SCHOOL OF ECONOMICS AND MANAGEMENT
Lund University

# Factors Influencing Cloud ERP Adoption

## *A Comparison Between SMEs and Large Companies*

Master Thesis
15 ECTS, INFM03
June 2013


*Authors:* Amar Alajbegovic
Vasileios Alexopoulos
Achilles Desalermos

*Supervisor:* Björn Johansson

*Examiners:* Bo Andersson
Paul Pierce

**Title:** Factors Influencing Cloud ERP Adoption: A comparison between SMEs and Large companies

**Authors:** Alajbegovic, Amar

Alexopoulos, Vasileios

Desalermos, Achilles

**Publisher:** Department of Informatics, Lund University

**Supervisor:** Johansson, Björn

**Examiners:** Andersson, Bo

Pierce, Paul

**Presented:** June 2013

**Thesis type:** Master thesis

**Language:** English

**Keywords:** Cloud, ERP, SMEs, Large companies, Opportunities, Concerns

**Abstract:** Cloud computing has become one of the fastest growing segments of the IT industry. In the wake of this success, cloud based Enterprise Resource Planning (ERP) systems have emerged as an alternative to the traditional ERPs for companies to plan and manage their resources. These systems require low upfront investments and can rapidly be deployed, as they and their underlying infrastructure are provided by a third party over the cloud on a subscription-based or pay-per use basis. In existing research, cloud ERPs are praised as a way for SMEs to reap the benefits of an ERP without having to put out big and risky investments as well as having to possess heavy IT capabilities in the form of a large IT department. However, not much has been done to investigate how well a large company can utilize a cloud ERP. Cloud ERPs inherit many of the benefits and limitations of cloud computing. In this study we seek to unravel how well SMEs and large companies can utilize cloud ERPs by identifying and classifying the opportunities and concerns often associated with cloud ERPs with respect to company size. For this purpose, we have conducted interviews with experts in ERP vendors that have much experience in dealing with a great variety of companies, of all sizes and industries. Before that, we had gathered and analyzed the relevant literature regarding the opportunities and concerns related to cloud ERPs and cloud computing, which we later used as a basis for our analysis of the collected empirical data. Our results show that SMEs, and in particular small companies, can best exploit cloud ERPs as many of the benefits, such as lower upfront and operating costs, access to advanced technology and scalability, are more relevant for them. At the same time, many of the concerns associated with cloud ERPs are not seen as important for SMEs. On the other hand, large companies have severe concerns that are related to their size, complexity and demands. However, we have found that a hybrid solution, in which business critical and sensitive applications are kept on-premise, can allow large companies to settle many of their concerns while at the same time enable them to reap some of the benefits of cloud computing.

## Acknowledgements

We would like to deeply thank all the IT professionals, who participated in our interviews, for the time they dedicated to us as well as their invaluable input. Without their contribution the realization of this study wouldn't be possible. We also want to express our gratitude to our research supervisor Björn Johansson, who helped us with his meaningful guidance through the whole process of this thesis. Moreover, we want to thank our reviewers, fellow students and friends Ola Roxendal, Victor Åkerblom and Kristin Olsman for their helpful corrections and suggestions. Finally, we want to thank our families and beloved persons for their continuous support and love they showed us during this intense year of our Master's degree.

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# 1. Introduction

In this chapter we present the background and problem statement of this thesis. We then present the delimitations and knowledge contribution before we briefly describe its remaining structure.

## 1.1 Background

Companies are continuously searching for ways to reduce costs and operate more efficiently in order to remain competitive in their markets and information technology (IT) can help them achieve these goals (Gurbaxani & Whang, 1991). As a consequence of the 2008-2009 financial crisis, companies are looking for new ways to consolidate their IT infrastructures and services and increase their return of investment (OECD, 2013).

Enterprise resource planning systems (ERPs) constitute the basic information systems software in the modern business environment as well as the typical model of computing in an organization (Bradford, 2010). These systems offer a way to efficiently plan and manage the resources of an entire company through the integration of its information and information-based processes across functional areas as well as beyond the organizational boundaries (Buonanno et al., 2005; Laukkanen et al., 2007). The benefits of adopting an ERP include for example; cost reduction, better customer service, improved productivity, better quality, enhanced resource management, better planning and decision making and organization empowerment (Laukkanen et al., 2007).

It is for above reasons that almost every large company worldwide has adopted an ERP system, while even Small and Medium Enterprises (SMEs) are increasingly implementing such software solutions in order to compete on the market and achieve cost reductions (Buonanno et al., 2005; Rosemann & Gable, 2004). At the same time, an ERP system is the most risky, time consuming and costly IT investment that a company ever makes (Lenart, 2011). ERPs are software packages that are sold in modules, a company does need to implement every module, however more modules result in greater integration and return on investment. As companies are looking to reduce costs and consolidate their IT infrastructures, cloud computing appears to have become an attractive option (OECD, 2013).

There has been a lot of hype around recently about how cloud computing, and particularly Software as a Service (SaaS), is the wave of the future which will sweep and replace the traditional on-premise software delivery model (Arnesen, 2013). This hype is supported by the remarkable acceptance and success that cloud computing has received over the last years. Cloud computing has seen the size of its industry to expand from $17.3 billion to a forecast of $43.2 billion in 2012 (Johnson, 2010). Furthermore, cloud computing is predicted to play an increasingly important role for businesses in the future (Aleem & Sprott, 2013; Benlian & Hess, 2011; Lenart, 2011; Marston et al., 2010). An indicative example is the 2012 survey conducted by Gartner and Financial Executives Research Foundation, where 53 percent of the surveyed CFOs seemed to believe that over 50 percent of their company's transactions will be delivered through the cloud over the next four years, as compared to the respective 12 percent which is currently the case (Miranda, 2013). Major software providers such as Microsoft,

Oracle and IBM have noticed this trend and are now offering hosted versions of their products while other more established vendors such as SAP along with newly emerged SaaS providers offer innovative cloud-based offerings (Scavo et al., 2012; Thomas, 2009).

Following the success of cloud computing, the new cloud-based delivery model of ERP has emerged. These ERP solutions are marketed to offer similar functionality as their on-premise counterparts, but the infrastructure (software, computational power, hardware etc.) is provided on-demand by the vendors in a pay-per use model (Duan et al., 2012). As with cloud computing, this new ERP delivery model gains success increasingly growing its market share. Most companies at least consider a cloud-ERP solution and this trend is illustrated by a 2012 survey conducted by Oracle where approximately 70 per cent of the CFOs stated that they would consider using a Cloud-based version of their ERP (Miranda, 2013). Panorama's 2012 ERP Report quantifies the momentum of cloud-ERPs as it revealed that the market share of cloud-based ERP systems has grown from 6 percent to 18 percent just in one year, from 2011 to 2012 (Panorama Consulting). As the market moves to a cloud environment, traditional ERP providers are also forced to develop their own cloud based solutions, ootherwise they risk losing market shares to the emerging Cloud ERP software vendors such as Netsuite and Plex (Duan et al., 2012; Scavo et al., 2012). However, a question that still appears to lack a clear answer is whether cloud ERP is a viable solution for companies of all sizes.

## 1.2 Problem statement and research questions

In the field of IT there are no one-size-fits-all solutions, as every company makes its decisions on what IT systems to use based on certain criteria, such as available resources to invest, specific functional requirements that the system should serve, existent IT infrastructure, Total Cost of Ownership (TCO), return on investment and delivery options for the company (Juell-Skielse & Enquist, 2012). This axiom also applies to the case of cloud ERPs, as we see that the existing literature indicates that their adoption is not homogenous across SMEs and large corporations and there is a discussion about the organizational size of the adopters (Juell-Skielse & Enquist, 2012). Gartner (Wailgum, 2008) and McKinsey (Forrest, 2009) argue that cloud ERPs comprise a viable solution only for SMEs and Arnesen (2013) strengthens this assumption arguing that the majority of the current cloud ERP adopters are SMEs. However, Arnesen (2013) adds that large companies also recognize and appreciate the advantages of cloud ERPs, such as the IT efficiency and business agility that cloud computing provides, and increasingly move their mission-critical enterprise systems to the cloud. On the other hand, Benlian et al (2009) argued that there is no correlation between the size of the company and the perceived advantages of the SaaS delivery model.

These conflicting arguments raise questions on the extent of relevance of cloud ERP to companies of different organizational size. This uncertainty is further nurtured by the fact that most researchers (Lenart, 2011; Juell-Skielse & Enquist, 2012; Schubert & Adisa, 2011; Arnesen, 2013) who have discussed the issue of cloud ERP adoption, have merely focused on dealing with opportunities and concerns of its use in general, without analyzing them based on the different characteristics that the influential factor of organizational size can shape. There are also a number of authors (Duan et al., 2012; Gabriela & Ioana, 2012; Mahara, 2013;

Neves et al., 2011; Faasen et al., 2013) who discuss cloud ERP adoption only from the standpoint of SMEs, analyzing factors which affect their decision making of whether to move their ERP to the cloud or not. Thus, there is a gap in the extant literature, as there is hardly any research which deals with large companies in order to explore the factors that comprise positive influence to go for a cloud solution but also those that act as inhibitors of migrating to the cloud.

Another noteworthy fact is that despite the focus that researchers have put on exploring the cloud phenomenon in relation to SMEs, a recent research by Opinion Matters for internet security company AVG Technologies showed that almost a third of the SMEs surveyed responded that they "do not get it" (techradar.computing, 2013). More specifically, out of the 505 small and medium companies based in UK surveyed, 31 percent responded that they do not understand cloud computing and the implications of its potential usage in their company. Yet, the most interesting statistic was that 22 percent responded that they believe that the cloud software delivery model is appropriate only for large companies. These findings demonstrate that even SMEs, which are heralded as the main cloud ERP adopters, express a limited understanding of the cloud offerings and limitations as well as that there is a confusion about what kind of organizations are more suitable for adopting a cloud solution.

Taking into consideration on the one hand the fact that the diffusion of cloud ERP is still in its infancy and the market is immature (Muhleman et al., 2012) and on the other hand that cloud ERP is a constantly changing area, as cloud providers constantly provide new functionality to their offering improving its characteristics and addressing previous shortcomings (Arnesen, 2013), we argue that there is a need for a study, which will not only take into account all the latest changes that could affect cloud ERP adoption, but also will focus on the exploration and analysis of its adoption from the standpoint of both SMEs and large companies. Thus, the primary goal of our study is to gain a deeper understanding of the opportunities and concerns regarding cloud ERP adoption for both SMEs and large companies. Consequently, the first research question which will drive this study will be the following:

*RQ1: What are the main opportunities and concerns for SMEs and large companies regarding cloud ERPs?*

According to Benlian et al. (2009), IT executives weigh the potential opportunities and risks that would emerge from SaaS adoption. The result of this process is an overall attitudinal appraisal of SaaS adoption, which influences IT executives' intentions to adopt SaaS applications. In line with Benlian et al. (2009) we will further attempt to weigh the overall perceived opportunities and overall perceived concerns that are ascribed to SMEs and large companies, so as to foreshadow their intention to adopt a cloud ERP and thus give an answer to our second research question:

*RQ2: Is cloud ERP a viable solution for companies of all sizes?*

## 1.3 Delimitations

This study tries to capture the value of Cloud ERP for SMEs and large companies and show how it is differentiated. However, the whole process is conducted through the view of ERP vendors and not the actual companies – the customers of cloud ERP solutions. This is due to the sheer number of companies we would otherwise need to contact for an interview so as to get the same coverage, as the study would require input from companies of various sizes and from different industries. Furthermore, cloud ERP is an emerging technology that is still neither well-known nor widely adopted. This reality would make it very difficult to find enough eligible interview candidates. Thus, ERP vendors were chosen as viable alternatives since their employees have the experience of dealing with a multitude of different companies and consequently they can give a spherical overview of the topic. However, there is always the possibility of vendors giving a beautified reality since they are the sellers of such products and might miss certain factors that they are not aware of as the customers can have special interests and conditions not visible to an external observer. Still, we believe that ERP vendors are satisfactory ambassadors for their customers.

In our study we are reviewing companies that we refer to as SMEs and large companies, though it should be mentioned that there might be important differences between startups, small and medium sized companies that can lead them to perceive cloud ERPs differently. However, in order to avoid this extensive fragmentation and facilitate our study, we will discuss potentially different perceptions of cloud ERP from the standpoint of SMEs and large companies only. For the purpose of this study we have adopted the definition of SMEs as it is suggested by European Commission Recommendation 2003/361/EC, according to which a company is specified as an SME if it has less than 250 employees and a turnover of less than 50 million euros (European Commission, 2003).

## 1.4 Knowledge Contribution

In this thesis we study how SMEs and large companies relate to cloud ERP adoption by exploring the opportunities and concerns of such an adoption in relation to company size. Current research is mainly mapping the opportunities and concerns regarding cloud ERPs from a general standpoint or from the standpoint of SMEs. On the other hand, in our study we compare to what extent the special characteristics of cloud ERPs can be perceived differently by companies of various sizes, filling the gap in the current literature as well as providing a foundation for further research on the subject of cloud ERPs. Furthermore, we believe that our thesis can work as a well-thought-out guide for decision makers that are puzzled and confused about whether to move their ERP to the cloud or not. It can serve as consulting material which provides decision makers the opportunity to evaluate their decision and possible impacts of cloud ERP adoption, since our thesis articulates the various barriers and motives that businesses face with regard to the distinctive features of SMEs and large companies. Finally, this thesis delivers a substantial piece of information for IT specialists in companies that have already moved their enterprise system to the cloud and are interested to explore and grasp this new and different situation as well as enables them to compare and associate their personal experiences with our study's outcome in order to expand their perspectives and prepare them for possible future challenges.

## 1.5 Outline of the thesis

Chapter 2 - *Literature Review*

In this chapter we introduce and describe the fundamental technologies of cloud ERPs, including traditional ERP and cloud computing. Then, we present the opportunities and concerns which previous research, reports and other sources associate with cloud ERP adoption

Chapter 3 - *Research Methods*

In this chapter we present the research methods applied to our thesis. This includes the research approach, data collection and data analysis methods as well as the considerations made regarding the scientific quality of this thesis.

Chapter 4 - *Empirical findings*

In this chapter we present the empirical data we collected during the interviews with our informants.

Chapter 5 - *Discussion*

In this chapter we analyze the empirical data with respect to the research framework that had been constructed in the literature review.

Chapter 6 - *Conclusion*

In this chapter we present our conclusions and the answers to our research questions. We conclude the chapter with our reflections on the results of the thesis and some proposals for potential future research.

# 2. Literature Review

In this chapter we present the relevant literature for our thesis. First, we describe the fundamental technologies of cloud ERP, including traditional ERP and cloud computing, before briefly introducing the concept of cloud ERP. We then proceed with the presentation of the opportunities and concerns often associated with cloud ERPs. In order to meet our goals and produce valuable and meaningful results, we carried out a thorough review of the relevant literature which provided us the needed theoretical background for the realization of our study (Boote & Beile, 2006).

## 2.1 ERP

In the first part of our literature review, we present a comprehensive introduction to ERP systems by providing the reader with the definition of the term, a historical overview of this technology, an explanation of the importance and complexity of the software as well as documented notions which relate ERP adoption to company size.

### 2.1.1 Definition

Enterprise Resource Planning system is a general term that defines systems which process a company's overall procedures as well as contribute in important strategic decisions (Rosemann & Gamble, 2004). These enterprise systems are complex software systems which help with the management of an organization and incorporate many different business modules in every functional area of a company, including sales, marketing, manufacturing, HR, financial and others (Rashid, et al., 2002). The modern term 'ERP' is first seen in literature when it was used by Gartner, the major IT market research and consulting group (Gartner, 1990). According to Davenport (1998), the most common definition of ERP is:

*These commercial software packages promise the seamless integration of all the information flowing through a company – financial and accounting information, human resource information, supply chain information, customer information* (Davenport,1998, p.121)

### 2.1.2 Historical Background

The fundamental basis, where ERP functionality is based on, date back to 1960s when computers were firstly used in the corporate environment (Möller, 2005). Back then and not very different from nowadays, the driving factor and objective for companies was cost reduction, especially in the manufacturing industry (Jacobs & Weston, 2007). Therefore, companies focused on cost reduction strategies. Gradually, the competition increased and companies were trying hard to compete and survive and eventually the need for computer systems that could assist them emerged (Umble et al., 2003). In the second half of 1960s a new technology appeared in the market, named Material Requirement Planning Systems (MRP). These systems were the predecessors of modern ERPs (Jacobs & Weston, 2007). The goal of this type of software was to ensure and optimize the different manufacturing and production operations, while at the same time it was regulating the inventory of a company. However, due to the fact that manufacturing procedures were not independent of the cash flow and the general financial procedures, companies had to still administer these business functions separately leading to cases of data duplication. Thus, the need for better integration

emerged. As an answer to these issues, in the 1980s MRPII systems were introduced and attempted to realize effective planning of a company's resources (Rosemann & Gamble, 2004). MRPII included business functions beyond manufacturing, such as finance, sales, HR and logistics (Rosemann & Gamble, 2004). As MRP's use expanded to include more functions, the term MRPII was no longer considered suitable and Gartner decided to name these systems ERP systems, since they were assisting and benefitting the whole enterprise entity (Umble, et al., 2003). Since then, the progress of ERP systems has been fast, especially after the introduction of SAP R/3 in 1992 which was the first ERP system that made use of server-client technology and consequently had the ability to run on different computing platforms. The success of the software was massive and greatly helped SAP to become a market leader for ERPs (Jacobs & Weston, 2007).

### 2.1.3 ERP Importance

The fundamental reason for ERPs existence is to link and connect together various business functions (Brown & Vessey, 2003). They consist of a combination of integrated software modules that share a common database which supports a company's different functions (Staehr, 2010). Hedman and Kalling (2002) argue that there are two main factors which characterize the importance of ERP systems. At first, it is the total integration of the different departments and procedures into a distinct computer system, resulting into centralization and prospective cost reductions of the various departments. Secondly, ERPs are generic systems, which sustain the wide range of business functions from a central point. They utilize an integrated database that is shared and used among the different departments, allowing real time access to the database. As a result, data duplication errors are eliminated and information communication between the various departments of a company is significantly facilitated, thus increasing their productivity (Hedman & Kalling, 2002).

Generally, not very different from 1960s when MRP was first introduced, the creation of value for the organization's stakeholders, the continuing effort to reduce operational costs of the company, the optimized application of the company's resources as well as the maximization of the offered quality, are still the factors that finally decide the position of the enterprise in the market and possibly lead to competitive advantage (Chung & Synder, 1999). Thus, ERP can be a crucial and decisive factor for achieving competitive advantage as they help companies to align themselves competitively in the market. ERP also enables better resource management as it offers a primary managing instrument that encompasses the needed functionality for effective optimization in the execution of different business procedures (Kalling, 2003). Moreover, it enables managers to access important information instantly, thus optimizing and reducing the time required for managers to make decisions, which can result in increased organizational competitiveness (Gomis, 2007). Alballaa and Al-Mudimigh (2011) also argue that this immediate, real-time access to information by the employees of a company is the most important offering of ERPs. All these beneficial effects of ERPs have been acknowledged by the market, which has endorsed ERP systems in a large scale. Even in 2001, more than 60 percent of the companies that were part of the Fortune 1000 list had installed an ERP system in order to support their everyday activities (Kraft, 2001). In

2008, the ERP market was valued to surpass 137 billion American dollars (Jacobson et al., 2008).

### 2.1.4 ERP Benefits/Drawbacks and Complications

The advantages of adopting an ERP are shown briefly in the following table (2.1).

Table 2. 1 Advantages of ERP (Rashid, et al., 2002)

| What Benefit | How |
|---|---|
| **Reliable information access** | Common DBMS, consistent and accurate data, improved reports. |
| **Avoid data and operations redundancy** | Modules access same data from the central database, avoids multiple data input and update operations |
| **Delivery and cycle time reduction** | Minimizes retrieving and reporting delays |
| **Cost reduction** | Time savings, improved control by enterprise-wide analysis of organizational decisions |
| **Easy adaptability** | Changes in business processes easy to adapt and restructure |
| **Improved scalability** | Structured and modular design with “add-ons” |
| **Improved maintenance** | Vendor-supported long-term contracts as part of the system procurement |
| **Global outreach** | Extended modules such as CRM and SCM |
| **E-Commerce, E-Business** | Internet commerce, collaborative culture |

As can be seen above, ERP offers a large variety of benefits, something that characterizes it as the well-designed, proven, reliable and solid IT backbone (Hofmann, 2008).

However, ERP, as massive software, also carries a range of disadvantages that should be considered by decision makers of every company prior its adoption. These disadvantages are summarized briefly in the following table (2.2).

Table 2. 2 Disadvantages of ERP (Rashid, et al., 2002)

| Disadvantage | How to overcome |
|---|---|
| **Time-consuming** | Minimize sensitive issues, internal politics and raise general consensus |
| **Expensive** | Cost may vary from thousands of dollars to millions. Business process reengineering cost may be extremely high. |
| **Conformity of the modules** | The architecture and components of the selected systems should conform to the business processes, culture and strategic goals of the organization. |
| **Vendor dependence** | Single vendor vs. multi vendor consideration, options for “best of breeds”, long term committed support |
| **Features and complexity** | ERP system may have too many features and modules so the user needs to consider carefully and implement the needful only |
| **Scalability and global outreach** | Look for vendor investment in R&D, long-term commitment to product and services, consider Internet-enabled systems |
| **Extended ERP** | Consider middle-ware “add-on” facilities and extended modules such as CRM and |

| | |
|---|---|
| **capability** | SCM |

The massive functionality of ERP has transformed them into highly complex software which demands considerable investments. More than $500 billion are spent on ERPs globally (Addo-Tenkorang & Helo, 2011).

### 2.1.5 Company Size and ERP Adoption

The implementation process is a crucial step for an efficacious ERP usage and companies, in order to achieve a successful realization, must develop a proper plan and follow it carefully (Brown & Vessey, 2008). ERP adoption brings a lot of changes in the business environment which should be considered beforehand. Large investments are needed for software licenses and hardware as well as consulting services and user training. In addition, further IT staff is needed for ERP maintenance and handling of the required organizational changes. These are just some of the challenges that a potential ERP adoption carries (Bradford, 2010). In the implementation phase, the size of the company is a very important predictor for the future success of the system (Mabert, et al., 2003). The vast costs for adopting and maintaining an ERP serve as a major barrier for SMEs, as they have limited financial resources. On the other hand, large companies often have already implemented an ERP solution, turning their use into a commodity (Klaus et al., 2000). But even for large companies, there are certain technical characteristics of ERPs which can be interpreted as barriers. These barriers are often related to the organizational and structural changes that ERP adoption demands (Laukkanen, et al., 2007). Finally, the motives that companies have for adopting an ERP also depend on company size. Large companies try to follow a steady and sustained growth model and ERP can ensure their positive long-term financial outlook through proper administration of their business functions and reassuring consistency of data, while SMEs are tempted by more random and instant decisions in an everlasting effort to achieve competitive advantage (Buonanno et al., 2005).

## 2.2 Cloud Computing

In the second part of the literature review, we introduce cloud computing, a fundamental technology on which cloud ERPs are based on. We begin by presenting the background and the definition of the technology, continuing with the service models and concluding with the different deployment models. It is important to show the special characteristics of the cloud in order to help the reader understand the advantages and disadvantages of cloud ERPs that have partially been inherited.

### 2.2.1 Background and Definition

Cloud computing is often presented as a new paradigm for providing computing infrastructure, representing a new way in which IT services are developed, implemented, scaled, maintained and paid for (Elragal & Kommos, 2012; Marston et al., 2010; Onose et al., 2011; Sarkar & Young, 2011; Singh et al., 2012). However, this technology is not new, as the concept of cloud computing has essentially emerged from the convergence of existing technologies

including; utility computing, grid computing, networking, virtualization, open source software, AJAX, multi-tenancy and various internet technologies such as SOA, Web Services and Web 2.0. Many of these date back to 1990s and early 2000s (Aleem & Sprott, 2013; Lenart, 2011; Sarkar & Young, 2011; Schubert & Adisa, 2011). Furthermore, cloud computing is based on on-demand software delivery models, including Application Service Provision (ASP) and Business Service Provision (BSP), which have been present since late 1990s (Benlian & Hess, 2011). ASP is an on-demand delivery model, involving vendor hosting in addition to delivering and managing application capabilities remotely from a datacenter that is accessed through the web. However, ASP had some technical and economic limitations. The technical issues included limited bandwidth availability and internet speed of the late 1990s as well as that only a few applications, at that time, were designed to be remotely accessible. The economic issues pertained to the single-tenant architecture according to which the software applications and IT infrastructure are dedicated to each customer. This prevented vendors from efficiently sharing applications and infrastructure across their customers, creating low economies of scale. As a response to these technical and economical limitations, Software as a Service (SaaS) emerged as an advanced way of providing services (Benlian & Hess, 2011).

The year 1999 was a key turning point in the history of cloud computing, when Salesforce.com introduced the concept of delivering applications through a website (Aleem & Sprott, 2013). In 2006, Amazon followed the same road with the introduction of their EC2 cloud service. Since then, there has been a steady migration of IT services towards the cloud. The development of cloud computing is often considered to stem from the convergence of grid computing and networking with the increasing trend of outsourcing IT resources to external parties (Aleem & Sprott, 2013). The introduction of Web 2.0 technologies in 2009 in combination with increasingly powerful computers, faster and more reliable internet as well as advancements made in virtualization technologies and universal software compatibility standards, are also said to have contributed to the rapid growth of cloud computing (Aleem & Sprott, 2013; Marston et al., 2010).

In recent years the market for cloud computing has witnessed a remarkable growth and is expected to become even more important (Aleem & Sprott, 2013; Benlian & Hess, 2011; Lenart, 2011; Marston et al., 2010). In 2008, Gartner listed cloud computing as one of the top ten most disruptive technologies that would shape the future IT landscape (Aleem & Sprott, 2013). According to Lenart (2011) cloud computing will become increasingly important in the Information and Communication Technologies (ICT) world and may even change it in a similar way the internet did. Gartner Research predicts the market for cloud computing to reach a value of $150 billion by 2014 (Marston et al., 2010).

Despite the fact that the concept of cloud computing has existed for a while and received a lot of attention, there is still no standard definition of the concept (Aljabre, 2012; Sarkar & Young, 2011; Woińska & Kołtuński, 2011). This could be due the number of perspectives involved, as cloud computing has a different meaning for different people (Lenart, 2011; Onose et al., 2011; Prantosh Kumar & Mrinal, 2012). For the purpose of this thesis, we will use the definition made by the United States National Institute of Standards and Technology

(NIST), as it has been widely used in previous research (Aleem & Sprott, 2013; Lenart, 2011; Prantosh Kumar & Mrinal, 2012):

*Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction* (Mell & Grance, 2011, p. 2).

NIST (Mell & Grance, 2011) also define five essential characteristics of cloud computing:

*On-demand self-service* - users can utilize new services as needed automatically without interacting with the service providers.

*Broad network access* - the supplier's capabilities are available over a network and can be accessed with standard mechanisms, without limiting a specific client type.

*Resource pooling* - the provider's computing resources are pooled to serve a multitude of clients using a multi-tenant model. Physical and virtual resources are assigned and reassigned according to consumer's needs.

*Rapid elasticity* - computing resources can be rapidly increased or decreased in order to accommodate sudden changes in consumer demand. From a customer's perspective, available capabilities seem endless in the sense that they can be allocated in any quantity at any time.

*Measured service* - cloud systems automatically control, optimize and report the usage of computing resources to consumers.

There are three service models and four deployment models in cloud computing which will be briefly presented in the following sections.

### 2.2.2 Service Models

There are three main types of service models that are offered by Cloud Service Providers (CSP). These can be purchased by customers depending on their needs. (Aleem & Sprott, 2013; Duan et al., 2012; Mell & Grance, 2011; Onose et al., 2011; Woińska & Kołtuński, 2011).

In the *Software as a Service* (SaaS) model, applications are hosted by the service provider and can be accessed by the customer over the internet. The customer uses the applications but does not manage and control the underlying infrastructure, including network, hardware, storage and operating systems. The client may be provided with limited configuration options for a particular application. Examples of SaaS offerings include Google Docs, Yahoo Mail and Microsoft Skydrive.

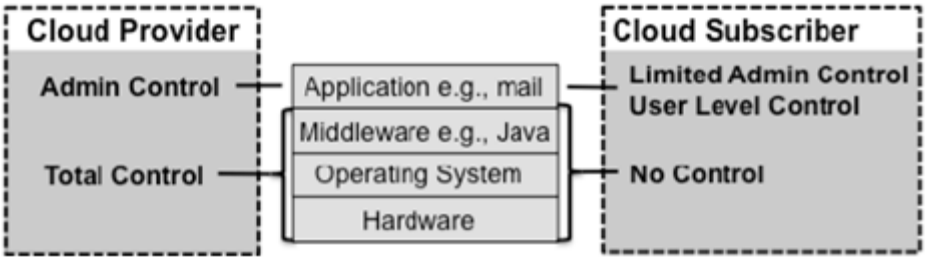


Fig. 2. 1 SaaS model (Onose et al., 2011, p. 277)

In the *Platform as a Service* (PaaS) model, the CSP provides the customer with a platform with a set of tools for developing, deploying and managing applications. The client has control over the installed software and sometimes also over the configuration of the hosting environment. The underlying cloud infrastructure is still managed and controlled by the service provider. Examples of this kind of cloud service include Google Application Engine and Microsoft Azure Platform.

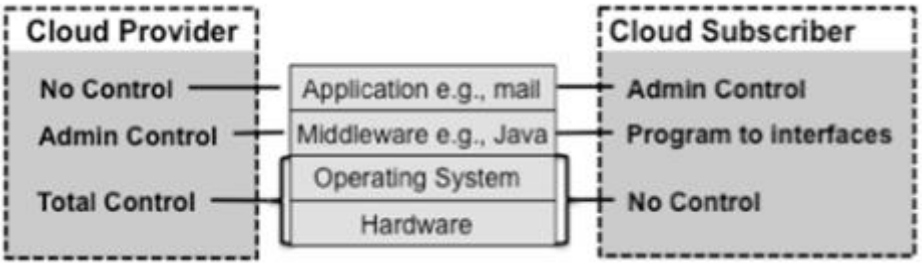


Fig. 2. 2 PaaS model (Onose et al., 2011, p. 278)

In the *Infrastructure as a Service* (IaaS) model, the customer is provided with software environment which is provisioned through software, hardware, storage, networks and other fundamental computing resources. The client cannot control or manage the core cloud infrastructure but has control over the installed applications, storage and operating systems and occasionally limited control over certain networking components. This on-demand provision of computing power allows customers to access the latest network technologies at a significantly lower cost. Examples of IaaS offerings include Amazon EC2 and Microsoft SQL Azure.

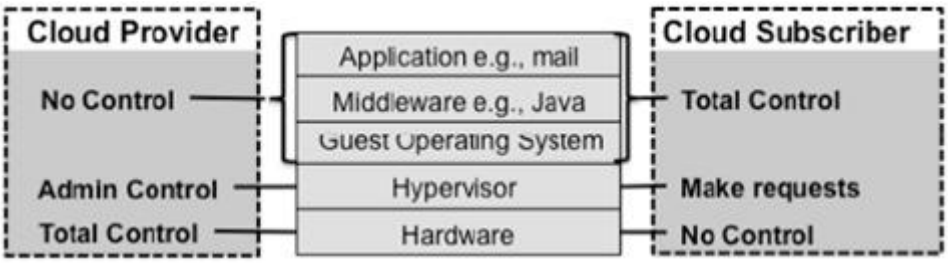


Fig. 2. 3 IaaS model (Onose et al., 2011, p. 278)

### 2.2.3 Deployment Models

In addition to the three service models, there are four common cloud deployment models (Aleem & Sprott, 2013; Lenart, 2011; Mell & Grance, 2011; Onose et al., 2011; Singh et al., 2012;).

*Private cloud* - the cloud infrastructure is provided exclusively to a single organization. The organization, a third party or a combination of both can own, manage and control the cloud infrastructure. It may be located on or off premise. This type of cloud is suitable for organizations that require more control over their data.

*Public cloud* - the cloud infrastructure is available to the general public. The CSP owns and manages the infrastructure and is also responsible for the overall operations and security. The client has limited control over the provided services. This deployment model is often free or carries a low cost and is therefore very appealing to small and mid-sized enterprises.

*Community cloud* - in this type of cloud, the infrastructure is provided for exclusive use to a certain community of client organizations that share the same interests and concerns. The infrastructure can be managed and controlled by one or more organizations within the community, a third party or a combination of both. The cloud may exist on or off premise.

*Hybrid cloud* - the cloud infrastructure is a combination of two or more cloud models (private, public, community), which are developed for a particular purpose. For example, an organization may choose to deploy non-critical applications on a public cloud and run critical or sensitive applications, which require more control, on a private cloud.

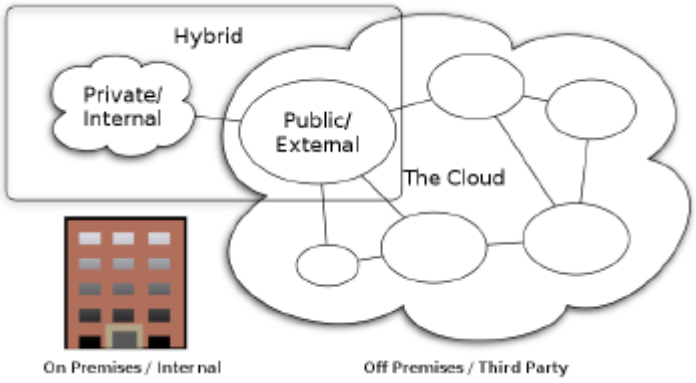


Fig. 2. 4 Cloud deployment models (Onose et al., 2011, p. 279)

## 2.3 Cloud ERP

Building on the success of cloud computing, a new delivery model has emerged for ERPs; that of cloud based ERP systems. These cloud ERPs are said to offer approximately the same functionality with on-premise ERPs, whilst maintaining the characteristics of cloud computing, thus inheriting many of their benefits and drawbacks which will be discussed in more detail in the following section (Duan et al., 2012). This new delivery model has stirred up the ERP market, as we now see a trend in which organizations are increasingly utilizing the cloud alternative for accesing and utilizing ERP (Duan et al., 2012; Scavo et al., 2012).

New ERP vendors, who focus on providing their services on the cloud, have emerged. Consequently, traditional ERP vendors are responding to this trend by offering hosted versions of their ERP systems as an alternative. Some are also offering cloud enabled ERP systems and hybrid solutions, where only certain parts or modules of an ERP are deployed on the cloud. As a result, companies have more options than before when selecting an ERP solution.

### 2.3.1 Cloud ERP deployment scenarios

Many ERP solutions are marketed as cloud-based when they are in fact hosted solutions (Duan et al., 2012; Scavo et al., 2012). Thus, we find it necessary to distinguish between the different ERP solutions so that the term 'cloud ERP' is not confused with something that is not appropriate.

*ERP-as-a-Service - the "true" cloud ERP*

In the cloud computing section of this thesis we introduced the three service models of cloud computing; SaaS, PaaS and IaaS. It is through the SaaS model that cloud ERPs are delivered (Duan et al., 2012; Juell-Skielse & Enquist, 2012; Lenart, 2011; Mahara, 2013, Schubert & Adisa, 2011). These SaaS ERPs are often referred to as ERP-as-a-Service (EaaS) and are considered to be the true cloud ERPs, as they incorporate the fundamental characteristics of SaaS (Duan et al., 2012; Juell-Skielse & Enquist, 2012; Mahara, 2013). It is these ERPs we refer to as 'cloud ERPs' and they are the focus of our thesis. In EaaS the ERP software is installed by the vendor in a public cloud, as public clouds are key components of SaaS offerings (Duan et al., 2012). The ERP software is typically accessed over the internet. One of the main reasons for choosing EaaS is the low entry-cost, since no initial investment is needed for the IT infrastructure and its pay-per-use model requires no license fees to be paid up-front (Mahara, 2013). Thus, EaaS allows access to advanced technology, whilst having a low barrier of entry (Lenart, 2011; Mahara, 2013; Schubert & Adisa, 2011). However, these cloud ERPs have limited customizability due to the multitenant attribute, meaning that the IT infrastructure and software source code are shared by multiple tenants (Duan et al., 2012; Juell-Skielse & Enquist, 2012; Mahara, 2013; Schubert & Adisa, 2011). Thus, the ownership of the ERP software is separated from its use. Examples of SaaS ERPs include Epicor Express, NetSuite, SAP Business ByDesign and Plex.

*Hosted ERP*

ERP systems often need customization, in particular for large companies, which may eventually require the ERP system to be on a private cloud, where one instance of the ERP system is customized for a particular company. Just like with the cloud ERPs, the IT infrastructure is provided by the vendor, however, unlike the multitenant model of cloud ERPs, the infrastructure is typically dedicated to a single tenant (Duan et al., 2012; Lenart, 2011; Scavo et al., 2012). These hosted ERPs are much like the traditional ERP offerings except that the provider hosts the physical servers on which the ERP software is running. There are no architectural changes made to the ERP products in order to fulfill the fundamental characteristics of cloud computing. More specifically, normally these solutions

do not include typical cloud ERP characteristics such as resource pooling, on-demand service, rapid elasticity, and pay-per-use model. Instead, customers receive a more customizable ERP system, that is also considered to be safer and more reliable, with more control and less reliance on an external provider (Lenart, 2011). These solutions also carry higher initial cost, including licensing costs (Duan et al., 2012; Lenart, 2011; Scavo et al., 2012). The ERP software can also be installed on a private cloud that is operated by the company itself, becoming more of an on-premise solution. Examples of ERP vendors providing hosted alternatives include Oracle, QAD, Sage and Syspro.

*Hybrid ERP*

There are also hybrid solutions for cloud ERPs where certain parts of an ERP system are hosted and others are deployed on-premise (Duan et al., 2012; Scavo et al., 2012). Some vendors have cloud-enabled their traditional on-premise products, so that they operate fully or partially as multi-tenant SaaS products. Furthermore, certain ERP parts can be deployed on a private cloud and others on a public cloud. For example, business sensitive parts can be hosted on a private cloud or on-premise whereas the less critical parts can be outsourced to a public cloud. ERP vendors can thus place themselves strategically by offering the customer a variety of choices (Scavo et al., 2012). Customer can choose to deploy a similar ERP system on-premise, as a hosted ERP, and as a cloud ERP. They can also mix the different deployment models for a hybrid solution and also transfer from one deployment model to another.

