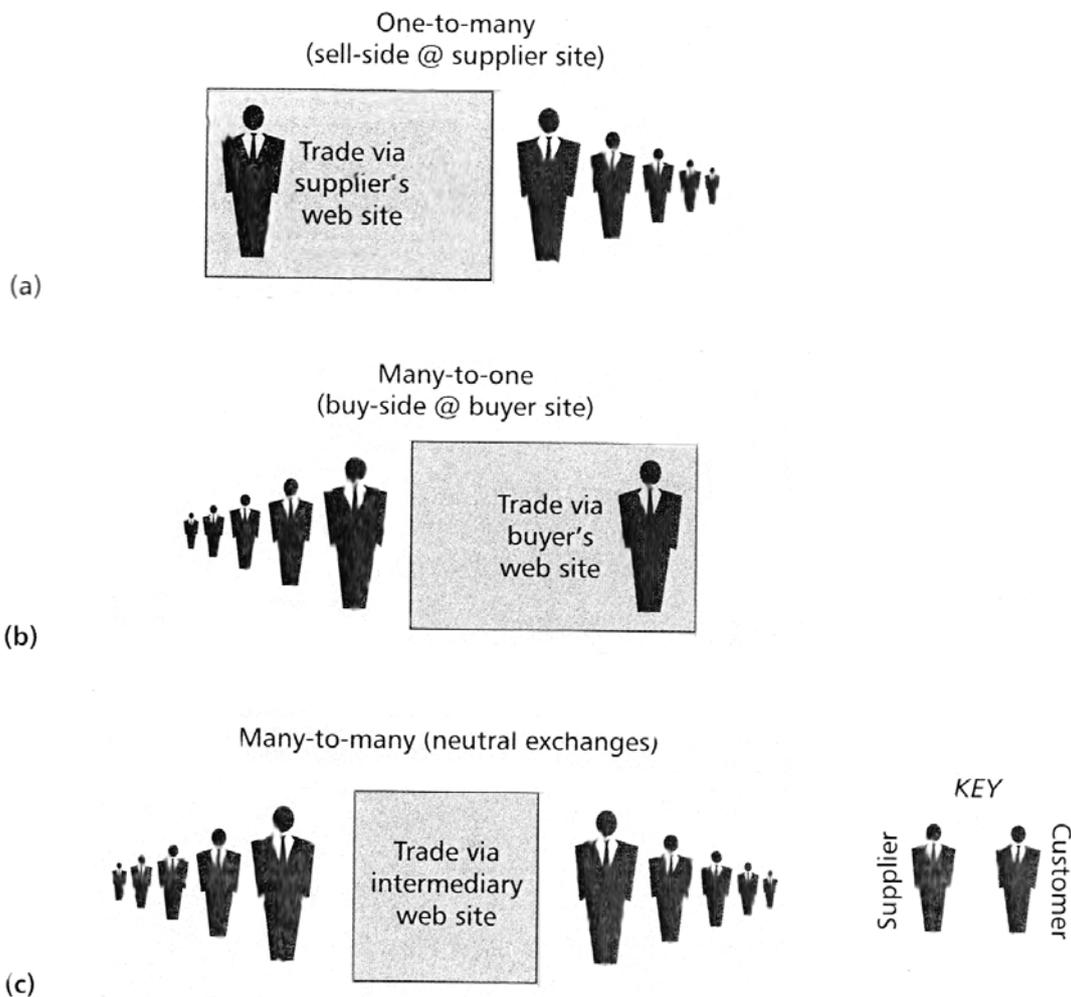
² Maintenance, Repairs and Operations. See Glossary p. 5

- **The systematic sourcing**, which represent negotiated contracts with regular and qualified suppliers, typically long term relationship.
- **The spot sourcing**, which is the fulfilment of immediate needs, typically commoditized item for which it is less important to know the credibility of the supplier. Thus, “spot transactions rarely involve long-term or ongoing relationship with the supplier” (Kaplan and Sawhney, 2000).

“E-procurement can support the purchase of both direct and indirect materials” (Turban et al, 2004). However, research has shown that the spot and the systematic sourcing of non-strategic products and services, especially MRO, seem to be the areas where e-procurement offers the biggest opportunities. Indeed, even if improvement can also be made in purchasing direct materials, the treatment of MRO (and/or office supplies) invoices implies often long, repetitive and sometimes very expensive administrative procedure for firms. The time spent for the treatment of these MRO purchases can be considered as a waste of time to the detriment of more important and strategic purchases that bring stronger added value. Besides, research has shown that the length of the process can increase the risk of appearance of errors, and the time spent to resolve these administrative problems is even more penalizing. D. Amor (2002) explains that although the operating resources do indeed account for a large amount of a company spending, the buying process is often not well organized and managed, which appears to be especially the case for SMEs. Indeed, up to now, the Internet has mostly been used as a strategic tool to electronically manage the purchasing processes of big manufacturing firms (e.g. VW, Renault, Airbus, etc), although in many SMEs, paper-based methods are still used to acquire and manage operating resources such as ordering new pencils and phone lines. Dreis (2000) explains that much of these processes appear to be costly and time-consuming, because they often require a clerk to re-enter the data, and it can become an administrative logjam as various individuals or departments are involved in the approval cycle. Therefore, as there is rarely a need for a close relationship with an MRO supplier, the procurement of these items represent one of the biggest opportunities for improvement and savings at most organizations, especially manufacturing SMEs. However, e-procurement does not appear to provide major significant opportunities concerning the sourcing of direct materials, where “personal relationships between the members of the buying unit and the supplier still seem to be important” (Chaffey, 2002). Moreover, it is even more important for smaller firms to have and maintain special personalised relationships with their suppliers as these relationships often are the source of sustainable comparative advantage for them over other firms, both large and small.

2.3. The different e-procurement alternatives

Basically, we can distinguish 3 main e-procurement model alternatives offering strategic opportunities for SMEs' buyers:



The three main e-procurement model alternatives

Source: E-business and e-commerce management (2002) by Dave Chaffey

We are now going to analyse each of these alternatives as well as the business opportunities that they offer to manufacturing SMEs.

a) Sell-side e-procurement

For a SME which wants to purchase products, many (often larger) suppliers have introduced internet-based tools supporting purchases. “These range from simple shops for business customers on their sites to multi-vendor catalogues that can directly show the availability of products and help a firm in decreasing the costs involved in purchasing from different vendors” (www.emarketservices.com). According to Rayport and Jaworski (2002), a sell-side capability usually includes a searchable online catalogue and shopping cart functions, but also often services to the buyers such as online access to fulfilment data informing the customer of expected ship date, delivery date, and shipping status, provided either by the seller or a third-party logistics provider. One of the early movers in this area has been Grainger (www.grainger.com), a 70-year-old maintenance, repair and operations US distributor which has created online fulfilment services for its customers.

We will not analyse in further details this kind of e-procurement solution as it comes from an initiative of the selling organization, the buying organizations (in our case the SMEs) only having a “passive” and “reactive” role to play. Nevertheless, buyers in SMEs should be aware of any possibility to procure online some of their products (e.g. MRO) through their suppliers’ website(s) in order to automate and streamline their purchasing activities.

b) Buy-side e-procurement

Because buyers often have to manually enter the same information many times, to find and compare suppliers and products through the sell-side e-procurement model can be very slow and costly. As a solution, buyers can opt for a buy-side e-procurement model (which is also sometimes called “internal marketplace”) which allows them to “view an online catalogue of goods and services available from partner suppliers, to create a purchase requisition online, to route a requisition throughout the organization for control and approval, and to create and send an associated purchase order to the supplier” (Rayport and Jaworski, 2002). According to Turban et al. (2004), this solution consists in aggregating the catalogs of all approved suppliers and combining them into a big and single internal electronic catalogue in order to centralize and to have a better control on procurement activities. Thus, the buy-side solutions, which make it possible to develop an effective collaborative planning, forecasting and replenishment (CPFR) system between supply chain partners, need that both buyer and supplier(s) get involved in a concerted planning and combined design efforts. Consequently, these methods aim at supporting existing relationships between buyers and sellers, and tend to be more effective for the systematic (long-term) sourcing of both strategic and non strategic products for a firm with their repeat or “frequent” trading partners.

Vendors

Ariba was one of the original providers of B2B software, and it was the “first one to build software that enable companies to procure goods and services online” (Rayport and Jaworski, 2002). Other major vendors now include IBM, Microsoft, BasWare, Commerce One, Oracle or HP. A list of the main e-procurement vendors can be found in Appendix 1 (p. 66). These vendors usually sell or lease different e-procurement software packages which include elements such as a server for hosting the databases and the applications, telecommunication protocols (e.g. web-EDI, extranets, XML, Java) and security for hardware and software.

Buy-side with interface

Even if the vendors have broaden their capabilities by continuously designing and developing more affordable and easy-to-use applications for small businesses, a consequent amount of time, effort and money are often required on an ongoing basis for the successful implementation, management and maintenance of an efficient e-procurement software. Indeed, “different levels of integration, varying integration costs, different supplier priorities and allowable budgets make this process difficult to achieve without a systematic approach” (Talluri et al., 2005). “Aggregating electronic product catalogues is complicated, and setting up such systems can be a lengthy process” (www.emarketservices.com). Thus, the main drawback of this model is that electronic interfaces have to be established and maintained with each supplier, and a substantial financial investment is required to update regularly the aggregated e-catalogues, to link all relevant back office systems and/or to ensure all supplier systems are compliant. Therefore, implementing and integrating a buy-side e-procurement system is often only affordable to larger companies.

Nevertheless, an applications service provider (ASP) may host the e-procurement application from a remote site and give access to the organization. ASPs “run, maintain and support packaged applications on their servers (...) and make them available for rent to businesses” (Mc Kie, 2001). These ASP, which basically deliver a specific software product over the Internet, are much cheaper than a “real” implementation and management of a buy-side e-procurement application. In addition, Mc Kie (2001) explains that it is not just reductions in IT costs that make ASP outsourcing attractive, and it is also other, less tangible benefits, these solutions providing for instance a high flexibility by allowing businesses to respond faster to the need to roll out new applications (such as the access to a buy side e-procurement solution in our case). As organizations focus increasingly on their core business nowadays and more and more business functions are being outsourced, these ASP solutions give smaller enterprises the opportunity to have access to sophisticated business management applications used by larger enterprises, but at a price relevant to their size and without the need of being a web specialist. Therefore, ASPs, by removing the need for an organization to buy, maintain and upgrade in-house

hardware, are now providing an affordable mean for SMEs to access buy-side e-procurement applications that would have been far too costly and complex for them to consider in its shrink-wrapped form.

c) E-marketplaces

Electronic B2B marketplaces, also often known as marketplaces, marketspaces, exchanges, B2B portals or hubs, have been defined by Rayport and Jaworski (2002) as “web-based capabilities to facilitate the interaction and exchange of commerce transactions among buyers, sellers and other trading partners”. They are basically commerce sites that enable communities of buyers and sellers to meet on the internet in order to conduct trade.

Main characteristics

“E-marketplaces have been created in a wide range of industries, with a wide range of capabilities and using a wide range of business models” (Rayport and Jaworski, 2002). Basically we can differentiate them between vertical, horizontal, buyer-centric, seller-centric, neutral, public and private.

“A horizontal marketplace creates a community for, and provides products and services required by all industries, although vertical ones create a community for and provide products and services specific to a particular industry” (Rayport and Jaworski, 2002). Examples of horizontal e-marketplaces are the ones created by Ariba or Commerce One, and vertical ones are for instance VerticalNet, Chemconnect (chemicals) or eHitex (computing). We can notice here that many vendors of e-procurement softwares such as Ariba have created their own “trading hubs”. Rayport and Jaworski (2002) explain that while horizontal marketplaces typically only focus on commerce, vertical ones are better able to take advantage of community and content capabilities such as industry news and literature, products specifications and/or technical-support documents.

Then, we can differentiate the e-marketplaces between the buyer-centric, seller-centric or neutral ones. Indeed, according to Rayport and Jaworski (2002) the buyer-centric and seller-centric marketplaces focus respectively on providing benefits to buying or selling organizations, and the neutral ones provide capabilities and benefits to both buyers and suppliers equally.

We can finally distinguish the public e-marketplaces from the private ones; the public ones being “opened” to any buyer or seller who want to participate, although the private marketplaces target and allow only strategic buying and selling partners to participate in the Net Exchanges, giving them strategic advantages over competitors.

Buyers within manufacturing SMEs have therefore the opportunity to use buyer-centric or neutral public e-marketplaces, and/or to create a private e-marketplace with some strategic partners.

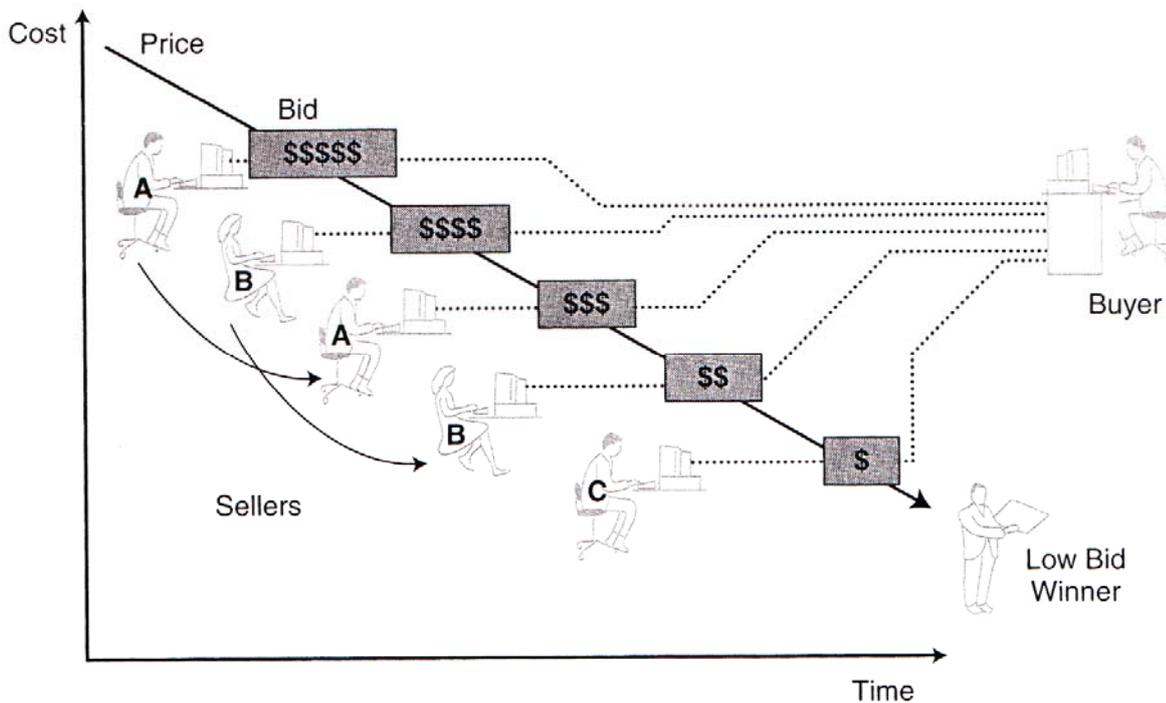
Globally, the number of e-marketplaces for businesses is extensive, and it can be sometimes difficult for a firm to identify the appropriate one(s) to use. Many websites referencing different e-marketplaces or providing information on B2B Internet platforms can be found on the Internet (see Appendix 2 p. 67) and can help firms in identifying the most relevant ones for them. The e-markets can be for instance sorted by industry (e.g. agriculture, construction, electronics, industrial machinery and equipment, IT products and services, etc), geographical focus (e.g. the number of Asian e-marketplaces is growing fast) and/or firm-size. A list of significant e-marketplaces sorted by industry can be found in Appendix 3 (p. 68).

Chaffey (2002) explains that e-marketplaces also differ in the range of services they provide, and for instance some of them may go beyond procurement to offer a wide range of services such as supplier's evaluation (e.g. scoring systems), tracking, marketplace information and industry news, certification monitoring (e.g. information about whether a company is certified ISO 9000 or with other standard certifications), project management tools, catalogues integration, advertising and promotions, and/or community capabilities (e.g. forums, online chat, instant messaging). Moreover, many third-party companies outside the exchange provide supporting services such as credit verification, quality insurance and/or banking services.

Mc Kie (2001) explains that most e-marketplaces are generally free to use for customers (the buying organizations), their main revenue coming from participation fees from suppliers and transaction fees. Thus, this really represents a “no-risk” opportunity for buying manufacturing SMEs to use these processes.

Price mechanisms

There are two main types of price mechanisms within e-marketplaces: conventional and reverse auctions. Basically, according to Mc Kie (2001) a conventional (also called ordinary or forward) auction essentially sells products and services to the highest bidder, the process involving matching offers to bids. In this case buyers compete to obtain a good or service. On the contrary, in reverse auctions, these are the suppliers who respond by bidding for a buyer's business, the process being reversed because it is the buyer who makes the offer and the sellers who make the bids, the winner of the contract being usually the one with the lowest bid (assuming that only the price is considered). The reverse auction process is illustrated through the following figure:



The reverse auction process

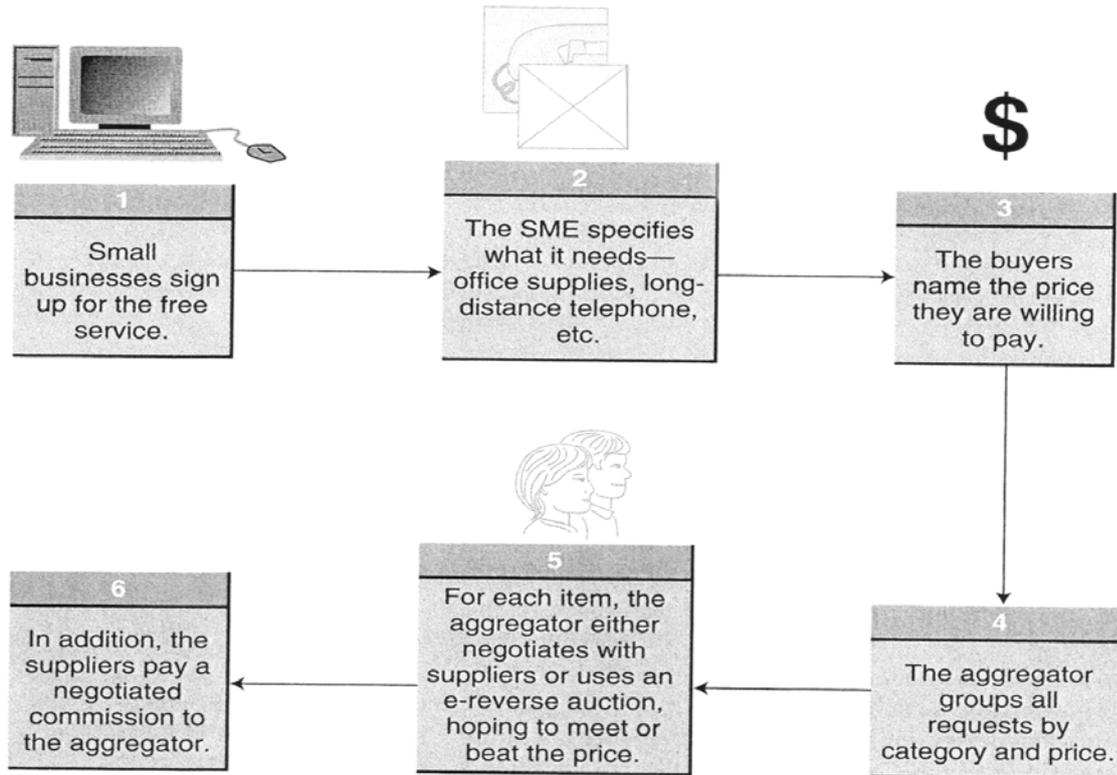
Source: Electronic-commerce: A Managerial perspective (2004) by E. Turban, D. King, J. Lee and D. Viehland

Reverse auctions are today one of the most vigorously debated inventions within the field of e-sourcing because many suppliers have the fear that the only goal of these processes is to put them under a significant price pressure. However, this dynamic pricing model tend to increase market efficiency for the buyers, and buying SMEs have thus the possibility in an e-marketplace to buy products and/or services through reverse auctions at a potentially cheaper price than in a conventional way.

According to Turban et al. (2004), the reverse auction method appears the most common model for large MRO purchases, and governments and big organizations are the most frequent structures which mandate this approach. Thus, SMEs, which do not have such large purchases to do for their activity, seem to have fewer advantages than larger structures to use this method. Nevertheless, by gathering together the purchasing power of many buyers, particularly small and midsize buyers (often in the same industry) into a purchasing group (also called a consortium), they can increase their procurement volumes and benefit from price reductions through reverse-auctions. Thus, “Group purchasing”, which has been defined as the “aggregation of orders from several buyers into volume purchases so that better prices can be negotiated” (Turban et al., 2004), represent a valuable option for SMEs to take advantage of e-marketplaces and reverse-auction processes. However, according to the same authors, many SMEs which would like to enjoy quantity discounts often have difficulties finding other to join them into a purchasing group. Such matching can nevertheless today be accomplished through an “external third party” (e.g. buyerzone.com, allbusiness.com) in order to “provide them with better prices, selection and

services, by aggregating demand online and then either negotiating with suppliers or conducting reverse-auctions”.

The group purchasing process through an external aggregator is illustrated in the following figure:



The Group Purchasing process

Source: Electronic-commerce: A Managerial perspective (2004) by E. Turban, D. King, J. Lee and D. Viehland

A purchasing group can be created by firms to procure goods and/or services through an e-marketplace but also through a buy-side e-procurement solution explained previously. The following example illustrates this solution resulting from cooperation among small companies:

Nordbike is a cooperation of 26 small independent German dealers of motorcycles and accessories, which has been founded to strengthen the competitive position of these companies against large chain stores. One goal of the cooperation was to decrease costs related to purchasing and storing products by delegating purchasing activities to a common organization – Nordbike.

These dealers have recently set up an internal trading network with the help of an integration company. The network now connects the backend IT systems of dealers with each other and with the central IT of Nordbike. The network supports product ordering and provides Nordbike as well as each individual dealer with better information about products in stock. This information helps to reduce stocks and the costs associated with stock keeping. In addition the network is also the foundation for a common B2C shop solution.

Source: Press release (www.pressebox.de/pressemeldungen/inubit-ag/boxid-33889.html).

Strengths and weaknesses of the model

As Rayport and Jaworski (2002) explained, we can identify the main advantage of the e-marketplaces from the fact that it is a “many-to-many” (buyers and suppliers) model. The buy-side model which is in fact a “one-to-many” (buyer-to-suppliers) model, and the sell-side which is a many-to-one (buyers-to-supplier) model offer in comparison much less advantages. Indeed, Turban et al. (2004) explicate that “it may be expensive for providers and consumers to find each other, but with e-marketplaces, thousands of products are exchanged among thousands of vendors and millions of people”.

By bringing together huge numbers of buyers and sellers on an internet platform, e-marketplace also try to facilitate “global commerce” as users anywhere in the world can use them to facilitate commerce transactions across geographical boundaries.

Finally, because the goal of these solutions is to put into competition several suppliers through reverse public auctions and to drive purchase prices downward, this generates a higher competition between suppliers, and these methods may enhance the buying power of the purchasing organization.

Because the suppliers are usually “unknown” from the buyers in an e-marketplace, and because “exchanges are usually not designed to support systematic or contractual purchases” (Kaplan and Sawhney, 2000), this solution would generally be more efficient for the spot sourcing of non-strategic products (such as MRO), traditional commodities and/or standardized products where there is little uncertainty about product quality. Differentiated products, on the other hand, do not appear to be convenient for this type of e-procurement because they must take into consideration “a number of non-price dimensions, including performance, quality, features and service level” (Grey et al., 2005).

The “e-marketplace” method can also simply be used by a buyer to get market information about the prices of the products in order to better negotiate with the current local supplier(s).

However, Chaffey (2002) explains that buyers may not want to participate if there are insufficient suppliers, and suppliers may not join if the site is not used by many purchasers. This has been one of the reasons why many e-marketplaces have closed soon after the Internet boom, because of their “inability to generate sufficient revenue from thin transaction volumes” (Grey et al. 2005). Thus, Turban et al. (2004) identified the main indicator of a marketplace success as its “liquidity” and its ability to attract a sufficient mass of buyers and sellers. Another major success factor for an e-market is also its ability to provide a “quality assurance” to its buyers.

According to Chaffey (2002), it can also be difficult for a firm to know which one to select. This problem can be even more important because many e-marketplaces have disappeared in the past and it will be wasteful to become involved in a marketplace which fails for instance in a year’s time.

Nonetheless, because e-marketplaces have a considerable potential to reduce search costs, allowing consumers to find sellers from everywhere offering lower prices, SMEs buyers should be aware about these solutions in order to procure some of their products (such as MRO).

D. Chaffey (2002) summarizes the main alternatives for a firm (including manufacturing SMEs) to integrate e-procurement with its suppliers as follows:

- To move to one or more preferred supplier for their products (sell-side) and to integrate within their sell-side infrastructure
- To set up buy-side links and encourage suppliers to link your standard
- To use e-marketplaces and start using new suppliers
- To give up the e-procurement initiative because of the complexity of it.

As seen previously, each alternative offers different advantages and disadvantages, the sell side leading to lock-in with supplier(s) and being the most straightforward to implement, but at the same time not encouraging price competition; and the buy-side resulting in a better competition, but being only a real option for large companies (D. Chaffey, 2002). However, applications service providers (ASP) seem to enable SMEs to have access to this type of solutions without any “heavy” IT investment. Moreover, even if their growth has been slower than expected and even if they are not the centre of all business as some predicted a few years ago, the use of private and/or public e-marketplaces still seem to offer important opportunities for SMEs for the procurement of some of their products and/or services (mainly non-strategic ones). Nevertheless, it can be considered as “a step in the dark” for such firms, and “it is best to combine with setting up a link with a favoured supplier” (D. Chaffey, 2002).

Consequently, even if e-procurement is not a “must” for every company, these solutions appear to fit in many cases for small and medium size businesses, depending on their needs.

But because it exist many different types of e-procurement solutions, SMEs will first need to analyse cautiously which of these solutions to use and how to efficiently use it (or them) within their corporate strategy, if they want to get significant benefits for their company.

We are now going to analyse which exactly are the main benefits and drawbacks associated with e-procurement solutions.

2.4 Benefits and Drawbacks of e-procurement

a) Benefits of e-procurement:

In the literature, many researchers have studied the positive impact of electronic-commerce on procurement.

According to Kalakota and Robinson (2001), the benefits of e-procurement fall into two major categories: efficiency and effectiveness. Efficiency includes reduced procurement costs, faster cycle times, less maverick (unauthorized) buying, more highly organized information and tighter integration of procurement function with key back-office systems. On the other hand, effectiveness includes increased control over the supply chain, proactive management of key procurement data, and higher-quality purchasing decisions within the organization.

According to Essig and Arnold (2001), the main advantage of e-procurement systems is the high quantity and quality of the information processing that they offer. Indeed, by “facilitating the sharing of supply-chain information such as forecasts and inventory levels” (Grey et al. 2005), these processes tend to increase collaboration and information-sharing between partners.

Turban et al (2004) identified the main benefits of e-procurement as follows:

- Streamline the purchasing process (making it simple and fast), and thus automating and eliminating the laborious purchasing routines
- Reduce the administrative processing cost per order (e.g. save time in the approval process)
- Reduce purchasing costs
- Improve sourcing, by finding new suppliers and vendors that can provide goods and services faster and/or cheaper

- Increase the productivity of the purchasing agents (enabling them to concentrate on strategic purchasing issues)
- Improve information flow and management (e.g. supplier's information and pricing information)
- Improve the payment process (this does not always occur since payment is sometimes not integrated into e-procurement systems)
- Establish efficient and collaborative supplier relations
- Ensure delivery on time, every time
- Reduce the skill requirements and training needs of purchasing agents
- Enhanced budgetary control (achieved through rules to limit spending and improved reporting facilities)
- Monitor and regulate buying behaviour
- Elimination of administrative errors (correcting errors is traditionally a major part of a buyer's workload).

D. Chaffey (2002) identifies cost reduction as generally the main driver for e-procurement adoption. Indeed, during negotiation, buyers can benefit for instance from a “quick and timely enquiry in which communication is enhanced, saving time with electronic and automated inquiry forms” (Yen, 2003). E-procurement offers a big opportunity for any firm to eliminate waste and redundancy within their buying processes by “capturing and managing information more effectively” (Mark, 2003). Indeed, according to Quayle (2005), this comprehensive solution eliminates the bottlenecks, unregulated maverick spending and time-consuming paper trails associated with typical procurement processes. Thus, direct cost reductions can be achieved through more efficiency in the process, the process efficiencies resulting in less staff time spent in searching and ordering products for example. It is undeniably easier to find products using the web than traditional catalogues, and large savings in time and expense are consequently possible by removing this person from the process. According to Chaffey (2002), savings may also be made through the need for less material in stock due to faster purchase cycle time. Therefore, most researches on this area agreed that because of its potential to speed up delivery times and to reduce document duplication and errors, enormous savings can be made through e-procurement.