## 2.4 Influential factors of cloud ERP adoption

As a main step of our study which will further extend its theoretical background, we have conducted a thorough literature review and we present below the factors that previous researchers have identified to influence companies positively or negatively in their decision-making regarding adoption of a cloud ERP, meaning the perceived opportunities and concerns which derive from potential ERP adoption. However, we have to point out again that extant literature mostly has discussed implications of cloud ERP adoption either in general or with a extensive focus on SMEs.

**Opportunities**

*Lower upfront costs*

The capital expenses that a company has to incur in order to implement a cloud-ERP solution are substantially reduced (Marston et al., 2010). A cloud-ERP implementation requires a modest capital investment upfront, as it eliminates the need for additional IT infrastructure (e.g. servers, operating systems, databases), equipment (e.g. UPS, fire extinguishing systems, cooling facilities), as well as the necessary building space (Muhleman et al., 2012; Duan et al., 2012). Companies need just commodity terminals, such as desktops, laptops or even tablets and smartphones in order to access the ERP services through the cloud using only a secure broadband internet connection (Gould, 2011). Moreover, a 2012 research showed that on-premise implementations usually tend to significantly escalate and end up to cost 30-40

percent more than the original budgeted projections (Gabriela & Ioana, 2012). However, according to Aggarwal & McCabe (2009) the implementation cost of cloud ERPs accounts only for 35 percent of total cost of ownership as opposed to an average of 74 percent for on-premises system, minimizing the impact of a potential escalation.

*Lower operating costs*

A Cloud- ERP solution lowers operating cost for energy consumption, maintenance (i.e. configuration and updates), upgrades and other IT staff costs and labor they commit (Castellina et al. 2011, Marston et al., 2010). More specifically, significantly less energy is consumed as a result of the extended reduction in infrastructure. In addition, costs for periodic updates and big-scale upgrades of the operating system of servers and the software of the data base management system are avoided as the cloud vendor automatically makes these enhancements available without increasing the standard monthly or annual fee that the user company pays (Arnesen, 2013; El ragal & El Kommos, 2013). Having outsourced maintenance and management of the system to the cloud vendor, there are less administration duties on behalf of the user-company and thus a lower number of IT staff is required for this reason reducing HR costs. However, according to McKinsey Consulting, a typical data center of a large organization could realize lower operating costs than what would be required to outsource it to a public cloud. In addition, it estimated that athough the HR costs would be lower on cloud, the decrease of 10–15 percent is considered modest (Marston et al., 2010).

*Transparency of TCO - enhanced financial image*

Treating ERP cost as an operational expense instead of capital expense (i.e. employing an ‘Op-ex’ instead of a ‘Cap-ex’ model) makes the TCO of the system at a business unit level more predictable helping organizations not only to drive down unnecessary IT expenses (Marston et al., 2010), but also to inculcate better budget stability, since both short and long term costs of cloud-based solutions are easier to forecast, as the majority of them are included in the service price that the user company has arranged to pay to the vendor (Muhleman et al., 2012; McClure, 2012; Juell-Skielse & Enquist, 2012). Treating ERP cost as an operational expense instead of capital expense has also a positive impact on the financial statements of user-companies, as instead of setting a designated capital asset for the necessary infrastructure of an on-premises system, which is depreciated as time goes by, they can more preferably expense the standard fees of the cloud solution vendor (Arnesen, 2013; Marston et al. 2010)

*Lower Total Cost of Ownership (TCO)*

The elimination of upfront costs for software and infrastructure in combination with lower operating costs result in lower total cost of ownership for the cloud-based system in the long run. According to a survey of around 800 respondents conducted by the Institute of Management Accountants (IMA) (Lenart, 2011), lower TCO was ranked as the most important benefit of cloud ERP. Aggarwal’s and McCabe’s (2009) four-year TCO study showed that the total cost of ownership for small businesses was 50-55 percent lower for the cloud-based ERP of Netsuite compared to the on-premise Microsoft Dynamics. Mid-market

companies were found to save 35-50 percent using the cloud-based option over the same time span. However, Muhleman et al (2012) argued that the significantly larger ERP user base of large companies could increase so much the cost of subscription-based fees that finally the option of the traditional on-premise ERP could become more cost-effective.

*Availability*

The resource pooling characteristic of cloud computing infrastructure gives cloud ERP vendors the opportunity to effectively pool all the computing resources they have in their disposal to all their customers. This capability enables cloud solution vendors to provide each and every one of their customers with vital measures such as backup and fallback routines, recovery procedures, conditioned power and network redundancy whenever it is needed. These measures enhance the system availability and ensure the customers that at worst scenario a disaster recovery procedure will be existent and at a lower cost than realizing it themselves in-house (Duan et al., 2012; Scavo et al., 2012).

*Scalability*

Supply chains constantly change, as companies grow or merge and the economy alters dynamically. Thus, start-ups, seasonal business and growing companies experience continuous changes to the number of their employees-users of the ERP (Arnesen, 2013). This fluctuation in usage demand results also in changes in the systems' needs for computing resources. Accordingly, increased scalability of the system is a matter of high importance for its potential adoption.

A company using a cloud ERP can add or reduce users as its needs change, exploiting the resource pooling and elasticity characteristics of the system. These characteristics allow cloud solution user-companies to scale their system at will, whenever it is needed, and meet increases or reductions in transaction volume, storage requirements or network bandwidth. In contrast, companies running traditional ERP implementations have to allocate resources in maintaining excess capacity in order to be able to live up to future needs, which is a costly procedure. (Scavo et al., 2012)

*Flexibility*

A Cloud-ERP solution is characterized by flexibility, which derives from its on-demand application delivery model and the fact that capital and operational investments are shifted from the customer to the cloud-provider (Benlian & Hess, 2011). There is a variety of payment models that cloud-ERP vendors make available to user companies, such as a flat monthly fee, a pay-per-use fee, or a two-layers mixed fee of flat and pay-per-usage fee, enabling user-companies to choose the one that best fits their financial situation and avoid the expensive long-term contracts with the vendor, which is a characteristic of on-premises implementations (Schubert & Adisa, 2011, Marston et al., 2010). Cloud-ERP adoption also provides strategic flexibility by giving user companies the opportunity to use easily scalable IT resources so as to respond fast to IT workload volatility (Benlian & Hess, 2011). Moreover, cloud-ERP vendors offer companies the flexibility to make a limited deployment of the

system under the specifications they have set, test its reliability and only then scale up their solution (Juell-Skielse & Enquist, 2012).

*Fast deployment*

Cloud ERP solutions are not as complex and functional as the mature and cumbersome on-premises packages and generally provide lower margins for software customization due to multi-tenancy (Arnesen, 2013; Mozammel-Bin-Motalab & Shohag, 2011; Miranda, 2013). Cloud solutions are often developed on industry and country-specific best practices and their implementation process is therefore faster. In addition, there is no need to acquire, install and test infrastructure, further improving deployment time. The annual survey of Computer Economics for the year 2012 regarding the key benefits of SaaS showed that the characteristic of rapid implementation was the highest-rated SaaS benefit. Gabriela & Ioana (2012) have calculated this improvement in time needed for a cloud ERP to reach the go-live stage to be 15-20 percent lower than that an on-premise ERP implementation demands, while Muhleman et al. (2012) stress that cloud-based systems are typically deployed in one third of the time as compared to in-house systems. The immediate access to hardware and software resources with no need for installation and testing are responsible for this deployment time improvement (Marston et al., 2010; Aggarwal & McCabe, 2009).

*Integration with other systems and services*

Recently, there has been an increase in requests for integration of the core business applications of companies with circumjacent systems owned by affiliates, according to the current trend of social software (Iyer and Henderson, 2010). Open APIs with well-documented specifications ensure the success of such integration, but in the area of ERP systems ERP vendors seem reluctant to fully open their systems without keeping the control of their interfaces. However, a number of novel cloud-ERP providers have responded and has published API specifications adapting to current trends from the social software movement. (Schubert & Adisa, 2011)

Another important issue that companies face is to streamline the data exchange process across the borders of the company and further connect the supply chain among suppliers, processors and customers. According to Schubert & Adisa (2011), in the case of an on-premise ERP, a third party undertakes the task to manage contracts, infrastructure and exchange formats between business partners (EDI gateways, B2B integration providers). In the case of a cloud ERP, these services can be provided by the vendor in the form of cloud services, reducing cost and complexity (Schubert & Adisa, 2011).

In general, cloud-based applications increasingly gain market success and cloud providers care for their integration in the shared infrastructure that they build. Therefore, as soon as new cloud services getting integrated with a vendor's cloud infrastructure, they instantly become available to all the customers of the cloud solution. Thus, integration with other cloud services is a benefit of cloud-ERPs which is estimated to grow over time. (Marston et al., 2010; Scavo et al., 2012)

However, in cases that a company needs to have real-time integration of its ERP system with proprietary, in-house applications which require low latency, such as factory equipment and warehouse management systems, on-premises systems are the most appropriate solutions as their architecture can efficiently accommodate low-latency integration requirements as opposed to cloud-based ERPs (Scavo et al., 2012). Although, Scavo et al. (2012) commented that some cloud providers, such as Plex, make steps towards the enhancement of their products with similar functionality in order to provide real time integration with resource-demanding and complex in-house applications.

*Access to leading technologies and skills*

Cloud ERP user-companies benefit not only from economies of scale but also from economies of skills, by leveraging the skills, resources, latest technologies and IT-related know-how that the cloud provider offers, which are qualities difficult and costly to be achieved internally for an in-house system (Benlian & Hess, 2011). Having the specialized vendor to deal with all aspects of management, maintenance and optimization of the software and infrastructure of the system, streamlines its use and management. Updates and upgrades to newer versions are completed without disrupting the operation of the running applications and emergent problems are typically easy to be solved without interruption of the business, while all information and business functions are shared via the internet with the vendor who is responsible for technical support (Muhleman et al., 2012; Armbrust et al., 2010).

*Business focus*

By outsourcing management and maintenance of the system to the cloud vendor, the on-site IT team has more time to spend on their core business work, focusing on high IT value and strategic initiatives (Lenart, 2011). On the one hand IT managers are more free to spend time solving business problems and conduct analysis on business data and on the other hand the technical IT staff of the company is freed up for more value-laden projects, which could grow the overall performance of the IT of the company, rather than just keep the plumbing flowing (McClure, 2012; Lenart, 2011). In General, a cloud-ERP solution transforms the IT stuff of the user-company from an operating expense, spent for testing and maintenance of the software application, to an integral part of the company which could dedicate their time to more strategic activities, such as determining how the company's IT could add value to the business (Lenart, 2011; Benlian & Hess, 2011).

*Always on the latest software release*

One of the big advantages of cloud ERP solutions is that the vendor constantly keeps the software up to date and manages all the aspects of its maintenance. Vendors continuously provide new features and functions into the base application, making them immediately available to users, as opposed to the traditional waterfall model of on-premises systems software development (i.e. version 1.0, 1.1, 2.0 etc.) (Gould, 2011). That means that the user-company also avoids all the economic and operational hardships of big upgrade scenarios. In addition, new features are provided with configuration settings which give the flexibility to

users to either turn them on at will or keep them as an opt-in enhancement (Arnesen, 2013, Gould, 2011).

*Accessibility – Ease of use*

Employees of user-companies can access ERP services through a web-interface over the internet from anywhere, anytime with the use of a broadband internet connection and commodity desktop or mobile devices (e.g. PCs, laptops, smartphones) (Muhleman et al., 2012). Thus, the same level of robustness of the software service is ensured for every location giving the advantage of mobility to services provided by cloud-vendors. Users of the cloud-based system can work from anywhere with mobile devices and it's the cloud vendor who is responsible to take care of VPN and tunneling (McClure, 2012). As a result, this easy access to services provided by cloud-vendors enhances the perceived ease of use of cloud-based systems. (Duan et al., 2012; Chunye Gong , 2010)

**Concerns**

*Security issues*

One of the biggest barriers to the adoption of cloud ERP solutions and an issue that traditional vendors of on-premises systems raise in order to deter customers from moving their enterprise systems to the cloud is the concern of security (Arnesen, 2013; Scavo et al., 2012).

An ERP system supports all core business processes of the user company and its database stores all sensitive master data of customers, products as well as transactional data of many daily activities. It is well understood that this data represents company assets and its security is critical for both operation and success of the company. Thus, managers are reluctant to move this data and the processing power to the cloud, when it is not guaranteed that confidentiality of the data is assured and that the system performs at least at the same level as a comparable on-premise solution. (Schubert & Adisa, 2011)

However, most experts consider the risk to be the same in a cloud solution as in an on-premise one, as the most cases of security problems pertain to internal abuse rather than a hacker coming in (McClure, 2012). Nevertheless, many SaaS providers have been putting significant resources on improving the security of their systems and now implement often better security measures, such as firewalls and private lines, than what many internal IT organizations implement. Many cloud ERP providers' systems have internal controls audited under high standards such as SSAE 16, ISAE 3402 or ISO/IEC 27001 (Scavo et al., 2012). Few corporate data centers can present full compliance with these standards. Especially in the case of companies which cannot afford hiring skilled security professionals, who would ensure the protection of the enterprise system immunity, going with a cloud solution which provides among others the benefit of improved security is a very good idea. (Arnesen, 2013; Scavo et al., 2012)

*Limited customization*

Most cloud-ERP vendors provide their customers with the capability of customer-spesific scripting and others ways, so as to achieve custom functionality (Scavo et al., 2012). However, major customizations, which would call for changes in the source code of the system, typically are not an option, so that the vendor can maintain the same seamless upgrade path for all customers that run on the same multitenant environment (Arnesen, 2013; Duan et al., 2012; Scavo et al., 2012). As a result, companies that would need extensive changes to the business logic of their system or have to integrate with numerous and complex legacy systems, which all of them are tasks which demand major customization of the ERP, would be pushed back from opting for a cloud-based ERP (Scavo et al., 2012).

*Vendor lock-in*

Problematic interoperability among cloud-ERP vendors and a lack of a common industry platform is one of the biggest impediments to the widespread adoption of SaaS and consequently to the more rapid adoption of cloud ERP solutions (Schubert & Adisa, 2011). In the 2010 Economist Debate, a big number of participants stressed that a company should have the opportunity to be able to move their applications to different vendors whenever their requirements, such as reliability, cost, security or government compliance, are not sufficiently covered by the current vendor. A prerequisite for migration to a different vendor is the access to both existing data and the metadata, so that the existing data to can be easily imported to the new system. (Iyer & Henderson, 2010)

Although user-companies of Cloud ERP solutions own the data of their enterprise system, the vendor owns the whole environment this data lives in, such as the data structure and its rules, tools which conduct reporting as well as audit trail information, which is used in data viewing and analysis. The format in which a company that wants to migrate will get its proprietary data is a decisive factor, which influences how easy could be a potential shift to another vendor (Arnesen, 2013).

*Performance issues*

Since cloud ERP user-companies access their enterprise services exclusively through Internet via a web browser, the strength and reliability of the Internet connection is critical for the performance of the system. The company should take into deep consideration the access as well as the response times of the service. It is well known that data transfer over the web can cause delays from times to times, which could eventually make cloud applications to perform slower than on-premises systems, which do not face fluctuations in performance or availability, as they operate over the user-company dedicated intranet. Poor performance can be the case especially when many users are connecting at the same time and large amounts of data are transferred between them and the cloud server, unless the robustness of the internet connection and the adequacy of the network capacity are not guaranteed (Kim et al., 2009; Lenart, 2011)

A major concern, which relates to the performance of cloud solutions and deters companies from moving their core enterprise systems to the cloud, is the fact that the continuous function of cloud-ERPs completely depends on the vendor's reliability. The possibility that cloud providers may not deliver the expected level of service regarding the application availability as well as the network bandwidth they have originally agreed, can harm the performance of the system and cause organizational inefficiencies and potentially harm the reputation of the company to customers (Benlian & Hess, 2011).

In case the cloud vendor loses access to the internet, a natural disaster interrupts its operations or in the worst case, it gets out of business, the customer can lose its access to the system with detrimental consequences. This concern becomes more intense, as currently many new vendors enter the market because of the rising commercial success of cloud applications. Since they charge small service fees in order to expand their customer base, they require a large amount of customers to be able to offer their services in a sustainable operational model. Therefore, it is critical for these new vendors to prove the viability of their business model in the near future, as capitalization and therefore viability of some of them could not be so robust, seriously affecting the reliability of their provided services. (Arnesen, 2013; Schubert & Adisa, 2011)

*Resistance to change from traditional ERP vendors*

A lot of traditional on-premise solution vendors cultivate fear, uncertainty and constantly cast doubt on multi-tenancy swelling its drawbacks and underestimating its obvious advantages, in order to protect the ongoing selling viability of their on-premises ERPs (Scavo et al., 2012). These efforts seem to work out at the moment, as customers are still skeptical and cloud ERP adoption increases but not significantly (Arnesen, 2013).

Another consideration pertains to the established sales models and channels of big players of the market, which would be severely challenged with a widespread adoption of the cloud version of their ERPs. Some of them have built and use an ecosystem of implementation partners as an indirect sales channel. Thus, their main role is to ensure that the system meets the defined technical requirements and specifications in terms of multi-tenancy and virtualization and they let their partners to offer the product to the customers. If these big vendors change their strategy and start to offer cloud services directly to customers they would destroy their own distribution partners and the indirect sales channel that they have developed (Schubert & Adisa, 2011).

*In-house resistance to change*

There is also resistance to change from the IT professionals' standpoint. Cloud Computing is undisputedly an innovative technology which simplifies IT tasks and frees up IT professionals from a lot of labor. However, IT specialists could see cloud ERP adoption as a disrupting and challenging change, which would comprise a threat to their job security by outsourcing a big part of their daily IT tasks to a third party (Marston et al., 2011). A 2012 survey of Computer Economics ground IT professionals' worry, as respondents (i.e. SaaS adopters) considered IT

staff reduction one of the main benefits of SaaS (Scavo et al., 2012). Moreover, even management could be reluctant to let its ERP to be externally handled, as otherwise the benefit of the cumulative, in the course of time, knowledge of IT staff about proper adaptation of the ERP on the organization's requirements and specifications would be redundant (Johansson, 2004).

*Jurisdiction compliance*

Cloud providers seize significant advantages out of having their data centers located near large sources of power and Internet bandwidth (Thomas, 2009). That means that companies, which access their ERP through the cloud computing service delivery model, could have their data warehoused and processed in physical locations which could be anywhere in the world. This affects the adoption of cloud ERPs, as regulations at national and international level define requirements for physical data audit and data location, which in some occasions restrict the retention or even the flow of corporate data outside national boundaries, while few cloud providers can provide transparency for the physical location of the hardware where data is kept (Marston et al., 2011; Thomas, 2009). Examples of regulations which prevent certain kinds of information to be kept off-shore are the US Patriot Act and EU Data Protection Directive (Ovum, 2010) and the Sarbanes-Oxley and the Health and Human Services Health Insurance Portability and Accountability Act (HIPAA) define requirements for physical data audit (Marston et al., 2011). Furthermore, jurisdiction problems may emerge where the cloud crosses jurisdictional boundaries (Schubert & Adisa, 2011). Clarke (2010) points out that even if a company identifies a privacy breach and manages to collect sufficient information about it, it is likely to encounter significant difficulties in its attempt to initiate and pursue actions in the jurisdictional location in where the violation has occurred.

*Lack of control*

On the one hand, outsourcing of implementation and maintenance of the ERP to a cloud-provider reduces cost of ownership and frees up company's IT to focus on more business work and add value to the business. On the other hand, outsourcing of business-critical applications, such as an ERP system, which supports key functional areas of the business, can result in a high level of dependence on the cloud vendor and thus, reduce company's ability to react fast to new business needs and requirements (Benlian & Hess, 2011). This reduced ability is connected also with the fact that the cloud-provider is exclusively responsible not only for the maintenance of the system but also for its development and thus, all user-companies, which run on the same software, are forced to follow its development path with limited margins for personal customization.

The fact that the control and management of critical assets, such as the ERP and data for customers, products and daily transactions, are not handled by the user-company harms the behavioral need for status which is connected with the need of companies to manage their assets on their own (Suciu & Ularu, 2012). This loss of control over resources and the subsequent inability of managers to contact or even reprimand someone in their own rank, in case an IT issue occurs, could result in a loss of power and thus affect how managers who

outsourced their companies' assets are perceived by their peers, clients, and employees (Benlian & Hess, 2011; Suciu & Ularu, 2012).

## 2.5 Research Framework

The factors we have found in the literature have been placed in the table (2.3) below according to whether they are primarily perceived as opportunities or concerns. In addition to giving the reader an overview of what has been presented in the literature review, this framework will be used as a point of reference for when collecting and analyzing empirical findings.

Table 2. 3 Research Framework

| Opportunities | Concerns |
|---|---|
| Lower upfront costs | Security |
| Lower operating costs | Vendor lock-in |
| Transparency of TCO - enhanced financial image | Performance |
| Lower TCO | Limited customization |
| Availability | In-house resistance to change |
| Scalability- Flexibility | Resistance to change from traditional ERP vendors |
| Fast deployment | Jurisdiction limitations |
| Integration with other systems and services | |
| Access to leading technologies and skills | |
| Business focus | |
| Always on the latest software release | |
| Accessibility – ease of use | |

# 3. Research methods

In this chapter we present the research methods applied to our thesis. This includes the research approach, data collection methods and data analysis methods as well as the considerations made regarding the scientific quality.

## 3.1 Research approach

Research methods are repeatedly distinguished between quantitative and qualitative research (Seale, 1999). The first relies on quantifiable data, often collected through surveys. The latter deals with complex issues, which cannot be explained through numbers, as they often involve multiple perspectives and subjective meanings that require deeper understanding and interpretation (Creswell, 2007).

The nature of our research questions is twofold. The main research question seeks to uncover and explore *what* the main concerns and opportunities are for SMEs and large companies regarding cloud ERPs. This suggest that the question is *explorative* or *descriptive* (Yin, 2009). However, we seek to go beyond just descriptions and we aim to understand the reasons for why SMEs and large companies perceive a certain factor as a concern or opportunity or a mix of both. The follow-up question draws upon the interpreted results of the main question to give an answer to whether cloud ERP is a solution that is appropriate for companies of all sizes. For this purpose, a qualitative research approach is essential as the issues we explore require a complex understanding of the factors involved (Creswell, 2007). This in turn demands interpretation of respondents' opinions and meanings they ascribe to the topic of research.

In order to tackle our research problem, we first had to establish a thorough theoretical background. In the first part of our literature review, we introduced the fundamental technologies of cloud ERPs. There, we defined and described the concept of ERPs and cloud computing before giving a brief introduction to cloud- ERPs. In the second part of our literature review, we gathered the opportunities and concerns regarding cloud computing and cloud ERPs as found in previous research and other sources. For our research framework we then compiled these opportunities and concerns, which later would be used as a point of reference for when analyzing the empirical findings. How we collected and analyzed the empirical data will be presented in the following sections.

## 3.2 Data collection

Data collection is a central part of every research and it is therefore imperative that researchers carefully evaluate and select an appropriate data collection method with regard to the knowledge sought (Bryman, 2012). Due to the complex nature of our inquiry, which requires deep understanding of the problem area, we have decided to utilize qualitative interviews for collecting our empirical data. As with any other qualitative research, there are many perspectives, subject meanings and other influencing factors involved, which call for interpretation in order to make sense of the data (Creswell, 2007). Qualitative interviews are professional conversations that have a structure and purpose, where two parties discuss a

theme of mutual interest (Kvale & Brinkmann, 2009). It is through the interaction between the researcher and the respondent that knowledge is produced.

For the purpose of acquiring the necessary data, we have selected the semi-structured interview type. This gave us the opportunity to ask a set of predefined open-ended questions regarding each theme to which the respondents could give open answers (Creswell, 2007; Kvale & Brinkmann, 2009). This approach being flexible, meaning we did not need to follow the interview guide strictly, allowed us to change the order of the questions, to critically follow-up on respondent's answers, to ask for clarification and further probe and inquire through additional questions. We could therefore keep the interviews open without losing control or direction of the interview (Kvale & Brinkmann, 2009). By giving a hue of structure to our interviews, the analysis of the empirical data becomes a lot more manageable. This is because structure facilitates the comparison and pattern recognition process. In our case, the interview structure was largely inspired by the findings in the literature review, yet with the aim to not restrict our respondents by asking about each identified factor. The structure of the interview guide will be described in more detail in the next section.

Part of the data-collection process is the recording of interviews (Kvale & Brinkmann, 2009). After receiving respondents' approval, we recorded our interviews we conducted through skype, by using an audio recording software in order to ensure that we did not miss anything the respondents said. Using audio recording allowed us to concentrate on the actual interview rather than taking notes as well as keeping the interview flowing. After conducting each interview, the audio recordings were stored on several computers so that we would not, for some reason, lose them.

### 3.2.1 Interview guide

According to Kvale & Brinkmann (2009), interviews should be conducted and recorded with respect to the knowledge sought. It is also, as previously mentioned, through the interaction between the researcher and the informant that knowledge is produced. This suggests that interviews should be designed in such a way that they gather the necessary data whilst attempting to keep a good relation between the respondent and researcher. We have therefore developed an interview guide with this in mind. We have also applied measures in order to make the respondents feel more comfortable. Since three of the respondents are Greek, we have chosen to conduct the concerned interviews in Greek in order to make the respondents feel more comfortable with the language and in that way set the base for a better discussion.

The interview guide is inspired by the themes developed in the research framework presented in 2.5. However, we do not ask specific questions regarding each identified factor as this could lead the respondent to a certain direction. Instead, we let respondents themselves come up with what they regard as crucial or less crucial opportunities and concerns before we match the responses with the identified factors in the literature review. Our interview guide is thus designed to contain questions that are very open-ended with the aim of acquiring comprehensive responses. In the text and tables below we explain the structure of our

interview guide which can be divided into four sections as represented by tables 3.1, 3.2, 3.3 and 3.4.

The first section (see table 3.1) contains a set of introductory questions. With these questions we aim to establish the background and experience of the respondent and the company he or she works at. We ask what the core business of the company is, what type of ERP services they offer and what kind of clients they serve. We also ask the respondent what his/her position is in the company and what it involves. With these introductory questions we hoped to gain an increased understanding of the respondent and the company he or she works at as well as to make the respondent feel comfortable with the interview situation. Finally, in order to bridge the gap between this section and the next we ask the respondent to give us an indicative proportion concerning the company sizes of the clients served.

Table 3. 1 Introductory questions

| Question | Purpose | Theme |
|---|---|---|
| **Can you briefly introduce the company you work for e.g. core business, size?** | Introduce the respondent and the company he/she works at. The questions mainly seek to establish the interviewees‘ working profile and demographical data regarding what type of ERP solutions are offered as well as what sort of clients have been served. | Introduction |
| **What is your role in the company and what does it involve?** | | |
| **What kinds of ERP delivery models do you provide? (on-premises, hosted, SaaS)** | | |
| **What kind of customers do you provide ERP services to? (SMBs, bigger companies)** | | |
| **Give as an indicative proportion** | | |

In the next section (see table 3.2) we ask rather direct questions regarding the perceived opportunities and concerns companies have regarding cloud ERPs. As mentioned earlier, we do not ask about specific factors but rather let the respondents themselves come up with what they perceive to be important or relevant factors. Our respondents come from ERP vendors that have a long history of dealing with many different clients. Therefore, they speak from their experience of dealing with these clients when they connect company size to various concerns and opportunities. We first ask questions about the main opportunities and concerns, so as to discern which ones are perceived to be the most important. We then ask for further opportunities or concerns, which are not crucial but still relevant. Since we aim to obtain a set of opportunities and concerns for both SMEs and large companies, we ask the same set of questions twice, one set for each company category.

Table 3. 2 Questions about opportunities and concerns

| Question | Purpose | Theme |
|---|---|---|
| **Which are the most important opportunities that a cloud solution provides to SMEs/bigger companies?** | To establish the perceived opportunities and concerns of SMEs and large companies. Furthermore we seek to discern which are the most critical factors. | Opportunities and concerns. |
| **Additional opportunities that a cloud solution provides to SMEs/bigger companies?** | | |
| **Which are the most important concerns SMEs/bigger companies have for adopting a cloud solution?** | | |
| **Additional ones?** | | |
| **Do you think that these concerns will be addressed in the future?** | | |

After we have established what opportunities and concerns are expressed by the different companies regarding cloud ERPs, we inquire about which delivery model of ERP, generally speaking, might be most appropriate for the different categories of companies (see table 3.3). With these questions we seek to discern what factors, depending on company size, affect the selection of an ERP solution. There might be some relevant factor involved that was not previously mentioned or some of the aforementioned factors might be more or less influential than what was previously indicated and therefore require further probing.

Table 3. 3 Solutions and company size

| Question | Purpose | Theme |
|---|---|---|
| **Customers have the opportunity to choose among three delivery models (on-premises, hosted, SaaS, hybrid) Based on your experience and knowledge of the industry, what do you think is the most appropriate choice for SMBs and bigger companies based on their different needs and competences?** | Discover what ERP solution is most appropriate for different category of companies. Also seek to discover what (if) factors influence the choice of solutions. | Appropriateness of different ERP solutions. Preferences of SMEs and large companies. |
| **Why?** | | |

In the fourth section (see table 3.4) we try to further distinguish which factors are important by applying a more indirect approach. There might be some factors that the respondent missed or did not think of, although they could be of importance or require attention. We therefore inquire about future developments and what needs to happen for the cloud ERPs to become more attractive to large companies as well as SMEs. With these questions we hope to further ascertain what factors are influential and thus important for SMEs and large companies when evaluating cloud ERPs.

Table 3. 4 Further questions to ascertain critical factors

| Question | Purpose | Theme |
|---|---|---|
| **Will SMEs continue to be the main adopters, or will bigger companies follow?** | To further ascertain what the crucial factors are by establishing what changes are needed in the future in order to attract more SMEs and large companies. | Future outlooks |
| **Why?** | | |
| **What needs to happen (what concerns need be addressed) if bigger companies are to be more prone to adopt cloud ERPs?** | | |
| **How do you think the ERP market will develop in the coming years (for SMEs and bigger companies)?** | | |
| **How will the cloud ERP solutions develop during the next years?** | | |

We conclude the interviews by asking the respondents if there is something they would like to add. There might be things that they feel were omitted and need to be mentioned, or previous responses that need further elaboration. Finally, we ask the respondents if, based on what has been said during the interview, they still have the same feeling towards anonymity as at the start of the interview.

It is important to note that since we have selected to conduct semi-structured interviews, we are free to modify the questions, ask additional questions, ask for clarification, change the order of the questions and leave out questions depending on the responses that have been given by the respondent (Creswell, 2007; Kvale & Brinkmann, 2009). Therefore this interview guide is, as its name implies, only a guide that serves to support our interviews without the need to be followed strictly.

### 3.2.2 Informant selection

When it comes to the selection of respondents as sources for our empirical data, we chose professionals who work in companies which are both part of the ERP industry, working for ERP vendors, and possess an extensive knowledge set about SaaS and cloud ERP. Since we research the topic of cloud ERP and the factors that affect the decision making of businesses towards cloud ERP adoption, we therefore tried to find vendors in order to gather their views

and insights as they are the specialists in the subject. They have many years of experience of interaction with a variety of companies of different sizes and industries and thus they know many of their concerns and motivations. Based on their experience, they can also reflect about the special characteristics of cloud ERPs and their suitability for various companies. The selected vendors operate on a multinational level with offices in more than one country. The scope of the study and its produced outcomes are therefore general and applicable in many parts of the world. Finally, the respondents have different roles in their companies, something that proves to be very useful for the acquisition of a more spherical perception of the topic with a variety of constructive ideas and insights. Below, a table (3.5) follows that provide an overview of the different interviews, which were conducted for our study.

Table 3. 5 Overview of conducted interviews

| ID | Name | Company | Position of Respondent | Interview Type | Business Location | Duration |
|---|---|---|---|---|---|---|
| 1 | Nick Amblianitis | SoftOne | Director of International Business Development | Phone | Multinational | 85min |
| 2 | Dimitrios Gaganelis | SoftOne | Marketing Director | Phone | Multinational | 91min |
| 3 | Bahtiyar Tan | IAS | R&D Manager | Phone | Multinational | 53min |
| 4 | Anonymous | Confidential | Partner Account Manager | Phone | Multinational | 65min |

The first respondent works for a company called Softone, which creates business software and its headquarters are located in Greece. Their main ERP product is called Softone software and is provided in different bundles. The company has created an extensive network of partners and is operates in a number of markets, serving customers in Bulgaria, Romania, Cyprus, Malta, Serbia and Russia. The company has developed both an on-premise and a cloud-based version of their ERP and their business model is mainly focused on SMEs. The first respondent's role in the company is that of the director of international business development, which involves working towards the creation of markets in foreign countries for the company. He is also involved in the development of products as well as the organization and expansion the channel partners' network that will finally sell and implement the software. Through his long experience in the field, the continuous interaction with partners, who implement their ERP software at the various client organizations as well as getting informed about their concerns and motivations, he can supply us with rich and valuable data, regarding how companies relate to cloud ERP.

The second respondent works for the same company as the first respondent, Softone, but has a different role in the firm. He is responsible for the promotion of the company's cloud ERP and other SaaS products, being the marketing director with responsibilities involving not only advertising and communication but also management of cloud products as well as other

software and services that the company offers. Since he is the voice responsible for explaining and promoting cloud ERPs to prospective customers, he has a very good perception of the market and its needs.

The third respondent is working in the company IAS, which is located in Turkey but also has presence in Middle East and Germany. IAS creates and produces ERP software. Their ERP product is called Canias and is offered both as an on-premise (at customer's site) and a hosted solution in IAS datacenter. His role in the company is head of the research and development department, leading the development of the company's ERP product. His experience of the early development phase of ERPs as well as his knowledge about SaaS, would certainly contribute with interesting insights to our study.

Finally, the fourth respondent is working for a Greek subsidiary of a large multinational corporation. However, he asked for both his name and the name of the company he works for to remain confidential. The products that his company provides have a global reach and are developed according to the international demand and requirements. The company has developed a great variety of products, including ERP solutions for on-premise, cloud and hybrid deployment which the various partners of the respective company modify and extend to a final solution appropriate for different customers. However, the cloud solution has not yet been introduced to the Greek market but is scheduled to be launched very soon. The role of the respondent is that of a partner account manager, responsible for the commercial success of both ERPs and CRMs and is in frequent contact with current and prospective customers and partners. With his extensive knowledge as well as interaction with partners and customers, he is well aware of the cloud ERP features and how these are suited for and perceived by different companies.

### 3.2.3 Interviewing

All our interviews were conducted through Skype phone calls. This method was chosen because it enabled us to reach our respondents, who are located in other countries than Sweden where the authors are currently located. In addition, phone calls are promoting a relaxed and deep discussion, respecting the respondents' personal time and life. Before each interview we informed the respondent about the objective of our study and we also asked for their permission to record the interview. After each interview, the transcription and data analysis were conducted.

## 3.3 Data Analysis

In the following chapter we analyze the data that we have collected during the inquiry process. We try to systematically and thoroughly search through unrefined data to find distinct elements and patterns of data that can be isolated and categorized as well as to be compared to findings from the literature review.

The transcription process took place directly after having conducted each interview. Consequently, it was realized while the interview was still fresh in our mind, which contributed to a higher level of accuracy increasing its quality. In addition, such a fast acting strategy allowed us to spend more time on the analysis process in order to produce valuable

outcomes. The analyzed interviews were sent back to the subjects, so they could have the opportunity to comment on the analyzed text and elaborate on their initial statements as well as provide useful feedback. In their work, Kvale and Brinkmann (2009) support that the method for data analysis should be determined in an early phase, even before the data collection phase, as potential delays can slow down the research considerably. Following this advice, we decided to apply Denscombe's (2007) guideline in order to facilitate our analysis process. The guideline consists of three steps; 1) Data Coding, 2) Data Categorization and 3) Concepts Production. The different steps will be briefly discussed below.

*Data Coding*

The initial step involves coding words and statements from the collected data (Denscombe, 2007). Following this we gathered and marked useful opinions and statements made by our respondents in the transcribed texts. In case we found matching or similar opinions between the respondents we marked them with a tag in order to recognize and distinguish their association.

*Data Categorization*

The second step involves the categorization the recurring tagged opinions (Denscombe, 2007). We created categories based on the recurring opinions and we analyzed them, stating thoroughly each respondent's ideas on the matter as well as contrasting and comparing them. In a sense, we also confirmed the data that we found and collected through the literature review. However, at this stage, we did not contrast the collected data with literature findings.

*Concept Production*

According to Denscombe (2009), the goal of the two previous steps, coding and categorization, is to produce an overall concept that can contribute in explaining a phenomenon, which in our research study is a framework that can help us measure the value of cloud ERPs in SMEs and large companies. After we prepared and articulated the final framework we could then contrast and compare it with the literature review. In our case, we created a simple framework with different factors (i.e. opportunities and concerns), which affect ERP adoption with regard to SMEs and large enterprises. In that way we facilitated the next phase of our study that compares the empirical findings with those of previous research.

## 3.4 Scientific Quality

There are many aspects of quality that we have taken into consideration during our inquiry process. According to Seale's (1999) recommendations, we have determined the audience that our research is targeting, which is the research community. The research community is an audience that follows certain patterns and norms and generally shares many common elements with the industry where we have conducted our interviews for our empirical data. This common pattern between the two communities is showed by the extensive and successful collaboration between them (Edmondson et al., 2012). We therefore followed a clear

established pattern, avoiding conflicting attitudes and norms.
As far as our approach is concerned, we tried to achieve quality by considering three aspects that we believe to be crucial in our study and these are: Reliability, Validity and Bias. The measures we have taken not only enhance the overall quality of our study but also facilitated us to achieve an increased level of trust from our audience. However, perfect quality is difficult to ensure through imposing criteria (Smith, 1984). Yet, that does not mean that we are suggesting an anti-criteriological approach, instead we are just informing that it is nearly impossible to quantify quality from imposed measures

### 3.4.1 Validity

Validity refers to whether the research truly measures what it is intended to measure and how truthful the findings of a research are (Creswell, 2007). Creswell presents several 'validation strategies' that help increase the validity of a study, for which he recommends that qualitative researchers apply at least two of them. We have applied some of these strategies to our study. First off, we did what Creswell (2007) refers to as 'member checking'. After we had conducted our interviews and made our data analyses, we sent the analyzed texts back to our respondents for their approval and feedback, so as to ensure the credibility of our analyses and interpretations. One of the respondents (respondent 1) responded, wanting to modify some of his statements, as well as to make a few additions. These modifications and additions were sent to us through mail, after which we reanalyzed the interview. Secondly, our study has incorporated 'peer review' as, in our case, our supervisor acted as a peer who would follow our research process and keep us honest asking crucial questions about our methods, interpretations and meanings (Creswell, 2007). Thirdly, we conducted 'negative case analyses', according to which we refined our research questions in light of negative or disconfirming evidence as our study progressed. This is mainly expressed by the several times our research questions have been modified so as to correctly align with the purpose and the overall process of the study. Fourthly, we gave 'rich descriptions' of our respondents and the interviews we had conducted with them. The fifth strategy applied to our study is 'triangulation'. We gathered data from multiple sources; existent research, business reports as well as work from numerous researchers discussing the same topic e.g. security of cloud ERPs, so as to include more perspectives and thus make our analysis and conclusions more convincing. The same applies for the collection of our empirical data, for which we conducted four interviews with three different vendors. Furthermore, this study is conducted by three investigators who all have actively participated in the analysis process, after which we compared our findings so as to develop a deeper and broader understanding of how each of us view the issues discussed. Finally, we clarify 'researcher bias', as will be briefly presented in 3.4.3. Further increasing the validity of our study are the measures applied to improve the study's reliability.

### 3.4.2 Reliability

Reliability can be distinguished between internal and external reliability (Seale, 1999). Internal reliability refers to the extent to which other researchers, by using comparable constructs, would match these to data in the same way as the original researchers. Seale (1999) mentions a few techniques, which can increase the internal reliability of a study. Some of these techniques have been incorporated in our study. We used audio recording software

for our interviews, which can reduce the possibility of the study to be influenced by the researchers, as the recordings are actually data in 'raw' form and thus removing the selective effect of the researchers' perceptual skills. Multiple researchers are included in this study, which can further increase the internal reliability by them repeatedly discussing methodological decisions (Seale, 1999). Finally, as has been previously mentioned, peer examination was used, which also contributes to higher internal reliability.

External reliability refers to the replicability of a study, the extent to which other researchers studying the same phenomenon in the same or similar setting are able to produce the same results (Seale, 1999). According to Seale, it is almost impossible to achieve full external reliability. There are however techniques for improving it. In our study we have applied some of these techniques. Earlier in this chapter we gave descriptions of our respondents, interview guide, how we conducted our interviews as well as our techniques for data analysis. Furthermore, in the previous chapter, we reviewed the extant relevant research and business reports, so as to be used in our study. Finally, in the appendix section of this thesis, transcriptions, both original and translated, are presented. These descriptions help in the improvementof the external reliability of our study as well as aid the readers in assessing the credibility of our findings (Seale, 1999).

### 3.4.3 Bias

According to Hammersley & Gomm (1997) and Norris (1997), although bias damages the validity of a research, at the same time it cannot be completely avoided when conducting a research. Research, qualitative as well as quantitative, are human activities and thus subjected to failings. However, there are measures that can be taken to reduce it. Consideration of self as researchers is a condition for coping with bias (Norris, 1997). As researchers of this study, we have tried to apply self-criticism and remain honest throughout the whole inquiry process. According to Ehrlinger et al. (2005), people tend to hold themselves in a higher regard than others, it is thus more difficult for them to detect bias in themselves than others. As it is hard to detect bias in self through introspection, we have had fellow-students and our supervisor to review our study, so as to detect potential researcher bias (Ehrlinger et al., 2005).

### 3.4.4 Ethical considerations

In this study we use interviews as the source for our empirical data. Since we deal with human subjects, it is highly appropriate to incorporate ethical considerations in our study (Kvale & Brinkmann, 2009). According to Berente et al. (2010), ethical considerations are involved in key aspects of social research and thus should be considered throughout the whole research process. This is a matter we have taken seriously in our study. In order to maintain a high level of ethical conduct, we have decided to incorporate the ethical considerations suggested by Frankfort-Nachmias (2007). These include:

*Informed Consent*

The subject's informed consent was asked and obtained before the start of each interview. Respondents were made aware of our identity and the purpose of the study. We also informed each respondent about the approximate duration of the interview we were about

to conduct with them. Furthermore, we asked permition for recording the interview using audio recording software.

*Consequences and profits for participants*

Our interviews were not rewarding for the subjects in the form of economic value. However, all of them have experienced the academic life in their past and therefore, by contributing with their input to our study, they might gain satisfaction on an ethical level. Regarding the possible consequences and costs for the subjects, we applied some measures so as to reduce or eliminate them, including notifying our respondents about a potential publishing of the study as well as trying to reduce the personal costs and distress, such as tiredness, by conducting interviews of moderate length.

*Confidentiality*

The respondents were given the opportunity to remain anonymous, including the identity of the companies they work at. Also, all elements that could unravel the identities of our respondents and their companies could be removed upon request by our respondents. It was, however, only respondent 4 who requested that both his name and the company he works for to remain confidential. Respondents 1, 2 and 3 allowed us to use their name and the name of their company in our thesis. All four respondents permitted us to reveal their roles and gender.

*Privacy*

Concerns of privacy were considered in different ways. We offered the respondents the opportunity to choose when the interviews would be conducted and in that way we respected their privacy and their limited available time. We could not conduct our interviews on-site, as our respondents were located in other countries than Sweden, where we were currently located during the writing of this thesis. Therefore, we conducted our interviews through Skype. While we would prefer to conduct our interviews face to face, using Skype allowed us to be more available to conduct our interviews whenever our respondents requested it. By using Skype we could also make ourselves available on short notice, should a respondent request it, as there was no need for us to travel to a physical meeting location. Finally, we put effort so as to avoid asking sensitive and ethically controversial questions. In the same vein, the respondents always had the opportunity to skip a question that they, for some reason, did not want to answer.

Finally, we have invested much effort in ensuring that the transcriptions would be as close to the the respondents' actual statements as possible. Even in the hermeneutic part of the procedure we tried to interpret the statements in a pragmatic and useful way, limiting the interpretation freedom and possible misunderstandings through member checking and triangulation (Creswell, 2007; Kvale & Brinkmann, 2009).

# 4. Empirical Findings

In this chapter we present the empirical data that has been collected through interviews with our respondents. The empirical findings are presented categorized in opportunities and concerns for SMEs and large companies. In addition, other influential factors that could not be characterized as opportunities or concerns are presented. Finally, we present findings regarding the future outlooks and the appropriateness of cloud ERPs in SMEs and large companies.

## 4.1 SMEs Opportunities & Concerns

In this section, we present the opportunities and concerns that our respondents associated with SMEs regarding cloud ERPs.

### 4.1.1 Opportunities

*Lower upfront investment*

The elimination of the big upfront investment on infrastructure and software was an opportunity mentioned by all the respondents. Respondent 2[1] stressed the fact that startups and small companies are not able to make a high capital investment, such as the acquisition and implementation of an on-premises ERP, especially during the current financial recession, while Respondent 1[2] said that in general SMEs are not willing to make a big investment, as it could affect their cash-flow which is considered of utmost importance for them. Both said that using a cloud ERP by just paying a much lower fee than buying the system is considered a big opportunity also because it significantly reduces the risk of the investment, as in case that the system or the business would not work out (failure in the implementation, problematic operation or even closing of the company) the company shareholders would not lose the whole investment. Respondent 2 pointed out that the loss would usually approximate the first one or two annual fees, as opposed to the total investment in the case of an on-premise system. Respondent 3[3], in accordance with the above, also mentioned renting the system, instead of spending too much buying it, as a big advantage which reduces the risk of the investment. He also mentioned the possibility for a trial of the system, which cloud providers give, as an extra measure which reduces the risk of the investment. Respondent 4[4] also argued that SMEs consider the zero investment in infrastructure a major opportunity cloud provides to them.

*Lower operating costs*

Lower operating costs of cloud ERP were pointed out as a significant advantage for SMEs. Respondent 1 stressed the fact that maintenance, upgrades, security and data storage function of the system are managed by the vendor with no more cost than the specified fee for using the system. He also added that the user company avoids the hardware maintenance that

[1] Gaganelis D., Marketing director
[2] Amblianitis N., Director of international business development
[3] Tan B., R&D manager
[4] Anonymous, Partner account manager

follows changes of software and in addition does not have to pay IT staff to deal with the above tasks, with all these finally resulting into lower operating costs. Respondent 2 expressed the same ideas with Respondent 1 and argued, based on statistic models, that the maintenance which an on-premise system needs usually every 3 years is equal to a 10-30 percent of the initial investment which is a considerable operating cost that is avoided with the use of a cloud ERP. He continued saying that an additional gain is that cloud ERP users do not need to make a new investment on a new system like companies which use on-premises systems have to do after the end of the lifecycle of their system typically after 5-6 years, which would catapult the operating costs of the system. Respondent 4 validated all the above mentioning: "*[…] SMEs appreciate the fact that having their ERP on cloud means that they don't have administration costs of the product, they don't worry about maintenance and management of the servers that exist in the company, also for the access of the users on these servers and for the infrastructure that is required to exist in the company to make possible this communication ability*" *(Interview 4, R12).*

*Lower TCO*

Lower TCO of a cloud ERP system than that of an in-house one was identified in all interviews. Respondent 1 argued that typically the money an SME pays through annual subscription for a cloud ERP throughout the system lifecycle is almost equal with the money that would have been invested in the purchase of the infrastructure and licenses of an in-house ERP. However, he said that maintenance and management costs of a cloud based system do not increase its TCO, as they are handled by the provider, while at the same time they must be calculated in the TCO of a traditional system. So, he concluded that TCO of a cloud ERP is lower than that of an on-premise system. Respondent 2 supported the same argument. He said that if a company computes all parameters that add cost to the system, then it is definite that a cloud ERP has a lower TCO than an in-house system. He also argued that the more disperse are the operations of the company to different geographical places the more evident is the profit in the TCO using a cloud ERP. He gave the example of a company with offices in different geographical places which, in order to communicate with them securely, should buy and operate rooters, firewalls and set VPNs. This extra infrastructure is needed only in the case of an in-house system, as in the case of a cloud ERP are covered by the vendor. Respondent 3 being in the same vein, said that the basic motivation for SMEs to go cloud is the attempt to minimize the TCO of their system. Respondent 4 also mentioned that in the long term SMEs can benefit a reduction of the TCO of their ERP through cloud. However, based on his knowledge of the Greek and other central-eastern european markets, he added that the difference between the TCO of a cloud-based and an on-premise system is not major because, on the one hand on-premise ERP vendors usually offer discounts in the cost of licenses, as opposed to cloud vendors who do not discuss discounts for their services, and on the other hand the cost for the needed infrastructure of an on-premises implementation declines constantly.

*Cap-ex to op-ex brings transparency of TCO and enhances financial image*

Respondent 2 argued that an important advantage of cloud ERP is that it lets the company to move from a model of capital investment to a model of an operational cost, as far as the cost of the system is concerned, which results in the improvement of certain financial indicators related to how the company uses its capital, finally improving its financial image. He continued saying that this model of expensed service makes the cost of the system measurable and thus the TCO transparent. Respondent 4 also referred to this opportunity stressing that it can benefit every company which would adopt a cloud solution. However, he added that there are on-premise ERP vendors who lease to customers ERP licenses instead of selling them, transforming in that way a part of the cost of an on-premise ERP from capital expenditure to an operating expenditure model. Nevertheless, he concluded that the cloud model provides full advantage of the op-ex model, as it requires zero capital investment, as opposed to the on-premise model, which at least requires the acquisition of the needed infrastructure.

*Business continuity*

Respondent 1 said that the cloud ERP vendor enhances the business continuity of the company, as all aspects of maintenance, such as bug fixes and updates, occur automatically and keep the system up to date without interrupting its operation. In addition to that, Respondent 2 argued that processes which just ensure the business continuity: *"[...] are better and more reliable to be handled by the vendor who is more specialized and has all the necessary tools, since it is his core business" (Interview 2, R26).*

*Mobility*

Mobility is stated in the interviews as an opportunity for SMEs. Respondent 3 stated that mobility is an important advantage that cloud computing is offering, a fact that also the first Respondent agreed with, supporting also that it allows business to be done anywhere where there is an internet connection, enabling the employees to access their files and applications via the web and serve their customers on their field. Moreover, he stressed that the advantage derived from mobility can be even more important for companies which rely their business model on outdoor activities and gave the example of a pharmaceutical company with multiple external salesmen who can access parts of the ERP through mobile appliances in real-time in order to better serve their customers. However, a pharmaceutical company is a typical example of a large organization and thus we take for granted that Respondent 1 considers mobility a general opportunity for every company that has external operations and relations with partners and customers. Respondent 4 recognized mobility as a great opportunity of cloud for SMEs. Although, stating that mobility can be achieved also through on-premise systems, he related it more with the fact that cloud makes it possible without any investment in relative infrastructure and IT staff needed for its maintenance, as an in-house system would require.

*Scalability*

Respondents 1 and 3 identified scalability as an advantage of cloud ERPs which mostly SMEs exploit. Both of them pointed out that with a cloud ERP a company can get the performance

that it needs. As the company grows, so do its computational needs. Thus, having a cloud ERP can allow the company to satisfy their increasing needs without making further investments in servers, storage and other hardware, which they would otherwise have to make with an on-premise solution. Instead, the needed performance is provided automatically or on-demand by the cloud provider through the pay-per-use model, according to which a company only needs to pay for the amount of IT resources it uses. Both of them also mentioned that cloud ERPs can allow companies to rapidly respond to sudden change in demands. According to Respondent 1, being able to respond to sudden changes is very important for SMEs in order to remain competitive, as SMEs are allowed to redirect resources, when new opportunities arise. Respondent 3 also mentioned that cloud ERPs can help companies to deal with irregular demands without making heavy investments in hardware and license fees that would not always be fully used and stressed that this opportunity to respond to irregular demands is a major advantage of the cloud ERP delivery model. However, he continued that if the demand is regular, meaning that a certain performance is always needed or certain users are always connected, then this advantage is of a lesser importance. Respondent 4 supported the same argument and claimed: *"[…] the fact that cloud provides the ability for scalable solutions is a big benefit that has high value for companies that have seasonality. The ability that a company has to increase and reduce users based on the needs that emerge on certain time periods. This again is connected with the cost topic since the cost of usage of the system is calculated based on the needs and is not fixed on the level of max needs that would be applied on an in-house system" (Interview 4, R16).*

Respondent 1 mentioned scalability in terms of acquiring additional modules as a company grows. He stated that: *"[...] not only does it allow the business to be more competitive, it also allows business owners to take advantage of the flexible options available with cloud technology" (Interview 1, R43).* However, he argued that this scalability feature is more evident in start-ups and small companies, as large companies have already developed their size. He further elaborated that scalability is more important for small companies because they do not buy the whole ERP package at once, instead they purchase the modules that cover their business processes and as the company grows, new modules are then added.

*Business focus*

Respondents 1 and 2 said that cloud ERP facilitates SMEs to allocate all available resources on their core business. Respondent 1 pointed out that *"[…] Cloud ERP provides small and medium business owners with a better way to manage their technology because they no longer have to worry about integration and deployment, time-to-value and cost of ownership. Instead, they can focus their efforts on mapping business planning to executive goals that will have the greatest impact on the bottom line which is profits. In that sense, a cloud ERP frees up all the resources and let the business to allocate them on the objective" (Interview 1, R39).* Respondent 2 added on the above that the outsourcing of the maintenance and management of the ERP to the vendor enables the IT staff to work on more productive, value adding and business-oriented processes and tasks, such as extracting reports with BI tools, which on the one hand could help the decision making of the company and on the other hand would excel

their skills and role. Respondent 4 went a step further and claimed that: *"[…] a SME to be profitable it will need to run only its core business, which in the case of businesses that don't deal with IT, it is definitely not ERP" (Interview 4, R20)*. In that sense, he considered the focus on its core business, which a SME can achieve by outsourcing to a cloud vendor the management and maintenance of its ERP, to be not only an opportunity but also a necessity in the current competitive environment.

*Access to the latest innovation*

Respondents 1 and 2 argued that SMEs through cloud ERPs have access to state of the art infrastructure and services provided by the cloud vendor. Respondent 2 mentioned that providers make continuous investments on their infrastructure in order to ensure that their services exploit the best out of the current technology. He considered this as a big benefit because as he said: *"[…] SMEs can't do that easily as they do not have the budget and the expertise" (Interview 2, R26)*. Respondent 1 fully agreed and mentioned the example of Microsoft arguing that it continuously makes optimizations on the level of efficiency and security of the systems that run on its Azure platform, as a result of the large economies of scale it has created.

### 4.1.2 Concerns

*Security*

A core concern that has been mentioned by all respondents is that of security or rather perceived security, as it has been stated that it is mostly an issue of mentality and trust. The respondents mentioned that many customers have expressed concerns regarding having their data stored off-premise, as it gives them a sense of lack of control over their own data. The customers want to keep their data at their own location and are therefore reluctant to move to the cloud. They worry that their data might leak out or get stolen, and according to Respondent 1 these concerns are mostly regarding financial data. Respondent 2 mentioned that companies worry whether the provider will properly run the outsourced service. Respondent 2 and 4 also mentioned that the heart of a company is their data and that it is therefore difficult for companies to trust a third party.

All Respondents mentioned that the security concerns have more to do with mentality and trust rather than with actual security issues. Respondent 4 stated that the security concerns that makes companies hesitant about moving to the cloud are psychological and "*[...] not because there is some kind of security problem" (Interview 4, R10)*. He also stressed that we must take into consideration that there are also security problems for on-premise solutions. Respondents 1 and 2 both mentioned that when it comes to cloud ERPs, company data is often stored at a secure location and its is also heavily encrypted. Respondent 2 mentioned the use of the ISO 270001 standard in their own cloud ERP solution, stating that it is the most powerful standard when it comes to security. Respondent 1 suggested that also the back-up of data can be more reliable on cloud than on-premise solutions. He mentioned that for their own cloud ERP solution, they store the data in one of Microsoft's Data Centers and pointed out that Microsoft

takes regular back-ups of the stored data. Customers can also have a local back-up. For on-premise solutions, back-up routines often run automatically every night but for many reasons this could not happen successfully. Respondent 4 mentioned that the security of cloud ERPs can be seen as an opportunity, especially for SMEs. It is difficult for SMEs to set up an infrastructure which provide high levels of security and maintain it because they have limited resources. On the other hand, by adopting a cloud ERP a SME can get access to advanced security technology and expertise that they would otherwise not be able to afford. Thus, Respondent 4 argued that the security problems could be greater for SMEs by keeping the ERP system on-premise. He also argued that disaster recovery capability can be better on cloud than on-premise as well as more cost effective.

However, Respondent 2 stated that level of security for cloud ERPs can vary a lot between providers. Not all vendors provide adequate security measures. All providers are not ISO certified and the amount of investments placed to make the software and data centers secure vary between providers. Furthermore, Respondent 2 mentioned that many providers do not offer a Service Level Agreement (SLA) or at least one that is complete, in which it is clearly stated the level of security, performance, availability, infrastructure etc. that will be provided as well as other terms and conditions. SLA is needed for every form of outsourcing. According to Respondent 2, the fact that many providers fail to give a proper SLA and the fact that the cloud ERP offerings, not just in terms of security, vary among providers, make companies reluctant or skeptical towards adopting a cloud ERP solution. Respondent 2 said that a company's decision for moving or not moving to the cloud often depends on the provider that the company has talked to.

Both Respondent 1 and 2 mentioned that it is hard to convince companies that their data will be secure. SLA, as mentioned by respondent 2, can increase the sense of security for companies by ensuring them that their data will be safe. Respondent 1 mentioned that telling the customer that their data is not stored in a random data center, but in a data center owned by Microsoft can help in this regard. He further explained that if they could show their customers " *[...] that the data center where their data is kept is 10 times bigger of the size of a football stadium and servers are stored into containers that is not allowed the access to no one" (Interview 1, R65)*, it would greatly persuade the potential customers, easing their concerns. Finally, Respondent 1 stressed that data centers, encryption and the way the provider can access customer data are three security areas that need to be shown care in order to avoid problems with security on the cloud.

*Customization*

Customization has been briefly mentioned by Respondents 1 and 4 as an issue for cloud ERPs. Respondent 4 stated that cloud ERPs offer many technological advantages but they possess limited customizability. Cloud ERP installations are often fixed and cannot be modified to fully support the business model and activities of an individual company.

When we brought up that according to existing research, the customizability of cloud ERPs is limited, Respondent 1 replied that we were correct in this regard. However, he also pointed

out that their product is fully configurable and extendable. He stated that *"[...] if the customer wants to develop a special solution, our channel partner could exploit the high level of configurability of the product to do so." (Interview 1, R10).* The channel partner has access to the installation just like if it was installed locally in the company and can make the changes a customer wants in real-time. If this was not enough, the user could use the embedded tools of their ERP in order to get a desired solution. Respondent 1 further stated that he believes that this is what differentiates their product from other international products, such as that provided by SAP. Their solution allows a company to adapt the cloud ERP to their processes, in contrast to other solutions that would instead force the company to operate in a certain merely predefined way.

*Performance*

Respondents 2 and 3 have mentioned that performance can be an issue when it comes to cloud ERPs. Respondent 3 stated that ERP systems are big systems that contain and process a lot of data and because of this the connection to a cloud ERP can be slow. This in turn makes the performance of cloud ERPs suffer. He pointed out that performance is an important issue. Respondent 2 on the other hand talked about reliability of the provider as a threat to performance and security, whether the vendor of the provided service will run it properly. He stated that many vendors do not provide a SLA that ensures adequate availability of resources and performance of the cloud ERP. He pointed out that ERP involve many heavy activities and processes that need to be ensured that they will be able to run efficiently over the internet. This can be done through modern architectures and the technology on which the application is based on. Respondent 2 further mentioned that not all providers have made the same investment in the software in order to make it efficiently over the internet. If the cloud ERP is not built on modern technologies then it cannot be efficient, which he pointed out is a very big problem. All of this is making companies reluctant to adopt a cloud ERP solution. A complete SLA can ensure the level of infrastructure and resources as well as the *"[...] good use of the same application" (Interview 2, R37).* He mentioned response time of the ERP as an example of what an SLA can cover. Finally, Respondent 2 pointed out that *"[...] such a SLA is a big market advantage for the provider that provides it." (Interview 2, R39)*

*Jurisdiction compliance*

Jurisdiction compliance as a concern has been lifted by Respondent 1. He explained that there is the possibility that public authorities through regulations can impose that the data of a company must be stored in the country of its operations, something that is in contrast with the basis of cloud computing since the host can be located in any other country. However, Respondent 3 commented on the same issue saying that he does not consider law as an important concern, since regulations are flexible and because you can always provide the data in an acceptable time when the authorities want to make inspections e.g. in financial reports.

## 4.2 Large Companies Opportunities & Concerns

In the section, we will now present our empirical findings regarding opportunities and concerns associated with large companies when it comes to cloud ERPs.

### 4.2.1 Opportunities

*Operating costs*

Respondents 2 and 3 recognized the utilization of the infrastructure of a public cloud as a considerable opportunity for large companies. Respondent 2 argued that it would be an advantage for them to use all this available and state of the art infrastructure of a public cloud instead of maintaining and constantly optimizing their own. He said: *"[…] even the big companies could find economies of scale by going to the public cloud. And this is because the infrastructures that they have are not simple. Instead they include redundancy systems with failover capabilities and generally try to remain always state of the art and this as we said costs a lot. So I think that they could find economies of scale using the infrastructure of a public cloud" (Interview 2, R57).* Respondent 3 pointed out the same and told that the main advantage of cloud for large companies is that they can avoid the big cost of the maintenance of their numerous servers and infrastructure. Respondent 2 also argued that large companies can further reduce the cost of their system through other parameters and more specifically he mentioned the possibility to reduce costs as a result of a reduction in IT personnel who was dedicated previously to the maintenance and management of the in-house system. Respondent 1 made the same argument telling that a large company has to calculate the opportunity cost of moving to cloud which: *"[…] in the case of big companies is way bigger than that of a SME. The company must take into consideration the big IT staff they got" (Interview 1, R83).* Thus, he pointed out the opportunity for reduction in IT staff, which would mean a reduction in operating costs if the company outsourced its system.

However, Respondent 4 although he agreed that a large company could reduce the number of its IT staff moving its ERP to the cloud, he added that the reduction in the cost of wages would be minor as the company would still need those IT people who have business knowledge and are the most costly to retain, as opposed to technicians who are not expensive. He summarized his thought accordingly: *"[…] most of the IT cost is not on the technological part and on people who have the role of technicians, but on the business part, on the consultants that know the business of the company much better from any vendor and thus are very expensive and needed even in the cloud environment. So the benefit of the outsourcing, which is very important for SMEs as we said before, is much lower on large companies because they still need the people that have good knowledge of the business model and can apply it on the ERP. So a large company can benefit from the cloud financially through the reductions on the technological part, in infrastructure and technicians. But as we said this is not the big part of the cost" (Interview 4, R33).*

*Business focus*

Respondent 2 mentioned that a cloud ERP system can also enhance the business focus of the IT staff of a large company. He argued that a cloud ERP makes: *"[…] the cost for IT human resources to become more productive and with bigger added value freeing the employees from low level activities and working with activities that have as target business growth" (Interview 2,R59 ).* However, Respondent 4 argued that large companies have already

developed a capable IT staff with all the required business expertise, which is a prerequisite for the optimal alignment of the ERP to the business processes of the company, and also they have the resources to maintain it. In that sense he implied that a cloud ERP implementation would not add more value to a large company, as far as the business focus of its staff is concerned.

*Enhanced efficiency*

Both Respondents 1 and 2 argued that, like SMEs, large companies can achieve not only cost benefits but also enhanced efficiency and productivity moving certain processes to the cloud, which as Respondent 1 stated could be *"[…] aspects of their business workflow which do not disrupt their current systems and processes… such as CRM, marketing and BI" (Interview 1,R87).* Respondent 2 expressed the same argument saying that processes behind the above operations *"[…] would function easier, more efficiently and with less cost on the cloud" (Interview 2, R61).* In the same vein with the other two Respondents, Respondent 3 gave the example of the HR module used by a large company, which would be more efficiently and less costly used through the cloud, by allocating resources according to current computational needs and not permanently designating resources which would cover the peak of demand.

*Scalability*

Respondent 3 argued that scalability of IT resources that cloud provides is an opportunity eligible also for large companies. He merely connected it with the potential to reduce costs through allocation of scalable resources to processes with changing demands instead of constantly maintaining dedicated resources which would cover the peak of those demands. Respondent 4 said the same: *"[…] a big company can consider a cloud solution if it has significant seasonality that can affect the ERP users with the typical example of the retailing industry" (Interview 4, R29).*

### 4.2.2 Concerns

All of the concerns mentioned for SMEs also apply to large companies and therefore, for the purpose of readability, we will try to avoid repetition. Jurisdiction compliance was discussed by our respondents in a general manner and thus remains the same for large companies. However, when it comes to issues of customization, performance and security, our Respondents have had additional opinions that apply only to large companies. Issues regarding migration have been lifted by our Respondents as a major concern for large companies. This concern is not evident for SMEs. Instead, it involves many relevant factors to large companies.

*Customizability*

Respondent 4 suggested that the issue of limited customizability of cloud ERPs is greater for large companies as they, unlike SMEs, often have the resources to make extensive customizations of their on-premise ERP solution. Furthermore, large companies often have IT staff that are also knowledgeable about the business of the company, and who can rapidly customize their on-premise ERP system according to changing business needs. IT staff are

therefore a valuable asset to large companies. Respondent 4 argued that large companies thus have less to gain by moving to the cloud as they have the funds and IT staff to better utilize the customizability of on-premise solutions.

*Security*

All of our Respondents stated that security is a much bigger issue for large companies than for SMEs. Respondent 2 mentioned that the risk of receiving a malicious action is greater for large companies because their data, e.g. client lists, pricing policies, and the way they have set up their networks are considered much more important than those of SMEs. He stated that information of large companies has greater value and thus the risk involved is greater as well. He also mentioned that a large company would tarnish its reputation and public image, should something considerable happen. Respondent 3 said that customers worry that their data might be stolen or shared with competitors. He pointed out that it is a psychological problem. It is therefore important that there is trust between the customer and vendor, and this is an especially big issue for large companies. He also mentioned that large companies do not want their data stored on a different location that is accessible through the internet. They want to have their data stored on-premise or hosted on a private cloud by a vendor they have good relations with. Respondent 4 stressed that medium and large companies are particularly concerned about security related issues and about storing their data, especially business critical data, off-premise. Therefore, they want to keep their data on-premise where they fully control their applications and data. Respondent 4 also mentioned that, unlike SMEs, large companies often have the ability to set up and maintain good levels of security on their own and therefore want to handle the security issues themselves. Respondent 1 mentioned that large companies do not like multi-tenancy but rather prefer to have a private cloud with their own dedicated servers, databases and security. Security of sensitive data is of great importance for large companies. He pointed out that someone would have to write down and compute whether it is beneficial enough to migrate to cloud, if it is worth the risks. He also assumed that large companies maybe would not benefit from moving to the cloud.

*Performance*

Respondents 2 and 3 stated that performance issues are greater for large companies. Respondent 2 mentioned that even mega vendors such as SAP and JD Edwards have not progressed much when it comes to offering very large companies a completely structured and efficient cloud ERP solution that can satisfy the high and complex demands of operations and efficiency on all levels. He stated that this is a very important factor that is lowering the cloud ERP adoption rate with regard to large companies. Respondent 3 mentioned an example about a factory full of machines which are provide input to an ERP system. If this factory was to shut down for just 5 minutes, it would cause a lot of damage. If a company cannot access their application servers at that moment it would be a big problem. Respondent 3 stated that this is a risky issue. Companies which lose connection to the application services directly call the provider to get the system running again. He concluded by saying that this is a very big problem for large companies.

*Migration*

Migration from on-premise to cloud ERP has been lifted by all our Respondents as a major concern for large companies. Respondent 1 mentioned that the transition from on-premise to cloud may not be possible for large companies due to their complex processes and infrastructures. He stated that there is too much risk, security issues and complexity involved for large companies to move business-critical applications to the cloud. Respondent 1 further suggested that large companies would prefer a hybrid model in which only certain modules, such as CRM or BI, would be deployed on cloud as SaaS. This would make the migration more effective and less costly as well as less likely to disrupt the current system and processes. Respondent 2 also referred to the complexity of large companies as something that is preventing them from migrating their ERP to the cloud. He stated that large companies have a very complex IT environment and infrastructure that is difficult to change. Both Respondents 1 and 2 mentioned that cloud ERPs lack the functionality to serve this complexity. Respondent 2 stated that due to this complexity and limited functionality of cloud ERPs, migration to the cloud could also threaten the business continuity of the migrating company. A lot more effort would be needed for a large company to move to the cloud, and during the migration, the company would also need to find a way to continue to operate efficiently. Respondent 3 mentioned that large companies are more conservative when it comes to migrating to the cloud than SMEs. This is because large companies have big infrastructures and therefore moving to the cloud would be both costly and risky.

Due to the complexity of large companies, Respondent 1 believes that as a company grows the possibility of going fully cloud decreases. He stated that *"A graph with the size of the company on the one axis and the probability for cloud ERP adoption on the other axis would show that cloud ERP adoption is very high for micro and small companies and would fall while we are moving towards medium and large" (Interview 1, R87 ).*

Respondents 1, 2 and 3 mentioned compatibility as an issue that makes the migration to cloud more difficult for large companies. Respondent 3 pointed out that differences in databases and data structures between a company's current ERP and that of cloud ERP can make the migration processes long and costly. However, he also stated that if a company has tools to make the migration at a minimum cost then moving to cloud could be advantageous for large companies. He mentioned that on-premise solutions may require a lot of consultants on-site and that in this regard cloud ERPs can be advantageous. Respondents 1 and 2 also reffered to compatibility issues, yet more in the sense of organizational structures and processes. According to respondent 2, whether a company can exploit cloud ERPs efficiently often comes down to the special characteristics of an individual company. He mentioned that if a company has the ability to set up some processes that would require much more time and money to set up on-premise, then the company would have a motive for moving to the cloud. Respondent 1 also discussed this compatibility issue, stating that *"[...]in order to have success with your Cloud ERP, just as with any ERP, first you have to recognize how it can fit into your business model and the ways in which it can enhance your internal business functions" (Interview 1, R83).*

Another issue that makes the migration difficult for large companies is that they have already invested much money in their current ERP system and IT department. Respondent 1 stated that *"[...] large organizations have large IT departments and have invested far too much time and money in developing and enhancing their ERP on-premise over the years." (Interview 1, R87).* Respondent 4 mentioned that large companies have already invested much in their current ERP and IT department. However, he also stressed that the IT staff of large company, especially the staff associated with ERPs, are very important to a large organization as they also possess business expertise in addition to IT knowledge. They have good knowledge of their company's business model and therefore, they can support the company considerably. Respondent 2 argued that large companies have already made big investments in their already working ERPs, investments which are much bigger than those SMEs can make. Large companies have established networks with partners, clients and suppliers. Furthermore, large companies are not limited to a single geographical point. All the above contribute to make the structure of large companies complex and unique. Because of that, it would require a very big investment to build from scratch a new system that is customized the extensive needs and complexity of large companies.

Respondent 2 also mentioned that large companies often have strong IT departments which the company has heavily invested in. The IT department can be seen as company itself that is residing within the large company and that has created a culture of how to handle issues. Furthermore, Respondent 2 mentioned that there can be resistance to change as IT staff would be concerned about their jobs since much of their work would be outsourced or disappear. Because of this, the change management for large companies would be very demanding. This issue is a lot smaller for SMEs since they sometimes lack their own IT department. Respondent 2 therefore stated that *"[...] the SME customer has a much bigger grade of freedom to try a change towards the direction of the cloud." (Interview 2, R59).* Due to the investments that have already been made and the strength of the IT department, it is difficult for large companies to move to the cloud. If their IT department is equipped with powerful resources and operates efficiently, then the decision to move their ERP, the heart of their IT, to the cloud is even more difficult for managers to make. However, Respondent 2 pointed out that a large company that does not have a strong IT department that is tightly knit together with the business of the company, may have a positive attitude towards cloud ERP adoption.

## 4.3 Additional Factors Influencing Adoption

During our interviews with our respondents, we came across other factors that influence how companies relate to cloud ERPs, which cannot be categorized as opportunities or concerns.

*Inexperience*

A factor that was constantly present in our interviews is inexperience. Inexperience has two main branches; the lack of knowledge for cloud ERPs from the side of the decision makers as well as the lack of experience that staff in companies have, so as to use the cloud product properly. Respondent 1 stressed that the inexperience gap, the fact that they do not know what

a cloud ERP is or how to handle it, is a major barrier for cloud ERP adoption. A decision maker who gets to decide whether or not to move to the cloud, in reality might not have the experience and knowledge of what it means to make such a transition. Respondent 4 also claimed that managers lack the needed knowledge. This fact was stated by Respondent 3 as well, supporting that customers interested in installing a new enterprise system are not aware of the cloud ERP's advantages and drawbacks. They often lack the needed specialized staff that can work with a cloud system and even if a company has a big IT staff they might still lack the proper competence. Finally, Respondent 2 added that the market is still immature as far as cloud and its implications are conserned. Many customers are still unaware of cloud ERPs and therefore vendors and their channel partners need to take the initiative to inform them.

*Norm*

Another factor that has been discussed during our interviews and which influences the adoption rate of cloud ERP is what we call norm. With the term norm we refer to the effect and influence that the current state of the market imposes on the decision makers and their decisions regarding moving their ERP system to the cloud. Respondent 1 reported that the adoption rate of cloud ERPs is still low. He said that his company has only 250 clients on the cloud out of the total number of 12500, out of which most are SMEs and just a few large organizations. Both Respondents 2 and 3 agreed that cloud ERP has not yet reached an extensive adoption rate, while Respondent 3 added that in Turkey and Middle-East, where his business is located, cloud ERP is not a popular topic among clients. Norm is affecting those thinking about migrating as the low adoption rate can only change if a trend appears. Respondent 2 further stressed the power that norm has, stating that if the number of companies that use cloud solutions would increase, then a part of the insecurity regarding cloud ERPs would disappear and more companies would follow. Respondent 1 added that *"[...] If suddenly 1/3 moves to the cloud then the possibility that the rest would follow would be greater because there would be a quantity, an inclination, a trend, better stated, that everyone is moving towards it" (Interview 1, R63)*. Respondent 1, however, stressed that this is something that is not apparent at the moment and concluded that the statistics are still weak for persuading someone to move to the cloud.

*Channel Partner*

The relationship between the client and the channel partner of the provider is also an influencing factor discussed in our interviews. Respondents 1 and 2 defined the channel partner's role as the one that promotes the provider's products to the market as well as the responsible for the configuration and customization during the implementation process. The partners are responsible for the development of specific functionality for the part of the customer, having access to the cloud ERP where it is installed and can in real time make changes according to the customer's needs. However, Respondent 4 argued that channel partners usually perceive the new cloud-based delivery model as a major threat for the ongoing importance of their role in the market. Respondent 2 also stressed this fact stating

that the network of partners are afraid that if the clients receive ERP solutions through SaaS it will inhibit their business since the customer would acquire the software directly from the provider. Thus, according to Respondent 4: *"[...] an IT provider, even if he knows about cloud and its benefits, will not discuss it with the client, since he is afraid that he will lose him if his product is not available through the cloud, either because he hasn't made it yet cloud based or because he considers that the investment that is needed to enter this market is not affordable, based on the current financial crisis reality or because the power of inertia is strong and he prefers to continue with the on-premise solutions he already offers"(Interview 4, R24).* Respondent 1 underlined the fact that partners are afraid that they would lose the control over their customer. They generally think that they have a greater control when customers run on-premise implementations because then the vendor does not have access to the system, while on a cloud implementation the system is managed by the vendor. Respondent 4 also discussed this issue, claiming that the relationship between the consultant and the customer is very strong, characterized by trust. Therefore, companies, especially SMEs, are very likely to follow the vendor's opinion about the cloud which is usually either negative or not at all mentioned. According to Respondent 4, another reason that makes partners unwilling to promote cloud ERPs is that *"[...] they might think that the profit margin will be smaller than working with on-premise systems" (Interview 4, R24),* especially considering the fact that cloud implementations require less support from consultants.