Another potential benefit of e-procurement is the reduction of the purchasing costs of the products through the potential extension of the market it provides. For instance, in an e-marketplace scenario, buyers have the opportunity to search products from a larger supplier base, resulting in more competition between them, and as a consequence to cheaper prices. To search for a cheap supplier for every buyer can be very costly for a firm, especially a SME, and that is why most businesses prefer to have only a few suppliers with reasonable prices. The e-marketplace solution provides in this case the opportunity to quickly and easily compare prices between a wide range of suppliers on the same platform, leading to

cheaper prices. A study by Kluge (1997) showed that the cost savings achieved through e-procurement may have a significant effect on profitability, and this is especially true for manufacturing SMEs in which procurement represent a major cost element. Therefore, Kluge (1997) and Kalakota and Robinson (2001) have considered e-procurement as a strategic issue since significant savings can be made which will increase the profitability of a firm.

Indirect benefits from e-procurement can also be that buyers can spend more time on value-adding activities such as analysing trends, strategic sourcing and negotiating contracts. Indeed, “a large portion of corporate buyers, especially in SMEs, spend too much time on non-value activities such as data entry, correcting errors in paperwork, expediting delivery, or solving quality problems (...) and if these buyers are busy with the details of the smaller items (usually MROs), they do not have enough time to properly deal with the purchase of the high-value items” (Turban et al, 2004). Thus, it is not unusual that in some organisations the cost of the time spent internally processing a requisition exceeds the cost of the “item” being purchased, and consequently there is a huge opportunity for e-procurement to reduce costs in this area.

E-procurement also tend to increase the “international” activity of firms, emarketplaces for instance enabling an easier international sourcing by making affordable and fast the opportunity to import parts or products from China, Mexico and/or Eastern Europe. “Internet now offers the prospect of an international, relatively inexpensive, and easily accessible trading opportunity for small firms” (R.G. Lewis, 1999, p.7). Indeed, e-procurement tends to enable a global reach, and “companies all over the world up to the smallest and in the remotest corner can be accessed electronically, resulting in access to new markets but also the entrance of new competitors into the home market” (Turban et al. 2006). Thus, because Internet is an open system, online purchasing processes tends to expand geographic market of a firm by providing an easy access to a wide base of potential suppliers, without any constraints of national borders (e.g. the potential supplier can be at 2km or 4000km away from the buyer), and this represent an important business opportunity for SMEs which find it generally difficult to trade beyond their country.

But Internet purchasing processes have also strong possibilities for local exploitation, and partners from the same town or region can simply use e-procurement to reduce their administrative, transactional and operating costs associated with their relationships, the digital information being much more easily stored, transmitted, processed, transformed or manipulated than “paper-based” processes.

Other benefits from e-procurement include an easier access for the buyer to up-to-date, accurate and relevant information about supply availability or product information. Indeed, Porter (2001) argued that “Internet technology provides buyers with an easier access to information about products and suppliers,

thus bolstering bargaining power.” Internet development can thus enable the buyer to use the web as a tool to benchmark suppliers’ markets and/or products, giving him/her a better and more accurate view of the market’ situation.

The buyer is moreover able to give any order at any time (24/7) as there are no constraints of time associated with e-procurement (which is not the case for instance with telephone calls).

There is also some evidence that e-procurement improves supplier relationship (Poirer and Bauer, 2002). Indeed, Moodley (2002) explains that Internet-based B2B interaction and real time communication can reduce information asymmetries between buyers and suppliers and build closer relationship among trading partners. Mc Kie (2001) also explains that e-procurement, by providing a wide range of services around the purchasing “act”, enables more collaboration between partners than previous generations of procurement technology (such as EDI).

To resume, research has shown that the benefits of e-procurement (e.g. buy-side e-procurement software, ASP, e-marketplaces) are diverse such as control improvement, reduced cycle time, lower transaction costs, convenience, improved services and/or relationship building. These solutions can thus provide both operational (e.g. reduced overall procurement costs) and strategic (e.g. greater control over procurement expenditure) benefits to any firm at a relatively low-cost.

b) Drawbacks of e-procurement:

Although e-procurement offers many benefits for companies which want to implement such systems within their business activity, some weaknesses also have to be identified.

First, e-procurement implies that partners and members of the supply chain are e-enabled. Nevertheless, we can assume that today Internet is widely spread among the business world.

But organizational hurdles involved with the introduction of e-procurement exist, and include aspects such as “redeployment or redundancy of staff and overcoming fears of trust in suppliers” (D. Chaffey, 2002). Indeed, Porter (2000) stated that security concerns and lack of faith in trading partners are the most significant factors holding back e-procurement, identifying the authentication of identity as the main issue. He explained that firms need to be sure and to trust the partner(s) with who they will deal, but they also need to be sure that their messages and the information they will give will not be intercepted or corrupted in some way. According to him, these represent considerable weaknesses associated with e-procurement.

“The lack of human contact between the partners also eliminates a powerful tool for encouraging purchases, trading off terms and conditions, providing advices and reassurance, and closing deals” (Porter, 2001). Indeed, in an e-procurement scenario, the negotiation will not take place in a face-to-face

meeting, and the purchaser does not have for example the possibility to do any physical inspection (to touch or feel) of the real product. Thus, buyers do face some risks with e-procurement to interpret wrongly the product, and “if specifications are not precisely nailed down, quality could suffer” (Pyke and Johnson, 2003). This drawback seems to play an important role for “direct” procurement but not so much however for “indirect” procurement (e.g. MRO) for which there is little uncertainty about product quality, the products generally being highly standardized and/or without strategic importance for the enterprise.

The lack of human contact associated with e-procurement solutions can also sometimes lead to an “organizational resistance” and/or to a reduced motivation from employees to use such systems. Therefore, it is critical to ensure the e-procurement integration and alignment within the corporate culture of the firm and “that both workers and senior management are motivated to use e-procurement system when introducing it” (Timmins, 2000), which can potentially be done through training and an accurate communication of the systems. Grey et al. (2005) also explain that online negotiation must not be a substitute for personal contact between buyers and suppliers but instead, the automation of many administrative processes (such as data entry and updating of supplier information) enabling buyers to spend more time on strategic issues.

Tranmit (1999) reported that one of the biggest barriers to automation of e-procurement is its integration within internal and financial systems. Indeed, to provide interfaces between e-procurement and integrated enterprisewide information systems such as ERP can be an implementation issue for some companies. E-procurement solutions, however, provide today good integration abilities within the existing internal systems of a company. According to Talluri et al. (2005), managers having implemented e-procurement systems also seem to suffer from a difficult optimal integration of suppliers. Indeed, how to optimally integrate suppliers within the e-procurement system (e.g. level of integration, integration costs, supplier priorities, budget, etc) is a difficult question faced by many procurement executives.

Another issue associated with e-procurement is the risk that “the return on investment from introducing e-procurement may be lower than that forecast and the introduction of the e-procurement system may not pay for itself” (D. Chaffey, 2002). This shows us that firms must be cautious when implementing e-procurement, and must beforehand analyse the potential added-value and savings associated with such processes.

Finally, Mc Kie (2001) argued that clearly, “the cost savings that can be done in larger enterprises (those with high employee counts, many procurement transactions and many suppliers in addition to complex

corporate buying procedures and policies) are likely to be more significant compared to those that can be effected in small to medium-size enterprises”.

The following figure summarizes the main benefits and weaknesses associated with each of the e-procurement alternatives:

Procurement model	Advantages to buyer	Disadvantages to buyer
<p><u>Sell-side</u> Many catalogue-based B2B suppliers e.g. www.grainger.com www.rswwww.com</p>	<ul style="list-style-type: none"> • Searching • Onus of maintaining data on supplier 	<ul style="list-style-type: none"> • Different interfaces on each site (catalogue and ordering) • Restricted choice • Poor integration with ERP/procurement systems • Limited purchase control
<p><u>Buy-side</u> Solutions developed by www.sap.com, www.ariba.com, etc.</p>	<ul style="list-style-type: none"> • Simplicity, single interface • Wider choice than sell-side • Integration with ERP/procurement systems • Good purchase control 	<ul style="list-style-type: none"> • Onus of maintaining data is on buyer • Software license costs • Retraining
<p><u>e-Marketplaces</u> e.g. www.itoi.com, www.vertical.net, www.chemdex.com, etc.</p>	<ul style="list-style-type: none"> • Simplicity, single interface • Potentially widest and international choice of suppliers, products and services • Often unified terms and conditions and order forms 	<ul style="list-style-type: none"> • Difficult to know which marketplace to choose (horizontal, vertical, etc.) • Uncertainty on service levels from unfamiliar suppliers • Interfacing with marketplace data format

Assessment of the e-procurement model alternatives for buyers

Source: adapted from D. Chaffey, E-business and e-commerce management (2002)

Conclusion:

Pyke and Johnson (2003) have shown that clearly, most manufacturing LMEs (Large and Medium Enterprises) have found that their procurement of indirect materials like office supplies and MRO can be effectively transferred to the web, which offers significant cost savings and efficiency. E-procurement practices are thus now fairly common within the sourcing processes of larger companies. We have found in this chapter that even when considering their main weaknesses and even if many experts exaggerated the trends and the adaptation of the new technology, some e-procurement solutions (such as e-marketplaces through for example a purchasing group or a “buy-side” solution via an ASP), which have a relatively low cost of implementation and which do not suffer from limitations of space, time or borders, also do provide strategic opportunities for manufacturing SMEs to be more competitive. Indeed, “by being an ideal for hyper-competition conditions” (Gowen and Tallon 2003; Tan et al. 2002; Telgen 1998 and De Boer et al. 2002) and “by being a means for becoming more productive and efficient in existing relationship” (Sweeney, 2002; Knudsen 2002 and Roberts, 2001), e-procurement can create strategic value for a firm. However, it is important to underline that even if these solutions do offer effective solutions for firms, they are unlikely to lead to a sustainable competitive advantage because they can normally be replicated by competitors.

Consequently, it is clear that these flexible and relatively inexpensive e-procurement solutions can overcome numerous limitations to the “traditional” procurement approach, and can add considerable value for manufacturing SMEs, by mainly allowing a fast return on investment (ROI) in comparison for instance to EDI systems which are costly and can not leverage implementation across various trading partners. We can moreover expect that such electronic purchasing solutions for SMEs will be even more various in the future as none would argue that the future is without the use and the development of ICTs. As a result, we can wonder if like LMEs, SMEs have similarly grasp the opportunities that offer e-procurement, and we are thus now going to analyse if Irish and French manufacturing SMEs are generally using or not e-procurement solutions within their buying processes. The research will contribute to understand why the respondents are using or not these solutions, by analysing the main drivers and barriers to adoption of these processes, in order to give accurate recommendations to widen the use of such systems.

Chapter 3: RESEARCH DESIGN AND METHODOLOGY

Introduction:

After having identified and evaluated within the last chapter the exact nature and opportunities provided by the adoption of e-procurement processes, we then had to collect primary data to analyse if Irish and French manufacturing SMEs use these processes, (or some of them), and if not to analyse the reasons why. The main goal of this research is to identify strategic opportunities for these firms to implement and integrate new innovative practices into their purchasing activity, which will be able to give them a significant competitive advantage. This chapter is therefore precisely presenting the methodology I used to collect the primary data I needed, and is divided into six different sections:

- The method selection
- The objectives of the survey
- The elaboration of the sample
- The questionnaire design
- The reliability and validity of the questionnaire
- The process used to interpret the results

3.1 Method selection

Our method selection was conditioned by two considerations. First, because of the nature of the information we wanted to gather. Indeed, as we have described in the second chapter the main benefits that e-procurement brings to firms of any size, we wanted to analyse how important e-procurement processes were used within manufacturing SMEs concretely, and if not, to analyse the reasons why, in order to identify potential strategic opportunities for them to use these new “tools”. Thus, our research aimed to look for general patterns and to focus on the “measurement” of general SMEs’ behaviours and opinions. Consequently, because we had to find generalisable patterns in the data that we can convert into statistical information, the use of a quantitative measurement technique and the choice of a deductive research approach by using a survey (under the form of a questionnaire) appeared to be the most appropriate method for our research.

Moreover, because our financial and technical resources were significantly limited for this project, the use of a questionnaire, which can be quite inexpensive to administer, seemed to be the best technique to use.

3.2 Objectives of the survey

Before designing our questionnaire, we clearly wanted to identify the main goals and purposes of the survey in order to effectively design an appropriate questionnaire, with relevant, concise and efficient questions, which stick to the information we wanted to find (and not to overlook useless or unimportant questions that waste the time of the participants).

Therefore, the most important aims of our survey were the following:

- To evaluate the use and the strategic importance of the e-procurement processes studied beforehand within French and Irish manufacturing SMEs
- To identify possible patterns of adoption by company size, nationality, particular processes and products purchased
- To identify the main drivers and barriers of adoption of e-procurement strategies and processes within SMEs

3.3 The Sample

First of all, a sample of the targets has been chosen instead of a census because of resources constraints (time, budget).

SMEs is a very broad sector comprising of companies from a wide range of industries such as manufacturing, clothing and textiles, agriculture, transport, hotels and catering, food, finance, etc. Concerning our sample, we chose to focus on manufacturing SMEs because “the largest savings and impact on profitability through e-procurement will typically be for manufacturing companies in which procurement is a major cost element, and there are many requisitions for relatively low value items” (D. Chaffey, 2002, p. 264). Therefore, I did not collect data from the service industry which has a lower potential for savings.

Typically, the definition of SMEs includes firms between 10 and 250 employees. The firms under 10 employees are indeed more considered as “micro firms”. Thus, we have chosen to collect data from SMEs between 10 and 250 employees.

We also decided to fix a “limit” in the turnover of our sample in order to focus our analysis on firms without a too important volume of activity, which could be considered closer to the “big” firms than to small SMEs. As a result, we decided that our analysis would mainly be on firms with a turnover under €50 millions.

As our report is a cross-border study between France and Ireland, we had to pick SMEs from both countries. Because of considerable financial and time constraints, we have chosen SMEs within the Dublin area (Ireland) and around Bordeaux (France). Thus, we will have to put into perspective the results we have found as the locations chosen are not “exactly” representative of the general situation. Indeed, we have chosen to administer our questionnaire to firms located around Dublin and Bordeaux but we have to take into consideration that the situation might be a little bit different for instance for firms located in Paris or in the mainland of Ireland (e.g. because of differences in terms of Internet access). However, because of our limited budget, it was less complicated and less expensive to interview and question a sample within these areas (where I had accommodation facilities).

One of our first challenges was to find an access to a potential database of SMEs in order to create our sample. We contacted Chambers Ireland, the Dublin Chamber, Enterprise Ireland and the ISME (Irish Small and Medium Enterprises) association in order to ask them an access to a potential list of manufacturing SMEs. However, to get such a service was strictly reserved to members of these organisations.

I thus found information (e.g. telephone number, email address, location, turnover, number of employees, etc) about the potential targets for my survey out of the Kompass database of companies.

22 Irish manufacturing SMEs (between 10 and 249 employees and with a turnover mainly under €50 million) located in the Dublin area have been found out of this database. I kept this number because of physical, time and budget constraints. Thus, no sampling technique needed to be done for our sample of Irish manufacturing SMEs. However we found 36 potential French manufacturing SMEs located in or around Bordeaux out of the Kompass database of companies. We then decided to do a “Simple Random Sampling” by listing all of them, and to randomly pick 22 of them in order to keep the balance between Irish and French respondents. This random process has ensured that each of the potential French SMEs had an equal chance of being selected.

Data Collection Technique

After having send a few emails to some of the Irish companies, I decided to increase the chances of responses by physically going to the “head offices” of these firms or by phoning them, and asking to talk for a few minutes to the Purchasing, Procurement or Materials Manager or a member of the senior management linked with these activities.

11 Irish SMEs accepted to answer the questionnaire at the end of June 2007. Most of the questionnaires were administered through face to face contact at the company's head office, but a small number were done by telephone. 12 French SMEs located in or near Bordeaux (France) were then interviewed on the same basis at the beginning of July 2007.

We tried to collect data from “nearly” the same number of Irish and French in order to keep the balance between the nationality of the firms (and not to have much higher results from one country than the other) and to have proportional accurate cross border results for this study.

Thus, as said before, because of our time, financial and technical constraints, we only could get access to a potentially limited sample, and therefore the results of this survey will not have to be “taken” as representative of the general situation in the two respective countries, but it will give an idea of how it may be is, and further investigation with more important resources will have to be done in this area according to the results we will get.

3.4 Questionnaire design

At this point, we already had decided what kind of data we have to measure, formulated the objectives of the investigation, and decided the participants group. We then needed to build an accurate questionnaire in order to gather in an efficient way the information we needed. This questionnaire can be found in Appendix 4 (p. 79).

We tried to keep the questionnaire as short and simple as possible in its structure in order to gather consistent responses from respondents. Indeed, it was very important for our research that all respondents (some of them were not “purchasing” professionals) take the same meaning from each question. To administer directly the questionnaire to the head office of most respondents allowed us to assist, if needed, the respondents to better understand a question by providing accurate information about it. However, this nearly never happened. To be physically present when administering the questionnaire also allowed us to better explained to the respondent the nature of the research.

We ensured that our questionnaire did not take too long to complete (approximately 10-15 minutes) in order to avoid as much as possible the feeling of “lassitude” or “boredom” among the respondents, which could have lead to inaccurate responses.

Questions:

We collected the “demographic” data of the participants (e.g. the firm's nationality, turnover, number of employees) at the beginning of our questionnaire because we believed that these background questions, which are easy to answer, would ease the respondent into the questionnaire. We intentionally did not

mention the name of the firm or the name of the respondents in order to keep the confidentiality and the privacy of the participants. Indeed, this type of information was not seen as essential for the accuracy of our research and to ask such questions could have offended the respondent, which could have led to a less important response rate.

We always used precise and closed questions (dichotomous and multiple response questions) in order to favour consistent and unambiguous responses. Within all our closed questions, we tried to provide a list of possible answers as complete as possible. We also provided the response “Other” in order to avoid the fact that respondents do not find any category that fits their situation, which would have led to a possible bias.

We finally built some “statement” questions in order to evaluate and to compare the importance given by the respondents to some benefits and barriers to e-procurement adoption over others. For that, we carefully asked them to indicate their level of agreement with the statement on a balanced 5 points scale (from “Very Important” to Very Unimportant”). This scale has been built to ensure that every potential respondent has a response option.

Within our entire questionnaire, closed format questions have mainly been preferred to open format questions in order to filter out useless or extreme answers that might have occurred in an open ended question.

Layout:

We tried to build our questionnaire with a logical layout and sequence. We started with questions that would raise the respondent’s interest, and we grouped together all questions that relate to similar areas into different sections (e.g. Section 1: Connection to Internet, Section 2: E-procurement for business purposes, etc).

We tried to keep a logical and simple flow through the questionnaire, and respondents had to answer different sections according to their situation (e.g. the respondents who do use e-procurement processes have been differentiated to the ones who do not use them). All questions flowed logically from the more general to the more specific, and from factual and behavioural questions to attitudinal and opinion questions.

3.5 Reliability and Validity

Before to administer our questionnaire, we tested its reliability and validity. Indeed, we checked the questionnaire's quality by giving a copy of it to Mr Gerry Connygham¹ in order to show up any flaws or inadequacies in the "form" and the structure of the questionnaire. Minor problems have been found, which have then been corrected in an appropriate way.

A copy of the "corrected" questionnaire has then been given to Mr Brice Malm² in order to check the accuracy of the "content". No changes to the questionnaire needed to be done from his feedback.

This questionnaire "pre-test" was seen as a critical element to the success of our survey. Indeed, inappropriate questions, incorrect ordering of questions, incorrect scaling, or a wrong questionnaire format could have made our research valueless.

The questionnaires have then been administered to the sampling group according to the selected data collection technique described above.

3.6 Interpretation of the Results

Once we collected the questionnaire responses from the sample, we then needed to use specific statistical analysis software to study the results that have been found. "Sphinx" software has been used to code, enter and analyse the data collected because I was used to work with this software many times in the past for business research. This software package also has been chosen because it enabled the survey data to be imported and exported in SPSS and in other file formats (e.g. Word, Excel).

The descriptive techniques that we used to analyze our results included graphs, histograms, scattergrams, bar charts and pie charts. We also included a short explanation under each of the results in order to clarify the understanding of the "graph".

The data collected was mainly summarized through the use of statistical techniques.

¹ Lecturer in « Research Methods », Portobello College Dublin, Ireland.

² Purchasing Consultant and Lecturer in « Purchasing strategic activities », Pau Business School of Management, France.

Conclusion:

We have seen within this chapter that we have come through a meticulous methodology to collect the primary data we needed. This precise process was absolutely necessary to collect accurate data which will lead to efficient interpretations and comments on the findings. The next chapter will present the main relevant answers we collected through our questionnaire.

Chapter 4: PRESENTATION OF FINDINGS

Introduction:

We will present within this chapter the primary data we collected from the respondents through our questionnaire. As previously said, “Sphinx” software (equivalent of SPSS) has been used to analyse the data we found, with the approval of Mr Gerry Connygham, Lecturer in Research Methods in Portobello College, Dublin. We can note that the statement “Non réponse” appears from time to time. This is only due to the French nature of the software, but does not distort the understanding of the results. We only included the most relevant results that would bring us to pertinent comments and/or observations in the next chapter. The entire results can be found in Appendix 5 (p. 90). We will note that some of the

4.1 Companies profile

Nationality	Nb. cit.	Fréq.
Irish	11	47,8%
French	12	52,2%
TOTAL OBS.	23	100%

Our sample was constituted for 47,8% of Irish SMEs and 52,8% of French ones. We tried to collect data from “nearly” the same number of Irish and French in order to keep the balance between the nationality of the firms (and not to have much higher results from one country than the other) and to have proportional accurate cross border results for this study.

Annual turnover	Nb. cit.	Fréq.
Less than 1 million	2	8,7%
1-5 million	7	30,4%
5-15 million	6	26,1%
15-35 million	5	21,7%
over 35 million	3	13,0%
Don't know/ Refused	0	0,0%
TOTAL OBS.	23	100%

We tried to administer the survey to SMEs with different range of turnover in order to analyse if the importance of the turnover (which reflect the volume of activity of a firm) has an effect on the adoption of e-procurement solutions within the firm.

Number of Employees	Nb. cit.	Fréq.
10-50	15	65,2%
50-150	7	30,4%
150-250	1	4,3%
TOTAL OBS.	23	100%

We also tried to administer the survey to SMEs with a different number of employees (which also reflect the volume of activity of a firm) in order to see if this is a factor influencing the adoption of e-procurement solutions within the firm. However it was impossible to keep the balance between the different categories (10-50 ; 50-150 ; 150-250) because of the limited number of potential SMEs found in the Kompass database, but also because of the high proportion of “relatively” small firms (under 50 employees) within general SMEs. Thus, 65,2% of the answers collected came from SMEs under 50 employees, 30,4% from firms between 50 and 150 employees, and finally only one answer was collected from a firm of the last category (150 to 250 employees).

4.2 Connection to Internet

Connection to Internet	Nb. cit.	Fréq.
Yes	22	95,7%
No	1	4,3%
TOTAL OBS.	23	100%

If YES	Nb. cit.	Fréq.
Non réponse	1	4,3%
Broadband	20	87,0%
Standard Telephone line	2	8,7%
Do not know	0	0,0%
TOTAL OBS.	23	100%

If NO	Nb. cit.	Fréq.
Non réponse	22	95,7%
Intend to get Internet soon	1	4,3%
Do not intend to get Internet	0	0,0%
TOTAL OBS.	23	100%

95,7% of the firms questioned had access to Internet. Nearly all of them with broadband. Thus, we can see that the gap on Internet penetration between larger firms and SMEs nearly do not exist anymore. Only two firms responded to have access to Internet with a standard telephone line. Finally only one

firm revealed not to have access to Internet within its organisation, but confessed to intend to get it very soon.

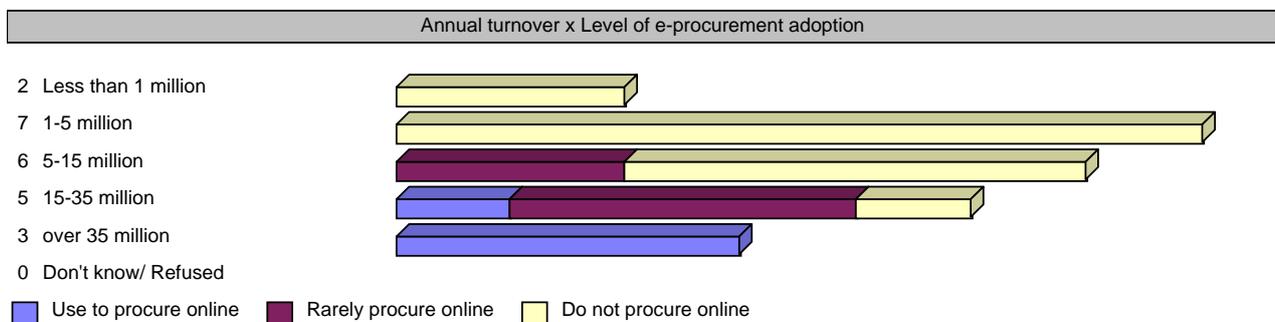
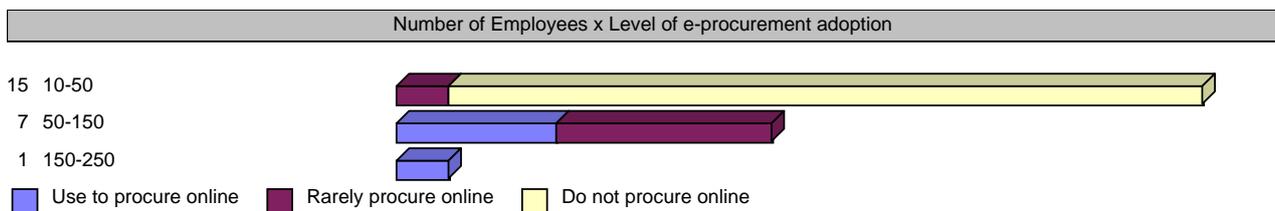
4.3 E-procurement for business purposes

Level of e-procurement adoption	Nb. cit.	Fréq.
Use to procure online	4	17,4%
Rarely procure online	5	21,7%
Do not procure online	14	60,9%
TOTAL OBS.	23	100%

Respondents were asked about their current level of e-procurement adoption within their firms. 60,9% of them do not use any e-procurement solution for their business activity. 39,1% of them use e-procurement more or less regularly.

Crossed information:

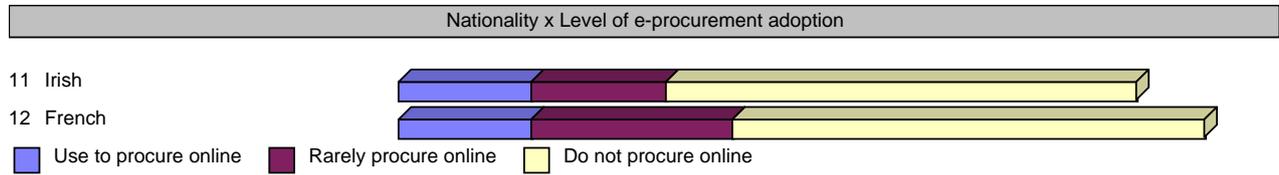
- **Size of firms (number of employees, turnover) + level of e-procurement adoption**



When we cross the data between the size of SMEs (turnover, number of employees) and the level of e-procurement adoption within them, we can clearly see that the biggest SMEs (turnover+ number of

employees) appear to be those which have adopted e-procurement solution (use or sometimes procure online), and that the smaller ones nearly never procure online.