*Age*

The age of company managers is another influencing factor which has been lifted during our interview with the first Respondent. Respondent 1 stated that age affects mentality. When a company is managed by young individuals then the company is more prone to move to the cloud since younger managers are modernized in their attitudes and way of thinking. He added that the same phenomenon is evident with their channel partners, the consultants that they are associated with. Younger partners try harder to persuade customers to move to the cloud while older ones are more hesitant, feeling insecure towards the transition to a new technology.

## 4.4 Appropriateness of Cloud ERP

During the discussions with our respondents, we got a quite clear view about the suitability of ERP in different companies. All Respondents acknowledged that cloud ERP is more appropriate for SMEs, which can fully exploit the benefits of the cloud implementation. However, not all SMEs can enjoy the same benefits of a cloud solution. According to Respondent 2, the special characteristics of a company often determine how efficiently a company can exploit a cloud ERP. A business without external entities and activities will not have the same benefits with the cloud as a business with several external activities. Respondent 4 agreed to this, stressing especially the characteristic of seasonality. How much a company can benefit from the rapid elasticity attribute of a cloud ERP, depends on whether a company has irregular demands or not.

On the other hand, our Respondents suggested that large enterprises could exploit the hybrid model instead. Respondent 1 stated that some ERP modules would be preferable to keep on-premise and others on cloud. He added that a company can move certain modules like sales, CRM and marketing to the cloud, while more sensitive and complex modules could remain on-premise. Thus, they could exploit cloud attributes for specific workflow processes without disrupting current system usage. The same opinion was also stated by Respondent 2, who added that the abovementioned modules could function more efficiently and easily on the cloud and finally would cost less for the organization.

## 4.5 Future outlooks

From our discussions with our respondents we got insights about the future of cloud ERP adoption. The main idea reproduced through the interviews was that the prospects are quite disappointing about a possible extensive adoption in large companies as opposed to SMEs. Respondent 4 claimed that large companies will be characterized by hybrid solutions, in agreement with Respondent 1, who argued that large companies will mix the two delivery models, exploiting the best of the breed; simpler, standardized processes and specific modules can be stored on the cloud making them more effective and less costly, while more complex and sensitive processes can stay on-premise. Respondent 2 agreed on this, adding that the market share of cloud ERPs for large companies will grow slowly while there will only be a small decrease in the market share for on-premise solutions since it is difficult for a large company to accept to outsource its core functions to a third party. However, hybrid solutions require progress in their development because, in their current state, it is not easy to isolate parts of the functionality of an ERP and place it on the cloud, while having other parts on-premise without compatibility and efficiency issues. The same opinion about low cloud ERP adoption rates in large companies was raised by Respondent 3, who explained his argument saying that large enterprises are usually characterized by conservatism, in combination with the fact that they have already invested considerable funds in their current infrastructure.

On the other hand cloud ERP systems seem t have better chances to be adopted on a larger scale by SMEs due to the forthcoming improvements of different factors that Respondent 1 described as psychology or perceived security, acknowledging the benefits of cloud and covering the inexperience gap. Respondent 1 concluded by stating that on a 5 year period he expects cloud ERP adoption to have a tenfold increase. Respondent 2 also mentioned that he expects SMEs to move their ERPs to the cloud on a massive scale and Respondent 3 stated that the opportunity of lower costs will contribute to a great increase in cloud ERP adoption for SMEs. Respondent 4 agreed, also stating that he expects a much higher adoption rate for SMEs, noting however that the market for cloud ERP dynamically changes and is therefore hard to predict.

## 4.6 Chapter overview

Tables 4.1 and 4.2, as seen below, have been constructed to give the reader an overview of what topics have been discussed by each of our respondents.

Table 4. 1 Overview of factors discussed by our respondents

| Factor | Respondent 1 | Respondent 2 | Respondent 3 | Respondent 4 |
|---|---|---|---|---|
| **Lower upfront investment** | X | X | X | X |
| **Operating costs and TCO** | X | X | - | X |
| **Cap-ex to op-ex** | - | X | - | X |
| **Access to cutting-edge IT resources** | X | X | - | X |
| **Security** | X | X | X | X |
| **Business continuity** | X | X | - | - |
| **Jurisdiction compliance** | X | - | X | - |
| **mobility** | X | - | X | X |
| **Customization** | X | - | - | X |
| **scalability** | X | - | X | X |
| **Performance** | - | X | X | - |
| **Migration** | X | X | X | X |
| **Business focus** | X | X | - | X |

Table 4. 2 Other influential factors

| Factor | Respondent 1 | Respondent 2 | Respondent 3 | Respondent 4 |
|---|---|---|---|---|
| **Age** | - | - | X | - |
| **Inexperience** | X | X | X | X |
| **Norm** | X | X | X | - |
| **Provider & Channel Partner** | X | X | - | X |

# 5. Discussion

In this chapter we analyze the empirical data with respect to the research framework constructed in the literature review. The discussions are presented as influential factors, which through analysis are assessed and classified by their importance with relation to the size of the company. Furthermore, the appropriateness of cloud ERPs for SMEs and large companies, other interesting factors that identified to affect cloud ERP adoption and the future outlooks of cloud ERPs are discussed.

## 5.1 Influential factors

*Lower upfront investment*

The reduction in the capital expenses that a company has to make upfront, in order to implement a cloud ERP, is a major advantage described by the literature (Muhleman et al., 2012; Duan et al., 2012; Gabriela & Ioana, 2012; Marston et al. 2010). Cloud ERP requires a smaller capital investment due to the fact that there is no need for the user-company to buy software licenses and acquire hardware and additional equipment, as well as building space to locate them (Duan et al., 2012). Companies need just commodity terminals, such as desktops, laptops, tablets or even smartphones, in order to access the ERP services through the cloud, using only a secure broadband internet connection, as applications that become available through the SaaS delivery model are considered "plug and play" (Gould, 2011).

All respondents referred to this significant opportunity that cloud ERP provides to user companies. However, they solely mentioned it in the context of SMEs, and no one connected it with large companies. Respondent 1[5] argued that SMEs and especially start-ups and small companies usually do not have the necessary resources to make a high upfront investment on an in-house ERP and thus, they highly appreciate the opportunity to access sophisticated software on a subscription basis, without a high upfront investment. Respondent 2[6] supported the same argument and also considered this advantage to be more advantageous for start-ups and small companies, which according to him, strive to do business without having enough capital sufficiency in the current harsh economic environment. Respondents 1,2 and 3[7] further argued that the opportunity of a low upfront investment reduces the risk of the investment SMEs are undertaking, as in case the system does not fulfill the needs of the company or the company goes out of business, the financial loss would be considerably lower, in relation to the respective loss of the investment in the acquisition of necessary licenses and infrastructure of an in-house ERP. However, respondent 4[8] added a very interesting dimension in this discussion. He mentioned that in a number of markets, such as the Greek market which he

[5] Amblianitis N., Director of international development
[6] Gaganelis D., Marketing manager
[7] Tan B., R&D manager
[8] Anonymous, Partner account manager

knows well, local independent software vendors (ISVs) sometimes offer licenses for on-premise ERPs even for free in order to attract customers. He continued that this fact, in combination with the fact that the prices of hardware constantly declines, reduces the upfront investment a company has to incur in order to implement an on-premise ERP. Nevertheless, he considered the zero investment in infrastructure through the cloud model a major opportunity for SMEs.

As mentioned above, no respondent related the respective opportunity to large companies. In an attempt to argue on that, we can assume that large companies most likely have their own in-house ERP, as according to Muhleman et al (2012) almost all Fortune 500 companies use their own on-premise ERPs, a fact verified just by investigating the customer lists of major vendors such as SAP, Oracle and IBM (Muhleman et al., 2012). As a result, the option to migrate their in-house system to a cloud-based one with a low capital investment could be of less value for a financially robust large company, in comparison to a small company which sees cloud ERP as an opportunity to access technology and services, which previously did not have the financial resources to absorb their cost.

Considering that this opportunity merely lowers the economic barriers of using an ERP for companies and, being in line with our respondents, we argue that it significantly benefits companies which do not have an ERP, such as start-ups and small companies. Meanwhile, it still comprises an opportunity for companies, which would consider migration of their ERP to the cloud, so as to reduce the cost of the new implementation.

*Operating costs and TCO*

Whether and to what extent a cloud ERP system can realize lower operating costs than an in-house system for all organizations, is an issue discussed both in the literature (Marston et al., 2010; Muhleman et al., 2012) and during the interviews with our respondents. In general, lower operating costs of cloud-based ERP are heralded as a significant advantage for user-companies (Duan et al., 2012; Lenart, 2011). Previously incurred costs for energy consumption of servers and additional infrastructure of the on-premises model, are eliminated for cloud-ERP user companies, as all infrastructure is located at the cloud providers' site, as well as they are operated by them (Castellina et al. 2011, Marston et al., 2010). Cloud providers also incur the cost of maintenance and optimization of both software and hardware of the system with no additional cost for customers. Consequently, less administration duties for the user-company can result in a reduction of the IT personnel, who in the case of a traditional ERP would deal with these duties, further reducing the operating costs of the system (Duan et al., 2012; Marston et al., 2010; Arnesen, 2013; Scavo et al., 2012).

All our respondents argued that cash-strapped SMEs, by adopting a cloud ERP, can have access to sophisticated IT functionality without the burden of having to run their own IT department or alternatively to pay usually expensive contracts for maintenance and technical support to external IT providers. Respondents 1, 2 and 4 extensively referred to the above opportunities that cloud ERP provides, especially to start-ups and small businesses, which

typically have neither the financial nor the human resources to maintain a comprehensive in-house ERP.

All respondents also supported the idea that, in general, SMEs can achieve lower long-term TCO of their system, if they opt for a cloud ERP instead of an on-premise one. This argument is supported by Aggarwal's and McCabe's (2009) research, which demonstrated that the total cost of ownership, calculated in a four year period, for small businesses was 50-55 percent lower for the cloud-based ERP of Netsuite than that of Microsoft's Dynamics on-premise ERP. The same study showed 35-50 percent reduction in the total cost of ownership of the same cloud-based solution for mid-market companies over the same four-year period. However, what has to be again mentioned is that Respondent 4, based on his knowledge of the Greek as well as some central-eastern European markets, argued that the above difference in the TCO between cloud-based and on-premise ERPs is of that extent, only when we discuss pricelist prices of the respective products. He continued saying that the actual difference can be significantly smaller, due to discounts that local ISVs offer to their customers both for the cost of licenses and the cost of post-implementation maintenance and support, while cloud-vendors typically do not offer discounts for their services. Nevertheless, he acknowledged that the difference is still in favor of cloud ERPs and concluded that SMEs do achieve lower TCO using a cloud-based solution.

However, when our respondents discussed operating costs of cloud ERPs for large organizations, they were more restrained. Respondent 1 mentioned that a large company through a cloud ERP solution can reduce its IT staff by outsourcing the operational tasks of the system to the cloud vendor and thus achieve a reduction in the operating costs of its ERP. Respondent 4 agreed on that, although he argued that this reduction would not be significant, as only the inexpensive, technical IT staff could be reduced. He continued saying that, on the contrary, the expensive IT professionals who possess extensive knowledge on the business specifications of the company should be retained in-house, in order to communicate with the cloud vendor and ensure that potential changes in its business processes would be both correctly and directly reflected on the ERP. A relevant McKinsey study (Marston et al., 2010) validates Respondent's 4 claims, as it estimated that a large organization using a cloud ERP could only reduce the cost of its IT staff for about 10-15 percent.

Respondents 3 and 4 mentioned that a large company can leverage, according to its current needs, the usage of the scalable computing resources of a public cloud. However, Respondent 2 added that usually large companies would prefer to implement their own private clouds, using some of the technologies used in cloud computing, such as virtualization, in order to achieve operating cost savings for their in-house ERP. Marston et al (2010) made the same argument, claiming that large companies are most likely to implement their own private clouds, using core technological components of the cloud, in order to achieve higher server utilization rates and enhanced IT efficiency. Nevertheless, as far as utilization of a public cloud by a large corporation is concerned, the above mentioned McKinsey's study found that a typical in-house data center of a large company could operate at lower operating costs than what would be required to outsource it to a public cloud (Marston et al., 2010).

Muhleman et al (2012) gave an explanation of this discrepancy between SMEs and large organizations. They argue that cloud would not make financial sense to large companies due to their much larger number of users of the system. They said that as the number of users increase, so do the monthly user fees which comprise the majority of the operating cost of cloud systems. This increase could make the usage of an in-house ERP to become more cost-effective in the long run and this assumption is strongly supported by the above mentioned Aggarwal's and McCabe's (2009) research, which showed that the total cost of ownership difference between in-house and cloud-based ERP systems decreases from 50 percent to 35 percent (still in favor of cloud-based ERP), as the number of users increased from one hundred to two hundred. Thus, for large corporations with several hundreds of ERP users, the cost comparison could finally show an economic benefit out of using an on-premise ERP and not a cloud-based one. If we also take into account the fact that large organizations use all the available modules of an ERP as opposed to SMEs, which typically use just a number of them, we can draw the conclusion that cloud ERP for large organizations can be even more expensive, as the fee for using a cloud ERP is positively correlated not only to the number of users but also to the number of modules used (Lenart, 2011). As far as the respondents of our study are concerned, only Respondent 1 made a comment on the long term TCO of a cloud ERP utilized by a large company, saying that he does not believe that large companies can have an economic benefit in the long run, while all other respondents did not make any comment.

Both literature and our respondents argued that a cloud ERP can achieve lower operating costs than an in-house ERP for SMEs. In contrast, as the organizational size of a company rises in parallel with its ERP users, the cost comparison between cloud-based and on-premise ERP declines and can even prove the latter to be financially more advantageous than the former, as potential cost benefits e.g. by a reduction in IT personnel could be erased by very expensive fees due to the big number of users and modules used. Thus, we argue that the opportunity of a reduction in operating costs is evident mostly for SMEs. However, we support Arnesen's (2013) suggestion that every company should thoroughly examine all involved internal cost in the long-run, in order to determine the economic impact of entering the cloud-based market.

*Cap-ex to op-ex*

Another opportunity that the literature discusses is that with a cloud ERP the user-company moves from a model of capital investment (cap-ex) to a model of managing an operational cost (op-ex) (Marston et al., 2012, Arnesen, 2013). Arnesen (2013) argues that this has a positive impact on the financial statements of companies, as they avoid the depreciation over the time of the capital asset which, otherwise, would have set up for an in-house ERP. McClure (2012) and Juell-Skielse & Enquist (2012) also add that this model improves the financial stability of the company, as both short-term and long-term costs of the system are included in the service fee the company pays to the cloud vendor, making its total cost measurable and thus predictable.

Respondents 2 and 4 identified these opportunities, which derive from treating cloud ERP as an operational expense, although neither them nor literature stated or implied that these advantages are more important for SMEs or large companies. However, Respondent 4 stressed that we should have in mind that even with an on-premise model a company can transform a part of the incurred capital investment to operating costs, utilizing the option many providers offer to customers to lease the software licenses instead of buying them. To conclude, we argue that transparency of TCO of cloud ERP and improved budget stability, as a result of the purely op-ex model of cloud, are valuable opportunities of the SaaS software delivery model, which benefit all companies.

*Access to cutting-edge IT resources*

One of the main advantages of SaaS delivery model is that it gives clients access to state of the art skills, resources and capabilities, such as cutting-edge IT technologies and know-how, which are difficult for a company alone to generate in-house (Benlian & Hess, 2011). According to Marston et al (2010), the quality of services offered by the leading cloud providers are far better than those most SMEs can realize in-house with their modest investment levels.

Respondents 1 and 2 made an extensive reference to the fact that SMEs can largely benefit from the state of the art infrastructure and services that cloud vendors can provide. They focused on the fact that cloud vendors have all the available tools and expertise to constantly optimize their infrastructure. Respondent 2 pointed out that SMEs' usually limited financial resources restrain them to only make minor updates and optimizations to their in-house systems throughout their lifecycle. Thus, he argued that the opportunity to access high quality IT resources through a cloud ERP is a major advancement for the respective companies.

On the contrary, large organizations typically have both the resources to invest on their datacenters and in-house applications as well as a big number of IT professionals with extensive IT skills to commit (Marston et al., 2010). However, Respondent 2 argued that although large companies have developed and keep their datacenters to be state of the art, they could reduce the hefty cost of their maintenance by utilizing infrastructure of a public cloud.

We conclude that access to cutting-edge IT resources provided by cloud vendors is a major opportunity for SMEs, which gives them the ability to access functionality that they could not access before in a viable payment model, whereas it has less relevance for large companies, as it could be again translated for them merely in a sense of a cost benefit.

*Mobility*

Cloud computing has made it possible to easily and fast deliver and access services in real-time over the internet (Duan et al., 2012). More specifically, users of a cloud-based system can work from any location, where there is access to a robust broadband internet connection, even using mobile devices and it's the cloud vendor's responsibility to take care of VPN and tunneling (McClure, 2012). Respondents 1, 3 and 4 pointed out this significant advantage

when they were talking about opportunities of cloud-ERP for SMEs. Respondents 1 and 3 argued that the mobility that cloud computing offers, allows business to be done everywhere using commodity terminals and that this advantage is even more important when the business model of the company involves many external transactions with partners and customers. It is rational to assume that the advantage of enhanced mobility, relates to any kind of business that has many links with its external environment irrespective its size. However, Respondent 4 argued that mobility is a feature that companies can exploit also through the on-premises ERP model, with the difference that they have to allocate monetary and human resources on the implementation and maintenance of the infrastructure that would make external communication with the ERP possible. Thus, he concluded that SMEs can really benefit from a cloud implementation in this aspect with no extra cost, as opposed to large companies which have the resources and the expertise to set up and maintain the infrastructure which can offer such functionality. According to techradar.computing (2013), Mike Foreman, general manager for SMEs of AVG argued the same saying: "[…] but the really big advantage would be that they (i.e. SMEs) could have the type of thing that was only available to a large enterprise, such as mobility, working outside the fixed office network. To do it before you needed lots of firewall and VPN equipment to punch a hole through your office network. Cloud has ripped all this apart; small businesses now have all that functionality and the ability to work on the go". Thus we conclude that mobility provided through cloud has increased relevance for SMEs.

*Scalablity*

The cloud computing characteristics of resource pooling and rapid resource elasticity allow the applications of cloud ERP to adjust to both short-term and long-term needs for computing resources (Scavo et al., 2012). The opportunity of utilizing easily scalable IT resources enables user-companies to respond to business-level volatility by easily adapting to potential changes which demand fluctuations in IT workloads (Benlian & Hess, 2011).

The respondents focused merely on SMEs and made an extensive reference to the advantages they can cease by leveraging according to their needs the pooled IT resources cloud vendors provide. Respondent 1 pointed out that the ability to respond to sudden changes of demand and to pay only for the amount of resources you use without the need to maintain excess capacity, which is very costly, helps SMEs to remain competitive. Respondent 1 and 3 also added that, since the functionality per se of a cloud ERP is scalable, companies can lease only the modules that cover their business processes and as the company grows, new modules can then be added. However, Respondent 1 stated that this advantage is relevant merely for SMEs, as they are more prone to subject changes in their size and consequently in their needs for further functionality, whereas large companies most likely have established size and processes. Although, Respondent 3 argued that a large company can still benefit economically by the scalability cloud provides, if it moves to cloud processes that have periodically fluctuating demand for resources, such as the HR module. Respondent 4 stressed that both SMEs and large companies can benefit by the scalability that cloud provides, fluctuating their ERP users according to their needs. However, he added that only companies that their business model is

characterized by seasonality, such as retailers, can benefit from this opportunity. Nevertheless, he stated that, especially in the Greek market, big retailers, although they recognize this opportunity, they prefer to keep the number of ERP users steady as they consider it a more secure option.

Based on the fact that the opportunity of using scalable IT resources facilitates SMEs both to reduce costs and to improve their business agility, we argue that it has increased relevance for SMEs, while it could also benefit large companies in terms of cost reduction.

*Business focus*

By outsourcing management and maintenance of the system to the cloud vendor, the on-site IT team can deal with high IT value and strategic initiatives, as on the one hand IT managers are free to spend time solving business problems and conduct analysis on business data and on the other hand the technical IT staff of the company is freed up for more value-laden projects than maintenance (Lenart, 2011; Benlian & Hess, 2011; McClure, 2012).

Respondents 1, 2 and 4 focused merely on SMEs when they talked about this opportunity, while Respondent 3 did not refer to it at all. Respondents 1 and 2 said that SMEs by outsourcing the management of their technology they get the opportunity to allocate all their available resources, which are usually limited, to tasks that relate only their core business, so as to become more competitive and profitable. In addition, Respondent 4 estimated that in the near future SMEs will be forced to outsource all their supporting tasks, such as IT and finance, in order to be able to allocate all their resources and effort exclusively to their core business tasks which contribute to their profitability. In that sense, he considered the enhanced business focus, which is achieved through the outsourcing of operating tasks of their ERP, as the biggest opportunity that SMEs can exploit. Respondent 2 also added that a cloud ERP can help the limited human resources of an SME who previously were dealing with just operating tasks to work with more IT value-laden projects, such as extracting Business Intelligence reports, which on the one hand would enhance their IT skills and on the other hand would help the management to take better decisions. Lenart (2011) converge with the above, arguing that the cloud concept transforms IT employees from an unwanted expense to an integral part of the profitability of the company.

Only Respondent 2 rendered this opportunity to be relevant also for large companies arguing that the cloud model could free their employees from low level activities, so as to work with tasks that have business growth as target. However, all respondents mentioned that, in general, large companies have the resources to gather and retain in-house adequate, business-expert IT personnel, who can take the best out of the accurate adaptation of the ERP on the business processes of the company. That means that large companies have already developed all the business focus that they need in order to be highly productive and profitable through their numerous and capable staff, as opposed to SMEs and especially small companies which strive to get along with a very small number of employees who try to take care of everything. Thus, the opportunity of enhanced business focus, although it can benefit all companies, for the aforementioned reasons is highly advantageous for SMEs.

*Security*

In the literature review, security was identified as one of the biggest barriers to adoption of cloud ERPs (Duan et al., 2012; Kim et al., 2009). An ERP system supports all core business processes of a company and its database stores sensitive data that is critical for the continuity of the company (Schubert & Adisa, 2011). As a result, managers are hesitant about moving storage and processing of company data to the cloud vendor, if the security of this data is not guaranteed (Schubert & Adisa, 2011). Nevertheless, there are authors (Arnesen, 2013; Scavo et al., 2012) who suggest that there are cloud vendors who provide very high security measures.

All our respondents identified potential security issues of outsourced data as the most suspending factor of cloud ERP adoption. However, this concern was merely expressed in terms of an established mentality against storing data outside the walls of the company and not as an actual problem raised by deficient security levels that cloud vendors implement. All of them described companies having a hard time to trust a third party for the proper management of their mission-critical applications and sensitive data. They stressed that companies worry that their data might be stolen, shared or sold and therefore do not want them to be stored off-premise. However, Respondents 1, 2 and 4 supported what has been identified in the literature review, regarding the actual high security of cloud ERP, stating that it indeed can be safer to keep the data on the cloud.

However, it was also mentioned that the security of data heavily depends on the vendor, as the security controls implemented by different vendors may differ. In that context, Respondent 2 considered the evaluation of a Service Level Agreement (SLA), which would provide full description of all implications of the service including provided security measures, essential prior to taking the decision to move to the cloud. Nevertheless, he mentioned that not all cloud vendors provide such SLAs. Thus, vendors play an important role in how companies perceive the security on the cloud.

While all our respondents identified security as a major concern for both SMEs and large companies, two of them stated that large companies worry more about potential security breaches, which is something that is not clearly reflected in previous research. Respondent 2 stressed that large companies have a greater risk of being targeted and experience a malicious attack, as their data is considered to be of higher value by competitors. In addition, he considered potential damage that would be caused by a successful attack to be much greater for large companies. He exemplified arguing that a publicly revealed successful security breach would harshly afflict their image and reputation, something which large companies arguably are highly concerned of.

However, according to McClure (2012), cloud vendors constantly invest significant amounts of resources improving the security of their cloud-based solutions. Scavo et al (2012) argued that certain cloud providers offer so advanced security controls that few corporate data centers can match. Nevertheless, it was also identified that the advanced security of cloud ERPs is especially beneficial for companies which otherwise could not afford the necessary cost of its implementation in-house (Arnesen, 2013; Scavo et al., 2012). This corresponds well to what Respondent 4 said about many SMEs having difficulties to set up and maintain an infrastructure, which would provide high levels of security due to their limited resources. SMEs can thus benefit the most by adopting a cloud ERP provided by a reliable vendor, as

they could access sophisticated security technology they would not be able to afford otherwise. On the other hand, as has been mentioned by Respondent 4, large companies have the resources and skilled IT staff so as to establish and maintain satisfactory levels of security for their on-premise ERP solution. They therefore are more prone to prefer to keep their sensitive data on-premise, rather than having to trust and rely on a third party to store and manage their data.

Consequently, we argue that the security concerns are greater for large companies, which have more to lose in a potential security breach. At the same time, the potential security benefits are arguable higher for SMEs, which can get access to advanced security that they would otherwise not be able to afford.

*Performance*

Potential performance issues of cloud ERPs have been brought up as an important concern in the literature. More specifically, it has been pointed out that, since cloud ERP is accessed over the internet, the speed and reliability of the internet connection is critical for the performance of the system (Kim et al., 2009; Lenart, 2011). It is well known that the transfer of data over the internet can sometimes cause delays (Lenart, 2011). Thus, poor performance could occur, especially when a lot of users connect to the same service simultaneously and large amounts of data is being transferred and processed (Schubert & Adisa, 2011). Moreover, if connection to the service for some reason is lost or the vendor goes out of business, the impact for the business continuity of the afflicted company could be devastating (Arnesen, 2013; Schubert & Adisa, 2011).

Respondent 2 identified the above issues, stating that since ERPs are large-scale systems, which process and transfer a lot of data over the internet, the robustness of internet connection is essential so that their uninterrupted, real-time performance to be guaranteed. He added that cloud ERP performance does not depend only on the quality of infrastructure of the public cloud and internet connection, but also it heavily depends on the investment that the software vendor has made on the software, in order to maintain it technologically up-to-date and highly efficient. He concluded that the fact that not all cloud ERP vendors provide the same quality for their offerings, and that even fewer provide comprehensive SLAs, which would define and guarantee all the parameters of the provided service, makes companies unwilling to outsource their core enterprise systems to the cloud.

However, due to the fact that ERPs of large companies typically process significantly more data and support “heavier” transactions than those SMEs use do, we argue that the concern of potential deficient performance of the software is extensively intensified from the standpoint of large companies. Respondent 3 illustrated this assumption arguing, based on his experience, that a large company would experience severe damage, if its ERP, which monitors and operates all its interrelated processes and infrastructures, stopped for only five minutes. Thus, it is well understood why many large organizations require uptime of their applications at 99.9 percent or higher (Marston et al., 2010). However, Marston et al (2010) argued that even the best cloud vendors were not currently prepared to provide this high level of guaranteed service in their SLAs pushing, in that way, back from adopting a cloud solution companies that set 100 percent uninterrupted performance of their ERP as their top priority.

*Limited customization*

Customization limitations of cloud ERP is an issue which was discussed in the literature review as a significant constraint of cloud-based ERP for companies that require this capacity (Arnesen, 2013; Scavo et al; Duan et al., 2012; Lenart, 2011). Although many cloud ERP providers allow customer-specific configuration of their systems, major customizations which would call for extended changes in the source code of the system, are not an option so that the cloud vendor can maintain the same seamless upgrade path for all customers who run on the same multi-tenant environment (i.e. multiple users access the same infrastructure and software simultaneously) of the public cloud. (Arnesen, 2013; Scavo et al., 2012). As a result, companies who need extensive changes in the business logic of their system or have to integrate it with numerous and complex legacy systems, which all of them are tasks which demand major customization of the ERP source code, could be pushed back from opting for a cloud-based ERP (Scavo et al., 2012).

Corresponding to the above, Respondent 4 mentioned that cloud ERP installations could be generally characterized as fixed, as their customizability in most cases is limited. Respondent 1 argued that the cloud ERP solution that his company offers is fully configurable, although he admitted that limited customization ability is indeed an issue for cloud-based ERPs. He also added that he does not find a reason for large companies to move certain modules of their ERP to the cloud, such as manufacturing, due to their numerous specifications and the need to be integrated with legacy systems and machinery. This argument corresponds to Scavo et al (2012), who supported that in cases that a company needs to have real-time integration of its ERP system with proprietary, in-house applications which require low latency (e.g. factory equipment and warehouse management systems), fully customizable on-premise systems or hosted, single-tenant solutions are the most appropriate solutions.

All our respondents said that large companies usually have complex infrastructures in order to support their unique processes and activities. Thus, it is implied that extended customizability of ERP is a necessity for them, in order to be able to optimally adapt their complex business logic on the ERP. SMEs and especially small companies, whose structure and processes are much simpler and less developed, will likely have it easier to adopt a cloud ERP and be served by the best practices a cloud-ERP offers (Arnesen, 2013; Miranda, 2013). Furthermore, as mentioned by Respondent 4, large companies often have the funds and skilled IT staff to efficiently utilize the customizability of an on-premise ERP solution. Thus, a large company by moving to the cloud, would lose this advantage, whereas most likely SMEs, which have not only limited capability to customize their IT, but also usually limited needs for custom business logic, would not experience the same loss.

*Jurisdiction compliance*

Cloud vendors usually locate their data centers near large sources of electricity and internet bandwidth, which could be anywhere in the world (Thomas, 2009). Thus, there is a possibility for companies, which would have their data stored and processed abroad, to face jurisdiction problems, as there are national and international laws that define requirements for physical data audit and location that companies need to comply with (Marston et al., 2011; Tomas, 2009). These laws, such as US Patriot Act, EU Data Protection Directive and the Sarbanes-Oxley Act, prevent certain data to be kept off-shore and sometimes even prevent the flow of data outside national boundaries. Furthermore, if there is a security breach that a company is

able trace, it is still likely that they will face difficulties in pursuing action in the jurisdictional location where the violation has occurred (Clark, 2010).

While several authors (Kim et al., 2009, Schubert & Adisa, 2011, Marston et al., 2011) considered this concern as a significant impediment of cloud ERP adoption, the respondents who discussed it did not see it as particularly important. Respondent 1 mentioned that there is a possibility that authorities, through regulations, can force a company to store its data within their country of operation. However, Respondent 3 did not see this as a concern, stating that regulations are flexible and local authorities give companies acceptable amounts of time to produce the necessary data when audit is needed.
We argue that the reason why our respondents did not focus on this undoubtedly important concern could be the possibility to not exist such constraining regulations in the countries or markets they bestir themselves. However, being in line with the literature, we consider it a critical issue that every company, which would consider moving its applications and data to the cloud, should first thoroughly investigate and ensure that it will not affect its business.

*Migration*

All our respondents have mentioned that decision-makers of large companies are also reluctant to adopt a cloud ERP as the migration process needed for the transition to the new system, exactly like every other migration to another system, would be difficult, requiring a lot of time and resources as well as involving much risk. The hardships of potential migration were considered to be result of the fact that large companies usually have complex infrastructures and many unique activities, partially shaped by their big, established networks of suppliers and customers. The high sunk cost invested in their current ERP solution, which has been adapted to fit the specifications and requirements of the company, was also identified as a suspending factor for a migration to a new ERP. Respondent 3 also mentioned that potential difference in the data structure between a company's current ERP and that of cloud ERP could make the migration time even more time consuming and costly in order to succeed, serving as another barrier for moving to the cloud. Respondent 2 characteristically wondered what a large company would do in the meantime of a long-term migration process, doubting that it could manage to continue seamlessly its operation during this time span. Extended change management required and high sunk cost of existent ERP are factors which negatively affect migration to a cloud ERP. Arguably, these constraining factors are merely evident for large companies, while they would let especially start-ups and small companies unaffected.

*Resistance to change*

According to Marston et al (2011), for a company that considers cloud ERP adoption, resistance to change on behalf of its internal IT staff would act as a suspending factor. This is because much of the IT-related work would be outsourced to the cloud ERP provider and consequently that would comprise a threat for the jobs of the already employed IT professionals (Marston et al., 2011). Respondents 2 and 4 expressed the same argument. However, they connected it to large companies, which often have a strong IT department in which they have most likely heavily invested. Respondent 2 stated that if the IT department is equipped with powerful resources and is known to operate efficiently then the decision to outsource its operations by adopting a cloud ERP is even harder to make. Elaborating on the value of internal IT departments, Respondent 4 stated that the internal IT staff is considered to

be a valuable asset of large companies, as they possess both business expertise and knowledge of the organization, as well as IT knowledge. Similarly, Johansson (2004) argued that an organization which has developed an IT department with knowledge on both the organization and its ICT would consider the external handling of the latter a risk, as the third party is difficult to know the organization to the extent the organization's IT staff do.
However, Respondent 2 also stated that if a company does not have a strong IT department, which would be tightly knit to the business of a company, then it is easier to have a positive attitude towards cloud ERP adoption. It is therefore implied that the existence of an IT department as well as how powerful is its role and contribution to the company's business, are factors that seriously affect how a company relates to cloud ERP adoption.

*Fast deployment*

Due to complexity of processes of large companies and resistance to change, the fast deployment benefit mentioned by Marston et al. (2010) and Arnesen (2013), may not be as applicable to large companies. As all respondents mentioned, the effort and change management would be very demanding for large companies. However, we would like to point out that this does not mean that it would not still be faster migrating to a cloud solution than to another on-premise solution under same conditions. This is because the migrating company would still get access to the software and hardware of the cloud immediately with no need for installation and testing as mentioned by Muhleman et al. (2012), Marston et al. (2010) and Arnesen (2013), even if the migration processes would be delayed by transferring of data and organizational challenges needed. Also, although the issue of limited customizability still remains, as has been discussed before, it should be stressed that cloud ERPs are often developed according to industry best practices, contributing to a faster implementation process for companies that can accommodate their needs and requirements by them (Arnesen, 2013; Miranda, 2013). However, as mentioned by Respondent 2, whether a company can exploit a cloud ERP efficiently often comes down to the specifications of the company. Thus, especially start-ups and small companies, which have limited data that needs to be transferred (in case they have an EPR) and usually no needs for customization, can largely utilize the fast deployment capability of a cloud-based system.

### 5.1.1 Factor analysis overview

In 5.1 we analyzed the implications of cloud ERP adoption on behalf of both SMEs and large companies through the combination of the empirical findings from our interviews with IT professionals and our study of the extant, relevant literature. However, we learnt that the special characteristics of a company (e.g. geographical dispersion of its activities, seasonality), as well as other external factors (e.g. country and industry where it bestirs itself) can significantly influence the way the respective company would evaluate its potential adoption of a cloud ERP instead of a conventional one. Nevertheless, the analysis results showed clearly that small and mid-market companies can exploit in a significantly greater extent than large companies the opportunities that cloud ERP adoption raises. Simultaneously, SMEs are related to a lesser degree to the existing concerns of moving core enterprise applications to the cloud than large corporations do.

Our analysis showed that it is the small and mid-sized companies that are most well-suited to benefit from a cloud ERP implementation. We found that SMEs and especially start-ups and

small companies, which typically lack the financial resources to build a comprehensive on-premise ERP, highly appreciate the modest capital investment required upfront for the implementation of a cloud-based system. In addition, long term costs of a cloud ERP are considered to be quite lower for SMEs, allowing them to reduce their overall IT expenditure. On the contrary, the pay-per-use model of the cloud may be proved detrimental for large companies in the long run, due to expensive fees paid, as a result of their large ERP user-base and number of ERP modules used.

Moreover, the opportunity of scalability was discussed both as an economic and a strategic benefit for SMEs, which enables them to adapt rapidly and with minimal cost to the dynamically changing needs of the market and thus to compete more efficiently with other organizations. In the meantime, utilization of scalable resources of the cloud for certain processes was merely discussed in the sense of a cost benefit for large companies and especially for those with seasonal business models. Cloud ERPs offer access to state of the art infrastructure, IT expertise and mobility of service in a viable payment model for SMEs, which usually do not have the resources to absorb the cost for their deployment and maintenance in-house, as opposed to large companies. In addition, the ability for a SME through a cloud ERP to focus all its available resources on the essential areas of business and not on IT maintenance and operation was identified not only as a major opportunity but also as a necessity so as to enhance its competitiveness. Finally, the op-ex model of the cloud was found to enable all companies to make their IT costs transparent and enhance their financial image.

Our analysis also discussed a number of concerns cloud ERP implementation and utilization raise. We found out that companies feel extremely insecure to store their sensitive data on the cloud and allow cloud vendors to control and process them. Since the risk of a potential security breach as well as the potential damage caused by that is higher for large organizations, they are even more unwilling to move their critical enterprise applications to a public cloud in relation to SMEs. In addition, as large companies most likely have the resources to implement and maintain themselves high security standards for their in-house ERPs, they prefer to opt for the on-premise model. However, it has to be mentioned that, at the moment, many cloud providers offer so high security levels for their services that SMEs cannot implement themselves and consequently they could take advantage of. Moreover, the concern of deficient performance of the cloud ERP due to potentially limited speed and reliability of the network as well as due to the extent of the technological proficiency of the software per se, was also identified as a major concern for companies which demand flawless performance for their “heavy” applications and systems. Nevertheless, since the performance typically decreases as the number of ERP users and the amount of data they transfer and process over the internet increases, the concern of problematic performance seems to be more evident for large organizations. Furthermore, limited customization ability of cloud ERP as well as confined integration ability with complex legacy systems, were identified as major concerns which are however particularly relevant to large organizations that are more likely to have such needs. On the contrary, SMEs typically do not have such needs and thus are well-suited to exploit the best practices cloud ERPs support.

Best practices of cloud ERPs and immediate access to infrastructure and software were discussed as factors which result in the fast deployment of cloud-based solutions. However, we found that mostly SMEs can reap this opportunity, as the numerous specifications of the processes of large organizations as well as the need to integrate with complex legacy systems, as described above, would require huge change management, which in turn could make potential migration to a cloud-based system an extremely time consuming, costly and dangerous task. Thus, the business continuity of a large organization seems to be severely threatened by a potential adoption of a cloud ERP. On the contrary, SMEs which typically have less and simpler activities can fast deploy and utilize a constantly maintained and updated by the vendor cloud ERP solution, who can also guarantee its optimal use, ensuring their business continuity.

Moreover, a highly competent and structured IT department, which most large organizations possess and have heavily invested in, as opposed to SMEs as some of which do not even employ IT professionals, would strongly resist to the outsourcing of their core objective, which is the proper management and maintenance of the in-house ERP system. Furthermore, jurisdiction compliance was identified as a country-specific concern, which all companies should be aware of and ensure that does not affect them in a negative way.

Figure 5.1 demonstrates the findings of our analysis of empirical findings with respect to the relevant literature. It represents a framework that depicts how SMEs and large companies relate to the identified in the interviews opportunities and concerns that cloud ERP adoption raises.

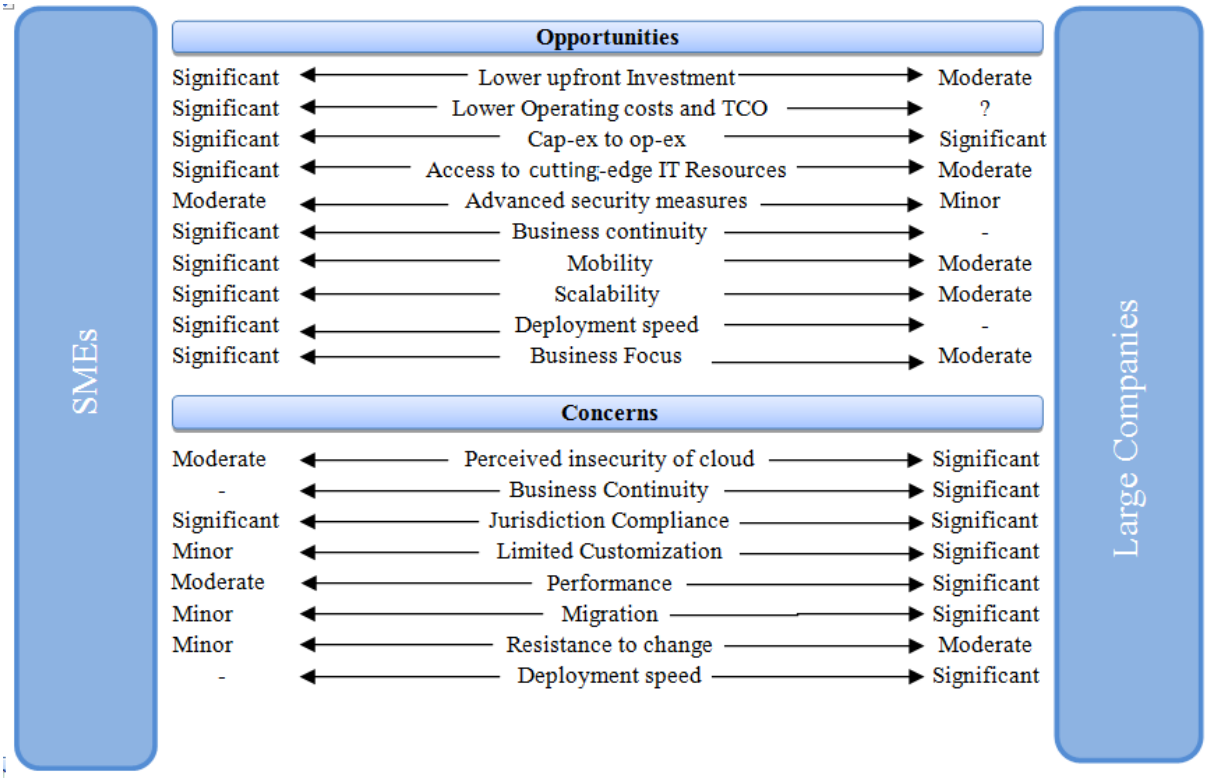

Fig. 5. 1 Factors' relevance in the context of company size

## 5.2 Appropriateness of the cloud

Our analysis in 5.1 provides us with the ground to converge with our respondents to the conclusion that SMEs, especially start-ups and small companies, are the strongest candidates for moving all their enterprise applications to the cloud, utilizing a cloud-ERP solution. Their constrained resources, low complexity of processes and limited requirements enable them to heavily exploit all the range of the opportunities the SaaS ERP delivery model can provide. In the meantime, most likely, their potential concerns could be reasonably tamed through a comprehensive SLA provided by a reliable, financially robust cloud vendor.

On the contrary, all four respondents argued that a hybrid solution would be most suitable for a number of medium-market companies and most large companies with complex and interrelated operations, which usually derive from their multiple business units and legacy systems. Respondents 1 and 2 stated that large companies could deploy certain, less mission-critical modules, such as Customer Relation Management (CRM) and Business Intelligence (BI), to the cloud where they could take advantage of the IT efficiency cloud provides. Accordingly, Respondent 3 added that business areas, such as HR, which have fluctuating computational needs, could leverage the scalable resources of a public cloud, instead of constantly maintaining resources which would serve the maximum demand, thus achieving cost savings. As a result, the companies which would select the hybrid model could still exploit to a certain extent some of the benefits cloud ERPs can provide.

On the contrary, as Respondent 1 suggested, through the hybrid model large companies could keep, operate and maintain in an on-premise, single-tenant environment, the modules which support business-critical applications with highly sensitive data or demand for extensive customization of their source code, such as finance and manufacturing respectively. Thus, large companies could eliminate the major concerns of the public cloud approach, such as potential security breaches, limited customization and potentially deficient performance, which could otherwise threaten the optimal operation of these processes and by extension the business.

Nevertheless, as has been also mentioned by Respondent 2 and Marston et al (2010), a large company could alternatively select to build and utilize a private cloud, so as to be able to avoid the abovementioned concerns of a public cloud. In that way, some of the core technological advantages of cloud computing could be exploited (e.g. virtualization of servers and end-user computing, enhanced mobility), only for the ERP modules that would be advantageous to be kept and operated off-premise. However, some of the benefits and characteristics of a public cloud, such as rapid elasticity, would then be reduced or eliminated (Scavo et al., 2012).

### 5.2.1 Other influential factors and future outlooks

Vendors were identified to play an important role in how companies perceive the value of a cloud ERP. Respondent 2 mentioned that there is a big difference between vendors, their products and the level of service they offer. Arnesen (2013) strengthens this argument pointing out that the rising commercial success of cloud applications has motivated many new

vendors, who have not proven yet the sustainability of their business and by extention the reliability of their services, to enter the market. As a result, managements could be very skeptical about moving their mission-critical applications to the cloud.

What further inflates confusion and uncertainty is the fact that many companies practically do not know much about SaaS and its implications. All respondents pointed out the limited familiarity, especially that of many SMEs, with cloud ERP. A recent Opinion Matters research validated our respondents' argument demonstrating that almost a third of the 505 UK-based SMEs surveyed responded that they "do not get" Cloud, while one out of 4 considered it relevant for large corporations (techradar.computing, 2013). Respondent 3 stated that many companies are not aware of IT in general, as it is not their core business. Respondents 1 and 4 identified channel partners, who are responsible for informing customers about and promoting to them cloud-based solutions, to have usually a negative stance towards cloud ERP. The fear of "losing" the customer in case of transition to the cloud model, smaller profit margins, unreadiness as well as conservative mentality to deal with new technology or even inertia, were mentioned to be the reasons for channel partners' unwillingness to promote cloud ERP solutions, further contributing to the abovementioned limited awareness of customers about cloud ERP.

Another factor that was also discussed in the interviews to retard cloud ERP adoption, was the limited "peer pressure", in other words the fact that not many companies have moved their ERP to the cloud currently, so that a clear tendency which would lead to that direction to be established. Indeed, a Forrester Research survey of 2,413 IT decision makers demonstrated that only 15 percent of their organizations plan to implement a cloud-based ERP by the end of 2013 (Williams, 2011).

Nevertheless, our respondents as well as existing research (Duan et al., 2012, Lenart, 2011, Scavo et al., 2012; Muhleman et al., 2012) are hopeful about the future of cloud ERPs, predicting that we will see a much more widespread adoption in the future, as on the one hand their functionality will further improve to match that of mature on-premise solutions and on the other hand companies will increasingly understand what cloud ERPs really are and can provide to their adopters. More specifically, our respondents predicted that SMEs will start adopting cloud ERPs on a large scale. Large companies were predicted to increasingly move some of their enterprise applications to the cloud, keeping simultaneously the more critical and demanding ones on-premise, utilizing the hybrid model.

# 6. Conclusion

Until now, research as well as business reports have largely focused on SMEs when it comes to cloud ERPs. At the same time, there have been mixed messages as to whether large companies can benefit from adopting a cloud ERP solution. From this, we realized that there is a need to investigate the differences in how SMEs and large companies perceive cloud ERPs. For the purpose of exploring whether cloud ERP is an advantageous solution for companies of all sizes, we designed our first research question as follows:

*RQ1 What are the main opportunities and concerns for SMEs and large companies regarding cloud ERPs?*

Accordingly, this study has established a set of opportunities and concerns that cloud ERP adoption raises from the standpoint of SMEs and large companies. The analysis of these opportunities and concerns as influential factors, with respect to the extant literature and empirical findings from semi-structured interviews with four IT professionals, indicated that different factors hold different levels of importance with relation to SMEs and large companies.

Our analysis demonstrated that SMEs can extensively exploit the opportunities that cloud ERP adoption emerges. By moving their core enterprise applications to the cloud, especially small but also medium sized companies can significantly reduce their IT costs. However, cloud-based ERP could not make financial sense to large companies, as their large number of ERP users could result in expensive subscription fees, which could be proved in the long run to be more costly than implementing and maintaining an on-premise ERP. Furthermore, SMEs are most well-suited to reap organizational benefits, such as enhanced focus on core business tasks and business continuity. Simultaneously, they can achieve strategic benefits, such as rapid response to business-level volatility and access to advanced technology in a viable payment model, which finally help them to be more competitive.

Meanwhile, the identified concerns of cloud ERP adoption may be considered less important for SMEs, while some of them could be extremely dangerous for the business continuity of large companies. The perceived insecurity of storing sensitive data to the cloud could not only be lessened but also turn out to be an advantage for SMEs, as companies will increasingly learn that reputable cloud vendors can actually provide exceptionally high security measures, surely higher than those SMEs could implement by themselves. At the same time, the conservative mentality that dominates large companies, the detrimental consequences of a potential security breach as well as their capacity to implement and maintain excellent security measures for their on-premises systems, advocate for keeping their sensitive data in-house.

Moreover, SMEs typically demand less than what large companies do from their ERP from the standpoint of complexity of supported processes, amount of data transferred and processed and functionality of the software. Consequently, the concern of problematic performance turns out to be significantly weaker for SMEs, whose needs could be more easily and effectively accommodated by best-practices of a cloud ERP and a detailed SLA with a satisfactory uptime guarantee provided by a reliable cloud vendor. Furthermore, cloud-ERP

limited customizability was found to afflict heavily large companies, which are more likely to use "heavy" ERP modules, such as manufacturing or supply chain management, which usually demand custom, narrow industry-specific functionality and real-time integration with machinery and other complex legacy systems.

The findings of our analysis, as illustrated in figure 5.1, gave us the confidence to answer our second research question, which has been formulated as follows:

*RQ2 Is cloud ERP a viable solution for companies of all sizes?*

Thus, we argue that SMEs are most well-suited to move the total of their core enterprise applications to the cloud, adopting a cloud-based ERP, as been suggested in previous research. The selection of a cloud ERP offers to SMEs a wide range of advantages, while their emergent concerns could be in most cases relieved by a reliable, robust cloud vendor. On the contrary, a complete transition to the cloud model might not be a viable option for large companies. The extensive need for customization and seamless operation of certain, resource-demanding processes of large companies, may not be able to be accommodated by limited customizability margins and functionality that most cloud ERP solutions offer up to date. In addition security and reliability issues of the cloud are more prominent among decision-makers of large companies, making them to reject the option to move their mission-critical application and data to the cloud.

A hybrid solution, where the most critical and resource-demanding modules are kept on-premise or hosted in a private, single-tenant cloud, while less critical ones are deployed on a public cloud, were identified in our study as the most appropriate solution for large companies as well as were projected by our respondents to be increasingly used in the future. Contrariwise, SMEs are anticipated to be increasingly prone to adopt fully cloud-based solutions, as awareness of implications of cloud ERP will increase.

## 6.1 Reflections and future research

In this study, we have explored the opportunities and concerns regarding cloud ERPs and how SMEs and large companies relate to these. For this purpose we have collected empirical data by conducting four interviews with three ERP vendors that offer or are about to offer cloud-based ERP solutions. ERP vendors were chosen as a source of empirical data for a number of reasons. Another approach could have been to collect data directly from SMEs and large companies that have considered or already adopted a cloud ERP. However, in order to gain empirical data with the same coverage, we would have needed to collect data from numerous companies, of all sizes and from different industries. In addition, it would have required vast amounts of time and effort to find enough eligible respondent-companies, as cloud ERP is an emerging technology that still is neither very well known nor widely adopted. For these reasons, we felt that this is something that is out of scope for a study of this size. We therefore turned to ERP vendors as viable alternative sources of empirical data since they have the experience of dealing with many different types of customers and therefore can, from their

experience, inform us of the main opportunities and concerns their customers associate with cloud ERPs. At the same time, this made the study more manageable, as we got access to rich data on opportunities and concerns related to cloud ERPs. However, we had to accept that vendors not necessarily know all of the opportunities and concerns, or the reasons behind them, that companies attribute to cloud ERPs and that there is a possibility of bias depending on the vendor's and particular respondent's standpoint towards cloud ERPs. Still, we believe that ERP vendors were good ambassadors for the customers who consider or already have adopted a cloud ERP.

The research area of cloud ERPs still requires further exploration. When it comes to the implications of cloud ERPs, much of the existing research has addressed cloud ERPs in a general manner or focused on SMEs and not really investigated whether and how companies of different sizes relate to these implications. In this regard, we feel that we have at least begun to fill this gap. However, for reasons stated above, more extensive research which would draw upon data collected directly from SMEs and large companies is needed, in order to acquire more in-depth results.

During our interviews, we have received hints from our respondents about potential future research concerning cloud ERPs. It was implied by Respondents 1, 2 and 4 that a separation between small and medium sized enterprises is necessary, as they relate differently to several of the opportunities and concerns discussed in this thesis. This is not surprising, as companies consisting of 10 employees and the ones consisting of 200+ employees are likely in different situations, having very different needs as well as resources. Future research can therefore address this issue by comparing how small and medium sized companies perceive cloud ERPs and explore the reasons for any differences. Another thing that has been hinted by Respondents 3 and 4 is that companies operating in different industries or markets perceive some of the opportunities and concerns differently. Thus future research could also explore and compare the value of cloud ERPs for companies which bestir themselves in different industries and countries.

## Appendix 1a – Interview guide

1. Can you briefly introduce the company you work for e.g. core business, size?
2. What is your role in the company and what does it involve?
3. What kinds of ERP delivery models do you provide? (on-premises, hosted, SaaS)
4. What kind of customers do you provide ERP services to? (SMBs, bigger companies)
5. Give as an indicative proportion
6. Which are the most important opportunities that a cloud solution provides to SMEs?
7. Additional opportunities that a cloud solution provides to SMEs?
8. Which are the most important concerns SMEs have for adopting a cloud solution?
9. Additional ones?
10. Cloud providers constantly build new functionality. Do you think that these concerns will be addressed in the future?
11. Which are the most important opportunities that a cloud solution provides to bigger companies?
12. Additional opportunities that a cloud solution provides to bigger companies?
13. Which are the most important concerns bigger companies have for adopting a cloud solution?
14. Additional ones?
15. Cloud providers constantly build new functionality. Do you think that these concerns will be addressed in the future?
16. Customers have the opportunity to choose among three delivery models (on-premises, hosted, SaaS, hybrid) Based on your experience and knowledge of the industry, what do you think is the most appropriate choice for SMBs and bigger companies based on their different needs and competences?
18. Will SMEs continue to be the main adopters, or will bigger companies follow?
20. What needs to happen (what concerns need be addressed) if bigger companies are to be more prone to adopt cloud ERPs?
21. How do you think the ERP market will develop in the coming years ( for SMEs and bigger companies)?
22. How will the cloud ERP solutions develop during the next years?
23. Is there anything you would like to add?

# Appendix 2a – Interview 1 transcript

9/4/2013

**Interviewer**: Vasileios Alexopoulos
**Interviewee**: Nikolaos Amblianitis

**V**= Vasileios Alexopoulos
**A** = Nikolaos Amblianitis

| Row | Conversation | Comments |
|---|---|---|
| **R1** | **V:** Tell me some introductory words about the company that you are working. Which is the core business, the size and what kind of services do you offer? | |
| **R2** | **A:** SoftOne was established in 2002 with the mission to create business software. In 2005 we officially launched our product in the Greek market and at the same time we were the first company that implemented the subscription model through our branding "ASK". That means practically that customers could get the software through leasing, instead of buying a license. Our company promotes its products and services through channel partners. Direct business with the end customer happens only in some occasions and if we do it, we do it with strategic customers such as Ernst & Young and G4S. Two years later, in 2007 we are the first -Greek - vendor that used the SaaS model and in 2011 we were the first that implemented cloud services on Windows Azure of Microsoft. Today our company has 300 channel partners and 12.500 customers. Besides of Greece we are serving customers in Bulgaria, Romania, Cyprus, Malta, Serbia and Russia. What differentiates us today from all the other competitors is that we have the capability to provide ERP solutions on the Cloud, something that I consider our strongest advantage in relation to the competition. And our second main element is that we have developed mobile and web solutions that "lock" with the back-office system. Meaning that ERP functions usually like a back-office system, however companies have today the opportunity to work a part of the product's functionality, e.g. the CRM module through mobile phones. | |
| **R3** | **V:** I would like to ask you a question that was not supposed to be done so early, yet your words pushed it forward. You told me that you work with channel partners, right? | |
| **R4** | **A:** Yes, precisely. | |
| **R5** | **V:** Regarding SaaS, does not this oppose a little with the term, with the concept that SaaS means that the provider provides services as a service direct to the customer. What is your partners' role in that? Does not it exist a danger for them? | |

| | | |
|---|---|---|
| **R6** | **A:** Generally speaking, in the SaaS delivery model the intervention of channel partners is not necessary. For instance, book-keeping services, that we provide to accounting offices and freelancers so that they serve their clients, are sold to them directly from us. But these are specific modules and not a full ERP. I would like to add that these kind of services are accompanied with good documentation and videos from the vendor. I would say that they are on the "do it yourself" concept. | |
| **R7** | **V:** In the case of ERP, which is a very complex system, does the need for consulting still exist in its cloud version? | |
| **R8** | **A:** For full ERP products, end-users require solutions and due to the fact that there is larger scope and need for configurability and customization, it is necessary to have a channel partner to carry out the implementation process. | |
| **R9** | **V:** Theoretically however, Cloud ERPs don't provide great freedom for customization in the customers preferences, instead allow some level of configuration. | |
| **R10** | **A:** You are right on this. However, our product is fully configurable and extendable and with this we mean that if the customer wants to develop a special solution, our channel partner could exploit the high level of configurability of the product to do so. And if this is not enough then the user could use the embedded tools of soft1 ERP in order to finally get the desired solution. We think that this is what really differentiate us from international products, such as those of SAP etc. Using our product, the customer can mould, meaning that customers can adapt our ERP to their processes, in contrast to other solutions which say: "this is how you will work". | Cloud ERPs can provide customization. |
| **R11** | **V:** Do you also offer APIs where customers can "build" ? | |
| **R12** | **A:** Yes, such as APIs for web services, for custom developing with .NET and APIs which accompany the customization tools of our product for developing in Java / VB.s | |
| **R13** | **V:** So we are talking about a cloud ERP with a big functionality | |
| **R14** | **A:** The functionality of our product is specific, however as I already said it can be further extended with the use of embedded in the product tools, as our ERP is not just a product but rather a development platform. Our partners are responsible for the development of functionality and we can say that there is no difference whether our ERP functions on-premise or on cloud. | |
| **R15** | **V:** I am saying that because in the literature is stated that cloud ERPs provide smaller margins for customization and functionality. | |
| **R16** | **A:** No, the good thing in our case is that when you work one of our applications on the cloud, which means that is hosted on a data center of Microsoft, the channel partner has access to the installation like it was installed locally on the company. The partner can explore it inside and make the changes the customer wants in real-time at the very moment. | |
| **R17** | **V:** Can you tell me some words for your role in the company? | |
| **R18** | **A:** My role is international business development, the creation | |

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| | of markets in foreign countries for our company, always trying to follow the same business model. Thus, to produce the software and the technologies and then the channel partners to implement the solutions to the final users. Thus our partners offer the solutions to customers, using our product. And I would like to emphasize that our product is not only business software but also a development platform. That means that provides the ability, with the embedded tools that we have, to our partner to develop whatever solution the customer needs. The distribution model is either on-premise license based, meaning that the user buys the software but have to buy the maintenance services "on the software" or using the subscription model (ASK) for a limited period of time (1 year) or on-cloud. | |
| **R19** | **V:** How do you exactly define Cloud-ERP, which are their characteristics? | |
| **R20** | **A:** The basic characteristic is that the software, the ERP that will serve the users, will be hosted in some server in multitenant environment, in a database that serves many customers. The communication must be through internet and the product must serve in fact all the modules that even a very big company would use. The ERP is not limited to CRM and electronic procurement but includes modules that uses a company that has production like supply chain and manufacturing. | |
| **R21** | **V:** So your product targets also this type of companies. | |
| **R22** | **A:** We are targeting mostly SMEs. However, our product has been designed to be able to serve the big companies. We did it so we could downsize it. So if you can serve the large companies, it is easy afterwards to "downsize" in relation to the size of the customer. On the contrary, if you create a product based on the needs of the small companies is much harder to "enlarge" it and adapt it to the needs of large companies. So from the start we created it for the large so we can scale it down more easily. | |
| **R23** | **V:** Which is the acceptance rate of the Cloud ERP on the market at the moment? According to your market research, which are the users, SMEs or/and the Larger ones? | |
| **R24** | **A:** From the 12500 customers, at this moment, around 250 customers are on cloud, especially small, few medium and very few large companies. | |
| **R25** | **V:** How do you discuss the topic of cloud ERP? Are they coming informed and ask you themselves or do you inform them first for this particular option? | |
| **R26** | **A:** The marketing strategy we are implementing has many parts. The first is through ads on TV, internet through Google ads and social media. The second approach is that we inform all our partners through events, massive sending of emails or through a portal that every partner can enter and see everything new that has been added in our product, anything new that is on the market and watch the orders and the different requests towards us and whether they have been replied. Therefore we have a high level of interactivity with our partners and with | |

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| | that way we are finding the chance to inform them about new things. The third part is that when our customers launch our product, messages in banners are showed in the landing page of the application and inform them for any new service e.g. the new service for mobile applications. Thus we have communication in all levels, public, partners and the final user through the product. We also publish relevant articles in well known editorials. | |
| **R27** | **V:** Let's concentrate now on SMEs, that you said to be your core business and let's talk for the advantages and opportunities that the adoption of a cloud ERP can give. | |
| **R28** | **A:** Fine, the first advantage we could discuss is that of greater business mobility. That means that using a cloud ERP, business can now be done anywhere where there is an internet connection. Cloud computing allows businesses to take full advantage of this opportunity by enabling employees to access their files and applications via the web, wherever they are, such as salesmen who can serve their customers in their field. | Mobility |
| **R29** | **V:** So the benefit that we are talking about is the mobility of the service. | |
| **R29** | **A:** Yes, mobility is one of many advantages but very important for a company that its business model relies on that, such as pharmaceutical companies. The main benefit in each case in small, medium or big business is the measuring of the opportunity cost. If we look at the medium size market, somebody has to compute how much does it cost to have a server inside the company, its purchase. The needed Operating System must also be purchased. Moreover, the server needs maintenance because when you change software it results in changes in the hardware too. Software leads the technology of the hardware. You understand also that someone has to be present and also responsible for the maintenance. For SMEs cash-flow is of utmost importance and as many cloud-computing services offer the option to pay on a subscription basis, monthly or yearly, businesses can access incredibly sophisticated software with no upfront fees. As a result, SMEs can access powerful software and services for a very low cost compared to buying or developing it in-house. | Opportunity Cost<br><br>Access to sophisticated software and hardware (at lower cost) |
| **R30** | **V:** So you talk about upfront and operating costs that are supposed to be lower in the case of the cloud. | |
| **R31** | **A:** Exactly. Businesses, by using a cloud ERP do not need to make a big upfront investment. They do not have to spend on hardware, software and license fees. Maintenances and upgrades are done by the vendor so they don't need to employ IT staff to deal with any problems which might arise or to manage the data protection and storage function, maintenance of the hardware and software. | Lower upfront costs<br><br>Reduced IT staff<br><br>Vendors takes care of storage, updates, maintenance of hardware and software and problems related to security |

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| **R32** | **V:** So you are referring to the TCO of the system. | |
| **R33** | **A:** True. TCO is much higher when the company has bought everything internally, in the company. | Lower TCO for cloud. Higher for on-premise |
| **R34** | **V:** Let's make an analysis of the TCO in the long-term, in a period of 5 years or 7 years, close to the life cycle of an ERP, what do the calculations show? | |
| **R35** | **A:** The data shows that the money that you will spend per year through subscription on the cloud, while the electronic data processing will be managed and maintained from the provider, this amount you will be giving every year if you sum it up after 6-7 years it would be like having bought all the infrastructure and had it inside your company. | |
| **R26** | **V:** So the cost in the long term is the same but companies are saving the very high initial investment. | |
| **R37** | **A:** And not only that. Especially for start-ups. Because start-ups, especially micro companies don't know whether what they try to do will succeed or not. So what are they saying? They prefer to have low cost of investment in the beginning so that they minimize the risk of a big loss in case things do not work out. Why have high capital costs, investment costs or start up costs on the beginning when they don't know if the object of the company will succeed or not? But you stated right, and I would talk about the term TCO. Indeed the customer must measure TCO, the start up costs and the operational costs, whether is it good for him to pay these internally in the company. And I would like to insist on the term opportunity cost because the object of a company is not data computerization, the object is e.g. to sell shoes or trade something else. Thus all this effort must flow towards the object of the company instead of data computerization. | Micro and small companies benefit the most with lower up-front cost |
| **R38** | **V:** I see. So you are saying that cloud ERP frees resources that can be invested elsewhere. | |
| **R39** | **A:** Indeed. Cloud ERP provides small and medium business owners with a better way to manage their technology because they no longer have to worry about integration and deployment, time-to-value and cost of ownership. Instead, they can focus their efforts on mapping business planning to executive goals that will have the greatest impact on the bottom line which is profits. In that sense a cloud ERP frees up all the resources and let the business to allocate them on the objective. And which is the objective? How I can become more competitive. The objective of a lot of companies is the sales they are doing and how they will grow them. These companies have sales departments and prefer their salesmen to spend 80% of their time outside on the street, on the market, instead to be required to go regularly to the company and take and give data in order to serve orders etc. With this technology of the cloud, salesmen with their own pads, notebooks, laptops can have the ability to be outside constantly on the market and be informed in real-time about all the data in order to be able instantly to serve their customers. | Better management. No need to worry about integration and deployment.<br><br>Focus on core business<br><br>Mobility+ |
| **R40** | **V:** So we are talking about real-time update that is combined with the capability of mobility. | |

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| **R41** | **A:** Exactly. But again, I would like to focus on the resources that the company will invest on the competitive advantage that could have versus the competition in order to offer better products and services. And this is happening when the staff of the company is targeted on the objective of the company and not on IT issues. And it plays naturally important role how powerful the ERP is in order to be able to give the information that they need when they need it. | Focus on core business. |
| **R42** | **V:** I imagine that advantages like scalability, flexibility etc are considered natural? | |
| **R43** | **A:** Yes, it goes without saying. While a company grows, on the cloud you can also grow the database, it is also scalable. For small and mid-size organizations, being able to respond quickly to the needs of the business is very important in order to be proactive and remain competitive. When an organization adopts ERP in the cloud, they have the ability to react faster to managing operational capability, which in turn will drive agility and the ability to re-direct resources when new opportunities arise. Scalability, in terms of adding more users and purchasing optional modules as your business grows, not only does it allow the business to be more competitive, it also allows business owners to take advantage of the flexible options available with cloud technology. Another advantage is that the cloud ERP solution can be easily extended with third party products which can be easily integrated. For example, we already have an embedded BI system in our product but there is also the opportunity to integrate a third product, Qlikview which is one dedicated BI system that works on the cloud too. | Scalable (performance, database etc)<br><br>Integration with 3rd party apps |
| **R44** | **V:** So we have big possibilities of integration with other products. | |
| **R45** | **A:** Exactly. One more thing that I would like to add is that a cloud ERP enhances the business continuity of an SME, as bug fixes and upgrades occur automatically in the cloud and consequently there are no interruptions to maintain and businesses don't have to spend for new versions of the software every few years when their version becomes obsolete. | Business Continuity |
| **R46** | **V:** Nice. Having analyzed the important advantages that at this time public asks for and these you are perceiving as important, can you also state possible drawbacks of cloud ERPs or else worries that customers are expressing and make them stay away from moving their ERP to the cloud? | |
| **R47** | **A:** You mean to talk about the reasons that companies are not moving to the cloud yet.? | |
| **R48** | **V:** Yes | |
| **R49** | **A:** Listen, a big percentage of the companies says that I want my data to be inside my home, I feel safe. This is the main reason. | Trust, Security - Mentality |
| **R50** | **V:** So we are talking about mentality. | |
| **R51** | **A:** Exactly. The issue is clearly psychological. I could also state something more, something that however I cannot prove. When a company is managed by young individuals, indicated up to 35 years old but not like a limit, these people are also modern on their attitude and way of thinking and are more | |

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| | prone to go towards the cloud. The same applies to channel partners too, and they have also one big share of responsibility because it is them who provide the solutions to our clients. They are the ones that should persuade customers to go cloud. But if our partners are old in age, and there are many like them, they hesitate to promote advanced things to their clients because they feel insecure about it. | Young managers more prone to adopt cloud ERPs<br><br>Same for channel partners. |
| **R52** | **V:** So it is like we said before, that partners maybe are scared that they won't be needed, they won't have a role in the model of ERP delivery. | |
| **R53** | **A:** We could say something like that but I am stating it more taking into consideration the age of partners with such an attitude. However, I must add that when partners buy a license from us and they move it to the customer, they think that they also have the control of the customer and we, the provider, cannot take from them the customer. And here again, this is also a psychological issue, because if we say that all 12.500 customers were working on the cloud they then would feel psychologically that they don't have the control of the customer because the control has the provider. | Channel partner worry that they don't have control of the customers but rather the provider. Psychological Issue |
| **R54** | **V:** So there is a matter of control that the customer wants to have on their data and the partner on the customer? | |
| **R55** | **A:** I would not like to use the term control for the customer. Better to say that the customer has the insecurity about a leak of the information that he keeps in the company to the competitors. This applies mostly to information regarding financial aspects of the company. Every company processes important things internally in the company, the way they think right and they are very reluctant to do it on the cloud because the data would be somewhere else. If we talk about the relationship between the partner and customer, indeed partners think that they have greater level of control on customers who run on on-premise implementations because the vendor does not have access in the system, while on cloud ERPs partners think that they do not have the same control over the customer because the system is managed by the vendor. | Security, leakage of data<br><br>Channel partner worried about less control |
| **R56** | **V:** Despite that, our credit cards are on the Internet. | |
| **R57** | **A:** Of course and not only these. The most characteristic and ground shaking example is GMAIL. Many companies, including ours don't have their own web servers to serve their emails. We are on the GMAIL, corporate GMAIL, since 2006. Our emails are served by Google. | |
| **R58** | **V:** And the mails in a company comprise the most important part of the communication | |
| **R59** | **A:** Exactly. And we are serving them through GMAIL, through the cloud. | |
| **R60** | **V:** Is there some other inhibiting factor for the adoption of cloud ERP? Maybe an external one not related with the software per se? | |
| **R61** | **A:** I would add to the category of threats the possibility the public authorities through regulations to impose the data of companies to be saved internally into the country. | Jurisdiction threat |

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| **R62** | **V:** So whether the change of rules and laws that regulate such topics is an existing danger. | |
| **R63** | **A:** Exactly, I would like also to add a weakness and I refer to what we call gap inexperience. One who will decide to move to the cloud may not have the experience and the knowledge of what means moving to cloud. Why is that a weakness? To what extent customers have been informed or have understood what means moving to cloud? Independently of how good we are marketing it, customer always say: "yet how many are on the cloud today?". In Greece we have around 750 – 760 thousands of companies. If suddenly 1/3 moves to the cloud then the possibility that the rest would follow would be large because there would be a quantity, an inclination, a trend, better stated, that everyone is moving towards it. But the statistics are still few to persuade someone to decide to go towards it on the one hand and on the other hand I don't think there is enough knowledge and information of what means going to the cloud. | Inexperience = lower adoption rate?<br><br>TRA connection to norm? Norm effect |
| **R64** | **V:** Based on the feedback you are receiving from your customers and things you are learning from the R&D of your company, how do you plan to counter possible problems? Is there a certain policy that you will follow in order to promote the cloud adoption of your product? | |
| **R65** | **A:** One of the things we are doing and I respond directly, is that we tell our customers that your data is not saved in a random data center. Your data is located on a Microsoft's Data Center. We consider ourselves a reputable cloud provider and we ensure that your data is encrypted and backed up, which takes the pressure and costs associated with data back-up away from the customer. In addition, it takes away their worry that they have to consider in-house data security as this is passed to us. If somebody shows them that the data center where their data is kept is 10 times bigger of the size of a football stadium and servers are stored into containers that is not allowed the access to no one since security measures are similar with the measures of e.g. NASA with the security features that Microsoft has implemented, it persuades in a big grade that their data will be secure in such type of facilities. Besides the topic of security, there is the issue of backups. Microsoft takes, in a row, three backups of data that is on the cloud in a global basis. So in the worst case scenario most of the data that you can lose is those of the day, but you won't lose your whole sum of data, which is actually your property. Because data that is located on the cloud at least in our ERP remains as long as the customer operates on cloud. | Counter-measures for concerns<br><br>Security+ Reduced costs (back-up taken care of) |
| **R66** | **V:** So we are talking about very important security and recovery measures. | |
| **R67** | **A:** Exactly. Customers have ISO standard security measures and recovery measures that in worst case restore you back 24 hours. In any case customers can get their own local back-up at any time. | |

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| **R68** | **V:** I imagine that in on-premise systems it is very difficult to have and maintain such recovery measures. | |
| **R69** | **A:** Usually in on-premises servers an automated "demon" is set inside the SQL database and every night let's say at 24.00, it makes a back up of the data base. For many reasons this could not happen successfully, e.g. problem in the hard disk etc. Problems of that type are not possible in the data center of Microsoft. One more advantage is that Windows Azure is also one platform. That means that on this environment are happening continuously optimizations on the level of efficiency and security of the systems that being run. | Security+ Reduced costs (back-up taken care of) |
| **R70** | **V:** I see. So Microsoft using economies of scale has the ability to invest much on the optimization of the infrastructure, something that is hard and costly for a company to do in-house. | |
| **R71** | **A:** Exactly, and additionally, something that we haven't stated is the fact of multi tenancy. On the cloud you are on a multi-tenant environment that means that the provider puts on the same infrastructure and environment thousands of companies to work at the same time. | |
| **R72** | **V:** Is this not perceived negatively by customers? | |
| **R73** | **A:** Usually large companies are concerned about that. Big companies don't want to be multi-tenant but have private cloud instead with their own dedicated servers, databases and security. I would like to add something else as a capability of cloud ERP, the fact that you have also geographical advantage. A company that has dispersion, having central offices but also other smaller offices remotely, all these offices will have the ability to work centrally on a point over the cloud. | Big Companies don't like Multi-tenancy. Want more control via private cloud.<br><br>Dispersed companies benefit? |
| **R74** | **V:** So we have the same service over many different places. | |
| **R75** | **A:** Exactly. One more important opportunity is the time to market. How faster you enter the market with new products and new services when you function through Internet. Don't forget that when you are on cloud you work through the Internet. When you want to promote new services, through Internet you serve the market faster. When you are on cloud that doesn't mean that have on cloud only your ERP but you gain also cooperation with other products that you can put on your cloud implementation. | Time to market<br><br>Integration |
| **R76** | **V:** You are talking about better integration with cloud based applications. So when you develop a new application on cloud it happens automatically available on all customers, right? | |
| **R77** | **A:** Exactly, and lets move to B2B or B2C level. Don't you have more instant and faster access? And without the need of web servers through the company and a whole infrastructure, you can serve your partners and whoever you want to communicate you applications and services. | |
| **R78** | **V:** Let's go now to Large companies and talk about the opportunities that has the adoption and use of a cloud ERP, taking into account that the Large company has probably already done an important investment in an in-house on-premise ERP. | |

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| **R79** | **A:** Look, very large companies (5000 employees) usually will have a hybrid system. They want some processes to be on cloud and some on-premise. What is the reason to have e.g. manufacturing on cloud, that has a thousand specifications and is very complex to integrate with other system and machinery? This is my opinion; I don't have a proof about it though. I consider that some ERP modules would be preferred by Large companies to be on-premise and some on cloud. E.g. large companies would say that they want CRM and accounting on the cloud and manufacturing and finance on premise. But in every case you can communicate data from on-premise to the cloud. | Very large companies usually have a hybrid system |
| **R80** | **V:** So according to your opinion this is the policy Large companies are following about their ERPs. | |
| **R81** | **A:** This is what I assume. I don't have proof to demonstrate it. My personal opinion is that cloud is not for everyone. I will state it clear. Cloud because of its economies of scale is indeed more flexible for SMEs but as you increase the size in the Large companies some processes will preferred to stay on-premise. | Cloud ERP is not for everyone. Good SMEs but large companies want to thinks on-premise |
| **R82** | **V:** We have analyzed a series of opportunities and strengths of Cloud ERP for SMEs. If we do the same discussion for Large companies what would we consider? Will we add something new? | |
| **R83** | **A:** I would come back to opportunity cost which in the case of big companies is way bigger than that of an SME. Large companies have large IT departments. The company must take into consideration the big IT staff they have. I don't think that cloud applications today can serve all the processes of a very big company and especially those of manufacturing due to their complex infrastructures and the industry they serve. Let's not forget that in order to have success with your Cloud ERP, just as any ERP, first you have to recognize how it can fit into your business model and the ways in which it can enhance your internal business functions. | Opportunity costs greater for big companies<br><br>Cloud ERPs cannot serve all process of big companies. Limited functionality? |
| **R84** | **V:** The measured service, that a cloud vendor provides in the case of Large companies and due to the big data they need and transfer, would be more expensive than using their own in-house system. | |
| **R85** | **A:** I don't know which solution would be more economical but in any case I don't know if the transition from on-premise to fully on cloud could be possible due to the great complexity of their processes. | Migration to cloud maybe not possible due to complexity. |
| **R86** | **V:** From our discussion I understand that you consider that Large companies don't have something special to gain from moving fully to the cloud. | |
| **R87** | **A:** I believe that very large corporations are less prone to cloud ERP due to their complex infrastructures and the industry they serve. Success for Cloud ERP first recognize how it can fit into your business model and the ways in which it can enhance | Complex infrastructure, industry = preventing big companies |