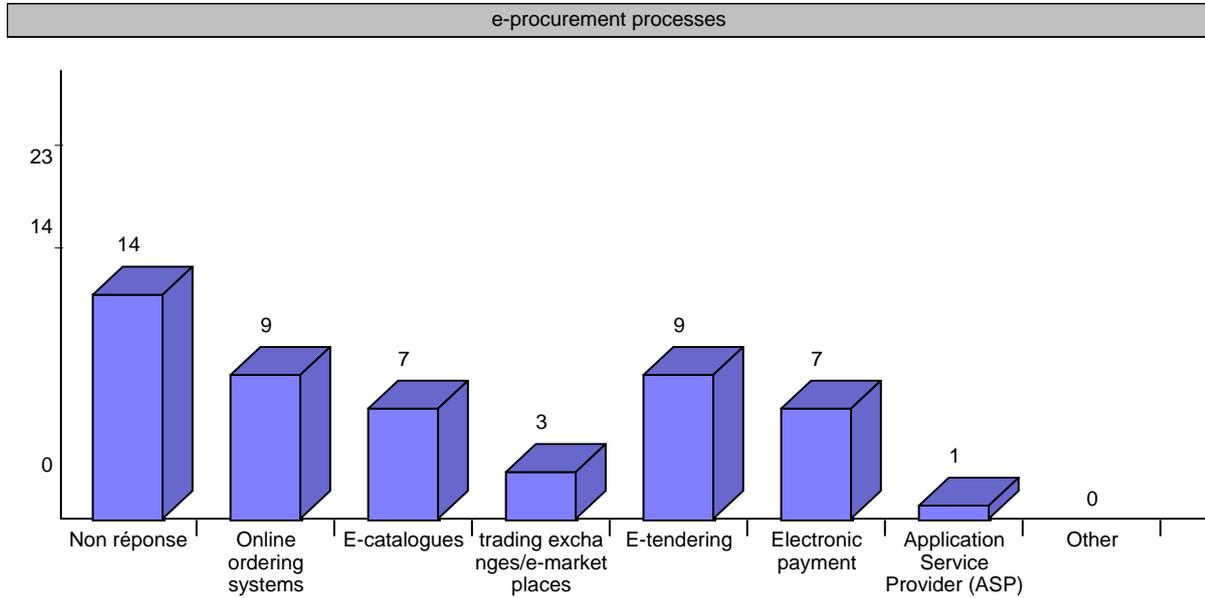
- **Nationality + level of e-procurement adoption**



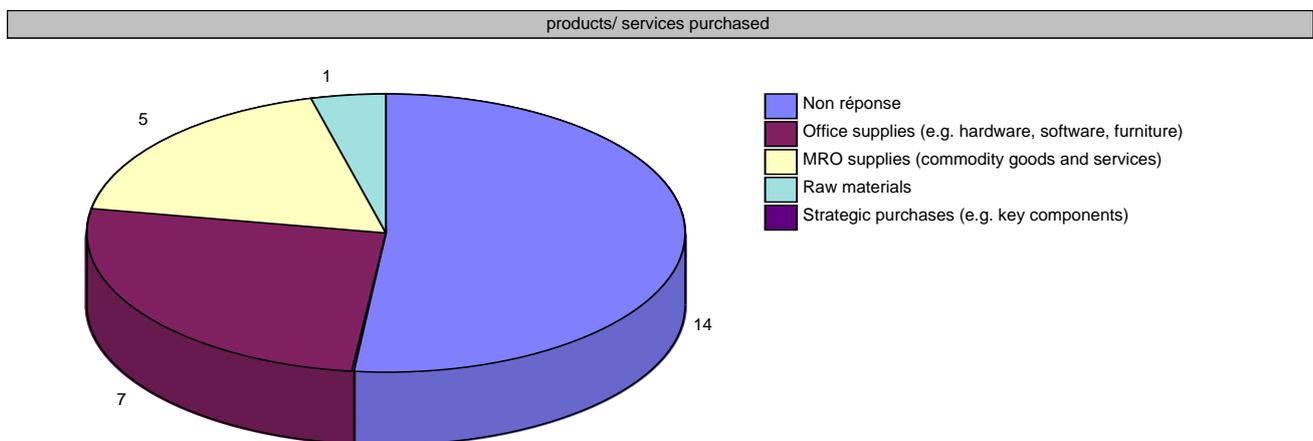
When we cross the data between the SMEs' nationality (Irish, French) and the level of e-procurement adoption within them, we can see that the data gathered is quite similar between both countries (we obtain more or less the same results for the French and the Irish SMEs). This clearly shows us that the nationality of a firm does not influence its level of e-procurement adoption.

4.4 E-procurement usage - *Current users only answered this section*

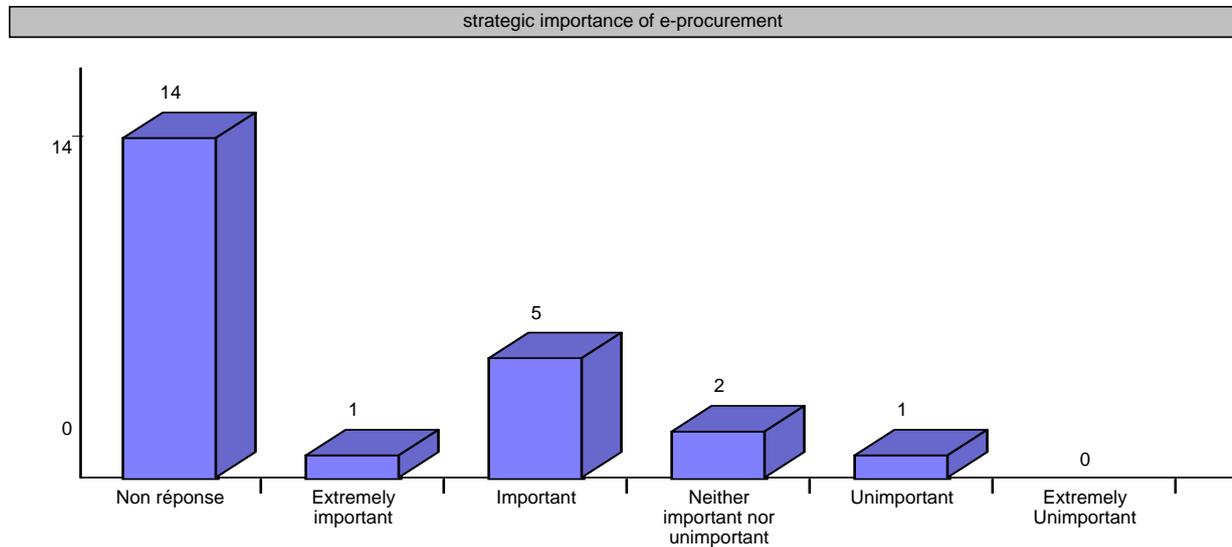
Only the respondents who procure online (39,1% of the sample, 9/23) were allowed to answer this section.



Within those using e-procurement solutions, respondents were asked to identify the e-procurement activities used in their organisations. Online ordering systems, e-tendering (sending requests for information and prices to suppliers and receiving the responses of suppliers using Internet technology), e-catalogues and electronic payment clearly remain in the most common e-procurement activities. E-marketplaces and ASP do not appear to be widely used among e-procurement users.

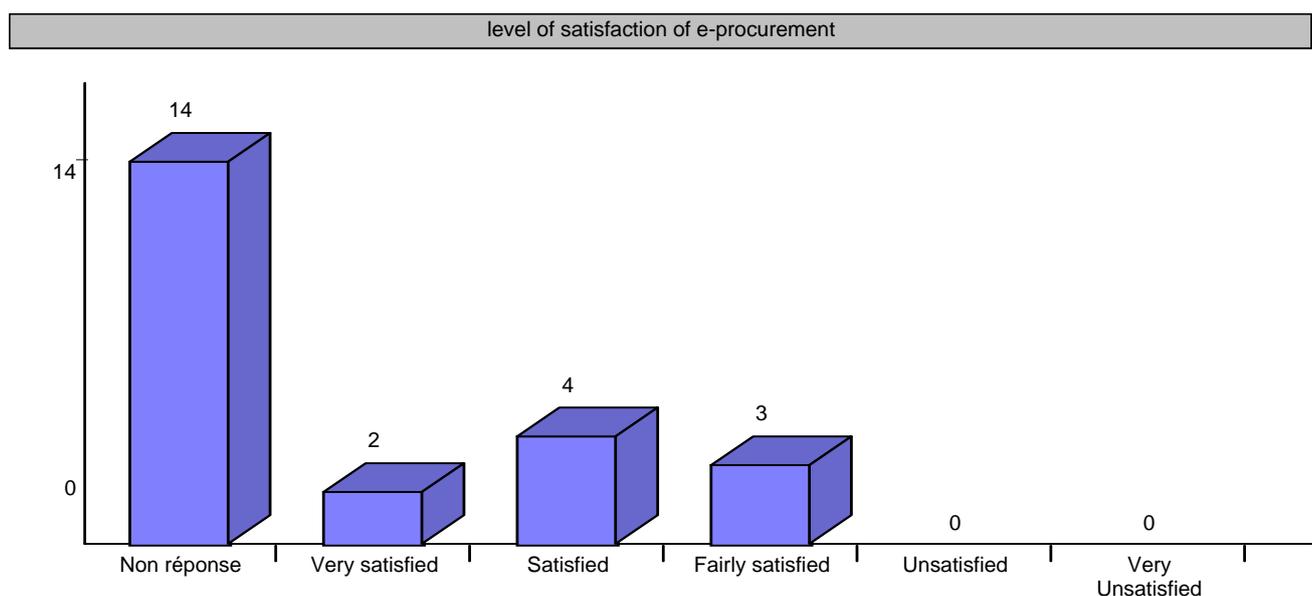


Within those using e-procurement solutions, respondents were then asked to identify the goods and services most commonly procured online. Office supplies and MRO are clearly the two categories of products most commonly purchased online by the sample of our survey.



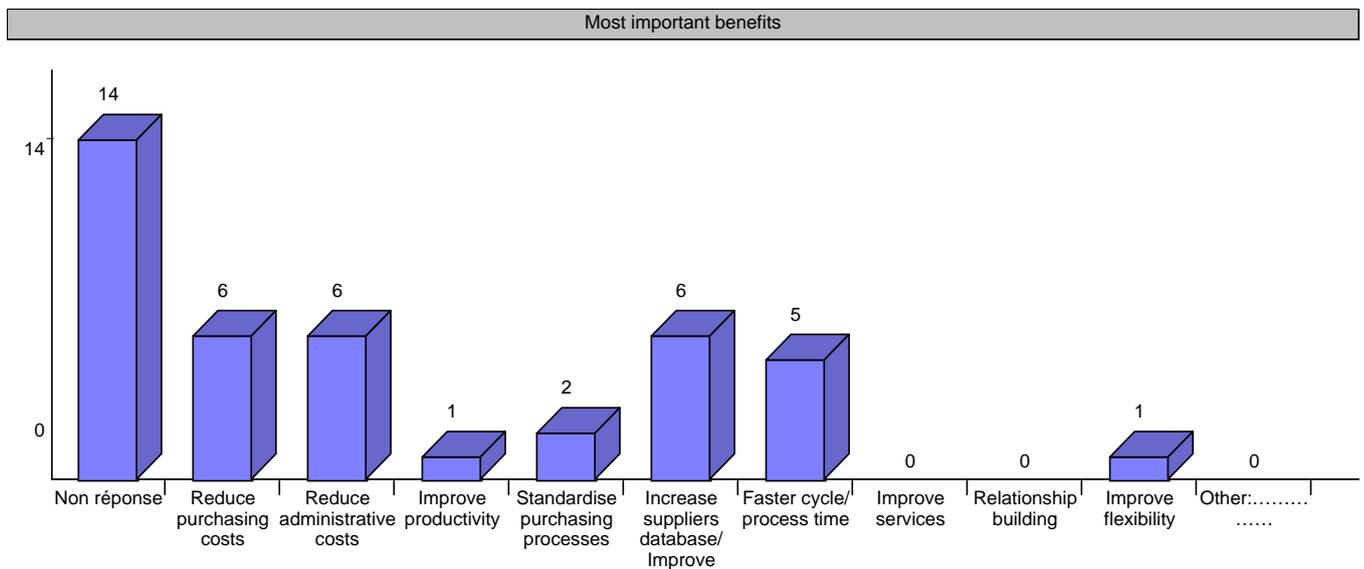
Respondents who have implemented e-procurement were asked to rate the strategic importance of e-Procurement in their organisation.

E-procurement appears to have an important strategic position within organisations which have implemented it. Indeed, 66,6% (6/9) of respondents who have implemented e-procurement rated it as strategically important to extremely important for their activity.



Similarly, organisations which have implemented e-procurement solutions seems to be satisfied with these as 66,6% (6/9) of them rated it as “satisfied” and “very satisfied” their level of satisfaction of e-procurement. None of them answered to be “unsatisfied” or “very unsatisfied”.

- Most important benefits from adopting e-procurement



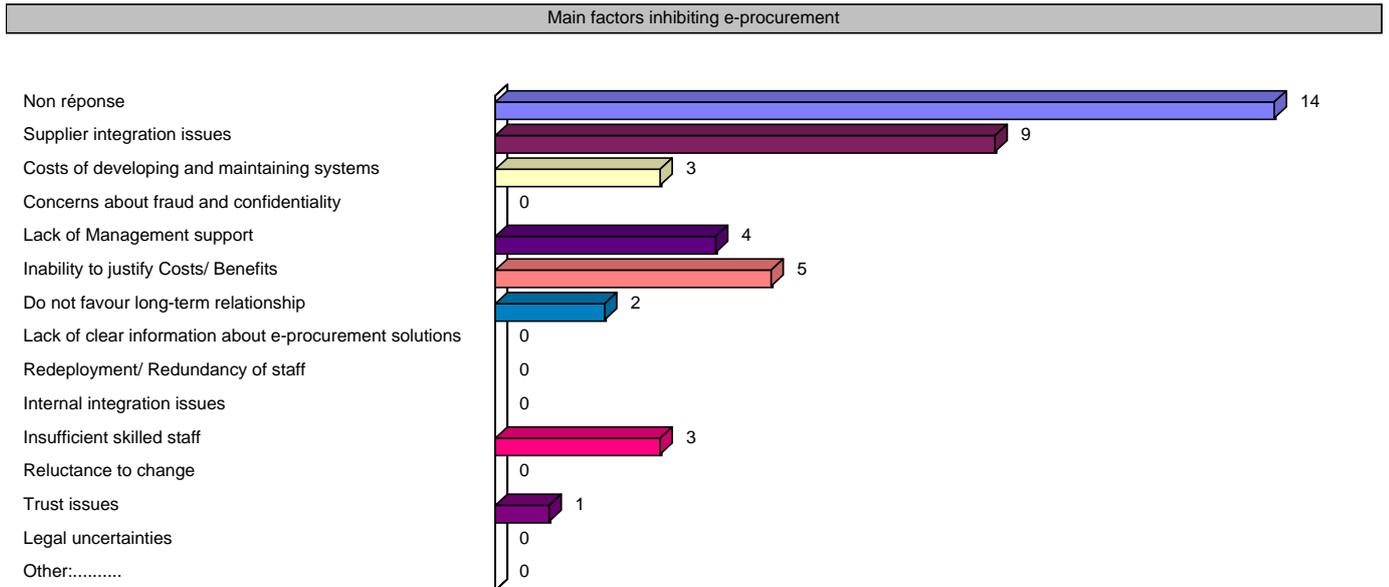
Respondents that already procure online were then asked to identify the 3 main factors driving the adoption of e-Procurement in their organisation.

Clearly, the most important benefits for them from adopting e-procurement appear to be the following:

- Reduced purchasing costs
- Reduced administrative costs
- Increased suppliers database and suppliers sourcing

“Faster cycle time and process time” also appear to be an important benefit associated with e-procurement for the respondents although “improved services” and “relationship building” were the answers with the less responses’ rate.

- Main factors inhibiting the adoption of e-procurement solutions



Respondents that already procure online were then asked to identify the top 3 inhibitors that are creating major hurdles for adopting/ implementing e-procurement.

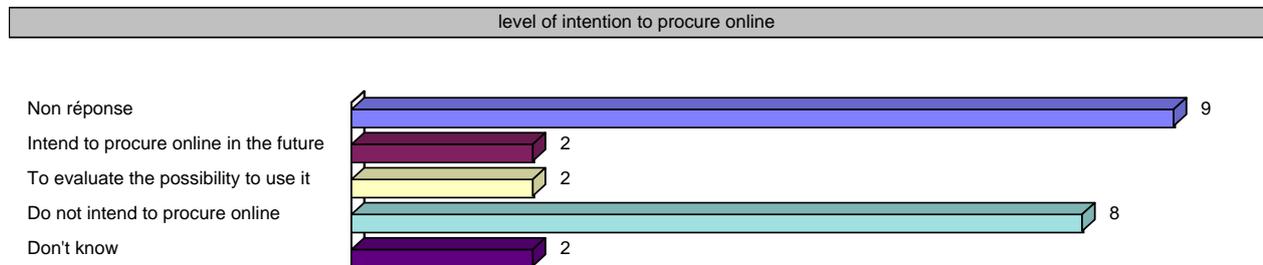
The 3 main barriers to e-procurement adoption appear for them to be the following:

- Supplier integration issues (e.g. commitment, systems' compatibility)
- The inability to justify the costs and benefits associated with these processes
- The lack of management support for these solutions

The costs of developing and maintaining systems and the insufficient skilled staff come behind, but are not within the 3 most important barriers of adoption for the respondents.

4.5 E-procurement perception – *Non-users only answered this section*

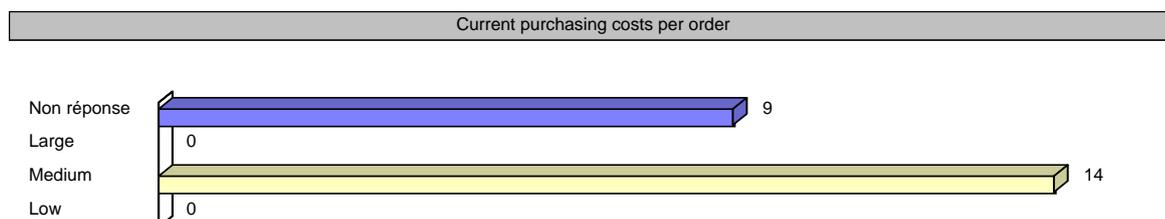
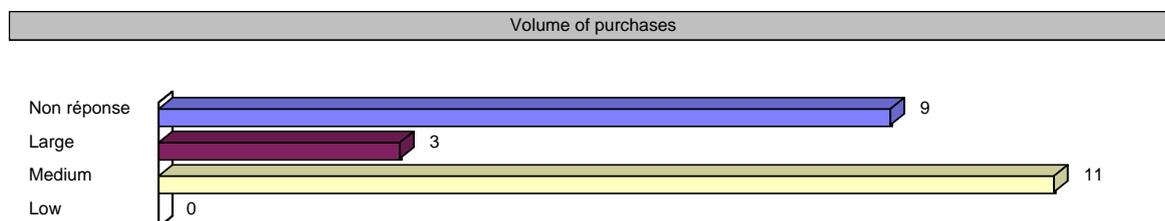
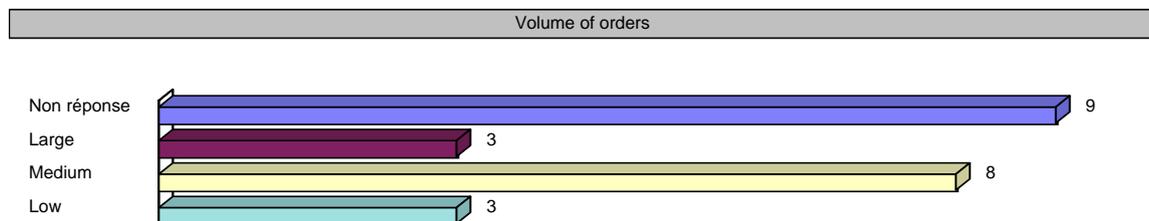
Only the respondents who do not procure online (60,9% of the sample, 14/23) were allowed to answer this section.

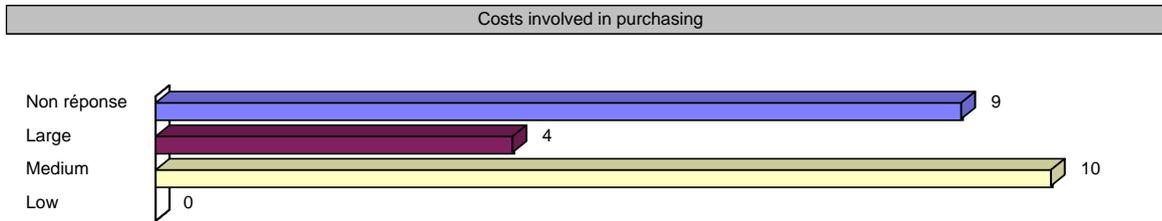


Respondents were asked to evaluate their level of intention to procure online in the future.

The majority of them (57,14%) do not intend at all to procure online, while 28,57% (4/14) seem to be in favour to consider such processes.

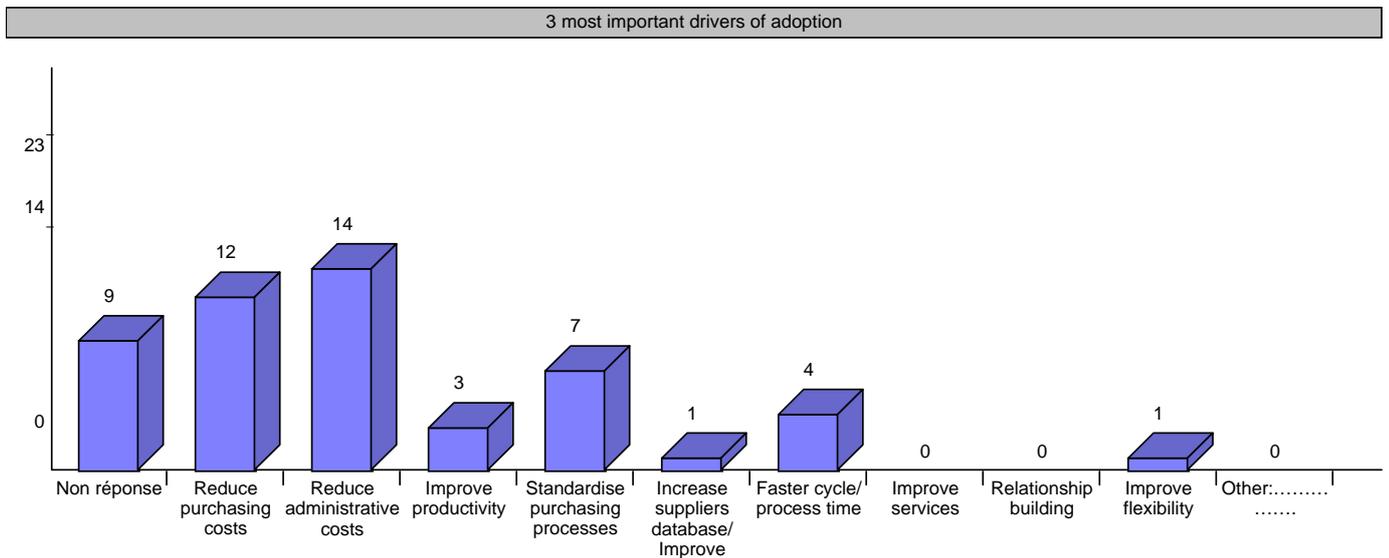
- **Purchasing situation**





Respondents who do not procure online generally rated as “medium” the volume of their orders, the volume of their purchases, their current purchasing costs per order and the costs involved in purchasing. We can also notice that 28,57% (4/14) consider the costs involved in purchasing as being large.

- **Most important drivers of adoption of e-procurement**



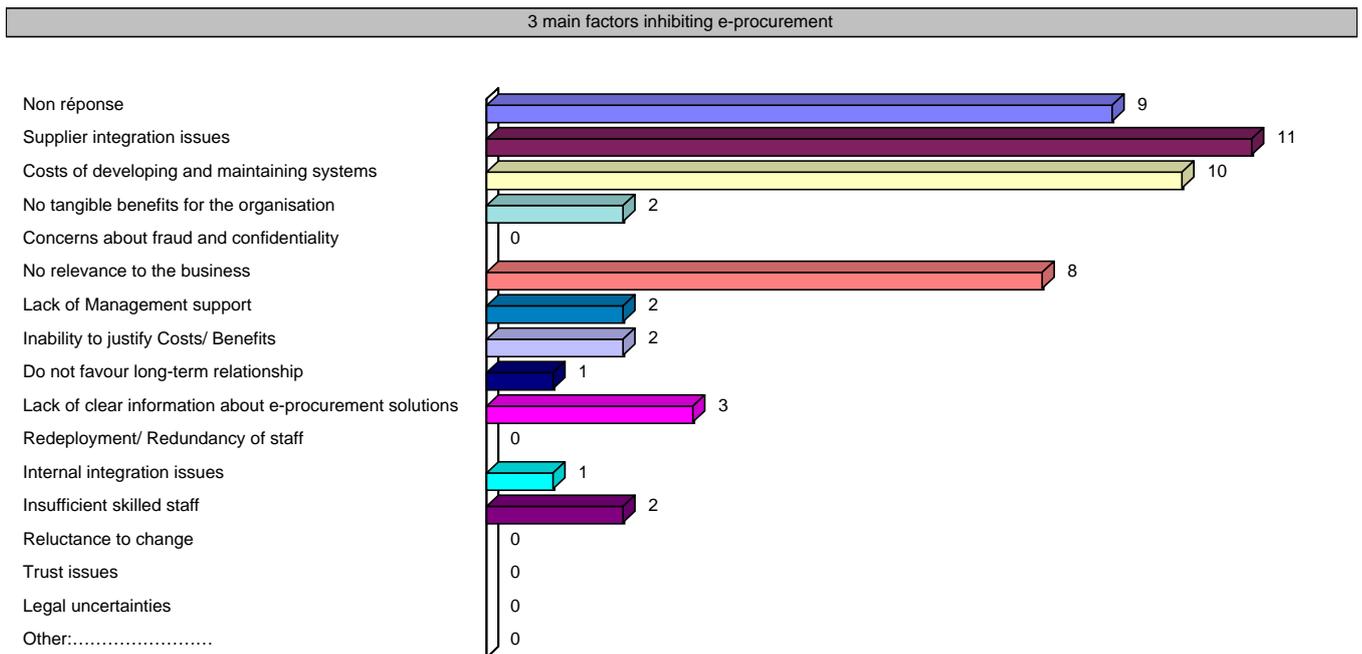
Respondents that do not procure online were then asked to identify the 3 main factors driving the adoption of e-procurement.

Clearly, the most important benefits for them from adopting e-procurement appear to be the following:

- Reduced administrative costs
- Reduced purchasing costs
- Standardised purchasing processes

“Improved services” and “relationship building” were the answers with the less responses’ rate.

- **Main factors inhibiting the adoption of e-procurement solutions**



Respondents who do not procure online were then asked to identify the top 3 inhibitors that are creating major hurdles for adopting/ implementing e-procurement.

The 3 main barriers for them to e-procurement adoption appear to be the following:

- Supplier integration issues (e.g. commitment, systems' compatibility)
- The costs of developing and maintaining systems
- The “perception” that e-procurement is not relevant for their business activity

Conclusion and important remarks:

First, when comparing the results found between the firms which already procure online and those which do not procure online, we can notice that the ones who do not procure online do not consider the fact that e-procurement can increase the suppliers' sourcing as an important benefit although those who procure online quoted it as one. The reduction of administrative and purchasing costs were however considered as the most important benefits by both categories of respondents. "Improved services" and "relationship building" were also the answers with the less responses' rate in both cases.

Then, we can notice that both categories of firms agreed that suppliers integration issues were an important drawback of e-procurement. The costs of developing and maintaining systems was however considered by "non users" as an important weakness of e-procurement, while respondents who actually use these processes do not give so much importance to this aspect.

A large proportion of respondents who do not procure online finally have the perception that e-procurement is simply not relevant for their business activity.

We are now going to discuss and to comment the findings we found in order to analyse the current situation and to identify potential opportunities to widen the use of e-procurement within French and Irish manufacturing SMEs.

Chapter 5: DISCUSSION OF FINDINGS

Introduction:

Within this chapter, we will comment on the primary data we collected through our questionnaire, and we will try to give some relevant recommendations to widen the use of e-procurement among French and Irish manufacturing SMEs.

5.1 E-procurement: an important potential of development among SMEs

First of all, our survey revealed that most of the French and Irish small and medium sized manufacturing firms fail to capitalise on the opportunity online trading could provide them with. Indeed, the results of our survey have shown that a large majority of the respondents (60,9% of our sample) do not use any e-procurement solutions for their business activity. It is interesting to see that the firms which mainly use e-procurement processes appear to be the largest SMEs (with the biggest volume of activity). Thus, most of the smaller firms from both countries do not simply grasp the opportunities that offer the ICTs for their purchasing processes up to now.

This finding is particularly notable as we have seen in the second chapter of this dissertation that there are a number of low cost and easy to implement e-procurement solutions (e.g. ASP, e-marketplaces, and purchasing group) which clearly have the potential to add value to firms of any size, even the smaller ones.

These results are even more noteworthy as our survey revealed that SMEs which have implemented e-procurement solutions within their business processes appear to be considerably satisfied with those (66,6% of them rated as “satisfied” and “very satisfied” their level of satisfaction of e-procurement), and have given a significant strategic importance to these innovative processes (66,6% of them have rated e-procurement as strategically important to extremely important for their activity).

Moreover we can really believe that e-procurement represent a considerable “untaken” opportunity for the respondents of our survey which do not procure online as most of them admitted to have:

- “medium” volume of orders
- “medium” or “large” volume of purchases
- “medium” current purchasing costs per order and most importantly,
- “medium” to “large” costs involved in purchasing

Therefore, e-procurement, which has the potential to reduce “direct” (the costs of the products) and “indirect” (the administrative costs) purchasing costs for a significant volume of orders and purchases, truly represents an important opportunity to grasp for these firms.