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| | your internal business functions as I have already said. I further believe that large organizations would prefer the hybrid model, whereby specific modules of their ERP would be more effective and less costly deploying on the cloud as SaaS for functions such as sales, service, CRM & marketing, BI. There is too much risk and complexity for large companies to move mission-critical applications on the cloud due to their complex functionalities and data security concerns, coupled with the fact that large organizations have large IT departments and have invested far too much time and money in developing and enhancing their ERP on-premise over the years. However, cloud computing for large enterprises can be used on specific and mission critical aspects of a business workflow which do not disrupt their current systems and processes. On the contrary, small companies don't have the resources to build electronic data processing systems. This is a fact. Usually the accountant is also the data entry employee. I am talking about Greece now. But I guess that in foreign countries is pretty much the same. Small companies don't have internal data computerization and due to that cloud is an opportunity for them. Because they can leverage the cost of the investment on hardware, software,maintenance and the upgrades. So it is obvious the advantage on this category because you have economies of scale. Start-ups and small companies, I am not talking about medium, are usually undercapitalized and therefore prefer pay as u go payment model of the cloud because they don't need upfront cash. They want to avoid capital expenditures because they try to achieve break even soon usually in two years. So while the medium company grows from 50 to 250 employees I consider they will have less interest to the cloud in comparison with the startups and small companies. While the company grows, the possibility to go full cloud drops. A graph with the size of the company on the one axis and the probability for cloud ERP adoption on the other axis would show that cloud ERP adoption is very high for micro and small companies and would fall while we are moving towards medium and large. That graph would be a hyperbola. | Hybrid best choice for big companies.<br><br>Too much risk and complexity big companies<br><br>Already invested too much money in IT departments and on-premise ERPs<br><br>SMEs on other hand lack resources (for on-premise)<br><br>Economies of scale advantage<br><br>Differentiate between small and medium. Mostly small that prefers pay as you go due to low upfront cost.<br><br>More differences between small and medium<br><br>Company size an influencing factor? As companies grow, possibility to go cloud drops |
| **R88** | **V:** We have found that the increased cost of cloud ERP is a worry for large companies. Can we talk for something more? | |
| **R89** | **A:** Security of critical and sensitive data which in the case of big companies is an even bigger issue that what it is in SMEs. In general, someone must write down and compute if it is for his benefit to go cloud. But according to my opinion companies of such a size maybe they are not benefiting. Generally my opinion is that the computation of the TCO and the opportunity cost is the essence and basic criteria whether someone will move ERP to the cloud. Moreover, micro companies don't want to take risks. Risks with cloud ERP is much lower since you are not making a considerable investment. You've nothing to lose. | Security more critical for big companies<br><br>Cost most important factor?<br><br>SMEs don't want to take risks which is lower with Cloud ERPs |
| **R90** | **V:** Can you make a future prediction for the future? | |

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| **R91** | **A:** There is no doubt that it is a matter of time cloud ERP systems to be adopted on a larger scale by SMEs than by large companies. For the reasons I stated before like psychology of security, the information they have whether it is of their benefit something like that but also if they have understood what means to have your ERP on the cloud e.g. there is bigger security to have your data on cloud instead of on-premise. It is a matter of time that I estimate to a 5 years period. Today we have 250 customers on cloud, in 5 years I am expecting 10 times more. | **I**ts a matter of time before companies understand the true offering of the cloud (e.g. security) |
| **R92** | **V:** Very good. I don't know if there is something else that you would like to add in our discussion. I don't have something else to ask. | |
| **R93** | **A:** I would like to add something more. That the ability of scalability that is provided by cloud is more evident and applicable to start ups and small companies because the bigger customer has already created his size. Small companies need more the ability of scalability, of every kind, and on the level of modules because they don't buy full ERP but only the modules that cover their processes. When the business grows they will buy more modules that they need as well as more space for their work on the cloud. | Scalability is more for SMEs |
| **R94** | **V:** I would like to thank you for your time. Our discussion was very fruitful with many important elements and outcomes! | |
| **R95** | **A:** You're welcome! For anything supplementary I am always available. | |

## Appendix 2b – Interview 2 transcript

13/4/2013

**Interviewer**: Vasileios Alexsopoulos
**Interviewee**: Dimitrios Gaganelis

**A** = Vasileios Alexopoulos
**G** = Dimitrios Gaganelis

| Row | Conversation | Comments |
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| **R1** | **A:** I would you to tell me some words for the company you are working. What is your object and what services do you offer? | |
| **R2** | **G:** Softone started its activity before 10-11 years. In fact it was started in 2002 but it wasn't a new company in the industry because the main structure came from a previous company that was functioning for 15 years. The other part came from another previous very big company of the industry, Singular. Softone is a software vendor that emphasizes in products and services that | |

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| | relate to business software. It has one main product that we are calling software Softone. It is our own ERP that we provide to the market with a series of market versions: Softone 100, Softone 300, Softone ERP, mySoftone. In fact they are different bundles of the same software. The big benefit is that we have a modern product that was written in the start of 2000 and managed to exploit all the modern trends of software engineering. It is not based on outdated, from other architectures, platforms and tools and that's the reason that exists in the market. Many products are based on designs and options made 15 and 25 years ago. | |
| **R3** | **A:** You used all the innovation that was available at that time | |
| **R4** | **G:** Yes. Our software is modern and is written from scratch apparently because there was available the experience, since the people that wrote it were coming from the industry and were well-established professionals. They knew what to avoid and what was needed to create real value. The other big benefit of the company is that we realized on time the change that was coming on how industry of software works and we were of the first companies on a world scale that we created solutions that work on the frame of the new model, SaaS. Already from 2007 we started to offer, like a first step on the proper positioning on the market of SaaS, applications of accounting nature. On that period the term cloud wasn't existed. On 2007-2008 the term cloud you wouldn't see it anywhere. Later on, our engagement with SaaS passed to our general product and touched all the parts of the ERP and from 2010 is available for the customers through SaaS. From the start of 2011 our ERP is available at the platform Windows Azure through the service Softone on Windows Azure and recently renamed to Softone Cloud ERP. | |
| **R5** | **A:** Are we talking about a full ERP? | |
| **R6** | **G:** Yes, it provides the ability to someone from 2010 to work on the cloud anything he needs without limits. Anything our software offers on an on-premise installation the same is provided also through the cloud. On the case of Softone on Windows Azure we have extended even more our investment that we made because we wrote on the platform and empowered the service regarding the functionality because we had to find solutions besides from efficient functioning of the ERP on the web, we had to find solutions on how it would function nicely as a service, how the updates would be made, the refreshes, the balance of the burdens on the cloud servers. All these are important because we are talking for a product SaaS thus you are sharing resources and is hard to check the need that the customer has. We had to find solutions for problems that he would face by reaching the top of resources available and at the same he wouldn't occupy resources that the customer wouldn't use but occupy only those needed. So we built on Azure our own technology that was managing such issues. | |
| **R7** | **A:** Did you make it to provide customers the best possible accurate measured service? | |
| **R8** | **G:** Exactly, because from the moment we are offering a SLA with distinct characteristics we had to ensure that in the real use | |

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| | of the product the same would apply. Generally the topic of cloud ERP in Greece from the side of the provider hasn't progressed enough. The most think that because they are hosting ERP they are using cloud. | |
| **R9** | **A:** Can you tell me some words for your role in the company? | |
| **R10** | **G:** I started on 2008 on Softone, on the beginning I focused on SaaS from how we would develop it and the services, to how we would offer its services on the market. I am the main expressing individual of the company related to cloud ERP and SaaS and recently I took over also the marketing direction with responsibilities not only advertising and communication but also product management that is not only about Cloud but also the other products and services of the company generally. | |
| **R11** | **A:** Which ERP delivery models are supported from the company? | |
| **R12** | **G:** We are providing on-premise installation but also cloud. On on-premise installation is located the biggest part of our customers. And I would like to say that we are offering two pricing schemes on on-premise model. The traditional sale of the license, but also we are providing it through subscription for a time period. The second model is a precursor of the subscription model that works on cloud as the yearly subscription. | |
| **R13** | **A:** If you can tell me, how many customers are on-premise and how many on-cloud? | |
| **R14** | **G:** If we include all the services, softone as a service, the subgroup of ERP that is related to accounting services, softone on-demand that runs on the formal Microsoft incubation provider on Thessaloniki and our service that is running directly on the infrastructure Windows Azure then the analogy on-premise with cloud would be between 85-15% and 90% - 10% . | |
| **R15** | **A:** And which is the size of the companies on the cloud? | |
| **R16** | **G:** We are emphasizing on SMEs. We have also large customers but the emphasis that we are giving is to SMEs because this is the business model we are following. Our business model is not after the very big companies even though we have some of them in our customers list. | |
| **R17** | **A:** How do you reach the discussion about cloud ERP? Do you inform usually the customers or they are asking themselves? | |
| **R18** | **G:** Both happening but I can say that mostly we are informing them. Because we are from the first on the industry, we experienced and still experiencing the immaturity of the market related to cloud. Imagine that on 2008 and 2009 to talk to the market for SaaS and say to someone that you have on your own space but I will take it and I will move it on a data center and I will operate it. That was very unclear for the Greek businessmen back on these years so first we had to go to inform them and persuade them. But while the market is getting mature on Greece that starts to change. So now a big part of the discussion is coming from the customer. Considerably has helped the fact that that have started to get deployed and used clouds on telecoms in Greece, having produced products and | |

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| | services that are not touching the level of applications but mostly IaaS. So the market is informed more and more for the topic of cloud generally. And while the number of people that use the applications on cloud will increase a part of insecurity will disappear and all these people that had concerns will think about it more positively and will follow. In connection with the positive elements of the cloud that they are hearing e.g. that cloud can reduce the cost, makes the businessmen more positive to try and now they are asking us themselves. | |
| **R19** | **A:** If we concentrate on SMEs, which are these benefits that SMEs clients perceive as positive and lead them to the cloud ERP? | |
| **R20** | **G:** We can't forget the benefits that SaaS is providing on the company that will work the applications on some data center. On general terms, these apply for the most companies, either small or large but this is not the general rule. It doesn't mean that in every SME you have the same benefits with someone else. It is very important the role of the special characteristics of the company. As an example a company that functions on its office doesn't have the departments and external salesmen or external activities and one other same size but e.g. with two departments or 5 external salesmen. It is not sure that they will have the same benefit from the side of the cloud. Some companies can solve all the problems if they move to the cloud and some can have only small benefits. So is very important the role and the special characteristics that every company has. | Generally benefits for SMEs |
| **R21** | **A:** If we use a limitation and talk about SMEs that have measurable benefits through cloud, what these would be? | |
| **R22** | **G:** The first we would report is the cost. The cost of the purchase of the equipment and the infrastructure to work the system if you go to cloud disappears. Of course a big part of the cost, provider moves it to the subscription that the client pays. But because on the side of the provider are happening economies of scale, the provider won't buy infrastructure that the client would buy on the same price and all the natural resources(Computing instances, databases, connections) will share to many, creating economies of scale and synergies that the customer alone couldn't create. So all the packet is offered on a more economical price and this is very important. But you don't have better economy only because you don't buy the equipment. The purchase of the software and the software is not static; you don't stay only on that investment during the life cycle of that investment. Because in a life cycle of 5-6 years of the infrastructure there is need of maintenance each one or three years. And there are no statistical models that say that every three years depending on the type of the company you have to add money that equals from 10 to 30% of the initial investment. I used a life cycle of infrastructure of 5-6 years because due to the rate of growth of the technology and the products you can't keep them more than that. So after this time frame you will need to make again a new investment, replacing and this increases even more the cost of the hardware. But even the software needs maintenance. To be updated each year you have to buy new contract of maintenance from the provider. He | No upfront costs<br><br>Operating costs |

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| | will fix you the bugs, send you the fixes, he will make you the updates and he will add new functionality etc. And this is a dynamic cost. If the customer goes on cloud all these will be included on the subscription and the provider will be the one to take care of the maintenance. | |
| **R23** | **A:** If we analyze TCO on the life cycle of the system what the data would show? | |
| **R24** | **G:** If a company computes all the parameters regularly it has a benefit. Generally when a company has costs that are coming from the need of usage of reliable communicational services (that are costly) or the connection of different processes that the company has on different geographical points, then the side of the cloud is more beneficial. When the business environment is more closed, you have not built business processes that include external entities then it is reducing the prospective benefit if you would move to the cloud. So generally you will have profit according to the special characteristics that you are expressing as a business model. | In general lower TCO for SMEs depending on the business model |
| **R25** | **A:** I'm noticing that the benefit from the cost reduction is a sure fact. | |
| **R26** | **G:** Yes. And this because they are added more parameters that they are not exactly cost computed. The fact that on an on-premise installation you are responsible for the maintenance, the managing and the functioning of the equipment, means that you have a big grade of responsibility and you are undertaking the risk. So we are talking about the risk parameter of the investment cost, if I don't do something right there is danger for the company. This risk can be solved if you make some contract for technical support with someone specialist or employ IT people that will undertake it, but this is costly. So this must also be added on the final cost. But with the cloud ERP you are freeing the infrastructure from your central system and you don't have the need of an IT manager. And again if you have some other things that someone must see them on the level of IT you have the option to employ someone, that because he will be doing less things you will pay him less money. You can take a more junior IT person that will cost less for the company. So you are saving money from the staff and from contracts from outsourcing. One other very important benefit is that with that way you are focusing better on more important and valuable things for the business part of the company. In a SME the only thing that persons care about is how to create more competitive products in order to create money. There is no reason to have IT skills. What is the reason to have employees that are not working on the focus of the company in relation to the company's object? In any case the company can send elsewhere the IT staff which can be used towards more productive processes from the maintenance of the system and the possible problems. For an example, to get with tools BI reports that can help on the decision taking and not use them with stuff that don't have added value. Moreover, for the processes that just ensure the good functioning of the system is better and more reliable to be made from the provider that is | Less risk with cloud ERP because the specialized vendor manages the system. This lowers the risk and enhances business continuity<br><br>Less operating cost from IT staff reduction<br><br>Business focus |

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| | specialized on it and he has more tools since it is his core business. One other benefit for SMEs is the following. The provider has his infrastructure and his services on state of the art level. So his is doing continuous investment on the level of equipment in order to work properly the service he is offering. The infrastructure which is based a service have continuous development e.g. on roadmap level in relation to the initial condition, since the provider takes care to be compatible with the best he can offer of technology on each moment. And the datacenter we are working with has the same philosophy and motivates towards this direction. This thing SME can't make it easily, because he doesn't have the needed budget and the expertise. Usually on the lifecycle of the system happens only some minor updates but the equipment is almost the same. On the cloud the provider ensures that the customer and the services that he offers are aligned properly with the latest technology. So the company is always state of the art through the infrastructure that are using and that way can exploit the business models, something that is a very beneficial. The company can set up business models on a way that is more customizable and direct on the needs of the clients. | Access to sophisticated software and hardware. The vendor continuously invests on the infrastructure |
| **R27** | **A:** So through the use of a cloud ERP every SME has access to the whole innovation that is available each moment. | |
| **R28** | **G:** Sure, and this is very important but not a measurable benefit. One other benefit is that through cloud you are moving from a model of capital investment to a management of operational costs. From capex to opex. That way you avoid problems that are related with how you use your capital and that destroy your economic measures of the company and thus the financial image. Also, going from the model of capital investment to the operational cost you are moving to the logic of the service that has also estimated cost that is more logical and measurable. So we are talking for transparency of the final cost. Also many companies don't have big capabilities to do this type of capital investments because they don't have the capitals and on the difficult economic situation we are experiencing, neither the shareholders give money, nor the banks give loans to find the capitals. So the cloud provides flexibility to the companies mostly to these that don't have capital sufficiency and to start ups that have made already big economic effort and have more expenses. This amount have would have paid it all together on the start of the life cycle of the investment now they are paying it on installments with a horizon of 5.6.7 years. So especially for new companies and these with reduced capital sufficiency there is much bigger value that the cloud ERP can offer because it gives the ability to take the result they want with better prerequisites as we said. | Capex to opex<br><br>Flexibility |
| **R29** | **A:** So the Cloud reduces the risk a company undertakes. | |
| **R29** | **G:** Right. For each investment like this, e.g. the infrastructure of a system, it has its own risk. Even the purchase of the software has risks. Don't think that someone that buys ERP keeps it and functions it forever. There are many cases that an implementation of an ERP is not utilized properly or still it can be utilized like it was designed but the result don't satisfy. Then | Risk |

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| | the company decides to stop this specific realization and move to a new one. So the money of the first investment disappears. On the case of cloud ERP you have much smaller risk. If the cloud ERP can't perform, possibly you are losing only one or 2 of the first yearly subscriptions and not all the investment of the implementation on-premise that is much higher. | |
| **R30** | **A:** Are there other benefits that are persuading SMEs clients to move to the cloud ERP? | |
| **R31** | **G:** The outsourcing of the service, the maintenance and the responsibility for the proper functioning is also very important benefit for many companies. The first years of the introduction of this model there was a problem mostly in the IT departments of the companies, because it was creating the concern that the IT staff would lost its job because many of these things and procedures they were doing before they won't need to do them anymore. Also this problem appeared and on the side of the partner of the software vendor that was coming in contact with the final client because the market of IT usually don't work on a direct level. There is either a more powerful or less powerful part that exists between the provider and the client and it is the network of partners that communicates with the clients and provides them the solutions of the software vendor. And these have a phobia that if the client receives the solution through SaaS would cancel its role since the customer could take it directly from the provider. We are still on the level of the cloud and we are not cancelling the partners because they are these that have to sell and help the parameterization of the product on the client's needs. But also the IT staffs while they understand that cloud ERP can't cancel but instead empower their role and their skills with more business oriented activities, the benefit of outsourcing can act more beneficially on all the levels of the company. | Ensures business continuity<br><br>Resistance to change from in-house IT but somewhere else says that SMEs usually don't have IT so it is more appropriate for big companies<br><br>resistance from the vendor |
| **R32** | **A:** Let's talk now for the drawbacks that SMEs realize and probably drive them away from a cloud ERP. | |
| **R33** | **G:** The first and main is the security | Security |
| **R34** | **A:** Is this a real problem of the cloud? I'm asking because the opinions are mixed. | |
| **R35** | **G:** On many cases it can be. It is a case that depends on the reliability of the provider. Not all providers provide the same quality of service and I'm not talking only about security. There are providers that sell solutions without giving the needed SLA that ensures the client through specific rules that client agree with. | This whole part deals with SLA and that many vendors don't offer reliable services on security and performance |
| **R26** | **A:** So the fact that many providers don't give clear SLA is an important drawback. | |
| **R37** | **G:** Surely. On every form of outsourcing is needed a SLA. When you trust to a third party the heart of your company, the ERP, without ensuring the requirements that are helpful for you or at least are agreed is very big mistake and is very dangerous for the viability of the company. Few providers give a SLA that describes the policies of security, the services of managing that provide and the levels of availability that are ensuring. We are maybe the only company in Greece that gives a complete SLA | |

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| | that ensures all these not only on level of infrastructure and resources but also for good use of the same application. As an example the reaction time of the application. | |
| **R38** | **A:** So we are talking at this moment for the issue of the guarantee of the performance of the application. | |
| **R39** | **G:** Surely. An ideal SLA should also cover this parameter. And this is a very difficult point, on which we are working in order to provide a SLA that guarantees time of response. In my opinion such a SLA is a big market advantage for the provider that provides it. | |
| **R40** | **A:** But the fact there are not many providers that give such guarantees of performance is a big vulnerability generally for the sector of cloud ERP that makes the companies more skeptical towards a cloud solution. | |
| **R41** | **G:** Yes and this is why I'm reporting it. Many providers don't ensure not even adequate level of available resources. Besides of this ERP includes many heavy activities which must be ensured that they will be efficient through web and this happens through modern architectures and generally the technology that the application is based on. If the ERP is not built on modern technologies it can't be efficient and is a very big problem. The fact that not all providers have made the same big investment on the software in order to run it efficiently and fast on the web and the fact that they don't describe exactly the characteristics of the provided service and terms of operating of the system, it makes the companies reluctant to adopt a solution on the cloud. But the main topic that makes the customers reluctant is the topic of security, that is not expressed only through that someone can steal data but in the more general meaning. That the thing that the company will outsource to the vendor, he will run it properly. The issue of uptime of the service that is issue of security. But also the issue of the security of the information is very important aspect. The heart of the company is the data and is difficult for a company to trust on a 3rd person. There is a very important grade of concern from the side of the company in relation to the security of information. And here again is the job of the provider to explain to the customer that is not satisfied in order to make him believe that he is not in danger. There are three levels on the cloud ERP that must be showed care in order to avoid problems with the security. The first is the level of the datacenter. On this we are saying to the customer that his data are stored on the datacenter of Microsoft that has the most strict security measures but also provides the highest levels of resources availability. The stats show that MS SLA on the level of availability reflects the real functioning of the data center. The 2nd level is whether the provider has access on the customer's data with the danger of stealing them, sell them to competitors etc. And this is possible to happen. So again the provider must ensure this. You have to set rules and create processes that are clear in order to be checked and that way to limit this danger. If e.g. goes someone from Softone to take access to someone's data he will be realized immediately. The level of the security on this sector is that of ISO 270001, that is the most powerful standard at this moment on the | Security and reliability of service (response time) |

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| | security level of information. The last part of security is this of communication. On our case, the data are encrypted with maybe the most powerful codex and that the banks use for the cryptography of their own data. So even if someone steal data they will be useless because he can't access them. | |
| **R42** | **A:** But how many providers offer such high standards on the security level? | |
| **R43** | **G:** This is the problem. Not everyone offers them. Not all the datacenters are the same, not all the providers have certified with ISO processes and not all have made large investments on the level of communication. | |
| **R44** | **A:** So a big problem that disappoints companies is the entity of the provider, the provided service and not the cloud ERP per se as technology and product. | |
| **R45** | **G:** Sure, and this is an issue that must be emphasized. To go or not go a company to the cloud many times depends on which provider you have talked with. Many times companies take the decision to evaluate a cloud solution but they don't get convinced from the product and the services of the provider while they could have been convinced from the product and additional possible characteristics provided from another provider. Sadly, the market of cloud is not homogenized towards the quality of the provided service. | We should refer to that as a main problem which affects trust |
| **R46** | **A:** The discussion with the middle-sized customers ends with these issues, cost, security and performance? | |
| **R47** | **G:** The truth is that most of the times the discussions are directed towards 2-3 main points. The cost is a very important point; obviously security is a very important point. Not only on the level of the security of the data but also on the level of the availability and the reliability of functioning of the system. This is where it concludes. And how easily and better the company can exploit something through the cloud on the business, to have the ability to set some new processes that would need much money and time to set up if the system was on-premise. If e.g. through cloud a company can in 10 days to move their salesmen out on the street with a smartphone to be able to work remotely on a specific process it is a motive to go to the cloud. Because with an on-premise system something like that would need much more time and cost. But these are special cases that are related with the special characteristics of a company. | |
| **R48** | **A:** If we go now to the large companies, how do you explain that they have so small adoption rate VS SMEs? Do you believe that a large company doesn't think about it seriously to go to the cloud? | |
| **R49** | **G:** No. this is not a rule. To say that they don't think about it is wrong. More right is to say that there is not big prospect of increase of the adoption rate of cloud solutions from the side of large companies. | |
| **R50** | **A:** Which are the reasons that are responsible for this? | |
| **R51** | **G:** A very important reason is that the big companies have made many big investments on ERP that already work, much bigger from that a SME has made. Usually, a large company has a complex structure because e.g. it is not limited from a | Sunk cost |

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| | geographical point and has a big variety of activities that are related with many geographical points and many external entities. To work all this mechanism efficiently you must have set up a network with partners, clients and suppliers. Because this structure is complex, to be built is needed a big cost of investment. And this is the problem because it's not easy for the company to remove all the mechanism and replace it with something new. And on the fact that it has been a new investment that we must exploit and this investment is not static because large companies add everyday new tools to the equipment either for maintenance or for development. So this total very big investment is not allowed for the company to leave it and make something new. But is also the business continuity that is more difficult to be ensured, due to the fact of very big complexity of the system and the processes that supports, moving to cloud. That doesn't mean that can't happen. What I'm saying is that is needed bigger progress to overcome with success the current situation. The large companies have a very complex IT environment, infrastructure that is very difficult to change. On the meantime of this change what will make the company to continue to work efficiently? | Complexity makes migration too difficult and threats business continuity |
| **R52** | **A:** So the big complexity of large companies affect negatively. | |
| **R53** | **G:** Exactly. The big level of complexity many times works dissuasive. One other very important factor is that large companies have a very powerful internal IT department with a big number of employees. We can say that IT in big companies is a distinct company inside the company. The fact that this big IT department has created a culture handling all the related issues but also the company watches this IT department like an investment, making even more difficult the outsourcing and generally the out of nowhere changes like the moving to the cloud. | Very concrete and big IT department resists to any organizational change |
| **R54** | **A:** So we are talking about a strong resistance to change from the side of the company. | |
| **R55** | **G:** Apparently. The change management that is required is much more demanding on the case of big company from this of the SME. Also, the issue of security is also a very big concern that multiplies on the case of big company VS SME. The large companies have larger risk to receive a malicious action because their data e.g. clients list, pricing policies, how they have set up their network are considered much more important issues VS a SME. Moreover, and the real loss but also the loss of fame of a big company will be considerable if happens something like that. It has much bigger value the information of the big company towards the external environment from the value of information of a smaller company and this applies because the risk that undertakes a big company towards the business result is bigger from this that undertakes the small one. | Big change management is needed<br><br>Security even bigger concern |
| **R56** | **A:** If we talk about the cost, can we say that due to the large mass of data that is moved through a large company it would be possibly more costly to use a cloud solution VS an on-premise? | |
| **R57** | **G:** It is not always true. Even the big companies could find economies of scale by going to the public cloud. And this is because the infrastructures that have are not simple. Instead | |

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| | include redundancy systems with failover capabilities and generally try to remain always state of the art and this as we said costs a lot. So I think that they could find economies of scale using the infrastructure of a public cloud. But the culture as I said before and the powerful IT entities that make the change of management much more demanding is the thing that doesn't let them to move on. So what they are doing many times is to exploit at least on the level of infrastructure the benefits of the cloud logic like virtualization setting up private cloud. This is one very important reason that is not increasing considerably the adoption of an ERP solution on the public cloud from large companies because on many cases they are setting up their own datacenters on the basis of private cloud. That way they are exploiting the synergistic on the level of infrastructure and finally the reduced costs from this keeping at the same time the functioning and the management of the application on the internal of the company but as we said. | Cost reduction in infrastructure<br><br>Culture and big change management is an obstacle |
| **R58** | **A:** Can we talk about other opportunities that are provided from cloud ERP to the big companies? | |
| **R59** | **G:** We can talk about reducing cost from other parameters. Making outsource the operation and the maintenance of the system to the provider you are reducing the need for maintaining numerous IT departments, reducing that way the cost for human resources. Or else as we said before can the cost for IT human resource to become more productive and with bigger added value freeing the employees from low level activities and working with activities that have as target business growth. From the side of the large company, when the IT is greatly structured with powerful resources and operates efficiently it is very difficult for the managers to take a decision to change, making outsourcing the ERP that is the heart of IT. I will give you a different example. This moment there is a trend in many countries and also in Greece to move the public sector, that we could see like a very big business, to the logic of cloud computing and SaaS. That happens because in no case the structure of IT is strong since the public sectors are characterized from big fragmentation on the sector generally. The outcome is that the big organization that is not so structured with strong IT is positive to the cloud ERP adoption, while the big organization that is structured with powerful and efficient IT that is very close together with the business part of the company and that have happened big investments is very difficult to make a such large scale change because the resistance is very big. This is the main reason. How strong IT there is inside the company. SMEs sometimes don't have IT departments and employ IT partners. So the SME customer has a much bigger grade of freedom to try a change towards the direction of the cloud. | Reduce IT staff |
| **R60** | **A:** Which do you think will be the future of cloud ERP adoption on SMEs and Large companies? | |
| **R61** | **G:** SMEs I predict that will move massively to cloud solutions most likely. For the large companies I consider that the market share of cloud ERP will grow and the part of on-premise installations will reduce but not considerably. On a short-term | |

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| | on 2-3 years will appear very often consolidated hybrid solutions. The part of core functionality like production will stay on-premise and ERP functions that work more efficiently out of the company will go the cloud e.g. operations like timesheet, payments, CRM or some project management tool, there is not a reason to stay inside the company and would function more easy, efficiently and with less cost on the cloud the processes that exist on these operations. | |
| **R62** | **A:** In short, which we could say that is the reason that the core functions like production would stay on cloud? | |
| **R63** | **G:** It depends on the level of productivity of the operation of the specific processes to the cloud. But as we said before it plays important role. The core functions are difficult for the big company to accept to remove them from inside the company. But also the providers need to develop their products and services in order to be able to offer such a type of hybrid solutions, because it's not easy to isolate part of the functionality of an ERP on cloud and the system to continue to work on a unified environment without problems of compatibility and efficiency. Thus also the providers have to invest on this in order to provide adequate solutions. The hybrid model can be expressed also in a part of the SME market but more common will be in large companies. Surely I would like to add that even mega-vendors of the market like SAP and JD Edwards have not progressed that much to offer to the very big companies completely structured and efficient solutions for cloud function that can satisfy on the complexity and the very high demands regarding the operation and the efficiency on all the levels. So this is also a very important factor that lowers the adoption rate regarding large companies. | No so advanced cloud ERP products which would serve all the big needs of big companies. Limited functionality |
| **R64** | **A:** Very nice. I don't have other questions to ask you. I'm covered. Do you have something more to add? | |
| **R65** | **G:** I don't think so. If you need something more we can talk again. | |
| **R66** | **A:** Thank you very much for you interest as well as for your time that you provided! | |
| **R67** | **G:** Good luck! | |

## Appendix 2c – Interview 3 transcript

16/4/2013

**Interviewer**: Vasileios Alexsopoulos
**Interviewee**: Bahtiyar Tan

**A**= Vasileios Alexopoulos
**T** = Bahtiyar Tan

| Row | Conversation | Comments |
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| **R1** | **A:** Can you introduce the company you work for, what are your core business, your products and services that you offer and who are your customers? | |
| **R2** | **T:** We are a company which creates and produces ERP softwares. Our ERP product is called Canias ERP and our company's name is IAS. It's a Turkey based company but it is well established in Germany.. Now, all processes about lochmund and technology based processes are located in Turkey. I am head of research and development department. | |
| **R3** | **A:** Okay so your role is research and development manager? | |
| **R4** | **T:** Yes | |
| **R5** | **A:** Okay. Do you have different delivery models for your ERP or is it just on-premises? | |
| **R6** | **T:** There are many owning types of our products. One of them is hiring of product in which the XXXX (01.48) are located in our company and customers connects to our system with their usernames and passwords via internet. That's the first type of our products. The second way is locating all the services to their own location and getting the whole database and whole code and libraries and running the whole system in their system. | |
| **R7** | **A:** So, there is a traditional model on-premise? | |
| **R8** | **T:** Yeah there is a traditional one. But for the other one, the first one, system is accessed over the internet. But it was an old way for companies. | |
| **R9** | **A:** But it is not cloud ERP right? It is more hosted in your infrastructure? | |
| **R10** | **T:** It is not cloud and it's not dynamic like Amazon's cloud for example. There is not a functionality to increase performance on-demand. | |
| **R11** | **A:** Okay, we understand. Can define what you mean with cloud ERP? | |
| **R12** | **T:** In my opinion, total cloud solution must be in a remote server and must be charged per use. For example you have irregular demand, data need. It must be dynamic. In our solution there is not a dynamic side. In a cloud ERP solution, the whole data and whole system must be located in a remote server and you must have some opportunities to change your XXXX (4.31) server and/or your database performance and size. | |
| **R13** | **A:** Your customers are aware of your ERP offerings. Do they talk to you about that? | |
| **R14** | **T:** Most of our customers are not aware of cloud ERPs. Some of them are aware of cloud ERP but they do not prefer them. There are some traditional causes for this. They want to have their own data in their own server. | |
| **R15** | **A:** Okay we will come back to this when we discuss about the potential advantages and disadvantages of cloud ERPS. From your experience, do you have any idea of how much cloud ERP | |

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| | is in the market? | |
| **R16** | **T:** I don't know the exact quantity, but I know some companies, for example Salesforce. I dont think they just have a ERP system but also a CRM system. But mostly, cloud ERPs is not a popular topic in Turkey or middle-east. | |
| **R17** | **A:** Okay so its not popular? | |
| **R18** | **T:** It's not popular. From our customers aspect, mostly from the aspect of small companies, they just want to get the software cheaper. They mostly focus on this point. If they can own this software with low investment, and then migrate to a total system next time or following year. They just try to minimize their costs. | Cloud ERP is not popular, customers are moved from their need for low cost and just that, if they can have lower price with other solutions they don't even consider cloud ERP. |
| **R19** | **A:** Okay. Let's move on to Small and Medium sized companies. What are the important opportunities that cloud ERPs could bring to Small and medium size companies? | |
| **R20** | **T:** The main advantage of cloud ERP is, if your company has changing demands about performance etc, I think cloud ERP is very useful. For example if you have a company where your demands from a technical point change from day to day or season to season for example, owning a total or big system would require a big investment. If you have regular demands, if you always need high performance system, or if you have many users who regularly connect to the system or something okay, then its ok, the investment will be returned. But if one month you have 10 users and next 100 users, you then don't want to pay for 100 users, for a whole month or years. So if your demands are changing when it comes to performance then cloud ERP are advantageous. | Performance issues, dynamic change of demands, much beneficial for cloud ERP leading also to cost reduction |
| **R21** | **A:** Okay. So main advantage is the cost reduction, for small and medium companies because they change their needs? | |
| **R22** | **T:** Yes. Yes. From the aspect of small companies or customers, the basic motivation for choosing some cloud system or software is minimizing the total cost of ownership. And the opportunity to try the system, a trial, so if they think that it's not a successful application for example, they can change it if they are only renting it. | Cost Reduction |
| **R23** | **A:** So it's a big investment they don't have to do? | |
| **R24** | **T:** Yes. | |
| **R25** | **A:** Can you think of any more opportunities besides reduced costs? | |
| **R26** | **T:** I think the main point is cost, but cloud ERP systems, if your service provider is reliable that would XXXX (11.46) XXXX. But then I look at companies, main customers and from their perspective I think the main point is cost I think. I know its a good technology and most of the students and professionals look at cloud ERPs in a romantic way, it must not be the main point of a such a huge system that can be accessed from the internet. But the main point from the customers perspective is the cost. | Cost reduction |
| **R27** | **A:** Maybe because of the existing financial crisis. | |
| **R28** | **T:** Yes. Because the companies which are potential customers | |

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| | have to invest too much money to these investments. ERPs are only investments to make companies more efficient, to make something more recordable or to enable or to able to create some reports. The main point is efficiency. So if you need to invest too much money that is not a good way to make your company efficient. | |
| **R29** | **A:** Okay. If you think of other potential advantages or opportunities as we continue then don't hesitate to mention them. | |
| **R29** | **T:** Okay. | |
| **R30** | **A:** What would you say are the main concerns, disadvantages or risks with cloud ERPs for small and medium size companies? | |
| **R31** | **T:** Did you ask about cons? | |
| **R32** | **A:** Yeah exactly. | |
| **R33** | **T:** In turkey and in middle-east, I think the main negative points about cloud ERPs is that the internet connection is too expensive. So most of our customers try to access the system cheaper. That is a main point, it's a barrier to enter a cloud ERP system. The second thing is access, there is still some infrastructure problems about the internet in our country. I don't have any example but I think its similar in middle east companies. | Performance concerns originating from connection issues and that can increase also the final cost. |
| **R34** | **A:** So slow connections and performance? | |
| **R35** | **T:** Yes. Slow connections if a problem. We have customers in Germany. It is also a problem for them. Because ERP systems are big systems and there is too much data to process, too many codes, old codes. These factors make ERP system slower. There are too many customizations. So in a situation like this, something like slow connection speed creates a weak point regarding performance. So performance is another key point I think. Another point from the customer perspective is data. They think about that their data might be stolen or shared to/with other companies. So there must be trust between the companies and this is especially a problem for medium and big sized companies. | Fear of stolen data / weak trust lead to Security Concerns |
| **R26** | **A:** So there is problem with security? | |
| **R37** | **T:** Yes. That's another point. | |
| **R38** | **A:** I see. Is there something else that comes to your mind? Other cons, for example problems with legislations and laws? | |
| **R39** | **T:** Data laws? | |
| **R40** | **A:** No, we mean regulations made by the government. | |
| **R41** | **T:** Ah Law. I don't have any example where our customers are behaving conservative regarding cloud ERP systems because of the law or some regulations. There are not problems with regulations, especially in Turkey. But the point is that government wants some data about your company, for example financial reports or something like that. If you access these reports in an acceptable time, there will be no problems. That is the only governmental issue I think. It's not a problem. | |
| **R42** | **A:** If we move to bigger companies. They probably have their own ERP systems. Is there any opportunity in moving to the | |

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| | cloud for them? What do your customers say? Do they think about it all as an opportunity? | |
| **R43** | **T:** About migration? | |
| **R44** | **A:** Yeah about migration. Are there any advantages that they mention/see? | |
| **R45** | **T:** Does the cloud ERP support or create an advantage compared to old systems about migration? | |
| **R46** | **A:** Yeah. Do you customers discuss that. Do they see any advantages? | |
| **R47** | **T:** I think it's not part of Cloud ERPs problems because most ERPs have different databases, or data types for example. The main point is migrating from one ERP system to another. This is not about accessing your cloud system or old system. | |
| **R48** | **A:** I see your point. You say that it's very difficult to migrate all this to another system. | |
| **R49** | **T:** Yes. Exactly. It's a big problem for ERP companies. For example if you have a customer that uses for example IFS and you have to migrate to you system, it's a hard thing that maybe take one year or six months. So the problem is the difference between their data structures. So I think having a cloud ERP system, or accessing your system over the cloud is no problem. If you have enough tools, if you have enough personnel, it's not a problem I think. The point is, system's data structure. | |
| **R50** | **A:** I understand. So it's a problem of migration as just that. It's not different between migrating to the cloud? They don't want to migrate, it's very difficult and very costly. | |
| **R51** | **T:** Yes! It's a very costly issue. So your customers do not want to migrate to another one, or to another company. For example, IFS customers, if they want to migrate to our system, they have to pay much more than having our system first time. So I think, most companies that want to try to cloud ERP system, the main point is that, is it possible to convert all data to this system for example. I don't have to pay the whole system's cost, so if you have a cloud system or have a ranking model for example, then your customers pay minimum price. But I can add something. If a cloud ERP system gives enough software tools or accessing methods, have an easy access method, maybe it can be an advantage XXXX (24.53)XXXX . If you have a location and many consultants need to be at your location then it is a problem. Maybe cloud ERP has some advantage in this point. Maybe but Im not sure. | Migration is not a specific problem of cloud ERP but generally ERP going from system to system, DB issues etc. Cloud ERP with proper tools can have even benefits regarding converting from system to system. But he is not sure. |
| **R52** | **A:** Could you please clarify? | |
| **R53** | **T:** If you have a cloud ERP system and you have enough tool to access your data and make your migration with a minimum cost, the migration process will not be an important issue. | |
| **R54** | **A:** I understand. So you say that if this problem ceased to exist, then maybe more big companies would think about migrating? | |
| **R55** | **T:** Yes. If you have a cloud ERP system and you can't access your data to perform the migration process, then it's a problem. But if your cloud systems allow you to perform your migration with a minimum cost, migration won't have a negative effect. | |
| **R56** | **A:** And so if they did not have this problem with migration, what are the opportunities and advantages that they would see | |

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| | in order to persuade themselves to move to cloud ERP. So for what reason would they move, do you have any opinion on that? Do these big companies have any advantages to gain by moving to the cloud? | |
| **R57** | **T:** I think the main advantage is cost. If you have a regular or traditional ERP system which located on your own servers for example or host, it's a major problem to keep your servers up. | |
| **R58** | **A:** To maintain? | |
| **R59** | **T:** Yes it's a problematic issue. As I said in the beginning, you have to create a steady demand. If you have changing demands about your ERP system, it's a problem. I know that Human Resources for example, may not be an ERP model firstly but most of ERP vendors supplies HR solutions. For example HR solutions have a character like this. The first part of demands, there is too much demand to access to these HR models, but middle of demands, at mitt-point of demands, the accessing of these models is not too heavy. | Cost reduction through dynamic allocation of data need is a benefit, HR department needs is a typical example |
| **R60** | **A:** So you say that for some things, there are advantages to send them (move) to the cloud. Not everything? | |
| **R61** | **T:** I think this is a good advantage. I think this a big advantage because there is a company who works in the HR sectors and which is our customer, they have too many (STOP). Sorry I can't find the word, I must ask Google translate. The company makes HR operations for other companies. Some companies outsource their HR operations. In the first and last days of the month, they have 120 staff, which work on other company's HR processes. And at the middle of the month, they connect to the whole system with for example 20 users. So if they host their own system, they have to invest for 120 persons (licenses). They have to create a system which can serve 120 staff. So its maybe for our system, maybe it XXXX (30.54) XXXX (...can hold 20 applications servers?). This is a big issue for HR companies, to create a system for 10 or 12 application servers which are up for 24 hours. A cloud ERP has a heavy advantage about cost and accessibility. | |
| **R62** | **A:** And they access from anywhere? | |
| **R63** | **T:** Yes, they can access from anywhere. In their case they mostly access their system from their own office but, it's a good advantage to not have to create a system which has to run 24hours (a day?) and can be access by 120 staff. To access the whole system from anywhere, it's not required to have a cloud ERP system. Accessing from the internet is enough. The advantage cloud ERPs have is cost and replying to changing demands with minimum cost. | Mobility Advantage<br><br>Performance and mobility advantage that lead also to cost reduction |
| **R64** | **A:** Okay, I see, so you say that this is the basic thing, the cost reduction? | |
| **R65** | **T:** Yes. I think the basic advantage is cost. For example, we have too many companies (customers) that hire or an application to access all servers, something like software as a service solution. They rent solution which they access from the internet but this is not a cloud solution. They have to pay the same money whether they access their servers with 100 or 200 staff or with just one person. | Dynamic size allocation and cost reduction benefit again |

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| **R66** | **A:** Yeah, they rent the server and services. I understand. So now we want to talk about disadvantages regarding cloud ERPs for big companies. What would say the disadvantages are for big companies? | |
| **R67** | **T:** I think it's a helpful technology for big companies, but they are very conservative about cloud system. They don't want to access their data from the internet, they don't want to store their data on a different location. Their main point is this, I think it's not a positivist or rational issue but I there is something absurd I think. They just have their own data on their own location. | Conservative approach of the management<br><br>Security, Don't want to store data outside the company |
| **R68** | **A:** So it's a psychological problem? | |
| **R69** | **T:** Yes, I think so. As I said before, the main advantages of cloud ERP systems, is for big companies I think. They have too much data, and they have to create IT infrastructure to create a system that runs 24/7 and they have to hire too much staff to run their system. They have to invest too much money to get enough servers or some networks. I think it's not something rational I think. But, most of our bigger customers, want to have their own data, they want to own their own servers at their location or they want to hire some hosting company. Not accessing their ERP system located at a ERP vendor or for example something like Amazon's cloud. They want to access their data from a hosting company that they have good contact with. | Psychological reasons not going to cloud since they can have cost benefits, TCO benefits and still are not moving to the cloud |
| **R70** | **A:** So they have concerns about security? | |
| **R71** | **T:** Yes. For example, in Turkey. There are too many (XXXX 37.35 - 38.00) . But the main point is, to accessing the whole IT process of Koch holding. Its similar for other companies. For example there is sabanji holdings, also Sabanji holding have an IT company. | Security Concern is important but they address it Turkey, at least big group companies by sub companies specialized in IT |
| **R72** | **A:** So they did on their own? | |
| **R73** | **T:** Yes. They have group companies and one of them is responsible of their IT operations. | |
| **R74** | **A:** And they don't want these things to change? | |
| **R75** | **T:** Yes. Because they have this solution and there is another opportunity to serve different companies with their IT company. | |
| **R76** | **A:** So this is why big companies don't want, because they already have their service and they don't want to change it for different reasons. | |
| **R77** | **T:** Yes. But I think this will change in about 5 five years. But current situation is that. | |
| **R78** | **A:** Okay. So at the moment, there is on-premise ERP, there is hosted ERP and there is cloud ERP. Do you think that there is one solution that is more suitable for SMEs and one more suitable for bigger companies? Also there is a hybrid solution, where some things are in-house and other on cloud. Do you think there is a more appropriate solution for different categories of companies? | |
| **R79** | **T:** Yes maybe. I think a hybrid makes some companies access services in a easy manner. Hybrid solutions change the mentality, some companies want to see the advantages of cloud system because most of them are not aware of this. Most ERP | So the point is that |

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| | customers are not about, they are not aware about IT. They look at IT system as just something to make their to work more efficient. They are in different markets, for example some of our companies are in the textile market, or market for car parts etc. So IT is just something to make their processes efficient. They therefore don't know the advantages of cloud system or advantages or ERP system. So I dont expect them to know all the advantages of a cloud system. There are different options like hybrid options, just like hosting or cloud or renting systems, can get customers closer to the cloud ERP concept. | companies are not fully aware of IT and Cloud ERP, they just try IT to become more efficient and a hybrid solution that is closer to the current situation can introduce them as a start to cloud ERPs |
| **R80** | **A:** So you think that, they would try cloud ERP, try some aspects of it in order to see the advantages? | |
| **R81** | **T:** Yes. But at the end of the day, a company which, for example, has five year ERP experience will not want a hybrid solution. I think if they know the advantages of a cloud ERP system, they may migrate their whole system to the cloud. Hybrid systems are just for one stage I think. | |
| **R82** | **A:** Okay, so you think it's just a small step towards the cloud, and then go fully cloud, especially the SMEs that don't have the previously mentioned problems? | |
| **R83** | **T:** Yes. Because most of our customers are not aware about the cloud ERP system advantages, pros and cons or how to access a cloud system or they don't have experienced staff about cloud systems. These are all factors. There are too many people, professionals that have no idea about cloud systems. | Lack of specialized staff regarding Cloud |
| **R84** | **A:** So there is a gap in experience. | |
| **R85** | **T:** I think, IT systems are getting better from day to day. But in the real world, adoption is slow. You know, everyone is using iPhone5, but too many of our customers are using, for example, 10 year old systems and servers. Because these require too much money, have a huge cost. So, improvements are slow. So they don't have any idea about cloud systems. But in the next five year for example, they will have. I can give an example of a company. I looked at their historical data and saw that this company firstly 1998, they created a renting concept, a really early solution I think, 1998 meaning that its about 15 years old. It's an early solution, but it failed because the economy atmosphere was not ready, IT infrastructure was not ready. In 1998, internet access cost was very high. So, this product, called Velocitas, failed. | |
| **R86** | **A:** Due to the infrastructure that was not advanced? | |
| **R87** | **T:** Yes, because the economy atmosphere, the technical atmosphere was not ready. | |
| **R88** | **A:** So you think that in the coming years, it will get better, cloud ERP will gain more acceptance? | |
| **R89** | **T:** It will become more popular. Maybe, in the next license costs will be dramatically lower. And maybe there will be some ERP solution with advertisement for example. | Gradually cloud ERP will get more popular and at the same time new paying models will be introduced like advertisment-powered applications |
| **R90** | **A:** What do you mean with that? | |
| **R91** | **T:** So you will be accessing an ERP system and there will be advertisement on your screen. | |

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| **R92** | **A:** Okay | |
| **R93** | **T:** My expectations are about this point. Because most of our customers don't want to pay for something like licenses, because licenses are too expensive. Now they have started trying to minimizing their costs, because it's really expensive, and cloud ERP systems will be popular in this regard I think. | |
| **R94** | **A:** But as you said, this is mostly for SMEs? | |
| **R95** | **T:** Yes, yes. | |
| **R96** | **A:** What do you think about the bigger ones? | |
| **R97** | **T:** I think, like I said before, there is conservative state. But, they will also be using cloud ERP systems, but I think it will be slower than for SMEs. | |
| **R98** | **A:** And more limited maybe? Keeping some parts in house and some other on the cloud? | |
| **R99** | **T:** Yes, yes. Because, bigger companies are more conservative, to change their systems, to make their system more technology. Because they have big infrastructures, and changing means costs and risks. | |
| **R100** | **A:** That true | |
| **R101** | **T:** Because, think about, you have factory, there are too many machines, and these machines serves data to your system, too much data to your system. Stopping this factory for just 5 minutes can cause too much damage. So, you must be very conservative in this issue. If you can't access your application servers for example, if you can't access your servers, this is a big problem. | Migration issues for Large companies |
| **R102** | **A:** I see your point. | |
| **R103** | **T:** It's a risky issue. I don't work directly at the systems department, but I know it's a very stressful issue, for our customers also. We have, one customer which accesses our application services from Dubai, and if the connection is lost, they directly call our systems department to try to get the system running again. I think it's a very big problem for big companies. | |
| **R104** | **A:** So the reliability is a very big issue? | |
| **R105** | **T:** Yes, yes, totally. | |
| **R106** | **A:** For big companies because they (have the biggest risk?) XXXX (51.38) | |
| **R107** | **T:** Okay. | |
| **R108** | **A:** Do you have anything else to add? I think we have covered everything, we don't have any more questions. | |
| **R109** | **T:** No, I don't have. | |
| **R110** | **A:** Okay. We would like to thank you very much for this conversation. | |
| **R111** | **T:** Okay okay, Vassilis. | |
| **R112** | **A:** It was very fruitful. | |
| **R113** | **T:** I will be thinking about you questions, and if I find something that are differs from what I have said, I will send an email. | |
| **R114** | **A:** Okay, thank you very much for that. | |
| **R115** | **T:** If you have enough time? | |
| **R116** | **A:** Yeah | |
| **R117** | **T:** If I find something new, we maybe can have another | |

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| | conversation next week. | |
| **R118** | **A:** Okay, thank you very much. | |
| **R119** | **T:** It was nice to talk to you. | |
| **R120** | **A:** Nice talking to you and again thank you. | |
| **R121** | **T:** Okay. | |
| **R122** | **A:** Bye | |
| **R123** | **T:** Bye | |

# Appendix 2d – Interview 4 transcript

5/5/2013

**Interviewer**: Vasileios Alexsopoulos
**Interviewee**: Anonymous

**V**= Vasileios Alexopoulos
**A** = Anonymous

| Row | Conversation | Comments |
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| **R1** | **V:** Let's start with an introductory question. Can you tell me some words for the company that you are working? What is the core business, what products and services do you offer? | |
| **R2** | A: The core business of the company is the providing of devices and services. The part of the devices is related to the mobility market that our company has entered and is a large trend through offering smartphones, tablets etc. On the part of the services we are observing the part of the cloud through which company wants to provide its software, through SaaS. Thus the strategy of the firm is to focus on SaaS. | |
| **R3** | **V:** What is your role in the firm? | |
| **R4** | **A**: Partner account manager. I am watching vertically the part of ERPs and CRMs products of the company. I am responsible commercially for all the part of this particular business. I have contact with existing but also prospect customers as well as with existing and prospect partners. The company works with partners and there is not direct contact with clients on the sales part. What we offer is the platform of the software and the partners provide their own vertical solutions built on it, as well as the implementation services and training on the platform. | |
| **R5** | **V:** At that moment which software delivery model do you support? Do you offer cloud based software? | |
| **R6** | **A:** Currently, ERP is not available through cloud but it will be soon. Our plan describes that for our ERP, as well as for the rest of our products, we will be able to offer hybrid solutions too. Thus, we will be able to offer on-premise, SaaS and hybrid solutions. | |
| **R7** | **V:** Can you give me a definition of cloud ERP according to the way you and your company perceive it? | |
| **R8** | **A:** It is exactly the same solution that we provide on-premise, which however is located on the cloud. This practically means that user has exactly the same experience, yet there is big difference both in maintenance and in management of the product from the IT staff. | |
| **R9** | **V:** How is the popularity of cloud ERP in the market currently? | |

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| **R10** | **A:** Cloud ERP especially when we talk about large facilities has trust issues from companies and it hasn't the same acceptance as e.g. desk software or mail servers on SaaS. The part of ERP, because it is considered the property of the company; the data of the firm, is a core product that especially medium and large companies, at least until now, prefer to have it on-premise. This fact is related with psychological decisions that companies take and not because there is some kind of security problem. It is proved that there is no actual security problem. In addition we should take in consideration that also on on-premise facilities there are security problems. The main issue is psychological, "I have critical data and I want it to be on-premise" and is extended on a more practical topic. This topic is that medium and large companies have an IT department that is hands-on on the part of ERP, in the sense that internal IT departments affect considerably the platform of ERP on the part of local parameterization, as well as on the part of BI that is set on the ERP and generally it wants to have full control of the application. | Security, trust. Not actual security problem but trust and mentality issue<br><br>Medium and large companies generally want to have full control of their applications. Separation between small and medium. |
| **R11** | **V:** Let's focus on SMEs. Reading through bibliography on the subject, we see a series of advantages that cloud offers. According to your opinion, which are the important benefits of cloud ERP, as SMEs perceive them, which could make them choose an ERP implementation and not a traditional on-premise installation? | |
| **R12** | **A:** The benefit of cloud ERP that SMEs consider to be the most important is the part of administration. SMEs appreciate the fact that having their ERP on cloud means that they don't have administration costs of the product, they don't worry about maintenance and management of the servers that exist in the company, also for the access of the users on these servers and for the infrastructure that is required to exist in the company to make possible this communication ability. Thus, the mobility that cloud ERP provides in combination with the zero investment needed, regarding the infrastructure and the maintenance of the product. These are very important advantages of the cloud that attract SMEs. | Lower operating costs of management and maintenance, as well as through avoidance of extra infrastructure which handles communication<br><br>Mobility |
| **R13** | **V:** You mentioned just now a series of benefits. The first one is the zero investment needed; the second is the avoidance of maintenance cost and the third, mobility. | |
| **R14** | **A:** Exactly. Surely mobility also exists on on-premise installations but the benefit that cloud offers on this to SMEs is that they avoid the installation and the maintenance of a whole infrastructure that serves this objective, something that has high cost but also requires effort from the HR of the company. Surely we need to remember that finally everything is compared through total cost and of course these people that on on-premise systems manage these infrastructures are costly. | Mobility exists on on-premise also, yet with extra cost |
| **R15** | **V:** Are there other benefits that cloud ERP offers to SMEs? | |
| **R16** | **A:** We could talk about the benefit of security that cloud provides. Practically for a SME to set up an infrastructure that provides high levels of security on its on-premise installation and to be able to also maintain it is difficult and demands | Security and disaster recovery capabilities a benefit for SME (while there are psychological |

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| | many resources. On a cloud installation from a big and trusted provider, this service is provided 100% as a part of the whole service without extra costs and is an extension of the benefit of cost reduction that I talked about previously. We could also argue about the capability of disaster recovery that cloud provider offers that again requires cost from the side of a SME to have it in-house. Even the fact that cloud provides the ability for scalable solutions is a big benefit that has high value for companies that have seasonality. The ability that a company has to increase and reduce users based on the needs that emerge on certain time periods. This again is connected with the cost topic since the cost of usage of the system is calculated based on the needs and is not fixed on the level of max needs that would be applied on an in-house system. | doubts)<br><br>Disaster recovery<br><br>Scalability through fluctuation of users for companies with seasonality |
| **R17** | **V:** Does this characteristic of seasonality applies also to large companies in order to support that this, the cloud ERP benefit of scalability is relevant also for them? | |
| **R18** | **A:** We can say that on these companies too can exist seasonality on their needs that can be encountered from a cloud ERP. It is not a frequent phenomenon on ERP, especially because of the way that we have handled it here, and I refer to the complexity that characterizes most of the ERP solutions which affects how we can serve possible seasonality. Let's take the example of productive companies that may have seasonality. There is seasonality on the demand for production but it is not translated as seasonality on the number of ERP users. There is maybe seasonality on the number of workers or the employees of the call center but these most likely are not users of an ERP but users of a platform that approximates a CRM platform. Usually ERP users are much more core users and therefore seasonality of a company hardly affects them. However on companies that work in retailing we can talk about seasonality that affects even ERP users. There are platforms like ours also that serve retail solutions with the users being at the same time ERP users. Nevertheless, in my opinion, retailers prefer not to fluctuate their ERP users, since they consider it a more secure option. In addition, medium and large retailers usually have a big and competent IT department. These two characteristics force them, at least for the moment, to keep and maintain their ERPs on-premise. In the future however this may change. | Scalability of cloud can serve seasonality even of big companies, yet at least in Greece big companies prefer not to add and remove ERP users<br><br>Industry seems to play a role in how much of a benefit scalability of cloud ERPs is.<br><br>Medium and large have IT departments which contribute to them wanting to keep their ERP on-premise. Separation between small and medium. |
| **R19** | **V:** Let's talk now about possible characteristics of cloud ERP that drive away SMEs from the implementation of a cloud solution. | |
| **R20** | **A:** I could say that cloud repels mostly in terms of psychology, since insecurity is created by the fact that the control of the system and the data of the company are given to another company. To tell you the truth, especially in small and medium companies I feel that the future will show that they will outsource almost all their infrastructures, not only because this is indicated by the current trend but also because this is the business model that can be proven profitable for them. I think that in the future for a SME to be profitable it will need to run only its core business, which in the case of | Insecurity, lack of control of system and data.<br><br>Future predictions. SMEs will move more towards to the cloud as |

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| | businesses that don't deal with IT, it is definitely not ERP. I consider that it will emerge a trend that all the supportive mechanism of a SME and I'm not talking only about ERP but also e.g. the part of finance, to become outsourced to third parties. So in this logic and looking at cloud ERP as SaaS and thus as a form of outsourcing I think that it will move towards there more easily for SMEs than large companies. For the time being however, the thing that I could characterize as disadvantage is the sense of lack of control of the data. | well as outsource more parts of the business to the cloud<br><br>Lack of control |
| **R21** | **V:** So we are talking about a matter of mentality and not about a real security issue. | |
| **R22** | **A:** A real problem of security doesn't exist. If we assume that it exists it would be much smaller than the problem that a SME encounters because not only it has constructed an infrastructure of security that can barely maintain but also because it faces the potential according to which any technician that has access on the application, either through the company or from distance, in order to solve a problem to have the ability to take a backup of the whole database and in reality steal all the data of the company. So this claim is very strong to convince SMEs, that don't have the ability to maintain infrastructures and the HR that is required for creating high levels of security, that the problem is much bigger in on-premise installations. However, when we discuss about large companies that usually are very concerned about the topic of security and have the ability to set up and maintain excellent infrastructure, things are different since they prefer this important matter of security to be handled by them. For SMEs is very difficult to implement models of security that cloud providers can offer. Nevertheless, it is difficult to convince the owners even of small companies to move their data and outsource it to a third party and I'm talking mostly about the mentality in the Greek region. On more western countries maybe this is easier and businessmen are more acceptable and knowledgeable about what means working in a SaaS environment. | Actual security issues non-existent, only psychological. Actually a benefit since SMEs don't have the resources to keep up a high level of security on-premise.<br><br>Large companies very concerned about security. They often have the ability to set up good security themselves, and therefore want to handle issues of security themselves.<br><br>SMEs have a hard time to match the security levels of cloud ERP providers<br><br>Suggests that level of mentality issues varies between countries and cultures. |
| **R23** | **V:** From my understanding you are claiming an issue of lack of knowledge and experience around the cloud that makes the implementation of cloud solutions more difficult. | |
| **R24** | **A:** Exactly. To what extent companies know what means cloud is a very important issue that affects the development of this type of solutions. Moreover, it is very important how much us, the persons of IT, contribute to make them understand. IT people have an important role on the part of users' training. In fact we are conducting the training. We can't expect from a businessman, especially from those who run SMEs, who engage with dozens of things in order to run properly their business and are not familiar with IT issues, to know all the new dimensions and the features of the cloud in order to feel safe. In addition, SMEs businessmen usually have an external IT provider that will offer them solutions that they need and will solve their problems because they don't have the ability to afford an internal IT department. Many | SMEs don't have knowledgeable IT people. A SME businessman can't be expected to know everything about cloud ERPs for him to feel safe. SMEs therefore often have a external provider that they trust and that will solve their problems as they don't have an their own IT department ( provider for on-premise solution implied) |

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| | times they trust easily this provider after a long time of collaboration and if this partner doesn't support strongly a solution or a move to the cloud then the businessman won't take the decision alone, since he doesn't want to change this relationship of trust with the IT provider. Especially in Greece and other markets which are not extensive, such personal relationships are well developed and to overcome them is a challenge for businessmen. Therefore we understand that an IT provider, even if he knows about cloud and its benefits, will not discuss it with the client, since he is afraid that he will lose him if his product is not available through the cloud, either because he hasn't made it yet cloud based or because he considers that the investment that is needed to enter this market is not affordable, based on the current financial crisis reality or because the power of inertia is strong and he prefers to continue with the on-premise solutions he already offers. Moreover, maybe he doesn't want to deal with the cloud and thus he doesn't inform clients about it, because he might think that the profit margin will be smaller instead of working with on-premise systems. All these affect both the IT partner and the final client. I want to emphasize that the power of inertia is very important. In fact, very few SMEs currently don't have ERP and the reports show that they change their ERP once every 10 years. Therefore it exist a relative stability on the market with a trend that shows that this duration grows larger and not decreasing. Thus we are observing great Inertia on the market that can be translated as " I have it, it works, I'm ok with that, why should I change it? Do I have much more to gain through a change with the cloud in order to justify the cost of change in contrast with the current solution that works fine? ". On the other hand, the partner expects smaller profit margins through cloud since the customer needs less support from him, thus he considers going to the cloud as bad for his profitability. | Trusty providers play an important role for SMEs if they should go cloud.<br><br>Strong relation with a provider can be troublesome and hard to overcome. An ERP provider whom a SME trust may not recommend going to the cloud because the provider would lose their business or have reduced profits.<br><br>Partners think that cloud ERPs are bad for their business since they would lose out income on consultancy. |
| **R25** | **V:** You talked about the cost of migration to the cloud for the SME client. There is research however that shows that on the long-term SMEs can achieve great cost reduction on the usage and maintenance through cloud. | |
| **R26** | **A:** That's true. There are studies that show that for SMEs can occur on the long term cost reduction which however is not significant especially if the company doesn't have a business model that has seasonality, periodical increase/decrease in needs for resources. That happens because the on-premise price model decreases. The price that the client was paying to the partner for maintenance e.g. from 60 euro has lowered to 40 euro therefore we are discussing an important price reduction that decreases the difference between cloud and on-premise systems. Moreover, the servers and generally the hardware that is required for an in-house system can be bought now on lower prices and someone can presume that this falling trend will continue. So the on-premise model is not a fixed priced model to conduct a secure comparison. | Cost discussion |
| **R27** | **V:** It is very interesting this thing you are telling me especially for the SMEs since there are many articles that | |

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| | support cost reductions between 30% and 40% through cloud. | |
| **R28** | **A:** I can tell you that at least in Greece these differences on the final prices are not like that. I will explain what I mean. When you start a negotiation, prices come from pricelist and the differences are according to what you stated. But when you compare the actual prices that the customer buys an on-premise system you realize that the price is significantly lower. E.g. there are cases of on-premise installations that local ISVs provide licenses free and charge only the implementation services, which are almost the same as cloud, and the maintenance fees which usually are also offered with price reductions. So these data that you told me are true but when we talk about pricelists and not about real prices that finally the customer pays. That is also because contrary to on-premise installations, cloud installations offer minimal margins of costs reductions. In our company we don't discuss about price reductions on the cloud but for on-premise we surely discuss. So we need always to consider the current conditions of the local market when we discuss cost models. This is not applicable only in Greece but also for many countries of the Central and Eastern Europe. | More cost discussions and difference between pricelists and real costs between cloud and on-premise<br><br>Difference in potential cost reductions between on-premise and cloud |
| **R29** | **V:** Let's talk now about large companies and the opportunities they have from the implementation and usage of a cloud ERP taking into consideration that a large company has possibly already made an important investment on the on-premise ERP. | |
| **R29** | **A:** I will explain. Depending on where a large company has focused, can be possible for parts of the solution that the company has implemented to be beneficial to move them to the cloud. Usually this part for a big company is not ERP because they have made a large investment on it and therefore it is difficult for them to move to cloud. A big company can consider a cloud solution if it has significant seasonality that can affect the the ERP users with the typical example of the retailing industry. Another benefit that applies for all companies is the transition of ERP from a capital expenditure model to an operating expenditure model. Surely this model is not only provided through cloud. I mean that there are cost models according to which a company can lease the licenses of its on-premise installation, giving also the sense of the operating cost model. | Hybrid for large companies<br><br>Investments already made in current ERP<br><br>Benefit of the cloud depends on the individual company, the industry its in.<br><br>Scalability = benefit for big companies<br><br>Capex to opex= benefit for all companies. However leasing of n-premise licenses is a type of limited opex model |
| **R30** | **V:** But on that way the company doesn't save costs from the initial capital investment related to the infrastructure, something that applies on the cloud. | |
| **R31** | **A:** That's true. Cloud by default is purely opex. It provides the benefit of the avoidance of the initial capital investment on infrastructures but also the benefit that cloud services are considered as operating costs. I just argue that that even on an on-premise installation through subscription model and on the level of licenses, a company can transform a part of the total cost from capex to opex. Truth is that I can't think about any | Elaboration of opex nature of cloud contrary to limited ability for that by on-premise |

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| | other possible reason that can make a large company to move the ERP to the cloud. | |
| **R32** | **V:** Let's talk about the features of the cloud and the characteristics that make the transition from the on-premise to the cloud for large companies difficult. | |
| **R33** | **A:** The large investment that usually large companies have made on their ERP solution, as well as the staff that manage and maintain it. These people especially in the case of the ERP are very important because they don't have only technological background to engage themselves only with maintenance and solution of problems, but have also business expertise, which transforms them to a basic part for the precise and optimal usage of the company's system. They are people that have a good knowledge of the company's business model and support considerably the company based on it, having the ability to implement fast and parameterize the system depending on the new needs that can emerge on the competent environment we are living. Cloud offers many technological advantages but cannot help a large company to change the way the company wants its ERP to work in order to satisfy whatsoever changes on the business plan. Cloud vendors cannot know how the company wants to change its business plan. Especially large companies want these changes to be fast realized so as to be instantly reflected on the ERP platform. In order for these changes to be instantly reflected that means that the company has people inside the company that cannot sack even if they wanted to. On these aspects people are needed that are experts on the business but also instantly connected with the platform. So, since the company needs them and cannot cancel their positions, the company considers that even on the cloud the company can't benefit much from wages reduction. This applies because most of the IT cost is not on the technological part and on people who have the role of technicians, but on the business part, on the consultants that know the business of the company much better from any vendor and thus are very expensive and needed even in the cloud environment. So the benefit of the outsourcing, which is very important for SMEs as we said before, on large companies is much lower because they still need the people that have good knowledge of the business model and can apply it on the ERP. So a large company can benefit from the cloud financially through the reductions on the technological part, in infrastructure and technicians. But as we said this is not the big part of the cost. In addition we need to mention that at this moment the cloud models that are available on the market support mostly a form of fixed installation that doesn't support the ability for whatever changes are needed so that companies' business needs to be served accordingly. On the contrary, the on-premise model provides the capability to the companies to do whatsoever customization they need and large companies can exploit it since they have the funds and the people to support it in contrast with SMEs and mostly small companies. | Big investments already made in existing ERP solution and IT-staff.<br><br>IT staff is a valuable asset to big companies as they know its business (model) as well as posses IT knowledge. Can rapidly implement and customize the ERP according to changing needs,.<br><br>Customizability of cloud ERPs limited. Cloud ERP offers technological advantages but cannot be changed into how an individual company wants it to work (at least not fast enough).<br><br>IT staff needed in order to make rapid system adaption<br><br>SMEs benefit more. Large companies still need their IT staff that can apply the ERP to their business model.<br><br>Most cloud ERP solutions fixed. +limited customizability.<br><br>Large companies on the other hand can better utilize the customizability of on-premise solution as they possess the funds and IT people to make this |

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| | | happen. |
| **R34** | **V:** So cloud ERP doesn't provide great capabilities of customization. | |
| **R35** | **A:** I'm saying that is not recommended to change the source code of the application that runs on the cloud. However, a vendor could come and claim that he provides the same capabilities of customization on the cloud like on-premise. In any case however this is not a recommended and safe practice based on the facts right now. | Changing source code not a safe practice. |
| **R26** | **V:** Can you give me an estimation on the future of the cloud ERP on SMEs but also on large companies? | |
| **R37** | **A:** I think that the future will be characterized by hybrid solutions. I can't say that I predict only on-premise or only cloud. More specifically I predict that cloud will enter the market and take a significant part but because ERP is a solution and not just an infrastructure I predict that a part will remain on-premise for the reasons we discussed before. Surely on SMEs the percentage of cloud will be much higher than large companies. I would like to finish with the following. Our current estimations can due to other circumstances change. Currently we are observing a big trend towards the cloud that exists but we are not sure what the success rate will be since the market is dynamically changing with great speeds. | More hybrid for both SMEs and Large companies.<br><br>Cloud market will grow, but parts of the ERP will remain on-premise.<br><br>SMEs will move much more to the cloud than large companies.<br><br>Hard to predict the future of cloud ERP due to rapidly changing market. |
| **R38** | **V:** I think that was all, thank you for the valuable information you provided us. | |
| **R39** | **A:** No problem, I hope I helped you enough with your research. | |
| **R40** | **V:** Sure, good day to you. | |
| **R41** | **A:** Bye**!** | |

# Appendix 3a – Interview 1 original transcript

9/4/2013

**Συνέντευξη με θέμα: "Cloud ERP adoption. SMEs vs Big companies"**

**Βασίλειος Αλεξόπουλος**

**Πείτε μου δυο λόγια για την εταιρία στη οποία εργάζεστε. Ποίο είναι το core business της, το μέγεθός της και τι προϊόντα και υπηρεσίες προσφέρει**

Η Softone ιδρύθηκε το 2002 με σκοπό να παράγει business software. Το 2005 έκανε το πρώτο official launch του πρώτου προϊόντος της στην ελληνική αγορά και ταυτόχρονα είμασταν η πρώτη εταιρία που εφήρμοσε το μοντέλο του subscription. Αυτό σήμαινε πρακτικά πως οι πελάτες θα μπορούσαν να αποκτούν το λογισμικό υπό μορφή ενοικιάσης παρά να αγοράζουν ένα license. Η εταιρία μας προωθεί τα προϊόντα και τι υπηρεσίες της μέσω channel partners. Direct business απευθείας σε πελάτες γίνεται μόνο σε λίγες περιπτώσεις και αν το κάνουμε το κάνουμε για στρατηγικούς λόγους. Τρία χρόνια αργότερα είμασταν η πρώτη, πάντα ελληνική εταιρία, που εφήρμοσε το SaaS μοντέλο και το 2011 είμασταν οι πρώτοι που εφήρμοσαν cloud on Windows Azure της Microsoft. Σήμερα η εταιρία μας έχει 300 channel partners και 12,500 πελάτες. Εκτός από την Ελλάδα εξυπηρετούμε πελάτες στην Βουλγαρία, Ρουμανία, Κύπρο, Μάλτα, Σερβία και Ρωσία. Αυτό που μας διαφοροποιεί σήμερα απ'όλους τους άλλους ανταγωνιστές μας είναι ότι έχουμε τη δυνατότητα να δίνουμε λύσεις ERP on the cloud, το οποίο εγώ θεωρώ ότι είναι το ισχυρότερο πλεονέκτημα μας σε σχέση με τον ανταγωνισμό. Και το δεύτερο κυριότερο στοιχείο μας είναι ότι έχουμε αναπτύξει και όλα τα mobile και web solutions τα οποία κλειδώνουνμαζί μ'ένα back office σύστημα. Δηλαδη το ERP λειτουργεί συνήθως ως ένα back office σύστημα, αλλά οι επιχειρήσεις έχουν σήμερα τη δυνατότητα να λειτουργούν μέρος του functionality του προϊόντος μας, π.χ ένα CRM, μέσω κινητών τηλεφώνων.

**Θα ήθελα να σας κάνω μια ερώτηση που δεν ήταν προγραμματισμένη για τόσο νωρίς αλλά τα λεγόμενά σας την φέρνουν στο προσκήνιο. Μου είπατε ότι δουλεύετε ,μέσω channel partners.**

Ακριβώς.

**Αυτό όσο αφορά το SaaS, δεν αντιβαίνει λίγο με τον όρο, με την έννοια ότι SaaS σημαίνει ότι ο πάροχος παρέχει υπηρεσίες as a service κατευθείαν στον πελάτη. Οι partners πως μπαίνουν στη μέση, δεν υπάρχει ένας κίνδυνος γι'αυτούς?**

Γιατί να υπάρχει κίνδυνος? Αντίθετα ο partner δίνει περισσότερες λύσεις στον τελικό χρήστη. Ο τελικός χρήστης είναι αυτός που θα αποφασίσει αν θα λειτουργήσει με εσωτερική μηχανογράφηση ή θα έχει τη μηχανογράφισή του hosted κάπου.

**Αν σε 2-3 χρόνια το SaaS δεν είναι απλά ένα trend, αλλά αντίθετα χρησιμοποιείται μαζικά, δεν θα εκλίψουν αυτοί οι partners?**

Όχι, δε μπορούν να εκλίψουν γιατί μην ξεχνάς ότι χρησιμοποιείς τη λέξη ERP, που σημαίνει ότι παρέχουμε όλα τα modules που χρειάζεται μια επιχείρηση για να λειτουργήσει. Όταν μιλάμε για μικρές επιχειρήσεις και πάμε προς τις μεσαίες, το functionality μεγαλώνει.

**Άρα η ανάγκη για consulting παραμένει.**

Ακριβώς.Οπότε έχω περισσότερη δουλεια να κάνω για να στήσω τις διαδικασίες μιας μεσαίας επειχήρησηςαπ'ότι έχω σε μια μικρή. Υπάρχουν τρια κομμάτια. Αγοράζει το software ο πελάτης απ'τον channel partner, το οποίο ο channel partner αγοράζει από εμας και στη συνέχεια έχουμε τα implementation services. Δεν πρέπει ο συνεργάτης να πάει να προσαρμόσει τις απαιτήσεις του πελάτη στο προϊόν?

**Θεωρητικά όμως τα cloud ERP δεν δίνουν μεγάλα περιθώρια για customization στα μέτρα του πελάτη, αντίθετα επιτρέπουν configuration.**

Σωστά το θέτεις. Το δικό μας το προϊόν είναι fully configurable, extendable και αυτό εννοούμε ότι το περισσότερο business που είναι ενσωματωμένο μέσα στο προϊόν μας δεν είναι hard coded μέσα στο προϊόν. Που σημαίνει πως αν ο πελάτης θέλει να αναπτύξει ιδιαίτερα πράγματα θα μπορεί ο συνεργάτης μας να τα αναπτύξει και αυτή είναι η μεγάλη μας διαφοροποίηση με τα διεθνή προϊόντα όπως της SAP, Netsuite κτλ. είναι ότι με το δικό μας το προϊόν μπορείς να κάνεις mould, να προσαρμόσεις τις διαδικασίες όπως τις θέλει ο πελάτης σε αντίθεση με τα ξένα προϊόντα που λένε «έτσι θα δουλέψεις».

**Δινετε και APIs πάνω στα οποία μπορούν οι πελάτες να χτίσουν?**

Δίνουμε APIs για τα web services. Η φιλοσοφία μας ήταν η εξής, επενδύσαμε σ'αυτό το προϊόν ώστε να μπορούν οι χρήστες να είναι αυτόνομοι, να μην βασίζονται τόσο πάνω σε IT staff. Αν θέλει ο χρήστης να εξάγει μια συγκεκριμένη πληροφορία για να αποφασίσει κάποια πράγματα, παραδοσιακά έπρεπε να απευθυνθεί στο IT της εταιρίας του ή να επικοινωνήσει με την εταιρία που παρέχει τεχνική υποστήριξη. Στο δικό μας το προϊόν εμείς δίνουμε στο χρήστη όλα τα διαθέσιμα πεδία του προϊόντος με καθαρές και αυτονόητες περιγραφές και ο χρήστης με drag n drop μπορεί να προσθέσει τα πεδία που θέλει σε μια λίστα έτσι ώστε να πάρει το report που θέλει, χωρίς να χρειάζεται να είναι power user για να κάνει κάτι τέτοιο.