Another attention-grabbing finding of our survey is the fact that a considerable proportion (28,57%) of the SMEs which do not use e-procurement processes seem to be nevertheless in favour to consider such processes in a near future for their business activities. This represents a relevant information for the vendors who can expect to benefit from an important base of potential customers. Further investigation with more resources will have to be done in this area to confirm the “accuracy” of this percentage and to analyse if it reflects the “real” situation of the market.

5.2 E-procurement processes and products purchased

As we expected during our literature review, the results of our survey show us that office supplies and MRO supplies represent the two main categories supplied online. The processes the most used are online ordering systems, e-tendering (sending requests for information and prices to suppliers and receiving the responses of suppliers using Internet technology), e-catalogues and electronic payment. We can see that e-marketplaces and ASP solutions are not so used by our respondents, even if some of them are actually using them. As the respondents of our survey are generally speaking satisfied with their e-procurement solutions, an important challenge of the vendors is thus to effectively communicate and provide clearer information to SMEs on each of these processes and on the important potential benefits to procure the non-strategic purchases (e.g. MRO, office supplies) via these different effective and low-cost web solutions.

5.3 Challenges for e-procurement expansion

Interestingly, when we compare the findings of the most important e-procurement benefits for SMEs which have already implemented it within their firms and for those which have not, we find that there is a common perception of the fact that e-procurement significantly “helps” to reduce both purchasing and administrative costs. Faster cycle and process time is also seen by both categories of respondents (those who procure online and those who do not) as a relatively important benefit associated with e-procurement. However, we can notice an « asymmetry » among the responses concerning the potential of e-procurement to maximise the supplier’s sourcing. Indeed, firms which do not procure online do not consider as an important benefit the fact that e-procurement has the potential to increase the suppliers’

database and to improve the supplier sourcing. It seems to be an erroneous perception as SMEs which procure online quoted this benefit as one of the 3 most important ones. One important challenge for the e-procurement vendors can thus be to communicate much more effectively on this important “real” benefit to potential customers, and on the fact that e-procurement can enable firms to find better and/or cheaper suppliers for their needs.

Our survey also highlights the fact that both e-procurement users and non-users do not believe that e-procurement can improve the quality of services nor strengthen the relationship between the buyer and his supplier(s). This information is particularly interesting for vendors which have to reduce these “weaknesses” in order to provide more efficient solutions to their clients.

Besides, it is interesting to notice that when we compare the main factors inhibiting the adoption of e-procurement between firms which already have implemented it and those which did not, supplier integration issues (such as the commitment of the supplier or the compatibility of the e-procurement systems between buyer and supplier) seem to be the most important barrier of adoption for both categories of respondents. Thus, an important challenge will be for the vendors to provide more efficient and integrated compatible solutions to SMEs which allow them to more easily and effectively work online with their upstream supply-chain. The vendors’ ability to provide solutions with an always easier integration capacity within business processes is therefore critical for the e-procurement development among SMEs.

Another interesting finding is that, contrarily to what we have alleged within our literature review and to the assumption of Porter (2000) which stated that “security concerns and lack of faith in trading partners are the most significant factors holding back e-procurement”, trust and privacy issues do not represent anymore an important inhibitor of e-procurement adoption. Indeed, only one respondent (from both e-procurement users and non users) quoted trust issues as one of the 3 most important factors inhibiting e-procurement adoption. Therefore, we can conclude that general fears concerning data corruption or other computer viruses do not have so much importance as it was the case in 2000, and firms are now much more confident with Internet general trading security.

Contrarily to what we also expected at the beginning of our dissertation, reluctance to change does not appear neither to be an important factor inhibiting e-procurement adoption for SMEs, the respondents who do not procure online do not quoting it as one of the main inhibitors.

Then, our survey highlights the fact that the inability to justify the costs and benefits associated with e-procurement, and the lack of management support for these solutions, appear to be an important drawback of e-procurement for SMEs which already procure online (while for those who do not these do

not appear to be so important). Consequently, vendors should find ways to improve these aspects (e.g. to better communicate on the strategic importance of these processes to senior management, etc) in order to “reduce” these weaknesses and to increase the current users’ satisfaction of the processes.

Concerning the SMEs which do not procure online, the costs of developing and maintaining the systems appear to be a very important barrier to e-procurement adoption, although it is not an important one for the respondents which do procure online. Thus, this idea of “high” costs associated with the implementation of e-procurement solutions seems to be wrong and vendors should communicate in this way to the potential users in order to improve their level of adoption. Moreover, firms should always do an objective analysis of the potential return on investment of such solutions in order to have an accurate view of what is exactly involved behind these costs. It is also worth mentioning here that, as we have seen within our literature review, there are numerous e-procurement solutions that involve minimum costs and do not require software nor hardware implementations in the firm (e.g. e-procurement via an ASP, e-marketplaces).

However, we should be careful with this conclusion as, as we have said before, these are the SMEs with the highest volume of activity, and thus probably with the highest budget, which already procure online and do not consider the costs of implementing and maintaining systems as an important barrier to e-procurement adoption. This perception of the importance of costs may be completely different for smaller SMEs with much lower financial resources.

Finally, the perception that e-procurement is not relevant for their business is also a very important barrier to adoption for SMEs which do not procure online. This also appears to be a wrong assumption as we have explained that e-procurement can be valuable for many types of business activity. Thus, the SME sector can be put off using e-procurement because of the ignorance of what is involved and/or because of the mistaken belief that their business is not suitable for doing business through the Internet. This assumption may come from the fact that SMEs generally focus on day-to-day operations and often lack or do not have the time to study and understand the benefits of new technologies. Indeed, “SMEs are mainly concerned with surviving and spend little time on developing new strategies, and are generally not familiar with the opportunities available through e-commerce” (www.emarketservices.com). Thus, the vendors should try to find ways to “eliminate” this negative stereotype from the mind of the potential users by for instance providing free or low-priced business consultation services and/or communicating effectively on the fact that e-procurement can add an important value to businesses of any type (size, sector of activity, etc).

Government and local authorities’ initiatives can also have an important role in encouraging SMEs to adopt more advanced e-business applications, and to help SMEs to get a foot on the ladder in using

online trading technologies. City councils, national institutions and business associations such as Enterprise Ireland, ISME (Irish Small and Medium Enterprises association) or Chamber of Ireland can play an important incentive role to support in this case Irish SMEs to go online. Similar national or regional French entities (e.g. Chambers of Commerce), with possible collaboration with universities and business schools can also help considerably French SMEs in that regard. Indeed, the implementation of national projects to enhance and to support the business use of e-commerce among the small and medium sized sector could be a critical tool influencing them. Free awareness-raising programmes, audit and advisory services, information seminars, ICT managerial trainings courses and workshops can be for instance good practices to be implemented by such institutions to demystify some complex technological concepts associated with e-procurement and to offer a clearer picture to SMEs of the real costs and benefits of e-procurement. Best practice presentations and case studies of SMEs which have successfully adopted e-procurement within their business processes can also be shown as references during such programmes, and the issues as well as the opportunities need to be carefully drawn out for other potential adopters to learn from.

Ireland and France could also benchmark some successful practices from Northern countries (Denmark, Sweden, Finland, Norway) which are already widely using e-business solutions. For instance, some of these countries developed government programmes to allow SMEs to benefit from free consultation services, while other (e.g. Finland) cover an important part (e.g. 85%) of SMEs direct consultant fees for a limited number of e-business consultation days per year. These kinds of practices and support services from governments could therefore provide an efficient framework to raise awareness and to widen the business use of e-commerce and e-procurement among SMEs.

It is finally important to underline the fact that a firm may sometimes come to the conclusion that e-procurement does not have much to offer for their activity (e.g. because its products are not suited, because the industry or the suppliers are not yet embracing internet, because there are no suitable platforms for the company, etc). But before to reach this conclusion, businesses, and especially SMEs, should objectively look for information about these solutions in order to take a decision based on facts and on an understanding of the relevant issues (and not just a feeling).

Conclusion:

To conclude this chapter, we can say that even if deeper market research needs to be done to confirm all these results, this survey suggests that potential processes improvement and e-procurement development among French and Irish manufacturing SMEs are potentially large; and combined efforts from technical vendors, government, local authorities and business associations need to be done to allow these firms to efficiently grasp the opportunities that offers the “Information Society”.

CONCLUSION

Because of today's increased globalization, which is characterised by an always more competitive and fast moving environment, the small and medium sized businesses are expected to meet international standards of performance, and have no choice to remain or become globally competitive. Thus, nowadays, to be born-global appears to be an important challenge for manufacturing SMEs to survive in our knowledge based economy.

We have seen during this dissertation that some e-procurement solutions clearly offer opportunities to add some considerable value to manufacturing SMEs, which can help them to ensure a competitive position in the global marketplace. Indeed, research has shown that "good e-procurement can impact significantly on the profitability of organisations" (Quayle, 2005). For instance, by automating purchasing transactions, by providing an easier access to information about products and suppliers and by optimizing the management of the "upstream" processes, some solutions, which have now a "low entry cost" and are "easy to use", can be implemented by SMEs to purchase some particular products (e.g. MRO) or to optimize information-sharing with critical supplier(s). Internet can also allow SMEs that remain in local and regional markets because of a lack of information and marketing capability to gain access to new potential trading partners, outside their domestic markets. Therefore, these e-procurement solutions represent potential powerful tools for small and medium sized firms to be more efficient and more competitive in our global environment.

However, we discovered through our quantitative empirical research that most of the Irish and French manufacturing SMEs do not simply take advantage of these opportunities (the nationality of the firm did not seem to have an impact on the SME's e-procurement adoption). These results are especially "disturbing" when we know that SMEs represent the vast majority of firms and significantly contribute to the national GDP and employment. Therefore, only very few companies (the biggest ones) are fully embracing this technology and Internet based supply chain applications adoption across SMEs is still at its infancy phase. Besides, we have shown that it is too often due to a lack of awareness and understanding as well as an ignorance of what is involved that French and Irish manufacturing SMEs are missing these strategic opportunities. Consequently, as we can not imagine the future without the use of e-business technologies (which include e-procurement), the potential of development of such solutions is huge.

Of course, the decision to invest in e-procurement depends on the volume of the firm's procurement spending and the degree of complexity and compatibility of the buyer's and supplier's procurement arrangement. Benefits should outweigh investment and maintenance expenses, and perhaps, not all SMEs have an interest in developing e-procurement processes. Any SME should start by precisely analysing its purchasing business needs and financial resources, reviewing current procurement processes and examining opportunities to implement e-procurement, in conjunction with an assessment of the uncertainty, complexity and strategic importance of the component being purchased. This analysis should also take into consideration non-monetary parameters such as an assessment of the organisational culture of the firm and the exact nature of the relationships with the different suppliers. These firms should then carefully develop a methodical approach for selecting the most appropriate e-procurement solution(s), choosing the best e-procurement vendor or service provider (in the case of an ASP or an emarketplace), and then supporting efficiently the implementation of the selected solution(s) (e.g. trainings, communication, etc). These investment evaluation and careful planning are essential for SMEs to maximise the benefits and minimize the risks or loss before implementing an e-procurement project within their business activity ; and clearly, the better this preparation will be, the better return on investment and the maximum value for money the firm will get.

E-commerce gurus sometimes argue that all purchases should be taken to the Internet. In my view, manufacturing SMEs should however keep a balance between electronic and physical ways to do business, and should implement a combination of Internet and traditional methods. For example, standardized inputs such as the commodity items (e.g. MRO supplies) may be purchased via e-procurement solutions, but the purchasing experts and a "physical" long-term relationship are still critical for the management of more value adding items for the firm. Therefore, it is crucial that SMEs understand under what circumstances it is beneficial for them to use traditional channel, e-procurement processes, or a combination of both. Indeed, electronic processes can operate in parallel and peacefully coexist with existing SMEs supply chain relationships in order to enhance their global competitiveness.

Porter (2001) argued that "once managers begin to see the potential of the Internet as a complement rather than a cannibal, they will take a very different approach to organizing their on-line efforts". The only real obstacles facing the wide implementation of e-procurement solutions across the small and medium sized sector are therefore business awareness and confidence.

Indeed, the complexity surrounding the nature of e-procurement and the diversity of the solutions available appear to prevent SMEs from using these technologies to enhance their services, increase their efficiency, and leverage their existing strengths. Moreover, to match the best e-procurement solution for a specific business purpose is not an easy assignment for a SME, and familiarity and time are required to

successfully achieve integration within business processes. Awareness-raising and support initiatives can therefore be beneficial. Existing larger companies, business associations, government and technology solutions providers should act as a catalyst to stimulate smaller firms to procure electronically, and they should work together to develop an “e-procurement plan” which would help SMEs to get a foot on the ladder in using e-procurement technologies. These actors should work for instance on projects to raise awareness, show benefits, provide support and gain acceptance among the SME sector. In other terms, they should deploy a global strategy to allow all the players (even the smaller ones) to benefit from the Information Society. For instance, the French and Irish governments should respectively implement a programme promoting the use of e-procurement among the small and medium sized sector. They could provide for instance SMEs with a basic knowledge about low-cost and easy to implement e-procurement solutions, as well as with information about the potential real benefits and costs associated to these processes, in order to help them to take rational decisions about which e-procurement solution to choose and how to effectively use it within their activity. Financial assistance and external consultancy services should also be facilitated to support SMEs when investing in IT. Finally, vendors should more efficiently communicate on the features, costs and benefits of their products to these categories of firms. All these kind of initiatives, which would provide support to SMEs through the first steps, would in my view enable SMEs to become more familiar and confident with e-procurement processes, which can only lead to an increased adoption’s rate.

Further research

Our results have shown that e-procurement improvements are potentially large within French and Irish manufacturing SMEs. But because of our lack of time, financial and technical resources during this project, which have lead to a significant limitation of our sample, we have to balance the results we found within this study and only take these information as a vision of how it possibly is. Thus, a deepest investigation with more important resources could be done in this area in order to confirm these results and to draw appropriate conclusions.

Another suggestion for further research in this area would be to objectively compare the traditional and e-procurement processes on the issues for instance of information and service quality. Indeed, the rapid development of constantly more complete supply chain e-commerce solutions offering more functionalities and more and more integrated options logically raise interrogations of exciting research in this area.

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- www.ariba.com
- www.oracle.com
- www.sap.com

LIST OF APPENDICES

Appendix 1: List of main e-procurement solutions vendors

Source : Forrester Research, 2007

- Ariba (www.ariba.com)
- Basware (www.basware.com)
- cc-hubwoo (www.cc-hubwoo.com)
- eplus (www.eplus.com)
- Fieldglass (www.fieldglass.com)
- IBX (www.ibx.fi)
- IQNavigator (www.iqnavigator.com)
- Ketera Technologies (www.ketera.com)
- Oracle iProcurement (www.oracle.com)
- Oracle PeopleSoft Enterprise eProcurement (www.peoplesoft.com)
- Commerce One (www.commerceone.com)
- Quadrem (www.quadrem.com)
- SAP (www.sap.com)
- SciQuest (www.sciquest.com)

Appendix 2: List of websites providing information on B2B platforms

Source: www.emarketservices.com

➤ **eBusiness Lex (www.ebusinesslex.net):**

This “E-Business Legal Portal” aims to provide European small and medium enterprises with extensive, clear and practical information on all legal aspects of e-business. The objective is to facilitate online activities by SMEs by making them aware of the legislation in force.

➤ **eMarket Services (www.emarketservices.com):**

Database of e-markets as well as case studies, guidelines and other material on e-markets targeted at small and medium size companies. eMarket Services makes it easier for companies to find and use electronic marketplaces for international business.

➤ **European Commission (europa.eu.int/comm/enterprise/ict/):**

The unit for ICT industries and e-business at the Commission’s Directorate General for Enterprise and Industry has published several documents on B2B Internet platforms, e.g. about Codes of Conduct, legal barriers to using such platforms, etc.

➤ **Line56 (www.line56.com):**

An online magazine focused on e-business with special sections on portals, sell-side and buy-side technology support.

➤ **ONCE (www.connect-once.com):**

The Open Network for Commerce Exchange is an industry consortium of marketplace owners, vendors, customers and technology providers.

Appendix 3: List of significant e-marketplaces

Source:

This list has been taken from www.emarketservices.com which has identified in 2005 52 significant e-marketplaces in 17 industries based on two main criteria; the e-markets are well known globally in their industries and they have significant global traffic. Other basic criteria for being rated as significant have been that the e-marketplaces should provide the following information:

- Complete contact information
- A statement of privacy
- Information on membership criteria and transaction statistics

This list provides an important example of potential e-marketplaces to be used.

Automotive

➤ **SupplyOn (www.supplyon.com)**

Launched in 2000 in Germany, SupplyOn is a worldwide operating provider of Internet services for the automotive industry. Founded by several of the largest globally operating automotive suppliers SupplyOn helps large companies in sourcing from suppliers. Their solutions also enable significant efficiency improvements in handling of transactions. The site is available in German and English.

➤ **TruckScout24 (www.truckscout24.com)**

As one of the major e-markets in Germany, TruckScout24 has managed to attract more than 3,000 professional suppliers from over 100 countries worldwide. Founded in 2001 by AutoScout24, this e-market has a focus on used commercial and business utility vehicles. The site is available in Croatian, Czech, English, French, German, Hungarian, Polish, Russian and Spanish.

Among their users are vendors, manufacturers, leasing and transport companies, licensed dealers, as well as end users and professional buyers. Companies include: AGROADGONA d.o.o, Auto Köhler Audi und VW Partner Betrieb, KAV Autoverhuur, MAN Veicoli Industriali S.p.A, LKW-Center-Linz, and Mercedes-Benz Niederlassung Nürnberg

Aviation

➤ **Aerexchange (www.aerexchange.com)**

Aerexchange was founded in October 2000 by several airline companies including Air Canada, Air New Zealand, Cathay Pacific, FedEx, KLM, Lufthansa, SAS and Singapore Airlines. Aerexchange's focus is on providing value to both buyers and sellers worldwide by increasing productivity along the complex aviation supply chain.

➤ **OneAero (oneaero.com)**

Launched in 2004, German based OneAero is the result of the combined efforts of Overhaul Search, b2b-aero, and ePark Labs. The e-market provides the leading airlines and aviation repair-stations in Europe, USA and Asia with Aviation inventory, overhaul/repair and maintenance services. OneAero focuses on helping large companies in sourcing from suppliers and increase the level of efficiency in handling of transactions. Companies include: Alitalia, SAS, Finnair, Praxair, SR Technics, Lufthansa Technik, and Air Canada.

Building & Construction

➤ **BravoBuild (www.bravobuild.it)**

Italian e-market BravoBuild, founded in 2000, is one of three vertical e-markets owned by BravoSolution S.p.A. With a site available in English, French, German, Italian and Spanish, BravoBuild function as a platform for companies who wish to find new buyers and sellers. The e-market provides building and construction materials and services from companies worldwide to European buyers. Companies include: Trambus, Ciments Calcia, Colas Group, Pizzarotti Group, Essroc, SABA, Omnitel Vodafone Spa, and Cefla Group.

➤ **Edilportale (www.edilportale.it)**

Online from March 2001, Edilportale was founded by Italian private investors and venture capitalists. The e-market offers materials, equipment, operational goods and services related to the construction industry. The site also offers a good industry directory and it is rich in news, industry laws and events. With more than 70,000 registered members, Edilportale is a large platform for companies that wish to find new buyers and sellers on the Italian market

➤ **Econstroi.com (www.econstroi.com)**

E-market founded in 2001 by some of the major players in the Portuguese building and construction sector, including PT Prime, Espírito Santo Tech Ventures, Somague Engenharia, Mota-Engil Engenharia, Soares da Costa, Amândio Carvalho S.A., CME, Rosas Constructores, Zagope, OPCA, Constructora do Tâmega, Jaime Ribeiro, Novopca, Monte & Monte, Adriano, Sopol, AM Mesquita, H.Hagen, Etermar, and Gabriel Couto. More than 2,400 companies use the services provided by econstroi.com and the e-market achieved over €512 million in transactions in 2004. This makes it an important platform for companies who wish to find new buyers and sellers in the Portuguese market.

Chemicals

➤ **ChemConnect (www.chemconnect.com)**

Founded in 1995, ChemConnect is a global trading hub for chemical feedstock's, chemicals, plastics, and related products. With a global focus they help large companies to increase the level of efficiency in handling of transactions. Companies include: Epsilon Products Company, Metropolitan Eximchem Limited, Vanguard, Landmark Chemicals, The Lubrizol Corporation, etc. In 2004, ChemConnect recorded 9,000 members in 150 countries.

➤ **Elemica (www.elemica.com)**

Founded in August 2000 by 22 of the worlds largest chemical companies including: BASF, Bayer, BP, Dow, DuPont, Mitsubishi Chemical Corporation, Mitsui Chemicals, Rhodia, Rohm and Haas, Shell Chemicals, Sumitomo Chemical, and Royal Vopak. The network provided by Elemica helps companies optimize contract-based buying and selling. The e-marketplace has interconnectivity with other e-markets including Quadrem (mining), The RubberNetwork, and Omnexus (plastics). In March 2003 Elemica announced acquisition of Optimum Logistics Limited, the leading global marine logistics solution in the chemical industry.

Electronics & Electrical products

➤ **Bizipoint (www.bizipoint.com)**

Chinese e-market for the electronic and computer industry, endorsed by the China Electronic Chamber of Commerce. Established in Hong Kong in 2000, Bizipoint has a more than 21,000 registered users from 156 countries and works as a platform for companies looking for new buyers and sellers worldwide. Companies include: China IT Sources, Doorga Importers, Laijen Opto-electronics Technology Co., Ltd., and Niche Technologies Services.

➤ **Converge (www.converge.com)**

Converge provides semiconductors, electronic components, computer products and networking equipment. The e-market has a network of more than 6,500 trading partners with over 28,000 contacts in 139 countries. Since their establishment in 1980 in USA, Converge has become a large technology exchange platform for many important market players worldwide. Companies include: CTX, Cisco, Apple, Intel, NEC, Philips, Packard Bell, IBM, Acer Communications, Compaq, and Belkin.

➤ **DRAMeXchange (www.dramexchange.com)**

Established in 2000 in Taiwan, DRAMeXchange offers DRAM (Dynamic Random Access Memory) and random access memory (RAM) for companies in memory chip production, memory module fabrication, systems integration and distribution. With a variety of services provided, DRAMeXchange assists large companies all over the world in sourcing from suppliers. They also help the companies in optimizing the level of efficiency in handling of transactions. Companies include Motorola, Alliance, Kingston Technology, Genesis, Sun, NEC, Intel, Samsung, Merrill Lynch, and Morgan Stanley.

Excess Inventory & Barter

➤ **DoveBid (www.dovebid.com)**

DoveBid was launched in 1999 in Foster City, USA. The e-market is owned by several large companies including Softbank Capital Partners, Texas Pacific Group, Sun Microsystems, Inc., Mayfield Fund, Fremont Ventures, and GE Capital. DoveBid offers capital asset auction, valuation, redeployment, and management services to large corporations, government agencies and financial institutions. Companies include IBM, Motorola, General Electric, SIEMENS, Fifth Third Bank, Nightingale & Associates, Baxter Healthcare Corporation, Xerox Corporation.

DoveBid focus on helping large companies in sourcing from suppliers and increase the level of efficiency in handling of transactions. They have conducted over 5,000 industry specific auctions throughout the world selling over 10,000,000 individual lots.

➤ **Acambiode (www.acambiode.com)**

Spanish e-marketplace with more than 30, 000 registered members. Established in 2002 by Grupo Intercom, Acambiode offers products and services to companies of varied size within the excess inventory and barter sector. The e-market functions as a platform for companies looking for new buyers and sellers in Spain, Portugal and Latin America. Companies include: Carrefour, Viajes Ecuador, ZT Hotels, Nominalia, Radio Club 25, Lecturas, and Editorial Aurum.

Energy & Fuels

➤ **Eutilia (www.eutilia.com)**

Eutilia is a pan-European e-market that helps companies to increase the level of efficiency in handling of transactions. Their industry focus is the utility sector, which includes the electricity, power, water, gas, telecom, and railway industry. The market was set up in March 2001 by 11 of Europe's leading utility companies including Electrabel, Electricité de France, Endesa, National Grid Company, RWE, Vattenfall and Nuon. In April 2003 Eutilia managed the largest e-tender ever with international industrial and services group SUEZ. Approximately 1000 buyers and 7000 suppliers have registered with Eutilia.

➤ **IntercontinentalExchange, ICE (www.theice.com)**

Based in Atlanta, Georgia, IntercontinentalExchange operates global marketplaces for the trading of energy commodity futures and OTC contracts. Founded in 2002 by major companies, such as: BP Amoco, Deutsche Bank AG, The Goldman Sachs Group, Inc., Morgan Stanley Dean Witter, Royal Dutch/Shell Group, SG Investment Banking, and the Totalfina Elf Group.

ICE assists large companies in sourcing from suppliers and their solutions increase the level of efficiency in handling of transactions. Companies include: Alcoa Power Generating Inc., AGP Trading, BNP Paribas, Bank of America, Chevron Texaco Global Trading, Exxon Mobil Sales, and Supply Corporation.

➤ **Perfect Commerce (www.perfect.com)**

Perfect Commerce delivers On-Demand Supplier Relationship Management helping companies in sourcing from suppliers and to increase the level of efficiency in handling of transactions. Founded in 2001, in Texas, USA by 21 Utility companies including American Electric Power, Carolina Power & Light, Dominion Resources, Duke Energy, Exelon, PG & E and Reliant Energy. The e-market has 190 Fortune 1000 Clients, 11,000 Suppliers, and 165,000 Users. Customers include Xerox, Starwood, Eastman, Polaroid, Unisys, Access Graphics, Bell Industries, Exostar, Honeywell, Guess, and many more.

Food & Beverage

➤ **Transora (www.transora.com)**

More than 50 large multinational companies are owners and users of Transora, including Unilever, Kraft, Pepsi, Coca-Cola, Mars, Kellogg's, Danone, Procter & Gamble, and Bush Brothers. Operating in 7 languages, Transora has interoperability projects underway with CPGmarket and GlobalNetXchange (GNX). Transora customers include GS1 Member Organizations, Manufacturers, and Retailers of all sizes.

The e-market was launched in 2000 in Chicago and has offices in Brazil, Mexico, France, and the United Kingdom. On May 13th 2005, Transora and UCCnet agreed to form a single organization that can more effectively serve companies seeking to realize the value of data synchronization.

Forestry & Wood

➤ **FORDAQ (www.fordaq.com)**

Launched in Belgium in 2000, FORDAQ provides timber products to wood professionals such as log producers, sawmills, veneer mills, panel producers, importers and large

industrial users.

With a site available in 8 languages and offices in 10 countries, the e-market works as a platform for companies looking for new buyers and sellers all over the world. FORDAQ has more than 5000 members and over 90, 000 visitors every month. The e-market is being owned by Mitiska Net Fund Europe and private investors.

Healthcare & Pharmaceutical

➤ Global Healthcare Exchange (www.ghx.com)

GHX was founded in March 2000 by important players on the market, including Johnson & Johnson, GE Medical Systems, Baxter International Inc., Abbott Laboratories, Medtronic, Inc., Siemens Medical Solutions and Tyco International, Ltd. Products traded include medical equipment and devices, and healthcare products & services. The e-market has more than 2,200 hospitals and 140 suppliers among their members, including 3M Medical, Arrow International, Bayer Diagnostics, and Boston Scientific Corp. In January 2004, GHX and PLC merged in to create Europe's largest electronic trading exchange for healthcare.

Industrial Machinery & Equipment

➤ MfgQuote (www.mfgquote.com)

MfgQuote, launched in 2000 in Atlanta, USA, offers an e-business network for the manufacturing industry. A wide variety of products are available through the network including; bearing, coating, packaging, dye making, metal spinning and stamping. Companies include: GTI Machining, MauiMount and Machine, BRP US Inc., Weschler Instruments, KPC-Masters Craft, Atx-keeper.

MfgQuote has a large number of users; 34,000 buyers and 1,200 suppliers supporting over 200 manufacturing processes. They focus on increasing the level of efficiency in the sourcing process for original equipment manufacturers (OEM), contract manufacturers and job shops worldwide.

➤ SourcingParts (www.sourcingparts.com)

SourcingParts works as a platform for European companies looking for new buyers and sellers within the industrial machinery and equipment sector. The e-market also assists companies in sourcing from suppliers and in increasing the level of efficiency in handling of transactions. Approximately 42,000 suppliers have registered with the e-market since the launch in 2000 in Switzerland. Site is available in several languages such as Czech, English, French, Hungarian, and Portuguese to name a few. SourcingParts is being owned by Galileo Partners and COM Ventures Telecom Partners 1 L.P.

Metal & Mining

➤ Endorsia (www.endorsia.com)

Endorsia delivers support and services to enhance more cost efficient business processes within the industrial supply chain industry. Established in Sweden in 1999, Endorsia is equally owned by SKF, Timken, INA, Sandvik and Rockwell Automation. The company has global coverage with applications translated into 17 languages.

Customers consist of manufacturers, distributors, OEM-customers, and end-users from

around the world. Companies include: SKF, Timken, Tyrolit, FAG, Bahco, ESAB, Rockwell Automation, INA, Sandvik, Goodyear, Renold, BSL, Carl Werthenbach, Dexis, Momentum, Sverull, Leitner, and Fimatec.

➤ **MundoAcero (www.mundoacero.com)**

Launched in 2002, in Barcelona, Spain, MundoAcero is used by buyers and suppliers in the retail steel market in Europe, Latin America and Asia. A wide range of steel products are available, including: carbon and stainless, flat and long, tubes, structural, coated and uncoated steel products. Site is available in English and Spanish. Mundo Acero has approximately 1000 registered users, from 58 countries. Companies include Aceralia, Capresa, IMS, Casares, Losal, GSB, MMK, Sidenor, AG Ferromallas, and Kocaer Rolling Mill.

➤ **Quadrem (www.quadrem.com)**

Established in 2000 by 14 of the world's largest mining, minerals and metals companies. With 19 shareholders, of whom several are listed in the Global Fortune 500, more than 14,000 suppliers, and over 400 buying locations, Quadrem is the world's biggest e-market for the Mining, Metals and Minerals industries. Members include: Shell, Michelin, A & M Com EInd Ltda, 3M, A-S Chile Energy Groups, Air Control, Inc, Nestlé Brasil Ltda, Schlumberger Oilfield Services Ltd., and Tarong Coal. Major buyers have committed to a trading volume for more than USD\$4 billion in 2004. Quadrem has partnered with some of the leading companies in the e-business industry including Accenture, Compaq, Lante Corporation, PT Mincom Indoservices, Requisite Technologies, SAP, and webMethods.

Multiple Industry E-marketplaces

➤ **Alibaba.com (www.alibaba.com)**

Based in Hong Kong since 1999, Alibaba is a very high volume trade lead site for goods and services in 27 different industry categories ranging from textiles to electronics. The site is available in English, Japanese and Chinese and has offices in China, UK, USA, and Korea. Alibaba.com has over 1 million registered members from over 220 countries and territories. The e-market has been awarded "Best of the Web: B2B" by Forbes magazine for the past 5 years.

➤ **Ariba Inc (www.ariba.com)**

Founded in 1996 as a provider of Spend Management solutions to help large companies in sourcing from suppliers and increase the level of efficiency in handling of transactions. In 2004 Ariba merged with FreeMarkets, Inc. and today 40 of the Fortune 100 use Ariba technology, including ABN AMRO, BMW, Chevron, Cisco Systems, Hewlett-Packard, and Unilever.

Ariba also provides access to an open business transaction network, The Ariba Supplier Network. It includes 120,000 e-enabled suppliers from 115 countries engaging in transactions with some of the world's largest buying organizations. Membership is available by invitation.

➤ **BravoIndustry (www.bravoindustry.it)**

Italian multiple industry e-market launched in 2001. Managed by Bravo Solution S.p.A. who also hosts three other vertical e-markets: BravoFood, BravoGov and BravoBuild. BravoIndustry focuses on European companies and their website is available in several languages. Buyers and sellers include: The UK Government, Alitalia, Ideal Standard, Burgo,

Banco Popolare di Novara e Verona, Merloni, Edf Gdf Services, Abb T&D.

➤ **cc-hubwoo (www.cc-hubwoo.com)**

cc-hubwoo is a European integration hub for non-production procurement activities for large companies. Formerly known as cc-chemplorer, it was formed in July 2001 by the merger of the two leading e-marketplaces chemplorer and cc-markets. On June 29th of 2004, ccchemplorer merged with Hubwoo-Avisium and became cc-hubwoo. They cater to more than 40 of the largest European groups (Total, BASF, Michelin, Thomson, Volkswagen, Alcatel, Crédit Agricole, Danone, etc.) and boast a network of more than 9,000 suppliers connected in 44 countries. With 2004 pro-forma sales of over €22 million, cc-hubwoo is one of the major players on a global level.

On May 17, 2005, cc-hubwoo announced the completion of the acquisition of the e-market Trade Ranger. With customers among the top-ranked companies in the world and a network of 2,000 connected suppliers, Trade-Ranger will provide to cc-hubwoo major references in the Oil, Gas and Chemicals industries, an increased geographic coverage in North America, Asia and Europe, and an extended solutions set including solutions in the areas of e-sourcing and e-invoicing.

➤ **Cyberlynx (www.cyberlynx.com.au)**

Founded in 2000 in Australia. The Cyberlynx Buyer network was created by the Commonwealth Bank Group, Woolworths, EDS, Telecom New Zealand, Woolworths, Lion Nathan, Carter Holt Harvey, Royal & SunAlliance, Nestlé Australia and Unilever. As a platform for procurement solutions, the main goal is to assist companies in Australia and New Zealand in sourcing from suppliers. Companies that use Cyberlynx include: Woolworths, Telecom, Woolworths, Lion Nathan, Carter Holt Harvey, Nestle, Marriott, Radisson, Qantas, Compaq, IBM, Ernst & Young, Samsung, and Lexmark.

➤ **GlobalSources (www.globalsources.com)**

Established in 2000 in Singapore, Global Sources facilitates global trade, with a particular focus on the China market. With over 423,000 active members this e-marketplace works as a platform for companies who wish to find new buyers and sellers. Global Sources has formed a strategic alliance with Worldwide Retail Exchange. The company has been named by Forbes Global as one of 200 Best Small Companies in the World; it has won Darwin magazine's Fittest 50 Award and the Best B2B Internet Site at Internet World Asia Industry Awards.

➤ **GoIndustry (www.goindustry.com)**

Founded in 1999 in Antwerp, Belgium, GoIndustry focuses on enterprise asset management solutions for used and under-utilized capital assets. Among the products and services traded are surplus assets like office equipment, machinery or entire production lines of a range of industries. The site is available in Chinese, Dutch, English, French, German, Italian, Japanese, Korean, and Turkish. Customers of GoIndustry consist of major market players worldwide. Companies include: Unilever, Bosch, Corning, Continental, Visteon, GlaxoSmithKline, General Motors, DuPont, Exxon Mobile, AT & T.

➤ **IBX (www.ibx.se)**

Launched in 2000 in Sweden, IBX has become a leading provider of services and solutions for efficient purchasing in Europe. The company is owned by large market players including Ericsson, Deutsche Post World Net, Lufthansa, SEB, and Novo Nordisk. IBX is the Nordic hub in the Global Trading Web (GTW), the world's largest business-to-business trading community. IBX is also a member of the Global Trading Web Association, which governs the GTW.

Customers include: Ericsson, Volvo Group, Skanska, Novo Nordisk, SEB, Bang & Olufsen, ABB Motors, Canon, Holmens, Manpower, Sandvik, Toshiba Tec and many more. In March

2005, IBX acquired German eProcurement leader trimondo.

➤ **Mercado Eletrônico (www.me.com.br)**

Brazilian e-market with more than 180,000 registered members, established in 1994 in São Paulo. Mercado Eletrônico is partly owned by Citibank, GP Investimento, Opportunity, and Redan. The e-market functions as a platform for companies that wish to find new buyers and sellers as well as increase the level of efficiency in handling of transactions. Mercado Eletrônico has a geographical focus on medium and large enterprises in Latin America. Companies include: Alcan, Orbitall, Elemetal, Telemar, Rasec Madeiras, Philips, VR, Caraíba Metais, Brasil Telecom, Cragill, Direct TV, Kodak, Thyssen Krupp.

➤ **Mercateo (mercateo.com)**

Mercateo was launched in 1999 as a subsidiary of the EON group in Germany. The emarketplace works as a platform for distributors, wholesalers and small & medium sized enterprises to find new buyers and sellers from Austria, Germany, and Switzerland. A wide range of products and services are available such as software, office supplies, computer accessories, office furniture, gifts, packaging and cleaning equipment. Mercateo has more than 120,000 registered members and 50,000 visits each day.

➤ **Perfect Commerce (www.perfect.com)**

Established in 1999 in USA, Perfect Commerce offers On-Demand Supplier Relationship Management (SRM) solutions enabling companies to reduce the cost and complexity of their purchasing process. Their services are being used by 190 Fortune 1000 Clients and 11,000 Suppliers. Companies include: Honeywell, Xerox, Starwood, Eastman, Polaroid, Unisys, Access Graphics, Bell Industries, Sandvik Coromant, Veritas Software Corporation and many more. The company is backed by large venture capital markets as well as 19 large utility companies in North America.

➤ **pmelink.pt (www.pmelink.pt)**

Portuguese e-market launched in 2001 by Banco Espírito Santo, Caixa Geral de Depósitos, and Portugal Telecom. With more than 45,000 registered users, the e-marketplace works as a platform for companies of different sizes, looking for new buyers and sellers in Portugal and Brazil. Companies include: Comercialcer, Lda., Passos de Sousa, lda., Albano N. Alves, Altamira, Compaq, Epson, HP, Microsoft, Philips, Samsung, Sony, Symantec, Toshiba, Travelstore, etc.

➤ **Rusbiz.com (www.rusbiz.com)**

Rusbiz.com, a division of ZAO Sozvezdie Nakosy, is a Russian Business-to-Business (B2B) market with global focus. The e-market offers a variety of products including: Bio chemicals, components, fuel additives, lubricants, clothes, food, etc. Rusbiz.com also provides other services such as an E-catalogue and an Internal Messaging System. Site is available in English and Russian. Since their launch in 2002, more than 20,000 small and mid size companies have registered as members at Rusbiz.com.

➤ **Tejari (www.tejari.com)**

Launched in Dubai, United Arab Emirates (UAE) in 2000. The e-market offers a variety of trading functions and related services to their approximately 2000 registered users. With subsidiary e-markets in Jordan and Kuwait their geographical focus is primarily on countries in the Middle East and on India. Customers include private companies and Government organisations such as The National Bank of Dubai, Government of Dubai - Land Department, Arabian Ethicals Co., Bilal International Company, and Desert TurfCare L.L.C.

➤ **Tenderlink.com (www.tenderlink.com)**

Tenderlink.com was established in 1994 and operates in New Zealand and Australia.

Tenderlink.com advertises tenders from all levels of government, and the private and public sector. The e-market had approximately 5,000 registered suppliers and 140,000 closed tenders in December 2004. Buyers and sellers include: 3M Australia, ANZ Banking Group Ltd, NEC Australia Pty Ltd, Baycorp Advantage Ltd, Siemens Building Technology Ltd, Sony New Zealand Ltd, Telecom New Zealand Ltd, Vodafone NZ and several others.

➤ **Trade-India.com (www.tradeindia.com)**

Launched in New Delhi in 1996, Trade-India.com helps to bridge the gap between foreign importers and Indian exporters. A variety of goods and services are available; Agricultural Products, Textiles, Consumer Electronics, Sports & Entertainment, Industrial Supplies, Business Service, etc. Trade-India.com has more than 4 million registered users and the company is maintained and promoted by Infocom Network Ltd.

➤ **Tradeboss.com (www.tradeboss.com)**

Tradeboss.com, formerly known as b2b.asialinks.com, is a part of a B2B Network hosted by Tradeholding.com. Several different categories of goods and services are available on the e-market including animal products, electronics, chemicals, textiles, transportation, and wood. Tradeboss.com has been active since 1999 and has a geographical focus on global companies looking for trading opportunities with small and mid size companies in Asia. With more than 80,000 registered members, they provide a platform for companies who wish to find new buyers and sellers.

Pre-owned / Second-hand Goods

➤ **Supralift (www.supralift.com)**

German e-marketplace Supralift was established in 2001 and is open to companies worldwide. The site is available in more than 20 languages including Danish, Dutch, English, German, Polish, Russian and Turkish, just to name a few. Supralift provides a variety of products and services, such as used forklift trucks and warehouse equipment. Companies include: Amvar Limited, Asercom, SMV, Joe Heyworth Forklift Trucks, Linde Jewsbury's Ltd, STILL, Pirtek and many more. The e-market has more than 3000 registered end-users, dealers, and manufacturers.

Retail & Consumer Goods

➤ **CPGmarket.com (www.cpgmarket.com)**

Founded in 2000 by Danone, Henkel, Nestlé and SAP, CPGmarket is a provider of collaborative supply chain solutions open to manufacturers of consumer packaged goods interested in efficient transactions with suppliers. Companies include: Barilla, Fromageries Bel, Coca-Cola, Danisco, Danone, Delta Dairies, Ferrero, Henkel, Nestlé, and L'Oreal. In January 2005 CPGmarket.com was acquired by Accenture, a global management consulting, technology services and outsourcing company.

➤ **GlobalNetXchange, GNX (www.gnx.com)**

Headquartered in San Francisco, USA, GNX is an e-business solution and service within the global retail industry. The e-market is owned by Sears, Carrefour, Oracle, Coles Myer Ltd., KarstadtQuelle AG, The Kroger Co., METRO AG, Pinault-Printemps-Redoute, J Sainsbury plc and Federated Department Stores. GNX solutions connect retailers, manufacturers and their trading partners to reduce costs and improve efficiency by streamlining and automating critical sourcing and supply chain processes. Since the launch in 2000 several major companies have registered with GNX including

Colgate Palmolive, Goodyear, Johnson & Johnson, Lever Fabergé, Marks & Spencer, Michelin, Philips, Procter & Gamble, Sears, and Unilever. The site is available in Chinese, German, English, Italian, Japanese, Portuguese, French and Spanish. In 2004, GNX ProductVine won the award for "Best Demonstration of Scalability" in Microsoft's Retail Application Developer (RAD) Award competition.

➤ **Tradeplace (www.tradeplace.com)**

Established in 2001 in Amsterdam, The Netherlands, Tradeplace was founded as a joint customer service by BSH Bosch und Siemens Hausgeräte GmbH, Electrolux Home Products, Whirlpool Europe, Indesit Company and Royal Philips Electronics of the Netherlands. Tradeplace provides a trading service to European retailers of household appliances and consumer electronics. The e-market aims to eliminate inefficiencies in the supply chain whilst improving e-enabled communications between manufacturers and distributors.

Registered companies include: BSH Bosch and Siemens Hausgeräte GmbH, Electrolux Home Products, Whirlpool Europe, Merloni Elettrodomestic, AEG, Philips Consumer Electronics Europe, and Siemens. The site is available in several different languages such as Dutch, English, Finnish, French and Italian.

➤ **WorldWideRetailExchange, WWRE (www.wwre.com)**

WWRE was founded in March 2000 for retailers and suppliers in the food, general merchandise, textile/home, and drugstore sectors. WWRE assist large companies in sourcing from suppliers and to increase the level of efficiency in handling of transactions. The e-market has global coverage and their site is available in English, French, German and Spanish. Members include leading retail industry players including Campbell Soup Company, Boots UK, Tesco, Coop Italia, John Lewis, Marks & Spencer, Safeway, Woolworths, Sony (Italia), and Universal.

On April 26, 2005, WWRE and GNX announced that the companies have entered into an agreement to merge. The two companies will combine their technology solutions into a single platform that connects retailers, manufacturers, and their business trading partners to more efficiently share information and manage work processes.

Services

➤ **Smarterwork (www.smarterwork.com)**

Headquartered in the UK, Smarterwork offers services in 11 business categories covering a wide range of services: Marketing & Creative, Research Services, Web Design Service, Business Consulting Services, Legal Services, and much more. Smarterwork was founded in 2000 by Net-Partners, Index Ventures and Wellington Partners. The services provided are being used by over 70,000 clients from 170 countries. Companies include Hugin, Dr NewMedia Ltd, Six Degrees Recruiting Inc., Rubicon International Services Ltd., MyAddress.co.uk, Higher Living, and Newsweek Japan Magazine.

Transportation & Logistics

➤ **Cargo Portal Services, CPS (www.cargoportalservices.com)**

Based in Blue Bell, USA since 2003, Cargo Portal Services works as a full service portal for the global air cargo industry. Companies include: Air Canada Cargo, Austrian Cargo, KLM Cargo, United Airlines Cargo and NWA Cargo. Although owned by Unisys, the services provided by CPS are open to all carriers and forwarders on a neutral basis. CPS carriers serve 430 cities in 117 countries. In order to use the services provided by Cargo Portal

Services companies need an account with one of the CPS participating carriers.

➤ **Global Freight Exchange, GF-X (www.gf-x.com)**

Launched in 2000 in London, UK, GF-X provides cargo capacity to carriers and forwarders in the air cargo industry. The e-market assists large companies to increase the level of efficiency in handling of transactions. With a global focus they have attracted several major companies including Air France Cargo, British Airways World Cargo, Lufthansa Cargo, Emirates Sky Cargo, DHL, Middle East Airlines, TAP Cargo and AACargo.

➤ **Teleroute (www.teleroute.com)**

Teleroute provides unused truck capacity and cargo, freight and vehicle exchange to Transporters, haulage contractors and freight forwarders from all European countries. The website is available in several different languages ranging from Arabic, Bulgarian and Polish to English and Swedish. Since the establishment in 1985 in France, Teleroute has become a subsidiary of the Dutch group WoltersKluwer. With sales offices in several European countries and 45,000 registered users, Teleroute works as a platform for companies looking for new buyers and sellers within Europe.

Appendix 4: The questionnaire

The use of E-procurement within manufacturing SMEs

Company profile

1. Nationality:

- Irish French

2. Annual Turnover:

- | | |
|---|--|
| <input type="checkbox"/> Less than €1 million | <input type="checkbox"/> €15-35 million |
| <input type="checkbox"/> €1-5 million | <input type="checkbox"/> over €35 million |
| <input type="checkbox"/> €5-15 million | <input type="checkbox"/> Don't know/ Refused |

3. Number of Employees:

- 10-50
 50-150
 150-250

Section 1: Connection to the Internet

4. Do you have Internet access within your company? Yes No

If YES:

- Type of connection:**
- Broadband*
- Standard Telephone line
- Do not know

If NO:

- Intend to get Internet soon
- Do not intend to get Internet

* *Broadband refers to the amount of capacity (or speed of data transfer) provided on a telecommunications network via high-speed Internet access (OECD, 2004).*

Section 2: E-procurement for business purposes

5. Level of e-procurement adoption*:

- Use to procure online
- Rarely procure online
- Do not procure online

* EDI is not considered as an e-procurement tool in this questionnaire.

Section 3: E-procurement usage – Current users only answer this section

6. Which of the following e-procurement processes have you used?

- Online ordering systems
- E-catalogues
- Trading exchanges/ e-marketplaces*
- E-tendering**
- Electronic payment
- Application Service Provider (ASP)
- Other:.....

*: Using Internet technology to buy goods and services from a number of known or unknown suppliers.

** : Sending requests for information and prices to suppliers and receiving the responses of suppliers using Internet technology.

7. Which of the following products/ services did you purchase online?

- Strategic purchases (e.g. key components)
- Office supplies (e.g. hardware, software, furniture)
- MRO supplies (commodity goods and services)
- Raw materials

8. How do you evaluate the strategic importance of e-procurement within your organisation?

- Extremely important
- Important
- Neither important nor unimportant
- Unimportant
- Extremely Unimportant

9. How do you rate your satisfaction of the use of e-procurement within your organisation (ROI)?

- | | |
|---|---|
| <input type="checkbox"/> Very satisfied | <input type="checkbox"/> Unsatisfied |
| <input type="checkbox"/> Satisfied | <input type="checkbox"/> Very Unsatisfied |
| <input type="checkbox"/> Fairly satisfied | |

10.

a) How important do you consider the following benefits from adopting e-procurement?

	<u>Very Important</u>	<u>Important</u>	<u>Fairly Important</u>	<u>Unimportant</u>	<u>Very Unimportant</u>
• Reduce purchasing costs	<input type="checkbox"/>				
• Reduce administrative costs	<input type="checkbox"/>				
• Improve productivity	<input type="checkbox"/>				
• Standardise purchasing processes	<input type="checkbox"/>				
• Increase suppliers database/ Improve supplier sourcing	<input type="checkbox"/>				
• Faster cycle/ process time	<input type="checkbox"/>				
• Improve services	<input type="checkbox"/>				
• Relationship building	<input type="checkbox"/>				
• Improve flexibility	<input type="checkbox"/>				
• Other:.....	<input type="checkbox"/>				

b) Which of these are the 3 most important benefits from adopting e-procurement?

- | | |
|---|---|
| <input type="checkbox"/> Reduce purchasing costs | <input type="checkbox"/> Faster cycle/ process time |
| <input type="checkbox"/> Reduce administrative costs | <input type="checkbox"/> Improve services |
| <input type="checkbox"/> Improve productivity | <input type="checkbox"/> Relationship building |
| <input type="checkbox"/> Standardise purchasing processes | <input type="checkbox"/> Improve flexibility |
| <input type="checkbox"/> Increase suppliers database/ Improve supplier sourcing | <input type="checkbox"/> Other:..... |

11.

a) How important do you consider the following factors inhibiting the adoption of e-procurement solutions?

	<u>Very Important</u>	<u>Important</u>	<u>Fairly Important</u>	<u>Unimportant</u>	<u>Very Unimportant</u>
• Supplier integration issues <i>(commitment, systems compatibility)</i>	<input type="checkbox"/>				
• Costs of developing and maintaining systems	<input type="checkbox"/>				
• Concerns about fraud and confidentiality	<input type="checkbox"/>				
• Lack of Management support	<input type="checkbox"/>				
• Inability to justify Costs/ Benefits	<input type="checkbox"/>				
• Do not favour long-term relationship	<input type="checkbox"/>				
• Lack of clear information about e-procurement solutions	<input type="checkbox"/>				

• Redeployment/ Redundancy of staff	<input type="checkbox"/>				
• Internal integration issues <i>(e.g. compliance with existing financial system, ERP)</i>	<input type="checkbox"/>				
• Insufficient skilled staff	<input type="checkbox"/>				
• Reluctance to change	<input type="checkbox"/>				
• Trust issues <i>(e.g. lack of faith in trading partners)</i>	<input type="checkbox"/>				
• Legal uncertainties <i>(e.g. cross country legal differences)</i>	<input type="checkbox"/>				
• Other:.....	<input type="checkbox"/>				

b) Which of the following are the 3 main factors inhibiting the adoption of e-procurement solutions?

- Supplier integration issues (commitment, systems compatibility)
- Costs of developing and maintaining systems
- Concerns about fraud and confidentiality
- Lack of Management support
- Inability to justify Costs/ Benefits
- Do not favour long-term relationship
- Lack of clear information about e-procurement solutions
- Redeployment/ Redundancy of staff
- Internal integration issues (e.g. compliance with existing financial system, ERP)
- Insufficient skilled staff
- Reluctance to change
- Trust (e.g. lack of faith in trading partners)
- Legal uncertainties (e.g. cross country legal differences)
- Other:.....

Section 4: E-procurement perception – non-users only answer this section

12. Level of intention to procure online:

- Intend to procure online in the future
- To evaluate the possibility to use it
- Do not intend to procure online
- Don't know

13. How do you consider your purchases?

	<u>Large</u>	<u>Medium</u>	<u>Low</u>
• Volume of orders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Volume of purchases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Current purchasing costs per order
- Proportion of costs involved in purchasing

14.

a) How important do you consider the following benefits from adopting e-procurement?

	<u>Very Important</u>	<u>Important</u>	<u>Fairly Important</u>	<u>Unimportant</u>	<u>Very Unimportant</u>
• Reduce purchasing costs	<input type="checkbox"/>				
• Reduce administrative costs	<input type="checkbox"/>				
• Improve productivity	<input type="checkbox"/>				
• Standardise purchasing processes	<input type="checkbox"/>				
• Increase suppliers database/ Improve supplier sourcing	<input type="checkbox"/>				
• Faster cycle/ process time	<input type="checkbox"/>				
• Improve services	<input type="checkbox"/>				
• Relationship building	<input type="checkbox"/>				
• Improve flexibility	<input type="checkbox"/>				
• Other:.....	<input type="checkbox"/>				

b) Which of the these are the 3 most important drivers of adoption of e-procurement?

- Reduce purchasing costs
- Reduce administrative costs
- Improve productivity
- Standardise purchasing processes
- Increase suppliers database/ Improve supplier sourcing
- Faster cycle/ process time
- Improve services
- Relationship building
- Improve flexibility
- Other:.....

15.

a) How important do you consider the following factors inhibiting the adoption of e-procurement solutions?

	<u>Very Important</u>	<u>Important</u>	<u>Fairly Important</u>	<u>Unimportant</u>	<u>Very Unimportant</u>
• Supplier integration issues <i>(commitment, systems compatibility)</i>	<input type="checkbox"/>				
• Costs of developing and maintaining systems	<input type="checkbox"/>				
• No tangible benefits for the organisation	<input type="checkbox"/>				
• Concerns about fraud and Confidentiality	<input type="checkbox"/>				
• No relevance to the business	<input type="checkbox"/>				
• Lack of Management support	<input type="checkbox"/>				
• Inability to justify Costs/ Benefits	<input type="checkbox"/>				
• Do not favour long-term relationship	<input type="checkbox"/>				
• Lack of clear information about e-procurement solutions	<input type="checkbox"/>				
• Redeployment/ Redundancy of staff	<input type="checkbox"/>				

- | | | | | | |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <ul style="list-style-type: none"> • Internal integration issues
<i>(e.g. compliance with existing financial system, ERP)</i> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> • Insufficient skilled staff | <input type="checkbox"/> |
| <ul style="list-style-type: none"> • Reluctance to change | <input type="checkbox"/> |
| <ul style="list-style-type: none"> • Trust issues
<i>(e.g. lack of faith in trading partners)</i> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> • Legal uncertainties
<i>(e.g. cross country legal differences)</i> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> • Other:..... | <input type="checkbox"/> |

b) Which of the following are the 3 main factors inhibiting the adoption of e-procurement solutions?

- Supplier integration issues (*commitment, systems compatibility*)
- Costs of developing and maintaining systems
- No tangible benefits for the organisation
- Concerns about fraud and confidentiality
- No relevance to the business
- Lack of Management support
- Inability to justify Costs/ Benefits
- Do not favour long-term relationship
- Lack of clear information about e-procurement solutions
- Redeployment/ Redundancy of staff
- Internal integration issues (*e.g. compliance with existing financial system, ERP*)
- Insufficient skilled staff
- Reluctance to change
- Trust (*e.g. lack of faith in trading partners*)
- Legal uncertainties (*e.g. cross country legal differences*)
- Other:.....

Appendix 5: Results of the Survey

Companies profile

Nationality	Nb. cit.	Fréq.
Irish	11	47,8%
French	12	52,2%
TOTAL OBS.	23	100%

Our sample was constituted for 47,8% of Irish SMEs and 52,8% of French ones. We tried to collect data from “nearly” the same number of Irish and French in order to keep the balance between the nationality of the firms (and not to have much higher results from one country than the other) and to have proportional accurate cross border results for this study.

Annual turnover	Nb. cit.	Fréq.
Less than 1 million	2	8,7%
1-5 million	7	30,4%
5-15 million	6	26,1%
15-35 million	5	21,7%
over 35 million	3	13,0%
Don't know/ Refused	0	0,0%
TOTAL OBS.	23	100%

We tried to administer the survey to SMEs with different range of turnover in order to analyse if the importance of the turnover (which reflect the volume of activity of a firm) has an effect on the adoption of e-procurement solutions within the firm.

Number of Employees	Nb. cit.	Fréq.
10-50	15	65,2%
50-150	7	30,4%
150-250	1	4,3%
TOTAL OBS.	23	100%

We also tried to administer the survey to SMEs with a different number of employees (which also reflect the volume of activity of a firm) in order to see if this is a factor influencing the adoption of e-procurement solutions within the firm. However it was impossible to keep the balance between the different categories (10-50 ; 50-150 ; 150-250) because of the limited number of potential SMEs found in the Kompass database, but also because of the high proportion of “relatively” small firms (under 50 employees) within general SMEs. Thus, 65,2% of the answers collected came from SMEs under 50 employees, 30,4% from firms between 50 and 150 employees, and finally only one answer was collected from a firm of the last category (150 to 250 employees).

Section 1: Connection to Internet

Connection to Internet	Nb. cit.	Fréq.
Yes	22	95,7%
No	1	4,3%
TOTAL OBS.	23	100%

If YES	Nb. cit.	Fréq.
Non réponse	1	4,3%
Broadband	20	87,0%
Standard Telephone line	2	8,7%
Do not know	0	0,0%
TOTAL OBS.	23	100%

If NO	Nb. cit.	Fréq.
Non réponse	22	95,7%
Intend to get Internet soon	1	4,3%
Do not intend to get Internet	0	0,0%
TOTAL OBS.	23	100%

95,7% of the firms questioned had access to Internet. Nearly all of them with broadband. Only two firms responded to have access to Internet with a standard telephone line. Finally only one firm revealed not to have access to Internet within its organisation, but confessed to intend to get it very soon.

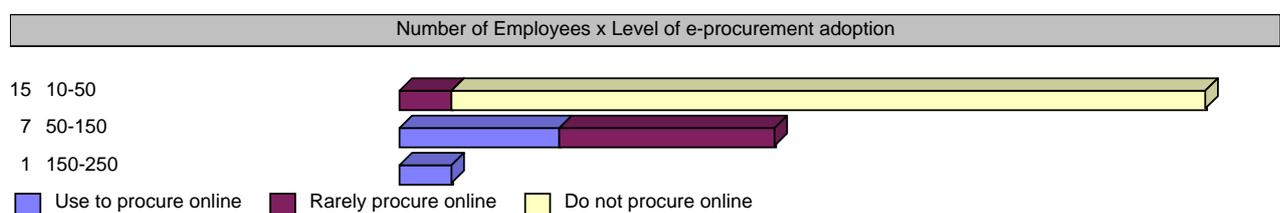
Section 2: E-procurement for business purposes

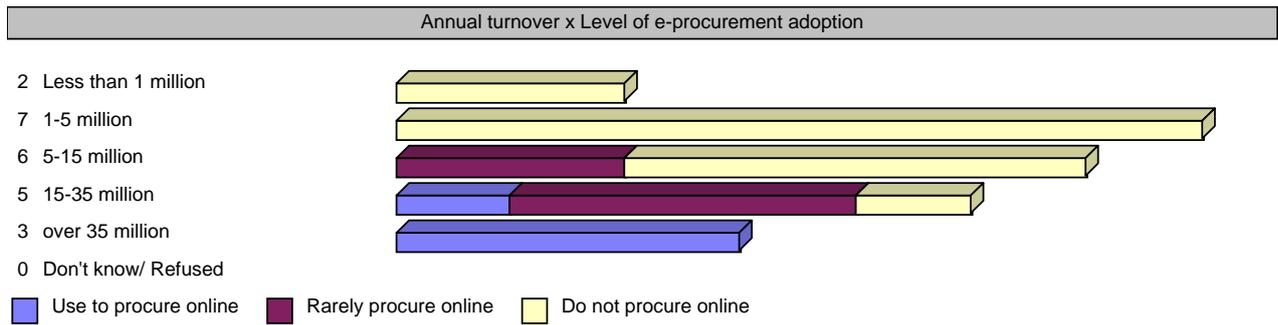
Level of e-procurement adoption	Nb. cit.	Fréq.
Use to procure online	4	17,4%
Rarely procure online	5	21,7%
Do not procure online	14	60,9%
TOTAL OBS.	23	100%

Respondents were asked about their current level of e-procurement adoption within their firms 60,9% of them do not use any e-procurement solution for their business activity. 39,1% of them use e-procurement more or less regularly.

Crossed information:

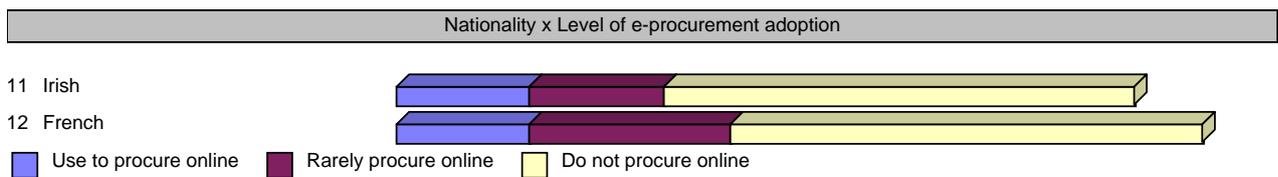
- **Size of firms (number of employees, turnover) + level of e-procurement adoption**





When we cross the data between the size of SMEs (turnover, number of employees) and the level of e-procurement adoption within them, we can clearly see that the biggest SMEs (turnover+ number of employees) appear to be those which have adopted e-procurement solution (use or sometimes procure online), and that the smaller ones nearly never procure online.

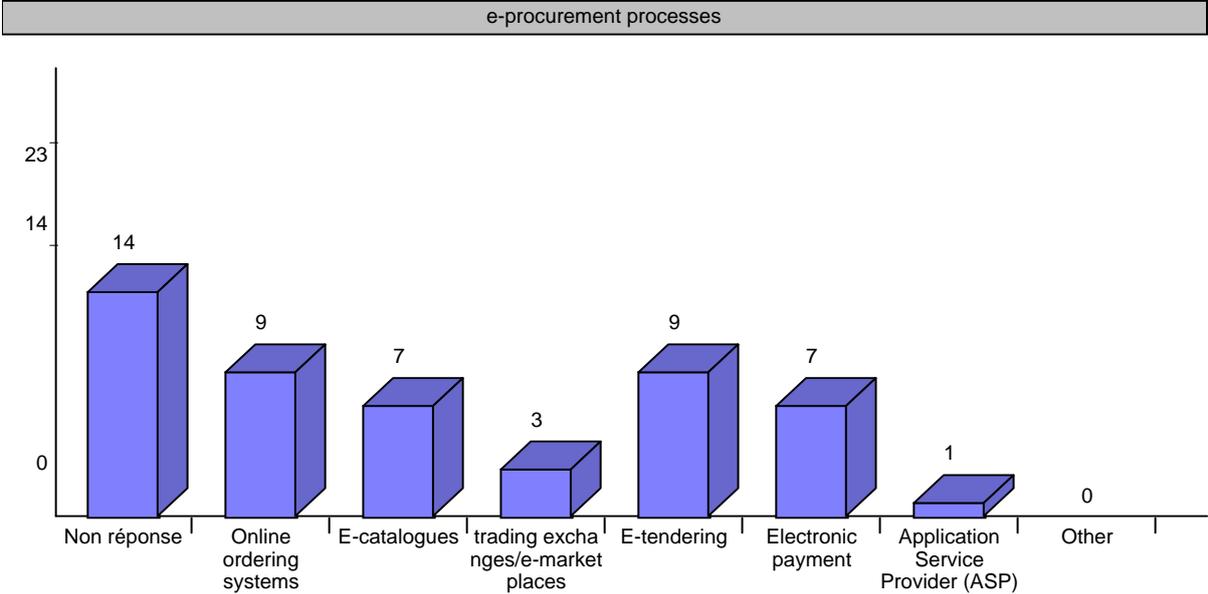
- **Nationality + level of e-procurement adoption**



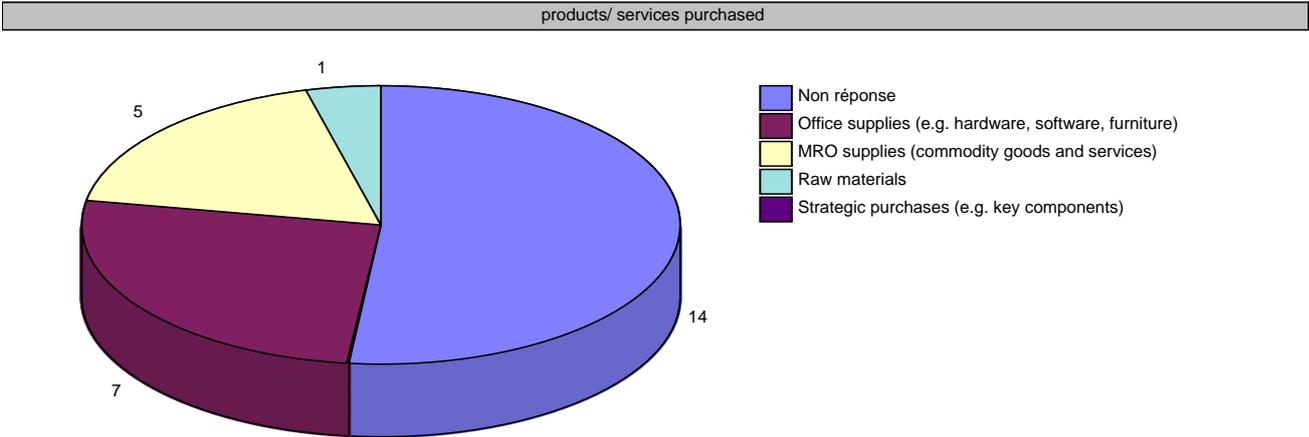
When we cross the data between the SMEs' nationality (Irish, French) and the level of e-procurement adoption within them, we can see that the data gathered is quite similar between both countries (we obtain more or less the same results for the French and the Irish SMEs). This clearly shows us that the nationality of a firm does not influence its level of e-procurement adoption.

Section 3: E-procurement usage *Current users only answer this section*

Only the respondents who procure online (39,1% of the sample) were allowed to answer this section.

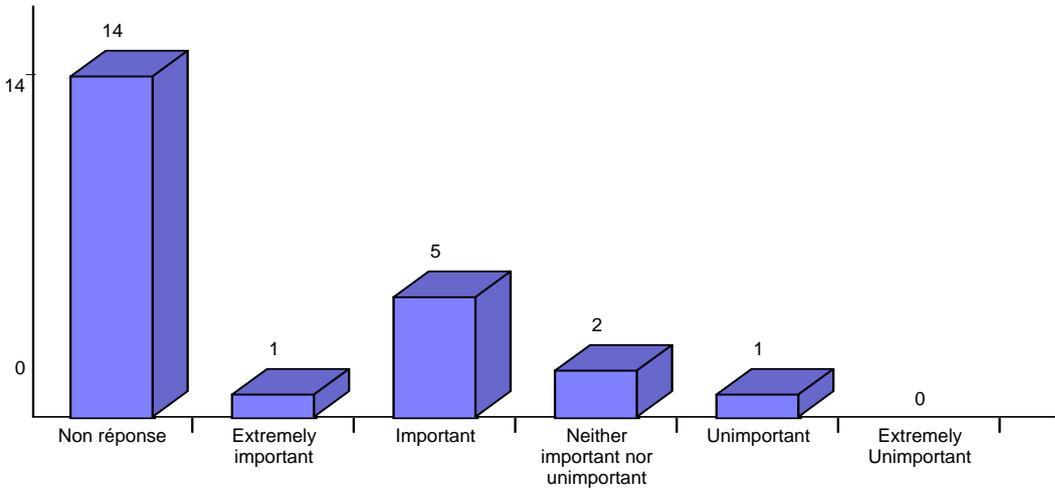


Within those using e-procurement solutions, respondents were asked to identify the e-Procurement activities used in their organisations. Online ordering systems, e-tendering (sending requests for information and prices to suppliers and receiving the responses of suppliers using Internet technology), e-catalogues and electronic payment clearly remain in the most common e-procurement activities.



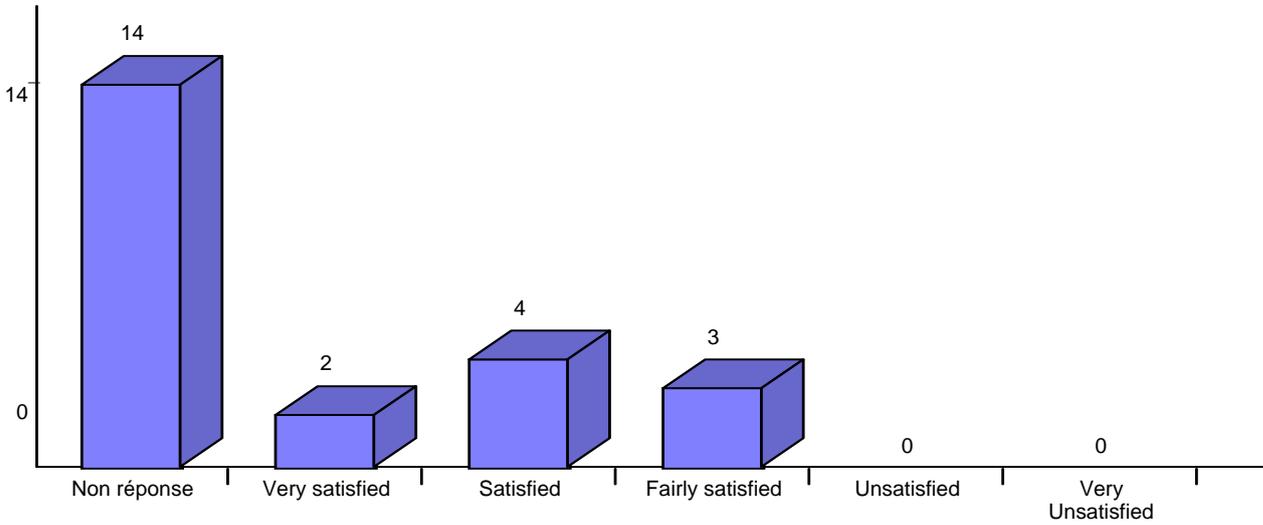
Within those using e-procurement solutions, respondents were then asked to identify the goods and services most commonly procured online. Office supplies and MRO are clearly the two categories of products most commonly purchased online by the sample of our survey.

strategic importance of e-procurement



Respondents who have implemented e-Procurement were asked to rate the strategic importance of e-Procurement in their organisation. E-Procurement appears to have an important strategic position within organisations which have implemented it. Indeed, 66,6% (6/9) of respondents who have implemented e-procurement rated it as strategically important to extremely important for their activity.

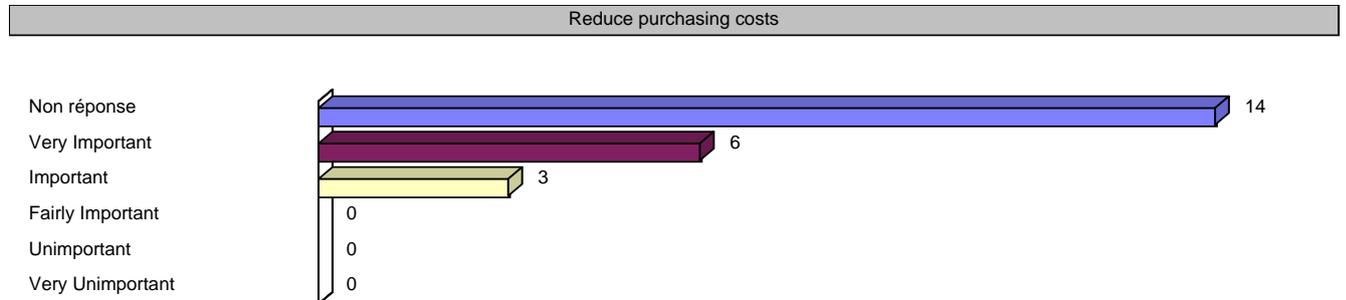
level of satisfaction of e-procurement



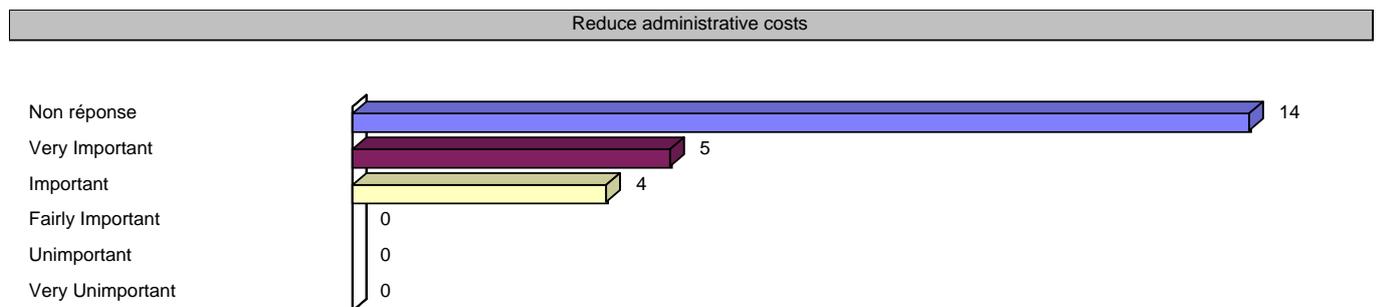
Similarly, organisations which have implemented e-procurement solutions seems to be satisfied with these as 66,6% (6/9) of them rated it as “satisfied” and “very satisfied” their level of satisfaction of e-procurement.

10.

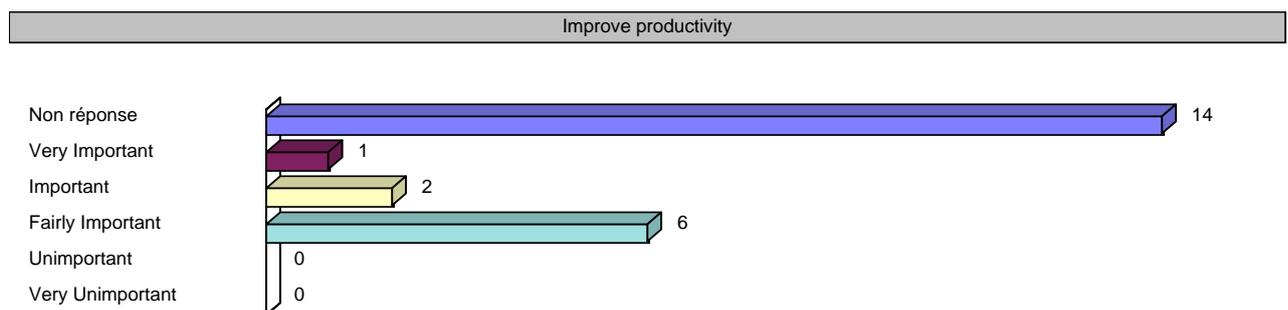
a) How important do you consider the following benefits from adopting e-procurement?



Respondents who have implemented e-procurement in their organisations unanimously consider the fact that it enables to reduce purchasing costs as an important (33,3%) or very important (66,6%) benefit.

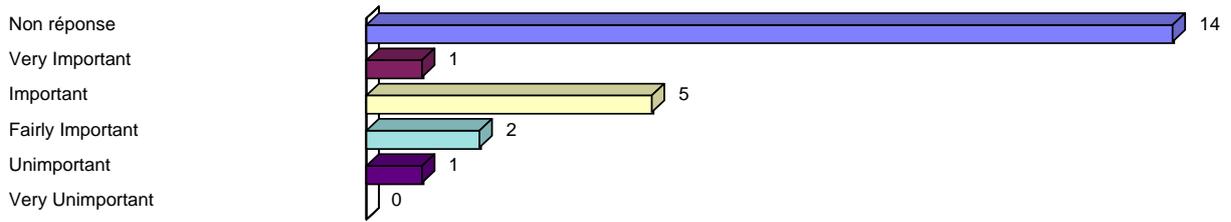


Respondents who have implemented e-procurement in their organisations unanimously consider the fact that it enables to reduce administrative costs as an important (44,4%) or very important (55,5%) benefit.



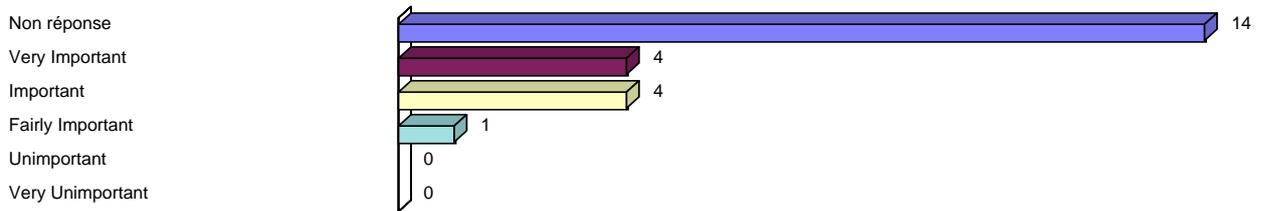
The majority (66,6%) of respondents who have implemented e-procurement in their organisations consider the fact that it enables to improve productivity as fairly important.

Standardise purchasing processes



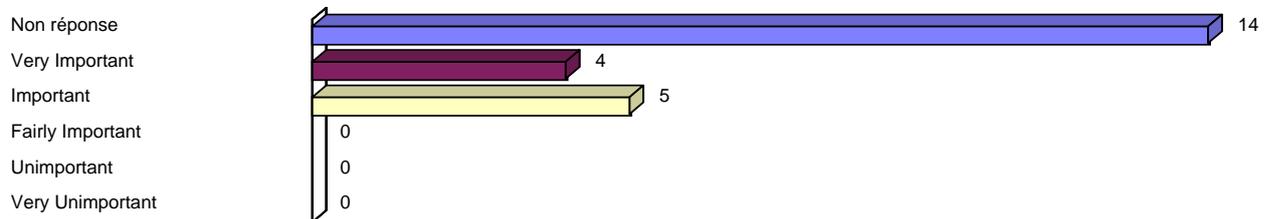
The majority (66,6%) of respondents who have implemented e-procurement in their organisations consider the fact that it enables to standardise purchasing processes as important or very important.

Increase suppliers database/ sourcing



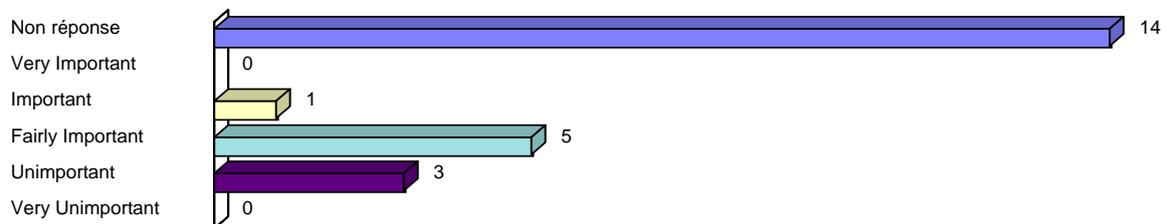
88,8% of respondents who have implemented e-procurement in their organisations consider the fact that it increase the suppliers database and that it allows a bigger supplier sourcing as important to very important.

Faster cycle/ process time



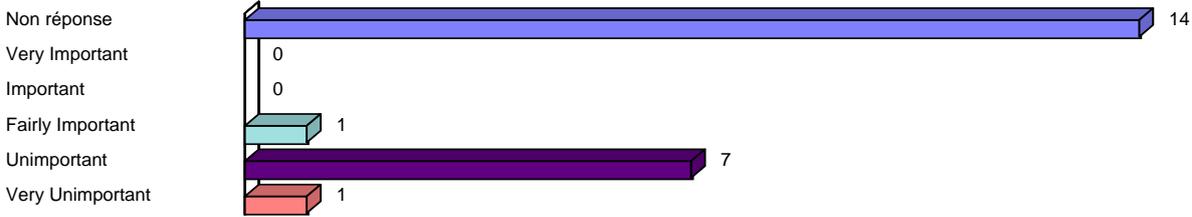
Respondents who have implemented e-procurement in their organisations unanimously consider the fact that it enables faster cycle and process time as important or very important.

Improve services



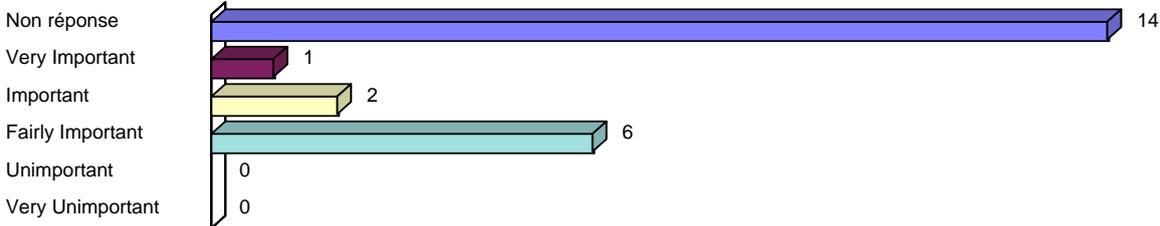
The majority (55,5%) of respondents who have implemented e-procurement in their organisations consider the fact that it enables to improve services as fairly important. However, 33,3% consider this benefit as unimportant.

Relationship building



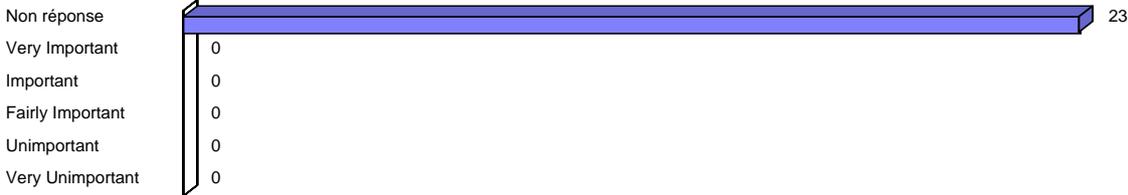
88,8% of respondents who have implemented e-procurement in their organisations consider the fact that it enables relationship building as unimportant to very unimportant. Thus, the respondents do not consider that relationship building is a factor of e-procurement adoption.

Improve flexibility



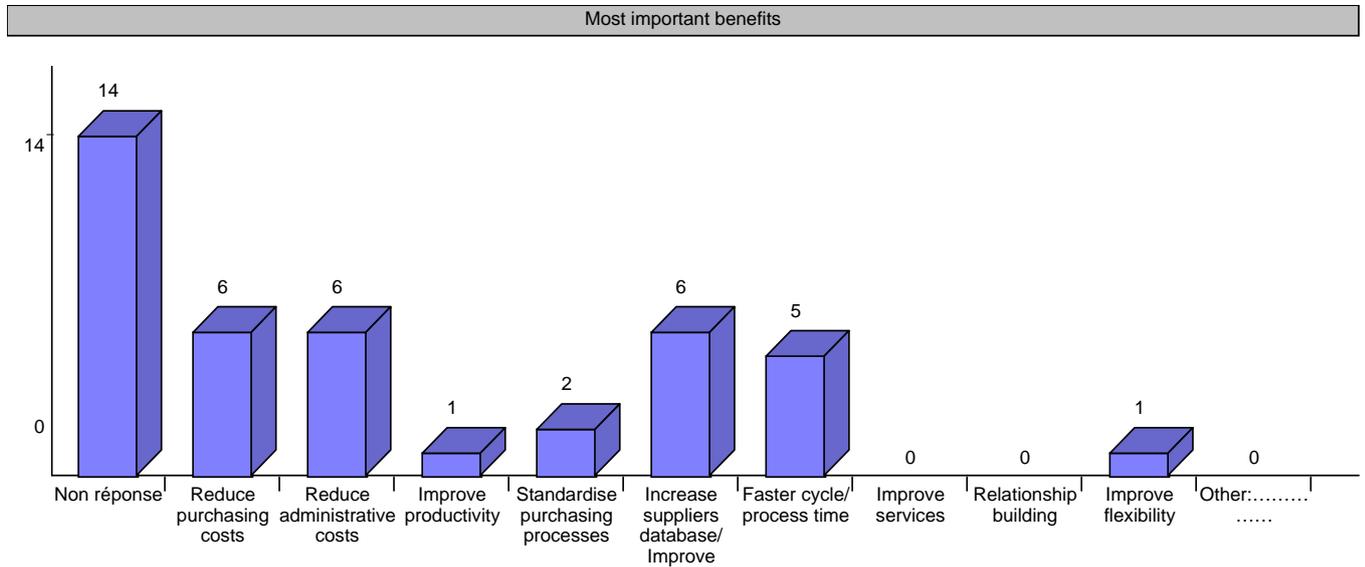
66,6% of respondents who have implemented e-procurement in their organisations consider the fact that it improve flexibility as fairly important, while the rest of them consider it as important or very important.

Other:.....



None of the respondents who have implemented e-procurement in their organisations quoted any other factor as important from adopting e-procurement solutions.

b) Which of these are the 3 most important benefits from adopting e-procurement?



Respondents that already procure online were then asked to identify the 3 main factors driving the adoption of e-Procurement in their organisation.

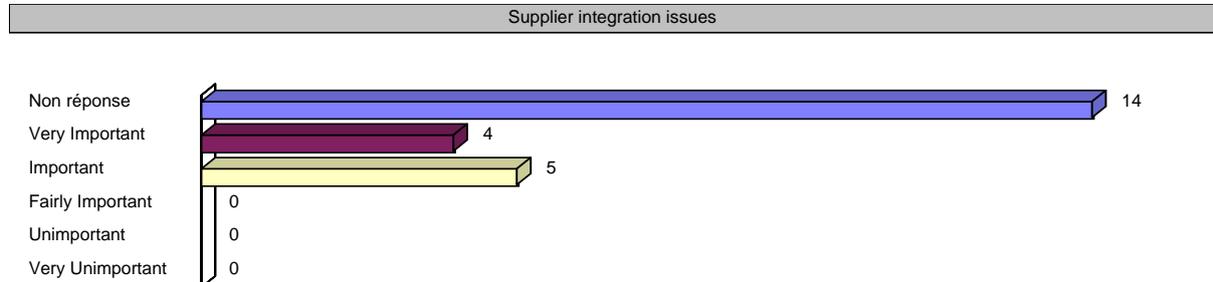
Clearly, the most important benefits for them from adopting e-procurement appear to be the following:

- Reduced purchasing costs
- Reduced administrative costs
- Increased suppliers database and suppliers sourcing

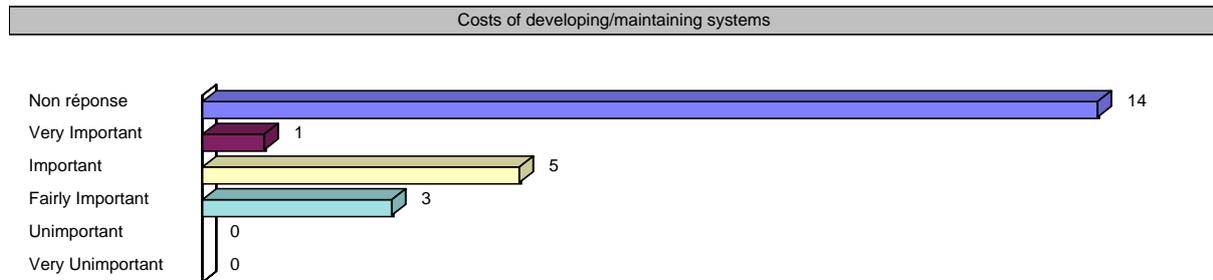
Faster cycle time and process time also appear to be an important benefit associated with e-procurement for the respondents.

11.

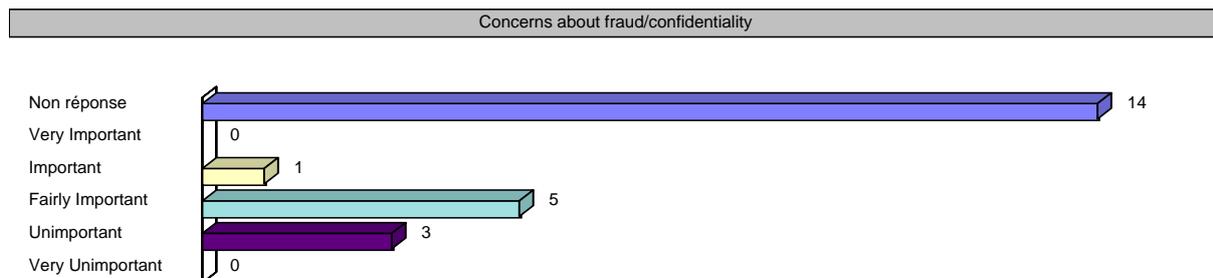
a) How important do you consider the following factors inhibiting the adoption of e-procurement solutions?



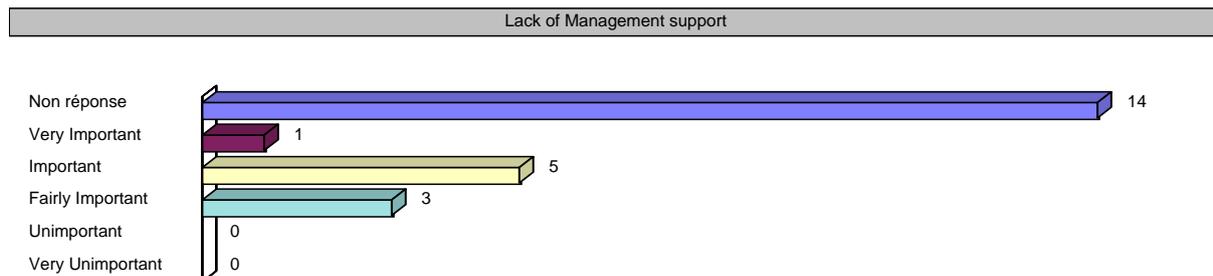
Respondents who have implemented e-procurement in their organisations unanimously consider supplier integration issues (e.g. supplier commitment, systems' compatibility, etc) as an important (55,5%) or very important (44,4%) barrier to e-procurement adoption.



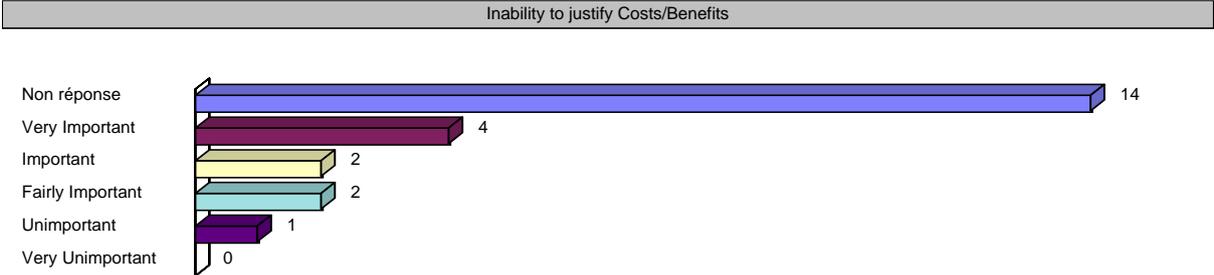
The majority (55,5%) of respondents who have implemented e-procurement in their organisations consider the costs of developing and maintaining systems as an important barrier to e-procurement adoption.



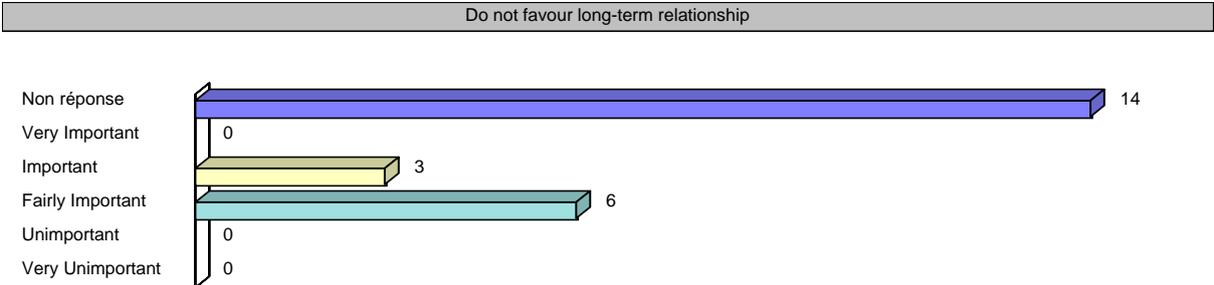
The majority (55,5%) of respondents who have implemented e-procurement in their organisations consider that the concerns about fraud and confidentiality represent an important barrier to e-procurement adoption. However, 33,3% of respondents consider this aspect unimportant.



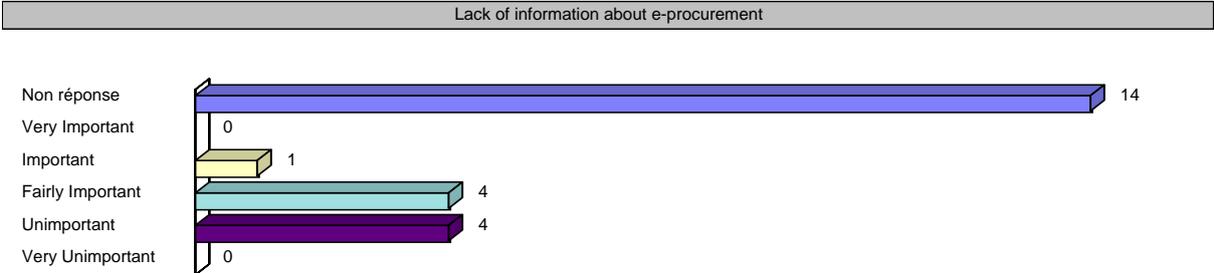
The majority (55,5%) of respondents who have implemented e-procurement in their organisations consider the lack of management support to these activities as an important barrier to e-procurement adoption.



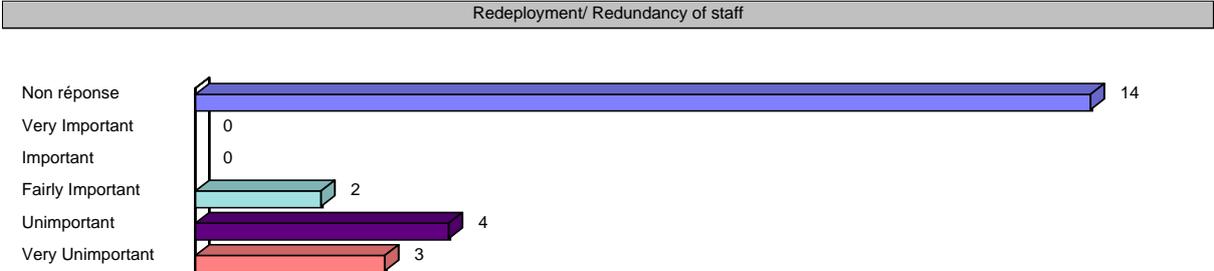
The inability to justify the costs and benefits associated with these processes appears to be a relatively important factor inhibiting e-procurement adoption for the respondents who already procure online.



The vast majority (66,6%) of respondents who have implemented e-procurement in their organisations consider the fact that these processes do not favour long-term relationship building as a fairly important barrier to e-procurement adoption.

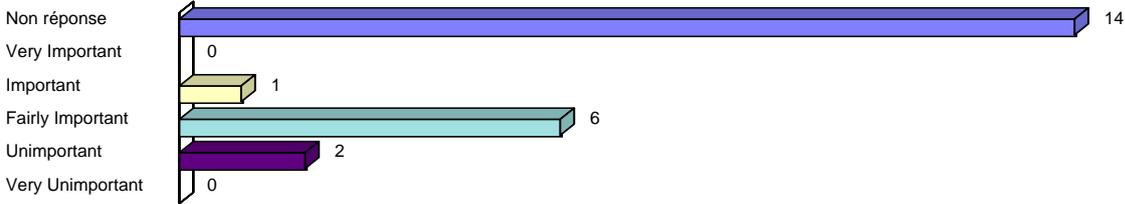


The lack of clear information about e-procurement solutions seems to be a fairly important barrier to e-procurement adoption for some of the respondents who already procure online (44,4%), while being unimportant for other (44,4%).



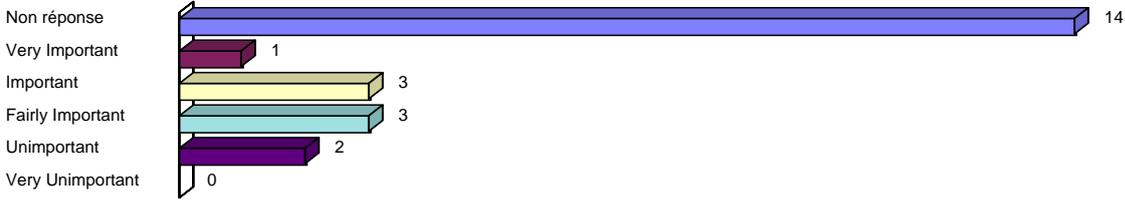
The redundancy and redeployment of staff needed by the implementation of e-procurement solutions within the firm does not appear to be an important barrier to e-procurement adoption, as being considered as unimportant or very unimportant by 77,7% of the respondents who already procure online.

Internal integration issues (e.g. ERP)



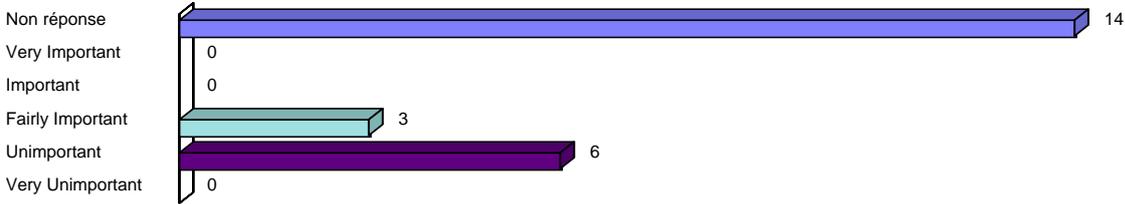
The vast majority (66,6%) of respondents who have implemented e-procurement in their organisations consider internal integration issues (e.g. compliance with existing financial system, compliance with ERP system, etc) as a fairly important barrier to e-procurement adoption.

Insufficient skilled staff



The insufficient skilled staff associated with these processes appear to be a relatively important factor inhibiting e-procurement adoption for the respondents who already procure online.

Reluctance to change

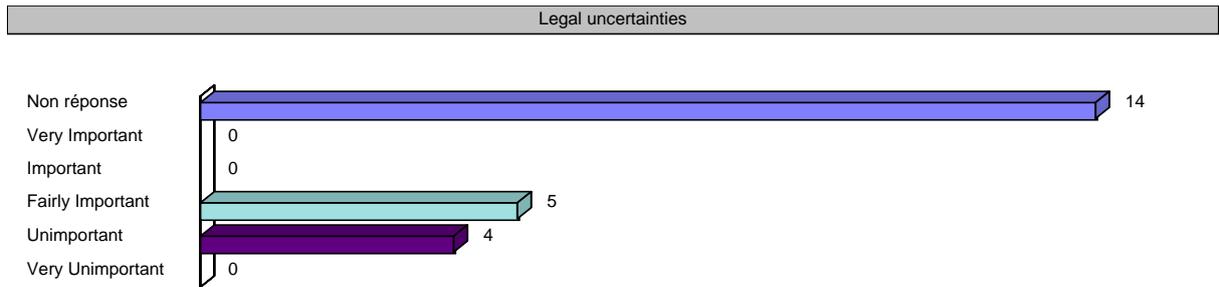


The vast majority (66,6%) of respondents who have implemented e-procurement in their organisations do not consider the reluctance to change as an important barrier to e-procurement adoption.

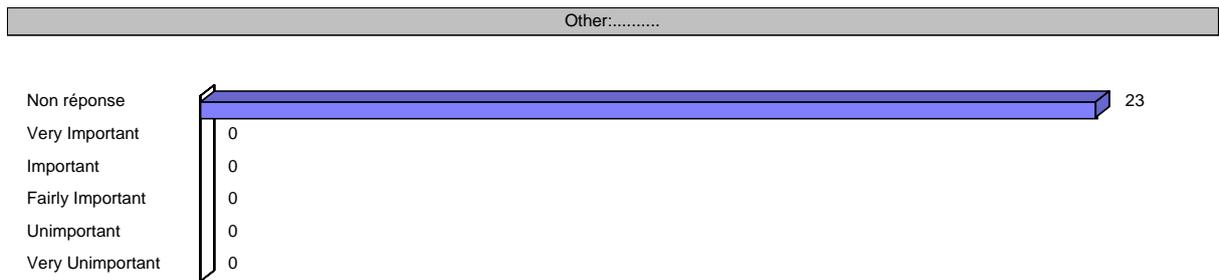
Trust issues



Trust issues associated with these processes (e.g. lack of faith in trading partners) seem to be a fairly important barrier to e-procurement adoption for some of the respondents who already procure online (44,4%), while being unimportant for other (44,4%).

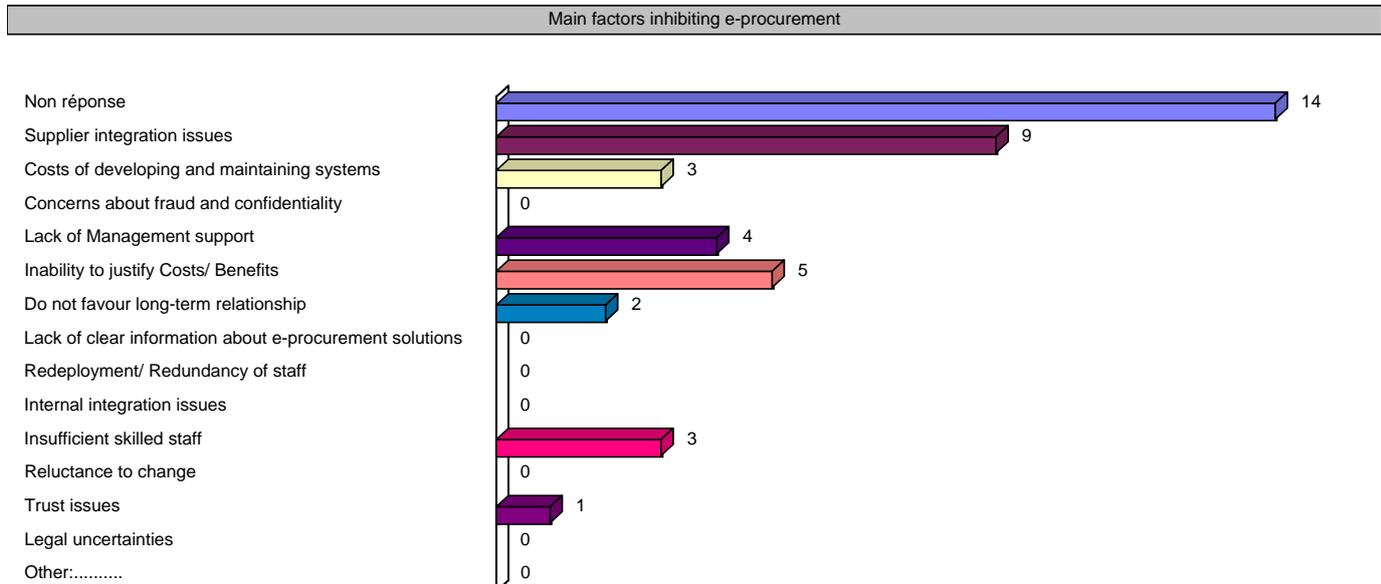


Legal issues associated with these processes (e.g. cross country legal differences) seem to be a fairly important barrier to e-procurement adoption for the majority of the respondents who already procure online (55,5%), while being unimportant for rest of them (44,4%).



None of the respondents who have implemented e-procurement in their organisations quoted any other barrier as important to adopt e-procurement solutions.

b) Which of the following are the 3 main factors inhibiting the adoption of e-procurement solutions?



Respondents that already procure online were then asked to identify the top 3 inhibitors that are creating major hurdles for adopting/ implementing e-procurement.

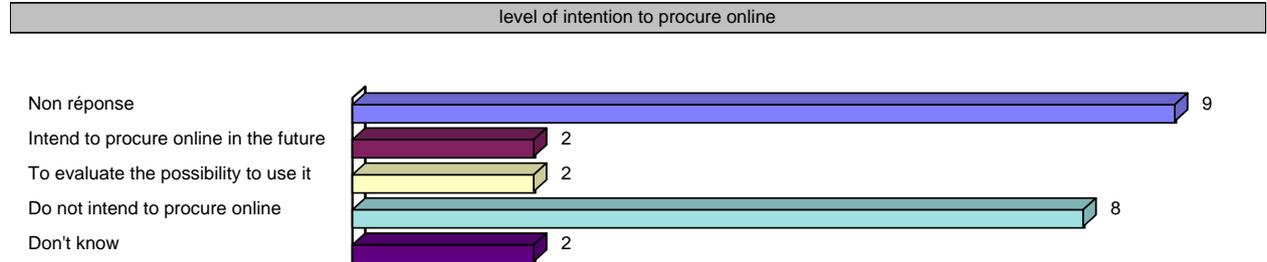
The 3 main barriers to e-procurement adoption appear for them to be the following:

- Supplier integration issues (e.g. commitment, systems' compatibility)
- The inability to justify the costs and benefits associated with these processes
- The lack of management support for these solutions

The costs of developing and maintaining systems and the insufficient skilled staff come behind, but are not within the 3 most important barriers of adoption for the respondents.

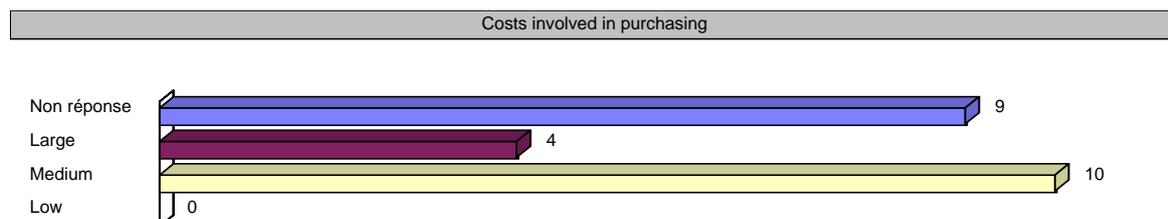
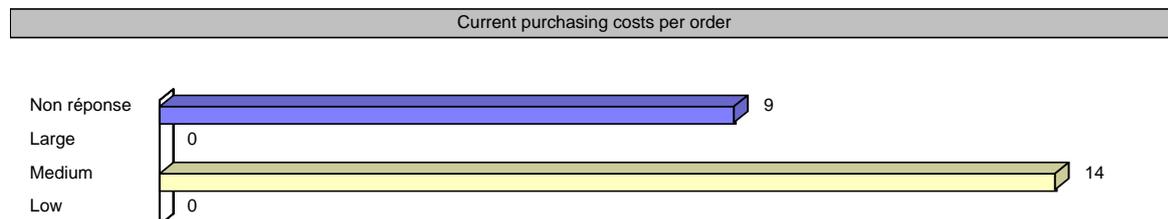
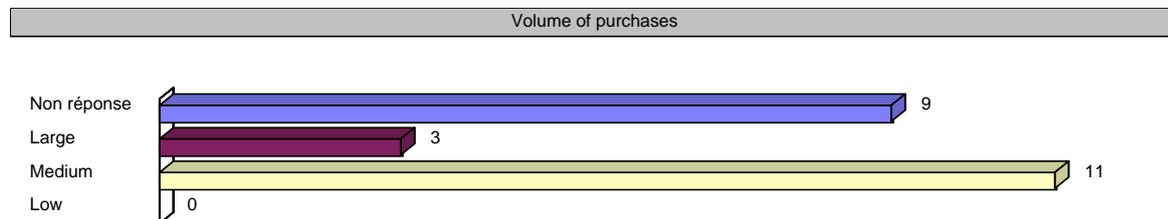
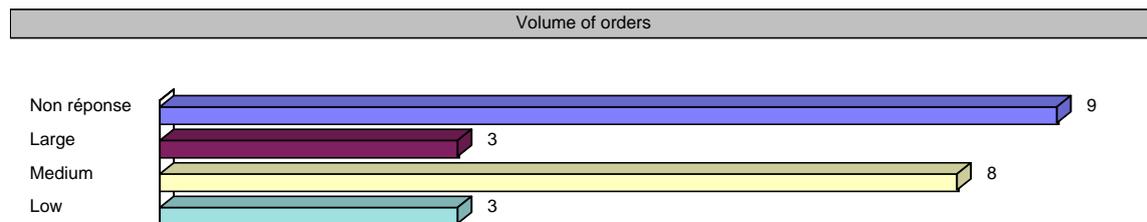
Section 4: E-procurement perception – non-users only answer this section

Only the respondents who do not procure online (60,9% of the sample) were allowed to answer this section.



Respondents were asked to evaluate their level of intention to procure online in the future. The majority of them (57,14%) do not intend at all to procure online, while 28,57% (4/14) seem to be in favour to consider such processes.

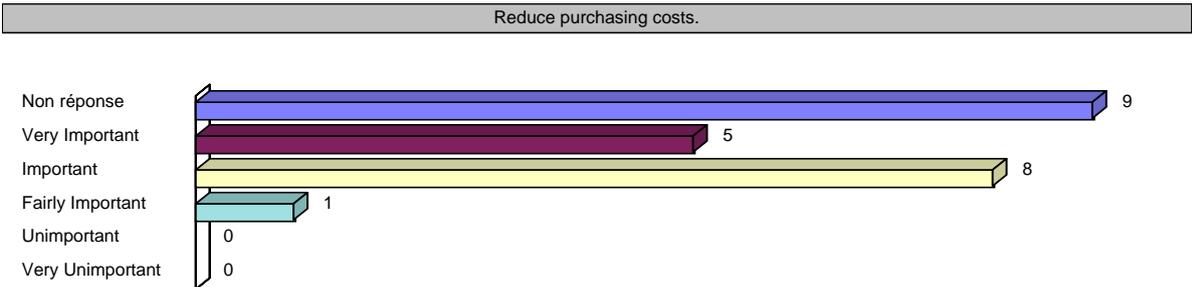
How do you consider your purchases?



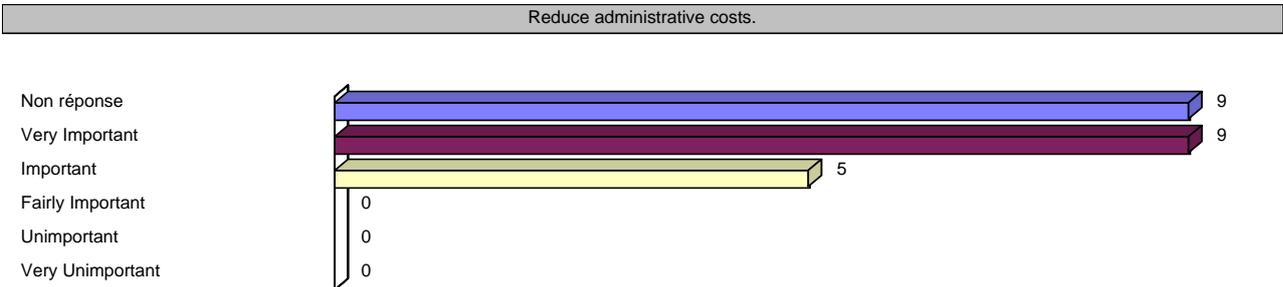
Respondents who do not procure online generally rate as “medium” the volume of their orders, the volume of their purchases, their current purchasing costs per order and the costs involved in purchasing. We can also notice that 28,57% (4/14) consider the costs involved in purchasing as being large.

14.

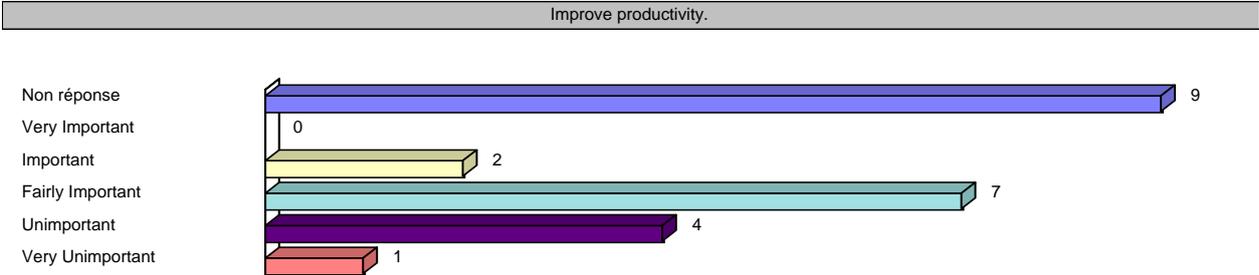
a) How important do you consider the following benefits from adopting e-procurement?



Respondents who do not have implemented e-procurement in their organisations unanimously consider the fact that it enables to reduce purchasing costs as very important (35,7%), important (57,14%) or fairly important (7,14%).

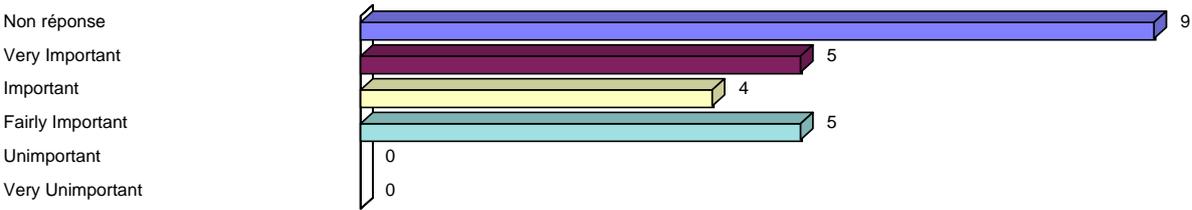


Respondents who do not have implemented e-procurement in their organisations unanimously consider the fact that it enables to reduce purchasing costs as a very important (64,3%) or important (35,7%) benefit for e-procurement.



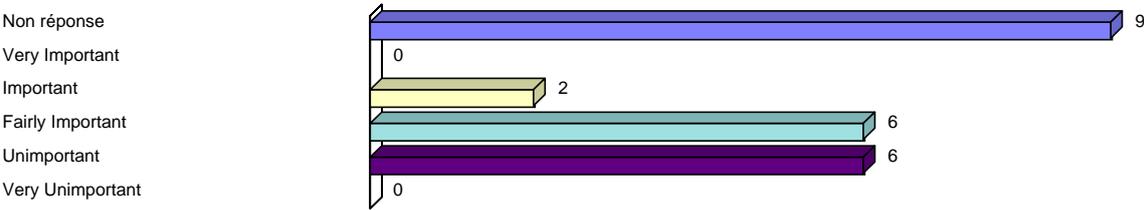
50% of the respondents who do not have implemented e-procurement in their organisations consider the fact that it improves productivity as a fairly important benefit for e-procurement adoption. However, 35,71% (5/14) of them consider this benefit as unimportant or very unimportant.

Standardise purchasing processes.



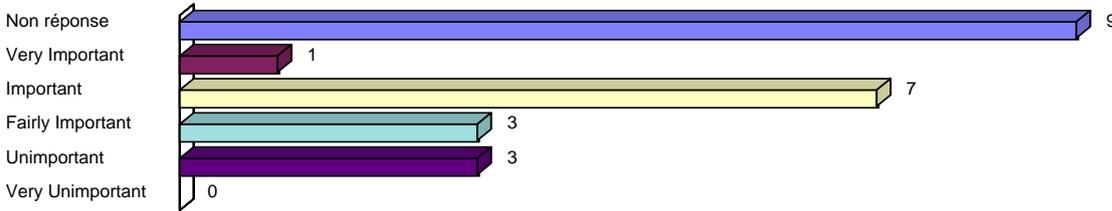
The fact that e-procurement standardise purchasing processes seems to be particularly important for respondents who do not have implemented e-procurement within their organisation as 35,7% of them consider it as very important, 28,57% as important and 35,7% as fairly important.

Increase suppliers database/ sourcing1



The fact that e-procurement allows to increase the suppliers database and improve the supplier sourcing does not seem to be an important benefit from e-procurement adoption for a lot of respondents who do not have implemented any e-procurement solutions within their organisations, as 42,86% of them consider this as unimportant. However, the same proportion consider it as fairly important and 14,29% as important.

Faster cycle/ process time.

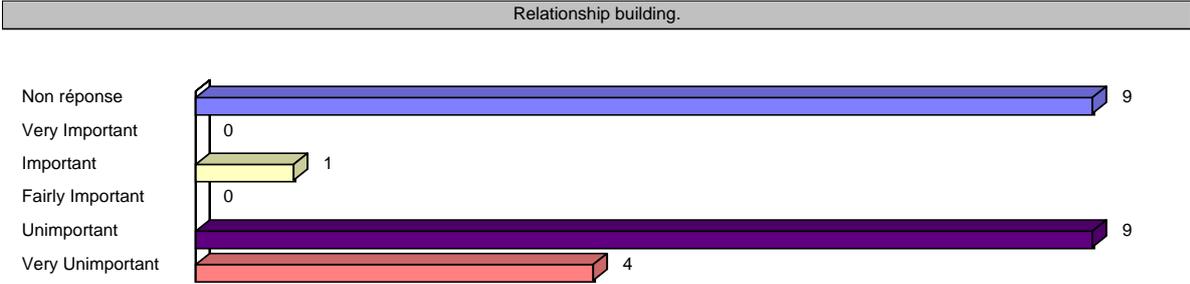


50% of the respondents who do not have implemented e-procurement in their organisations consider the fact that it enables to fasten cycle time and process time as an important benefit for e-procurement adoption. The rest of them is mainly divided on the issue between fairly important (21,43%) and unimportant (21,43%).

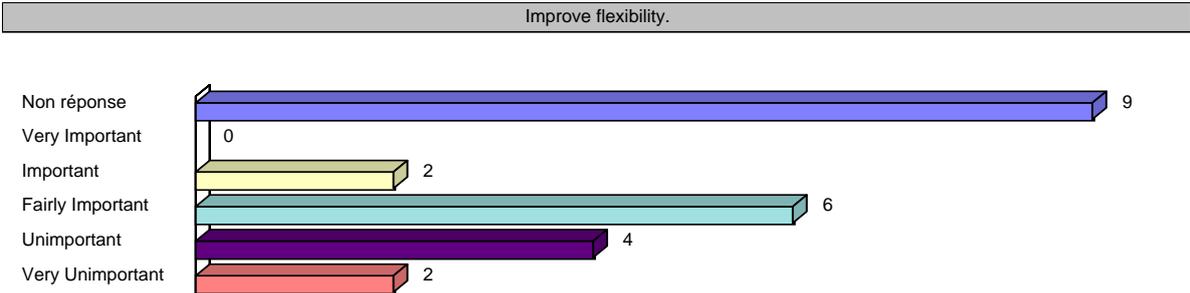
Improve services.



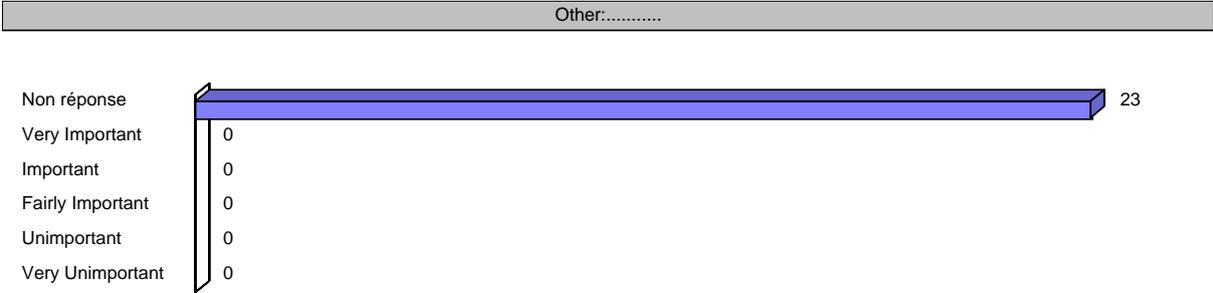
This graph shows us that the vast majority (64,29%) of the respondents who do not have implemented e-procurement within their organisations do not consider improved services as a benefit for e-procurement adoption.



This graph shows us that nearly (92,86%) all of the respondents who do not have implemented e-procurement within their organisations do not consider relationship building as a benefit for e-procurement adoption.

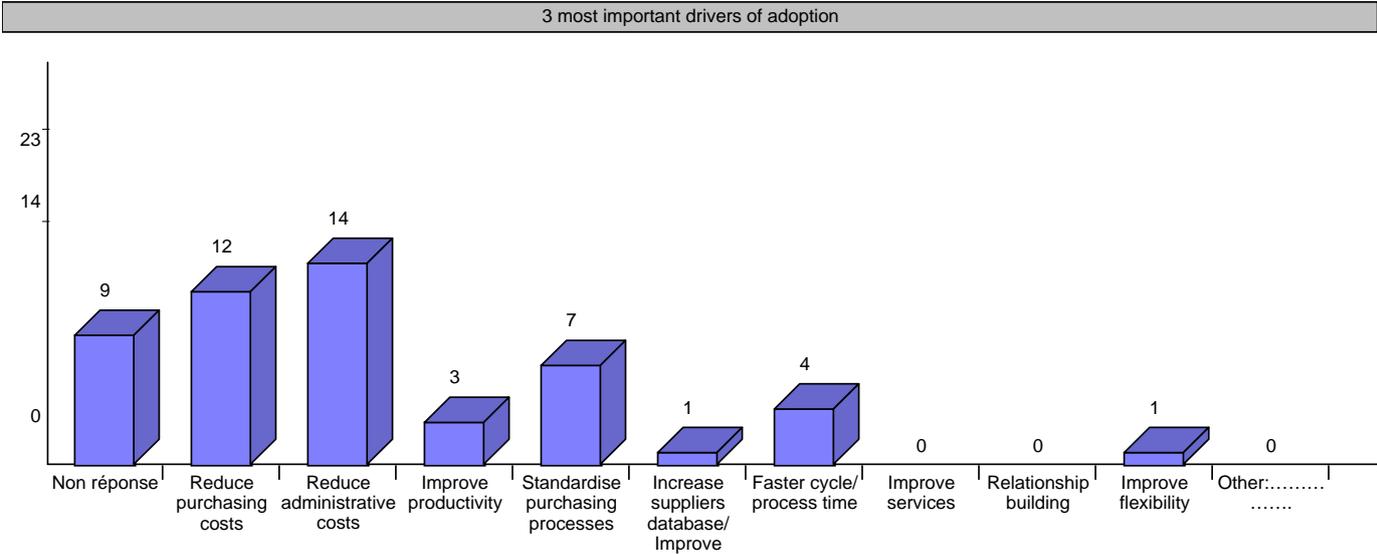


The fact that e-procurement improve the flexibility of the firms does not seem to be an important benefit from e-procurement adoption for a lot of respondents who do not have implemented any e-procurement solutions within their organisations, as 42,86% of them consider this as unimportant or very unimportant. However, the same proportion consider it as fairly important and 14,29% as important.



None of the respondents who do not have implemented e-procurement in their organisations quoted any other factor as important from adopting e-procurement solutions.

b) Which of these are the 3 most important drivers of adoption of e-procurement?



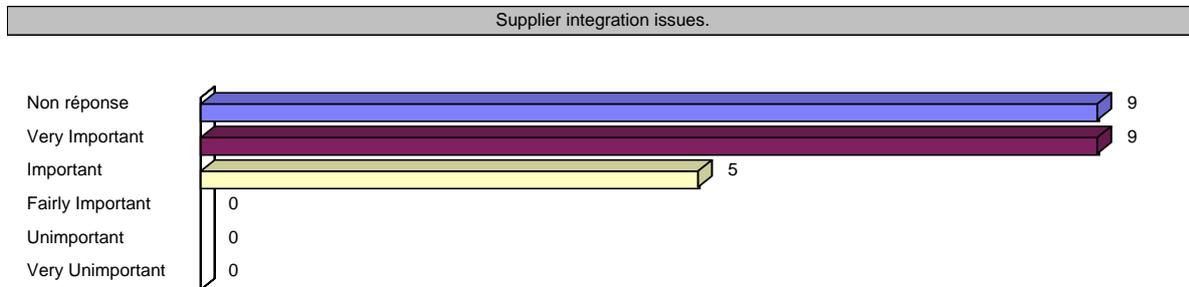
Respondents that do not procure online were then asked to identify the 3 main factors driving the adoption of e-procurement.

Clearly, the most important benefits for them from adopting e-procurement appear to be the following:

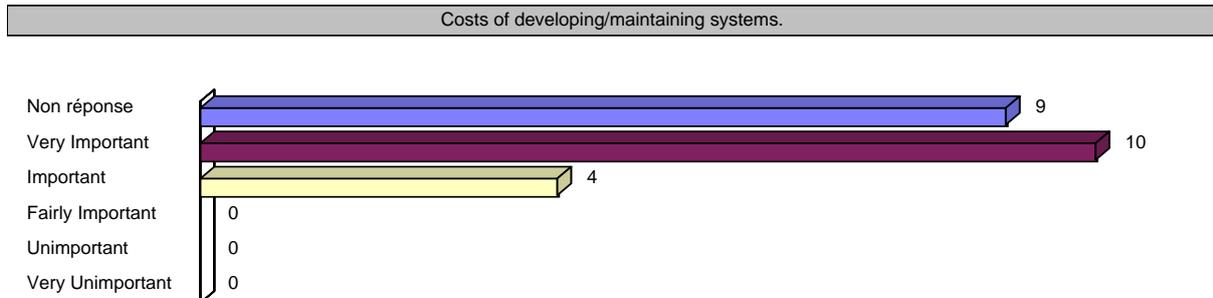
- Reduced administrative costs
- Reduced purchasing costs
- Standardised purchasing processes

15.

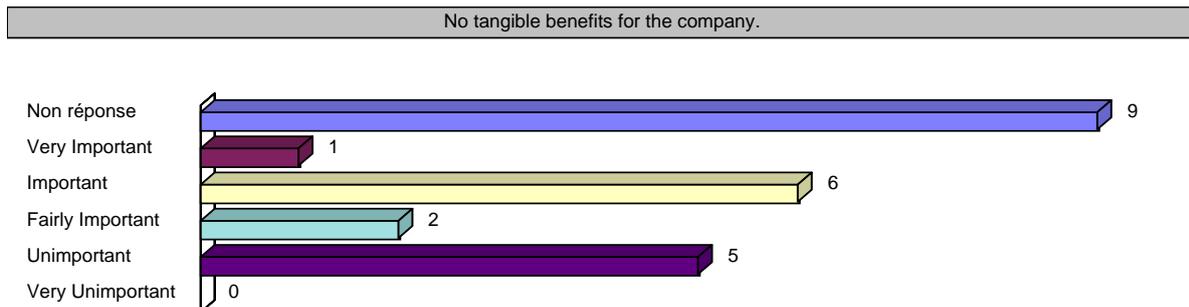
a) How important do you consider the following factors inhibiting the adoption of e-procurement solutions?



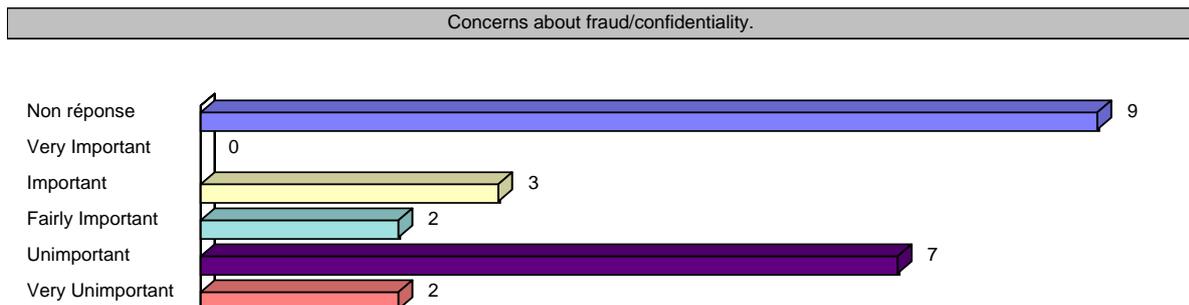
Supplier integration issues (e.g. supplier commitment, systems' compatibility) appears to be a significant barrier to adoption for respondents who do not procure online as 64,29% of them consider this as very important and the rest (35,71%) as important.



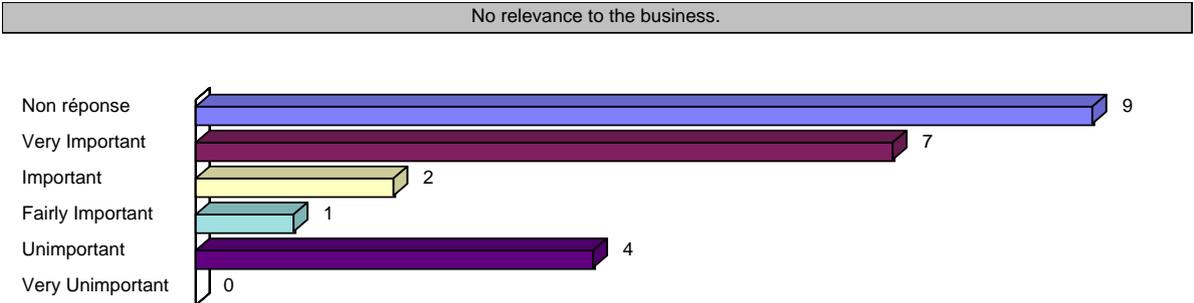
The costs of developing and maintaining the e-procurement systems also appears to be a significant barrier to e-procurement adoption for respondents who do not procure online as 71,43% of them consider this issue as very important, and the rest (28,6%) as important.



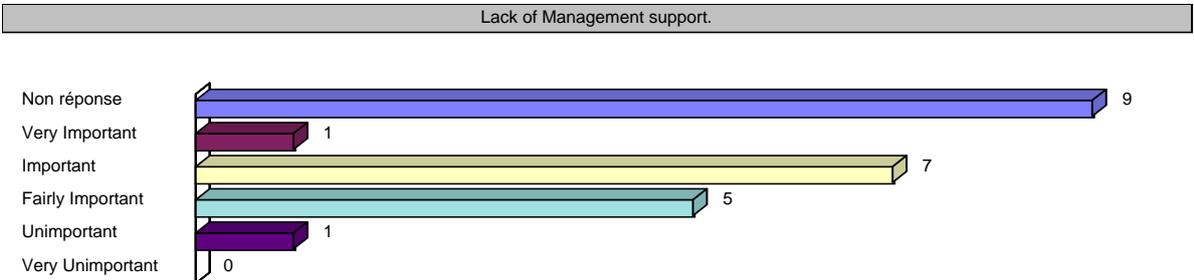
This graph shows us that 50% of the respondents who do not procure online consider the fact that e-procurement does not bring any tangible benefits for their company as an important or very important barrier to adoption.



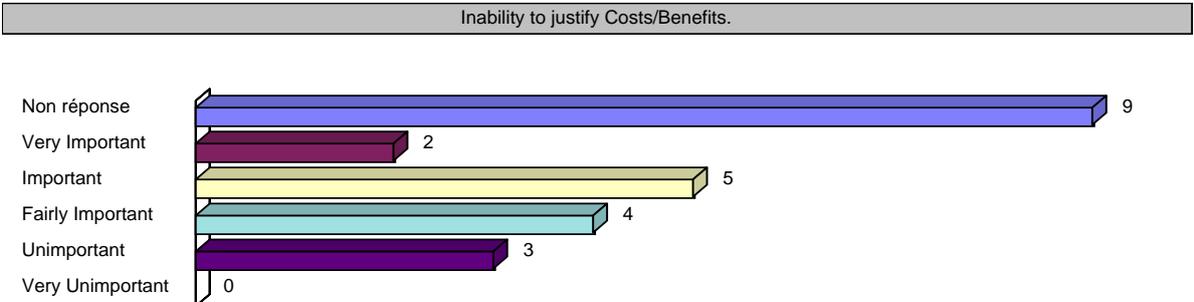
The concerns about fraud and confidentiality associated with e-procurement do not seem to be a significant barrier to adoption for respondents who do not procure online as 64,29% of them consider this as unimportant or very unimportant.



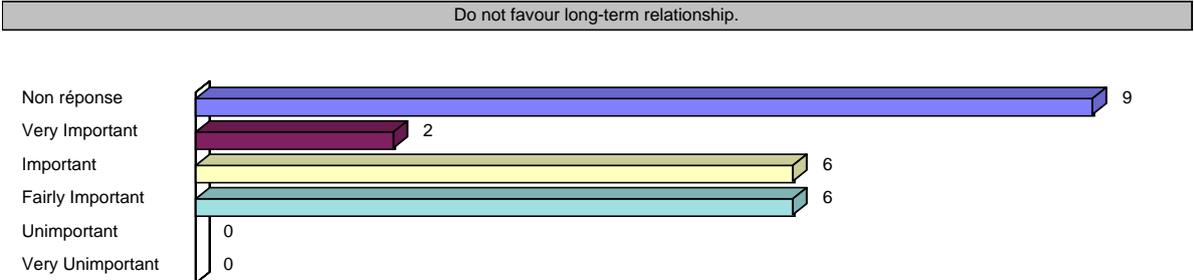
This graph shows us that 64,29% (9/14) of the respondents who do not procure online consider the fact that e-procurement has no relevance for their business activity for their company as an important or very important barrier to adoption.



The lack of management support associated with e-procurement seems to be a pretty significant barrier to adoption for respondents who do not procure online as the majority of them (57,14%) of them consider this as unimportant or very unimportant, and 35,71% as fairly important.

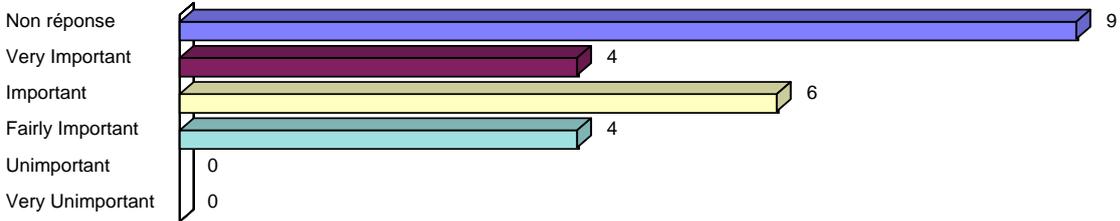


This graph shows us that 50% of the respondents who do not procure online consider the inability to justify the costs and benefits associated with e-procurement as an important or very important barrier to adoption.



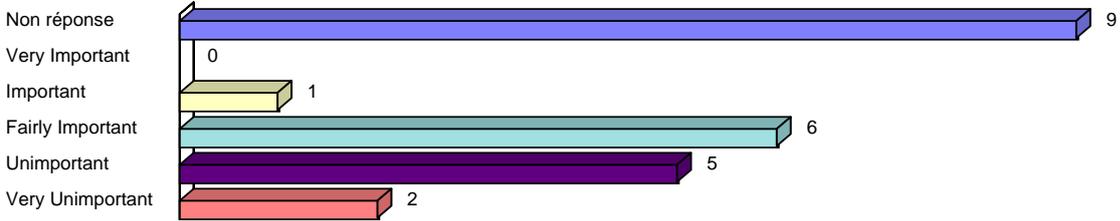
The fact that e-procurement do not favour long-term relationship appears to be a significant barrier to adoption for respondents who do not procure online as the majority of them (57,14%) consider this issue as important or very important, and the rest of them (42,86%) as fairly important.

Lack of information about e-procurement.



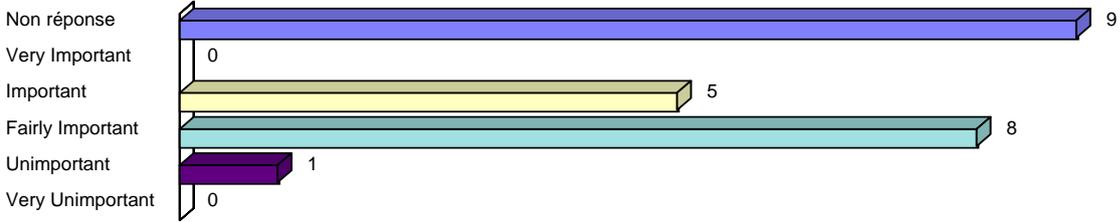
The lack of clear information about e-procurement appears to be a significant barrier to e-procurement adoption for respondents who do not procure online as 71,43% of them consider this issue as very important and important, and the rest (28,6%) as fairly important.

Redeployment/ Redundancy of staff.



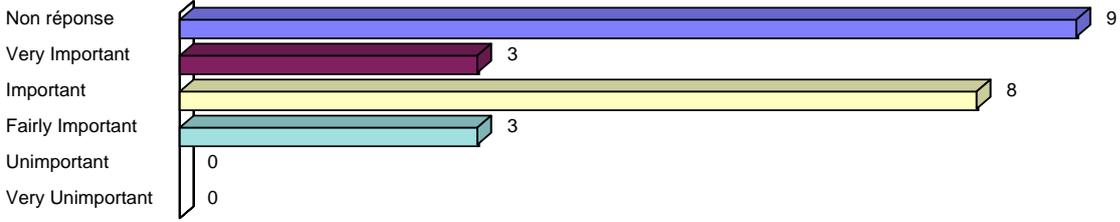
The redeployment and redundancy of staff associated with the implementation of e-procurement systems does not appear to be a significant barrier to adoption for respondents who do not procure online as 50% of them consider the issue as unimportant or very unimportant, and 42,86% as fairly important.

Internal integration issues (e.g. ERP).



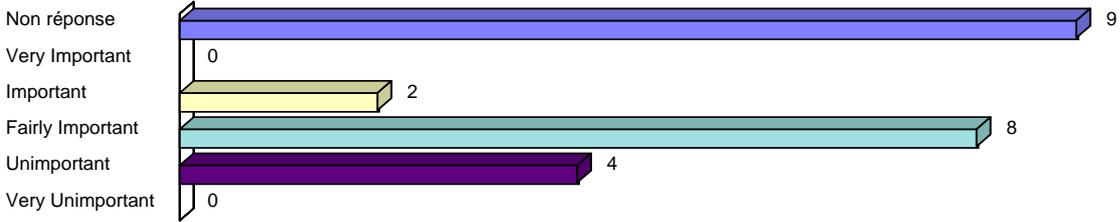
Internal integration issues associated with the implementation of e-procurement systems appear to be a relatively important barrier to adoption for respondents who do not procure online as 57,14% of them consider the issue as fairly important and 35,71% as important.

Insufficient skilled staff.



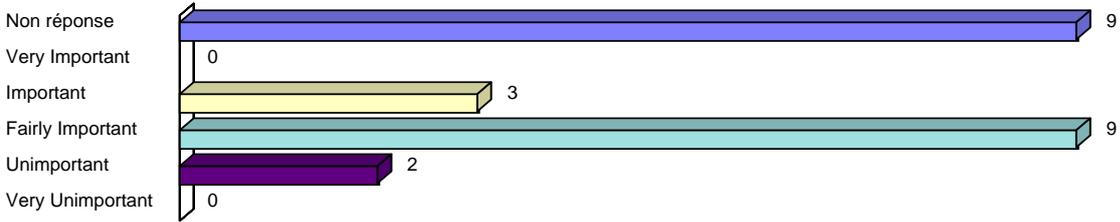
The insufficient IT skilled staff appears to be a significant barrier to e-procurement adoption for respondents who do not procure online as 78,57% of them consider this issue as very important and important, and the rest (21,43%) as fairly important.

Reluctance to change.



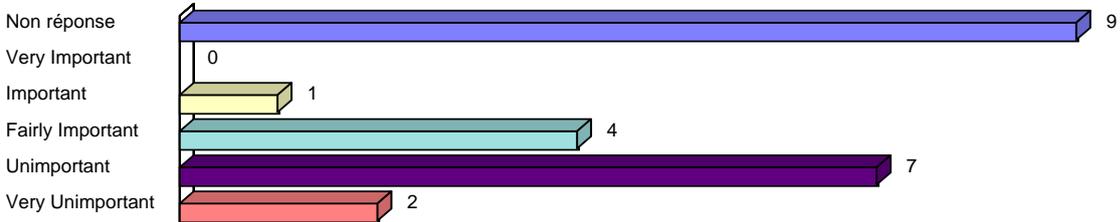
The reluctance to change does not appear to be a significant barrier to e-procurement adoption for respondents who do not procure online, as 28,57% of them consider the issue as unimportant, and 57,14% as only fairly important.

Trust issues.



Trust issues (e.g. lack of faith in trading partner) do not appear to be a significant barrier to e-procurement adoption for respondents who do not procure online, as 64,29% of them consider the issue as only fairly important.

Legal uncertainties.



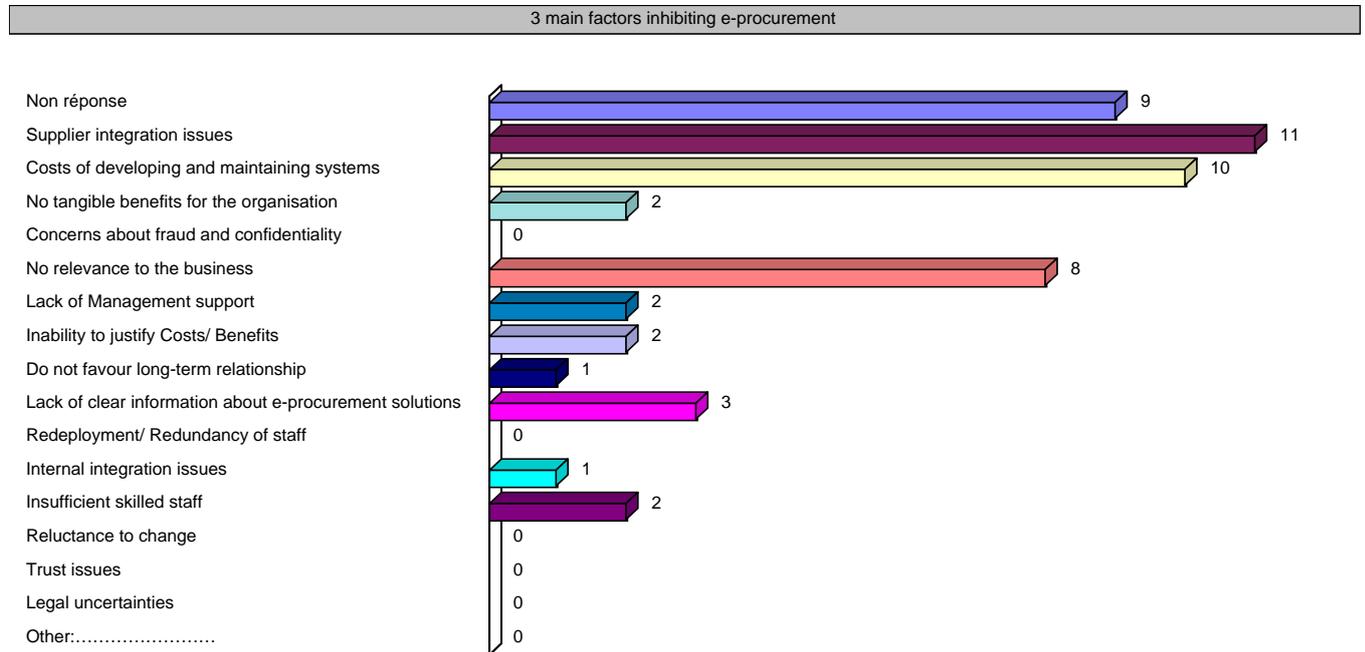
Legal uncertainties (e.g. cross-country legal differences) do not appear to be a significant barrier to e-procurement adoption for respondents who do not procure online, as 64,29% of them consider the issue as unimportant or very unimportant.

Other:.....



None of the respondents who do not have implemented e-procurement in their organisations quoted any other barrier as important to adopt e-procurement solutions.

b) Which of the following are the 3 main factors inhibiting the adoption of e-procurement solutions?



Respondents who do not procure online were then asked to identify the top 3 inhibitors that are creating major hurdles for adopting/ implementing e-procurement.

The 3 main barriers for them to e-procurement adoption appear to be the following:

- Supplier integration issues (e.g. commitment, systems' compatibility)
- The costs of developing and maintaining systems
- The “perception” that e-procurement is not relevant for their business activity