**Άρα μιλάμε για ένα cloud ERP με πολύ μεγάλο functionality.**

Εγώ δεν είπα ότι το προϊόν μας είναι cloud. Αλλά ότι το προϊόν μας είτε δουλεύει on-premises είτε on cloud δεν έχει διάκριση.

**Το λέω αυτό γιατί στη βιβλιογραφία αναφέρεται πως τα cloud ERP παρέχουν μικρότερα περιθώρια customization και functionality.**

Όχι. Το καλό της υπόθεσης είναι ότι όταν δουλεύει μια εφαρμογή δική μας στο cloud, που σημαίνει ότι είναι hosted στο data center της Microsoft, έχει πρόσβαση ο channel partner

στην εγκατάσταση σα να ήταν εγκατεστημένη τοπικά στην εταιρία. Μπορεί να μπει μέσα και να κάνει ότι αλλαγή θέλει live εκείνη τη στιγμή.

**Μπορείτε να μου πείτε δυο λόγια για το ρόλο σας στην εταιρία?**

Ο ρόλος μου είναι international business development, δηλαδή η δημιουργία αγορών στο εξωτερικό για την εταιρία μας, πάντα προσπαθώντας να ακολουθήσουμε το ίδιο business model. Δηλαδή εμείς να παράγουμε το λογισμικό και τις τεχνολογίες και οι channel partner μας να εφαρμόζουν τα solutions στους τελικούς χρήστες. Άρα οι συνεργάτες μας είναι αυτοί που δίνουν τις λύσεις μας στον πελάτη χρησιμοποιώντας το δικό μας προϊόν. Και θα ήθελα να επισημάνω ότι το δικό μας προϊόν δεν είναι μόνο ένα business software αλλά επίσης ένα development platform. Αυτό σημαίνει ότι δίνει τη δυνατότητα με τα ενσωματωμένα εργαλεία που έχουμε, να μπορεί ο συνεργάτης να αναπτύξει ότι λύση θέλει ο πελάτης. Το distribution model είναι είτε on-premise license based, δηλαδή ο πελάτης αγοράζει το λογισμικό αλλά είναι υποχρεωμένος να αγοράζει και maintenance services πάνω στο software, είτε υπό μορφή subscription, είτε on cloud.

**Πώς ακριβώς ορίζετε το cloud-ERP, ποιά είναι τα χαρακτηριστικά του?**

Το βασικό χαρακτηριστικό του είναι ότι το λογισμικό, το ERP δηλαδή, το οποίο θα εξυπηρετήσει τους χρήστες θα είναι hosted σε κάποιον server σε multitenant environment, σε μία βάση δεδομένων δηλαδή εξυπηρετούνται πολλοί πελάτες, η επικοινωνία πρέπει να είναι μέσω internet, και το προϊόν θα πρέπει να εξυπηρετεί ουσιαστικά όλα τα modules που θα είχε έως και μία πολύ μεγάλη επιχείρηση. Το ERP δεν περιορίζεται σε CRM και ηλεκτρονική τιμολόγιση αλλά περιλαμβάνει modules που χρησιμοποιεί μια εταιρία που έχει παραγωγή, π.χ supply chain και manufacturing.

**Οπότε το προϊόν σας απευθύνεται και σε τέτοιου είδους εταιρίες**

Εμεις απευθυνόμαστε κατά κύριο λόγω στις SMEs. Ωστόσο το προϊόν έχει παραχθεί για να μπορεί να εξυπηρετεί τις μεγάλες επιχειρήσεις. Το κάναμε αυτό για να μπορούμε να κάνουμε downsizing. Δηλαδη εφόσον μπορούμε να εξυπηρετήσουμε τις μεγάλες επιχειρήσεις. Είναι πολύ πιο εύκολο μετά να κατέβουμε προς τα κάτω ως προς το μέγεθος του πελάτη. Αν αντίθετα φτιάξεις ενα προϊόν πάνω στις ανάγκες των μικρών επιχειρήσεων είναι πολύ πιο δυσκολό μετά να το μεγαλώσεις και να πας στις μεγάλες. Άρα απ'την αρχή το φτιάξαμε για τις μεγάλες έτσι ώστε να κατεβαίνει πιο εύκολα στις μικρότερες.

**Ποιά είναι η απήχηση των cloud ERP στην αγορά αυτή τη στιγμή? Τι λέει το δικό σας market research. Ποιοί είναι οι χρήστες του, οι μικρομεσσαίες επιχειρήσεις ή και οι μεγαλύτερες?**

απ'τους 12.500 πελάτες μας αυτή τη στιγμή, περίπου οι 300 είναι μεγάλες επιχειρήσεις.

**Πως φτάνει η συζήτηση στο cloud ERP? Έρχονται ενημερωμένοι και σας ρωτάνε οι ίδιοι, ή τους ενημερώνετε εσείς για τη συγκεκριμένη δυνατότητα?**

Το marketing strategy που εφαρμόζουμε έχει τρία κομμάτια. Το πρώτο είναι μέσω διαφήμισεων σε τηλεόραση, στο internet μέσω της Google και social media. Η δεύτερη προσέγγιση είναι πως ενημερώνονται όλοι οι συνεργάτες μας μέσω είτε μαζικής αποστολής email, είτε μέσω ενός portal στο οποίο μορεί να μπει ο κάθε partner και να δει οτιδήποτε νέο έχει μπει στο προϊόν μας, οτιδήποτε νέο κυκλοφορεί και να δει τις παραγγελίες και τα διάφορα requests προς εμάς κατά πόσο έχουν απαντηθεί. Οπότε έχουμε ενα υψηλό επίπεδο διαδραστικότητας με τους συνεργάτες μας και έτσι βρίσκουμε την ευκαιρία να τους ενημερώνουμε για νέα πράγματα. Το τρίτο κομμάτι είναι πως όταν οι χρήστες μπαίνουν στο προϊόν μας, στο landing page της εφαρμογής μας εμφανίζονται μηνύματα, banner που ενημερώνουν τον χρήστη για οποιαδήποτε νέα υπηρεσία όπως π.χ η νέα υπηρεσία για τα mobile applications. Επομένως έχουμε επικοινωνία σε όλα τα επίπεδα, ευρύ κοινό, συνεργάτες και με τελικό χρήστη μέσω του προϊόντος.

**Ας συγκεντρωθούμε τώρα στις μικρομεσσαίες επιχειρήσεις, που όπως είπατε είναι το core business σας και ας μιλήσουμε για τα πλεονεκτήματα και τις ευκαιρίες που παρουσιάζει η υιοθέτηση από μέρους τους ενός cloud ERP.**

Ωραία. Κατ'αρχήν να σου πω ότι απ'τις 12.500 εταιρίες που εξυπηρετούμε περίπου οι 250 είναι on cloud σήμερα και έχουν αθροιστικά 300 χρήστες. Αλλά όταν λέμε εμείς χρήστες εννοούμε concurrent χρήστες. Δηλαδή αν κάποιος αγοράσει 2 χρήστες από εμάς, μπορεί να εγκαταστήσει το σύστημα σε π.χ 300 pc, αλλά το πολύ δύο χρήστες θα δουλεύουν ταυτόχρονα πάνω στο σύστημα. Θα σου δώσω ένα παράδειγμα με ένα λογιστικό γραφείο που έχει π.χ 200 πελάτες. Οι λογιστές του εν λόγω γραφείου που εξυπηρετουν τους πελάτες του γραφείου μπορούν να δουλεύουν any time and any place. Δεν είναι υποχρεωμένοι να δουλεύουν στη εταιρία, μπορούν να πάνε στον πελάτη με το laptop τους.

**Άρα το πλεονέκτημα για το οποίο μιλάμε είναι το mobility της υπηρεσίας**

Το mobility είναι πάρα πολύ σημαντικό. Το κύριο όμως θέμα σε κάθε περίπτωση σε μικρή, σε μεσαία, σε μεγάλη επιχείρηση είναι η μέτρηση του opportunity cost. Αν πάμε στη μικρομεσαία αγορά θα πρέπει να υπολογίσει κάποιος πόσο κοστίζει να έχει ένα server μέσα στην επιχείρηση, η αγορά του δηλαδή. Πρέπει επίσης να αγοραστεί και το απαραίτητο λειτουργικό σύστημα. Επίσης ο server θα χρειάζεται maintenance γιατί όταν αλλάζει το software οδηγούμαστε σε αλλαγές και στο hardware. Το software οδηγεί την τεχνολογία του hardware. Αντιλαμβάνεσαι ότι πρέπει να υπάρχει και κάποιος που πρέπει να είναι υπεύθυνος για το maintenance.

**Μιλάτε για τα upfront και τα operating costs.**

Ακριβώς.

**Επομένως αναφέρεστε στο TCO του συστήματος.**

Πολύ σωστά. Το TCO είναι πολύ μεγαλύτερο όταν τα έχεις αγοράσει όλα αυτά ο ίδιος εσωτερικά στην επιχείρησή σου.

**Αν κάνουμε μια ανάλυση του TCO μακροπρόθεσμη, δηλαδή σε βάθος πενταετίας ή εφταετίας, δηλαδή κοντά στον κύκλο ζωής ενός ERP, τι δείχνουν τα στοιχεία?**

Τα στοιχεία δείχνουν πως τα χρήματα που θα δίνεις ετησίως μέσω subscription στο cloud, ενώ τη μηχανογράφηση σου θα τη διαχειρίζεται και θα την συντηρεί ο πάροχος, το ποσό αυτό που δίνεις κάθε χρόνο αν το αθροίσεις μετά από 6-7 χρόνια θα είναι σα να είχες αγοράσει όλη την υποδομή και να την είχες μέσα στην επιχείρηση σου.

**Το κόστος δηλαδή μακροπρόθεσμα είναι το ίδιο άλλα οι επιχειρήσεις γλιτώνουν την πολύ υψηλή αρχική επένδυση.**

Και όχι μόνο. Ειδικά για τις start-up εταιρίες. Γιατί οι start-up, ειδικα οι micro εταιρίες δεν ξέρουν κατά πόσο αυτό που πάνε να επιχειρήσουν ότι θα φέρει επιτυχία. Άρα τι λένε? Προτιμάνε να έχουν πολύ χαμηλό κόστος επένδυσης στην αρχή μέχρι να δούνε κατά πόσο αυτό θα περπατήσει. Γιατί να έχουν high capital costs, investment costs ή start-up costs στην αρχή όταν δεν ξέρουν αν το αντικείμενο της εταιρίας τους θα πετύχει ή όχι? Αλλά το έθεσες πολύ σωστά και θα πήγαινα στον όρο TCO. Πράγματι πρέπει να μετρήσει ο πελάτης το TCO, τα start-up costs και τα operational costs, κατά πόσο τον συμφέρει αυτόν να τα πληρώνει εσωτερικά μέσα στην επιχείρηση του. Και θα ήθελα να επιμείνω στον όρο του opportunity cost γιατί το αντικείμενο μιας επιχείρησης δεν είναι η μηχανογράφισή του, το αντικείμενό του π.χ είναι να πουλάει παπούτσια ή να εμπορεύεται κάτι άλλο. Άρα θα πρέπει όλο το effort να πηγαίνει προς το αντικείμενο παρά στη μηχανογράφιση.

**Κατάλαβα. Οπότε μου λέτε ότι το cloud ERP ελευθερώνει resources τα οποία μπορεί η εταιρία να επενδύσει αλλού.**

Ναι, όλα τα resources γιατί δεν είναι μόνο η απελευθέρωση των resources, το οποίο είναι ένα μεγάλο κομμάτι. Είναι επίσης ότι τα συγκεκριμένα resources θέλω να ασχολούνται με το αντικείμενό μου. Και ποιό είναι το αντικείμενο μου? Πώς θα γίνω πιο ανταγωνιστικός. Επίσης αντικείμενο μιας επιχείρησης είναι οι πωλήσεις που κάνει. Πάρα πολλές εταιρίες έχουν τμήματα πωλήσεων. Οι επιχειρήσεις αυτές προτιμούν οι πωλητές τους να είναι 80% του χρόνου τους έξω στο δρόμο, στην αγορά, παρά να χρειάζεται να πηγαίνουν συνέχεια στην εταιρία για να παίρνουν και να δίνουν στοιχεία έστι ώστε να εξυπηρετούνται παραγγελίες κτλ. Με την τεχνολογία του cloud θα μπορούν οι πωλητές με τα δικά τους τα pads, notebooks, laptops να είναι συνεχώς έξω στην αγορά και να ενημερώνονται σε πραγματικό χρόνο όλα τα στοιχεία έτσι ώστε να μπορούν άμεσα να εξυπηρετήσουν τους πελάτες τους.

**Οποτε μιλάμε για real time ενημέρωση που συνδυάζεται με τη δυνατότητα mobility.**

Ακριβώς. Αλλά και πάλι θα'θελα να σταθώ στα resources που η εταιρία θα επενδύσει πάνω στο competitive advantage που θα μπορούσε να έχει έναντι του ανταγωνισμού, έτσι ώστε να παρέχει καλύτερα προϊόντα και υπηρεσίες. Και αυτό γίνεται όταν το προσωπικό της εταιρίας είναι στοχευμένο πάνω στο αντικείμενο της εταιρίας και όχι σε IT θέματα. Και φυσικά παίζει σημαντικό ρόλο πόσο ισχυρό είναι το ERP έτσι ώστε να μπορεί να τους δίνει την πληροφορία που θέλουν όπως την χρειάζονται.

**Να φανταστώ πως πλεονεκτήματα όπως scalability, flexibility etc τα θεωρούμε δεδομένα?**

Ναι, αυτά εννοούνται. Δεν μπήκα καν σ'αυτόν τον κόπο γιατί τα θεωρώ αυτονόητα. Όσο μεγαλώνει μια επιχείρηση, στο cloud μπορείς να μεγαλώσεις και το database, είναι και αυτό scalable. Επίσης μπορείς να κάνεις extend και άλλα, third party προϊόντα πάνω στη δική σου την εγκατάσταση. Όπως εμείς έχουμε. Ναι μεν έχουμε ενσωματωμένο BI σύστημα στο προϊόν μας, αλλά για πολλά data έχουμε ένα τρίτο προϊόν, το clickview που είναι ένα dedicated BI σύστημα το οποίο δουλεύει και αυτό on cloud.

**Άρα έχουμε μεγάλες δυνατότητες integration με άλλα προϊόντα**

Ακριβώς.

**Ωραία. Αφού αναλύσαμε τα σημαντικά πλεονεκτήματα που ζητάει αυτή τη στιγμή ο κόσμος και αυτά που αντιλαμβάνεστε εσείς ώς σημαντικά, θα μπορούσαμε τώρα να αναφερθούμε σε πιθανά μειωνεκτήματα του cloud ERP, ή αλλιώς στις ανησυχίες που εκφράζουν οι πελάτες και τους απωθούν απ'το να πάνε το ERP τους on cloud.**

Εννοείς να μιλήσουμε για τους λόγους που οι εταιρίες δεν πάνε ακόμα στο cloud.

**Σωστά.**

Κοίταξε, ένα μεγάλο ποσοστό των εταιριών λέει ότι εγω θέλω τα στοιχεία μου να τα έχω μέσα στο σπίτι μου, έτσι νιώθω ασφαλής. Αυτός είναι ο κύριος λόγος.

**Οπότε μιλάμε για mentality.**

Ακριβώς. Το θέμα είναι καθαρά ψυχολογικό. Θα μπορούσα να πω και κάτι άλλο, για το οποίο όμως δεν έχω αποδεικτικό στοιχείο. Όταν μια επιχείρηση την απαρτίζουν νέα παιδιά, ενδεικτικά μέχρι 35 χρονών (όχι σαν όριο), είναι άτομα τα οποία θα είναι σύγχρονα και στη σκέψη τους και έτσι τείνουν περισσότερο να πάνε on cloud. Το ίδιο σχύει και με τους channel partners, και ένα μερίδιο ευθύνης έχουν και αυτοί γιατί αυτοί δίνουν τις λύσεις στους πελάτες μας. Αυτοί είναι οι οποίοι πρέπει να πείσουν τους πελάτες να πάνε cloud. Αλλά αν οι partners οι δικοί μας είναι μεγάλοι σε ηλικία, και υπάρχουν πολλοί τέτοιοι, διστάζουν να προωθούν προχωρημένα πράγματα στους πελάτες τους, επειδή και αυτοί έχουν ανασφάλεια σ'αυτό.

**Είναι δηλαδή αυτό που είπαμε πριν, ότι οι partners ίσως να φοβούνται ότι δεν θα χρειάζονται, δε θα έχουν κάποιο ρόλο στο σύστημα δίαθεσης του cloud ERP.**

Θα μπορούσαμε να το πούμε κάπως έτσι, αλλά το λέω περισσότερο ηλικιακά οτι συμβαίνει αυτό. Το δικαιολογώ ηλικιακά το θέμα. Βέβαια πρέπει να πω ότι όταν οι partners αγοράζουν ένα license από μας και πάνε και το βάζουν στον πελάτη, νομίζουν ότι έχουν και τον έλεγχο του πελάτη και εμείς, δηλαδή ο πάροχος, δε μπορούμε να τους πάρουμε τον πελάτη. Και εκεί είναι πάλι ψυχολογικό το θέμα, γιατί αν ας πουμε δουλεύαν και οι 12.500 πελάτες on cloud, θα νιώθαν ψυχολογικά ότι δεν έχουν τον έλεγχο του πελάτη γιατί τον έλεγχο θα τον είχε ο ίδιος ο πάροχος.

**Δηλαδή υπάρχει ένα θέμα ελέγχου που θέλει να έχει αφενός ο πελάτης πάνω στα data του και αφετέρου ο partner πάνω στον πελάτη?**

Δε θα ήθελα να χρησιμοποιήσουμε τη λέξη έλεγχο για τον πελάτη. Καλύτερα θα έπρεπε να πούμε πως ο πελάτης έχει την ανασφάλεια να μην γίνει διαρροή των πληροφοριών που έχει στην εταιρία του στους ανταγωνιστές και αυτό συμβαίνει κυρίως σε πληροφορίες που αφορούν financial aspects της επιχείρησης. Κάθε εταιρία μαγειρεύει πράγματα όπως νομίζει εσωτερικά μέσα στην επιχείρηση και αυτά φοβάται να τα κάνει πάνω στο cloud διότι τα σοιχεία του είναι κάπου αλλού.

**Παρόλα αυτάοι πιστωτικές μας κάρτες βρίσκονται στο internet**

Φυσικά, και όχι μόνο. Το πιο τρανταχτό και αψυχολόγητο παράδειγμα είναι το gmail. Πάρα πολλές εταιρίες, και εμείς οι ίδιοι στην εταιρία μας δεν έχουμε δικό μας web server για να εξυπηρετούμε τα email μας. Είμαστε σε gmail απ'το 2006, εταιρικό gmail. Τα mail μας εξυπηρετούνται απ'την google.

**Και τα mails σε μια εταιρία αποτελούν το πιό σημαντικό κομμάτι της επικοινωνίας.**

Ακριβώς. Και σε μας εξυπηρετούνται μέσω gmail.

**Υπάρχει κάποιος άλλος ανασταλτικός παράγοντας για την υιοθέτηση cloud ERP? Ίσως κάποιος εξωγενής, που να μηνέχει να κάνει με το προϊόν αυτό καθ'αυτό?**

Θα έβαζα στην κατηγορία των κινδύνων το ενδεχόμενο το κράτος μέσω ρυθμίσεων να έλεγε ότι τα data των εταιριών της χώρας τα θέλω να φυλάσσονται εσωτερικά, μέσα στη χώρα.

**Οπότε το κατά πόσο μπορεί να αλλάζουν οι νομοθεσίες που ρυθμίζουν τέτοια θέματα αποτέλει έναν υπαρκτό κίνδυνο.**

Ακριβώς. Θα ήθελα να προσθέσω και ένα weakness και αναφέρομαι στο λεγόμενο gap inexperience. Ένας ο οποίος θα αποφασίσει να πάει στο cloud δεν έχει την εμπειρία και τη γνώση του τι σημαίνει να πάει στο cloud. Γιατί είναι weakness αυτό? Κατά πόσο έχουν ενημερωθεί και πόσο καλά έχουν κατανοήσει οι πελάτες τι σημαίνει να πας στο cloud? Όσο ωραία και να το διαφημίζουμε, σου λένε οι πελάτες «μα πόσοι είναι στο cloud σήμερα?». Στην Ελλάδα έχουμε περίπου 750.000-760.000 επιχειρήσεις. Αν ξαφνικά το 1/3 πήγαινε on cloud τότε η πιθανότητα να ακολουθήσουν και οι υπόλοιποι είναι πολύ μεγάλη διότι υπάρχει μια μάζα, μία τάση, ένα trend καλύτερα ότι όλοι πάνε προς τα εκεί. Αλλά τα στατιστικά είναι πολύ λίγα ακόμα για να μπορεί κάποιος να πεισθεί και να αποφασίσει να πάει εκεί αφενός, και αφετέρου δεν πιστεύω ότι υπάρχει αρκετή γνώση και ενημέρωση του τι σημαίνει να πάει on cloud.

**Με βάση το feedback που παίρνετε απ'τους πελάτες σας και όσα μαθαίνετε απ'το R&D τμήμα της εταιρίας σας, πως σχεδιάζετε να αντιμετωπίσετε τα όποια προβλήματα? Υπάρχει κάποια πολιτική που θα ακολουθήσετε έτσι ώστε να δώσετε ώθηση στο cloud προϊόν σας?**

ένα απ'τα πράγματα που κάνουμε και το απαντώ ευθέως είναι ότι εμείς λέμε στους πελάτες πως τα data σας δε βρίσκονται αποθηκευμένα σε κάποιο τυχαίο datacenter. Βρίσκονται στο datacenter της Microsoft. Και όταν τους δείξει κάποιος ότι αυτό το datacenter είναι 10 φορές το μέγεθος ενός ποδοσφαιρικού γηπέδου και οι servers βρίσκονται αποθηκευμένοι μέσα σε containers που δεν επιτρέπεται η πρόσβαση σε κανέναν αφού τα μέτρα ασφαλείας που τηρούνται για να μπεις σ'αυτες τις εγκαταστάσεις είναι εφάμιλλα μ'αυτά που τηρούνται π.χ στη NASA με όλα τα security features που έχει η Microsoft για να μπαίνεις σ'ενα fort knox αν θέλεις, πείθει σε ένα πολύ μεγάλο βαθμό ότι τα στοιχεία τους θα είναι ασφαλή σε τέτοιου τύπου εγκαταστάσεις. Εκτός απ'το θέμα της ασφάλειας των εγκαταστάσεων υπάρχει και το θέμα των backups. Η Microsoft παίρνει διαδοχικά τρία backups ανά τον κόσμο στα στοιχεία που είναι πάνω στο cloud. Οπότε στο χειρότερο σενάριο τα περισσότερα δεδομένα που μπορεί να χάσεις είναι της ημέρας αλλά δε θα χάσεις όλη την περιουσία σου. Γιατί τα data που βρίσκονται στο cloud, τουλάχιστον στο δικό μας ERP, είναι για όσα χρόνια το λειτουργεί ο πελάτης.

**Οπότε μιλάμε για πολύ σημαντικά recovery measures**

Ακριβώς. Οι πελάτες έχουν recovery measures τα οποία πάνε στη χειρότερη περίπτωση το πολύ μέχρι 24 ώρες πίσω.

**Σε on-premise συστήματα να φανταστώ πως είναι πολύ δύσκολο να έχουμε τέτοια recovery measures?**

Συνήθως στους on premise servers βάζουν ένα δαίμονα το βράδυ μέσα στον SQL που τρέχει η βάση δεδομένων και του λένε κάθε 12 το βράδυ πήγαινε κάνε back up τη βάση δεδομένων. Για πολλούς λόγους αυτό μπορεί να μη γίνει σωστά π.χ πρόβλημα στο σκληρό δίσκο κτλ. Προβλήματα τέτοιου είδους δεν έχει το datacenter της Microsoft. Ένα ακόμα μεγάλο πλεονέκτημα είναι ότι το Windows Azure είναι επίσης μία πλατφόρμα. Αυτό σημαίνει ότι πάνω σ'αυτό το περιβάλλον γίνονται συνεχώς optimizations σε επίπεδο απόδοσης και ασφάλειας των συστηματών που τρέχουν πάνω σ'αυτό.

**Καταλαβαίνω. Οπότε η Microsoft χρησιμοποιώντας economies of scale έχει τη δυνατότητα να επενδύει πάρα πολλά στη βελτιστοποίηση των υποδομών της, κάτι που είναι πολύ πιο δύσκολο να το κάνει κάποια εταιρία in-house.**

Ακριβώς. Και επίσης κάτι που δεν έχουμε αναφέρει είναι το στοιχείο του multi-tenancy. Στο cloud είσαι σε multi-tenant environment που σημαίνει ότι ο πάροχος βάζει πάνω στις δικές του υποδομές και περιβάλλον χιλιάδες επιχειρίσεις να λειτουργούν ταυτόχρονα.

**Αυτό δεν το λαμβάνουν οι επιχειρήσεις ως αρνητικό?**

Αυτό απασχολεί κυρίως τις μεγαλύτερες επιχειρήσεις. Οι μεγάλες επιχειρήσεις δεν θέλουν να είναι multi-tenant αλλά να έχουν δικό τους private cloud με δικούς τους dedicated servers. Θα ήθελα να προσθέσω και κάτι άλλο ώς δυνατότητα του cloud-ERP, ότι έχεις και το geographical advantage. Μια εταιρία η οποία έχει διασπορά, δηλαδή έχει σ'ενα μέρος τα

κεντρικά της και έχει και υποκαταστήματα, όλα αυτά τα γραφεία θα δουλεύουν κεντρικά σ'ενα σημείο πάνω στο cloud.

**Οπότε έχουμε την ίδια υπηρεσία στα διάφορα μέρη.**

Ακριβώς. Ένα ακόμα σημαντικό opportunity είναι το time to market. Δηλαδή πόσο πιο γρήγορα μπαίνεις κάποιος στην αγορά με νέα προϊόντα και νέες υπηρεσίες όταν λειτουργεί μέσω internet. Μην ξεχνάμε ότι όταν είσαι on cloud λειτουργείς μέσω internet. Οταν θες να προωθήσεις νέες υπηρεσίες, μέσω internet εξυπηρετείς πιο γρήγορα την αγορά. Όταν είσαι on cloud αυτό δε σημαίνει ότι έχεις on cloud μόνο το ERP σου, αλλά κερδίζεις και συνεργασίες με άλλα προϊόντα τα οποία μπορείς να «κουμπώσεις» πάνω στο cloud.

**Μιλάτε για καλύτερο integration με cloud-based εφαρμογές. Δηλαδή όταν αναπτύσετε μια νέα εφαρμογή on cloud γίνεται αυτόματα διαθέσιμη σ'όλους τους πελάτες. Σωστά?**

Ακριβώς. Και ας πάμε και στο επίπεδο B2B ή B2C. Δεν έχεις πιο άμεση και γρήγορη πρόσβαση? Και χωρίς να έχεις την ανάγκη να έχεις web servers μέσα στην εταιρία σου και μία ολόκληρη υποδομή, μπορείς να εξυπηρετείς τους partner σου και οποινδήποτε θέλεις να επικοινωνήσεις τα προϊόντα σου και τις υπηρεσίες σου.

**Ας πάμε τώρα στις μεγάλες εταιρίες και ας μιλήσουμε για τα opportunities που παρουσιάζει η υιοθέτηση και χρήση ενός cloud ERP, παιρνοντας ως δεδομένο βέβαια ότι μια μεγάλη εταιρία έχει κάνει πιθανότατα μια σημαντική επένδυση στο in-house on premise ERP της.**

Κοίταξε, οι μεγάλες επχειρήσεις συνήθως αυτό που θα κάνουν είναι ότι θα έχουν ένα υβριδικό σύστημα. Κάποιες διαδικασίες τους θέλουν να είναι on cloud και κάποιες on-premise. Ποιός ο λόγος να έχω π.χ το manufacturing on cloud, το οποίο είναι βαρύ και ασήκωτο, μιλάω για τις πολύ μεγάλες επιχειρήσεις. Αυτή είναι η δική μου η γνώμη, δεν έχω κάποιο αποδεικτικό στοιχείο. Εκτιμώ πως κάποια πράγματα ενός ERP θα προτιμούν οι μεγάλες επιχειρήσεις να είναι on premise και κάποια on cloud. Π.χ οι μεγάλες εταιρίες θα λέγανε ότι το CRM και το accounting να τα έχω on cloud και το manufacturing και το finance on premise. Αλλά σε κάθε περίπτωση μπορείς να επικοινωνούν τα στοιχεία απ'το on premise στο cloud.

**Οπότε κατά τη γνώμη σας αυτή είναι η πολιτική που οι μεγάλες επιχειρήσεις ακολουθούν σχετικά με το ERP τους.**

Αυτό εκτιμώ. Δεν έχω στοιχεία να το αποδείξω. Η προσωπική μου εκτίμηση είναι ότι δεν είναι το cloud για όλους. Θα το πω καθαρά. Το cloud όντως για οικονομίες κλίμακος είναι πιο ευέλικτο για μικρομεσαίες επιχειρήσεις, αλλά όσο ανεβαίνεις στις πολύ μεγάλες επιχειρήσεις κάποιες διαδικασίες θα θέλουν να τις διατηρήσουν on-premise.

**Έχουμε αναλύσει μια σειρά απο opportunities και strengths του cloud ERP για τις μικρομεσαίες επιχειρήσεις. Αν κάναμε την ίδια συζήτηση για τις μεγάλες επιχειρήσεις τι θα αναφέραμε? Θα προσθέταμε κάτι κανούργιο?**

Θα επέστρεφα και πάλι στο opportunity cost. Οι μεγάλες ειχειρήσεις έχουν μεγάλα τμήματα IT. Η εταιρία πρέπει τώρα να λάβει υπ'όψιν της ότι έχει IT ανθρώπους που απασχολεί. Είναι οικονομικό το θέμα κατά πόσο θα μπορέσει η εταιρία να εξυπηρετήσει τα πάντα γι'αυτούς πάνω στο cloud. Θεωρώ ότι μπορεί να είναι ακριβό γι'αυτούς. Και αυτό γιατί είναι πολύ μεγαλύτερο το μέγεθος των data τους. Το βλέπουμε και εμείς αυτό. Έχουμε ένα τιμοκατάλογο στον οποίο δίνουμε στις μικρές επιχειρήσεις 1 GB χώρο για να λειτουργήσουν την επιχείρηση και στη συνέχεια υπάρχει option για 5 και 10 GB. Μια μεγάλη επιχείρηση σαφέστατα έχει 5 και 6 φορές περισσότερο από αυτό. Εμείς κρίνουμε οτι οι μικρομεσαίες επιχειρήσεις θα αναλώσουν μέχρι 5, 10 GB, το οποίο και τους συμφέρει.

**Άρα μου λέτε ότι επειδή το cloud ERP προσφέρει measured service, αυτό το measured service στην περίπτωση των μεγάλων επιχειρήσεων θα ήταν πιο ακριβό απ'ότι να είχαν αναπτύξει και να χρησιμοποιούσαν το δικό τους in-house σύστημα.**

Ακριβώς αυτό εννοώ, αλλά δεν μπορώ να το αποδείξω. Είναι η εκτίμησή μου.

**Από τη συνομιλία μας καταλαβαίνω πως θεωρείτε ότι οι μεγάλες επιχειρήσεις δεν έχουν κάτι ιδιαίτερο να κερδίσουν πηγαίνοντας full on cloud.**

Κοίταξε να δεις. Οι μικρές επιχειρήσεις δεν έχουν τα resources για να χτίσουν μια εσωτερική μηχανογράφιση. Αυτό είναι ένα γεγονός. Συνήθως ο λογιστής είναι και ο μηχανογράφος. Μιλάω για την Ελλάδα αυτή τη στιγμή. Αλλά εκτιμώ πως και στο εξωτερικό περίπου το ίδιο συμβαίνει. Οι μικρές επιχειρήσεις δεν έχουν εσωτερική μηχανογράφιση και γι'αυτό για τις μικρές επιχειρήσεις το cloud είναι ευκαιρία. Γιατί μπορούν να κάνουν αν θέλεις leverage το maintenace και τα upgrades. Άρα είναι σαφές το πλεονέκτημα σ'αυτή την κατηγορία γιατί έχεις οικονομίες κλίμακος. Όταν είναι μεγάλος ο πελάτης έχει δικές του οικονομίες κλίμακος και έτσι μπορεί οικονομικά να μην τον συμφέρει να μετακινηθεί on cloud. Αντιλαμβάνεσαι ότι μεγάλες επιχειρήσεις έχουν πολλά υποκαταστήματα με π.χ 1000 εργαζόμενους, άρα μιλάμε για μεγάλες υποδομές. Τα λεφτά παίζουν πολύ σημαντικό ρόλο. Οι start-up και οι μικρές εταιρίες, δε μιλάω για τις μεσαίες, είναι συνήθως undercapitalized και επομένως προτιμούν το pay as you go payment model του cloud γιατί δε χρειάζονται upfront cash. Θέλουν ν'αποφύγουν capital expenditures γιατί προσπαθούν να κάνουν break even σύντομα συνήθως σε 2 χρόνια. Όσο ανεβαίνει η μεσαία επιχείρηση από τους 50 στους 250 εργαζόμενους, θεωρώ ότι θα έχει λιγότερο ενδιαφέρον σε cloud απ'ότι θα έχει η start-up και οι μικρές επιχειρήσεις. Όσο μεγαλώνει η επιχείρηση, η πιθανότητα να πάει full cloud ERP πέφτει. Μια γραφική παράσταση με το μέγεθος της εταιρίας στον ένα άξονα και την πιθανότητα για cloud ERP adoption στον άλλο, θα έδειχνε ότι το cloud ERP adoption θα ήταν πολύ υψηλό για τις micro και small επιχειρήσεις και θα έπεφτε καθώς κινούμαστε πρός τις μεσαίες και τις μεγάλες.

**Εντοπίσαμε ότι το αυξημένο κόστος του cloud ERP είναι μια ανησυχία για τις μεγάλες επιχειρήσεις. Μπορούμε να μιλήσουμε για κάποια άλλη?**

Πρόσεξε. Αυτό το είπα για τις πολύ μεγάλες επιχειρήσεις. Αλλά θα ήθελα να προσθέσουμε ένα ακόμα άξονα στην προηγούμενη γραφική παράσταση, ο οποίος θα λεγόταν

opportunity cost. Εκεί θα έβλεπες οτι θα ήταν ανάποδο το αποτέλεσμα, δηλαδή θα είχαν πολύ μεγαλύτερο όφελος οι μεγάλες επιχειρήσεις γιατί οι μικρές δεν έχουν εσωτερικές μηχανογραφίσεις. Δηλαδή οι μεγάλες εταιρίες έχουνμεγαλύτερο κόστος της ευκαιρίας. Γιατί να έχει μια μεγάλη εταιρία 10-15 άτομα στη μηχανογράφισή της όταν αυτά τα άτομα θα μπορούσε να τα χρησιμοποιήσει πιο παραγωγικά αλλού στην επιχείρηση. Αλλά έχει και μεγάλη σημασία τι πράγματα θέλει να τρέξει η μεγάλη επιχείρηση στο cloud για ευννόητους λόγους.

**Οπότε τίθεται θέμα πολιτικής της κάθε εταιρίας.**

Ναι. Ας πούμε δεν έχω ακούσει πολύ μεγάλες εταιρές όπως η Novartis ή η Glaxo να έχουν τη μηχανογράφισή τους on cloud. Όμως μπορεί να έχουν ένα τμήμα του ERP τους on the cloud, δηλαδή αυτό για τους πωλητές όπως οι φαρμακευτικοί επισκέπτες (της Novartis). Για ποιό λόγο δεν έχουν βάλει π.χ την τεράστια μηχνογράφησή τους στο cloud δε μπορώ να το απαντήσω. Σε κάθε περίπτωση πρέπει κάποιος να πάρει χαρτί και μολύβι και να υπολογίσει αν τον συμφέρει κάτι τέτοιο. Αλλά δική μου εκτίμηση είναι ότι εταιρίες τέτοιου μεγέθους ίσως να μην τις συνέφερε. Γενικά η άποψη μου είναι ότι ο υπολογισμός του TCO και του opportunity cost είναι η ουσία και τα βασικά κριτήρια για το αν κάποιος πάει το ERP του on cloud. Επίσης, οι micro εταιρίες δε θέλουν να πάρουν κανένα ρίσκο. Το ρίσκο με το cloud ERP είναι πολύ χαμηλό με την έννοια ότι δεν κάνει κάποια σημαντική επένδυση. Δεν έχει τίποτα να χάσει.

**Μπορείτε να κάνετε κάποια πρόβλεψη για το μέλλον?**

Δεν υπάρχει καμία αμφιβολία ότι είναι θέμα χρόνου να υιοθετηθεί το cloud σε μεγαλύτερη μάζα μικρομεσαίων επιχειρήσεων παρά μεγάλων. Για τους λόγους που ανέπυξα πιο πριν, όπως η ψυχολογία, η ενημέρωση που έχουν κατά πόσο τους συμφέρει κάτι τέτοιο αλλά και αν το έχουν καταλάβει τι σημαίνει να έχεις το ERP σου on cloud, ότι π.χ υπάρχει μεγαλύτερη ασφάλεια να έχεις τα data σου on cloud παρά να τα έχεις on premise. Είναι θέμα χρόνου που το προσδιορίζω σε πενταετία. Σήμερα έχουμε 250 πελάτες on cloud, σε μια πενταετία περιμένω να δω 10 φορές περισσότερο.

**Πολυ ωραία. Δεν ξέρω αν έχετε κάτι άλλο να προσθέσετε στη συζήτηση μας. Εγώ δεν έχω κάτι άλλο να ρωτήσω.**

Ήθελα να προσθέσω και κάτι άλλο. Ότι η δυνατότητα scalability που προσφέρει το cloud είναι περισσότερο αναγκαία απ'τις start-up και τις μικρές επιχειρήσεις γιατί ο μεγάλος πελάτης έχει δημιουργήσει το μέγεθος του. Οι μικρές επιχειρήσεις χρειάζονται περισσότερο το scalability, πάσης φύσεως, και σε επίπεδο modules γιατί δεν αγοράζουν full ERP αλλά μόνο τα modules που καλύπτουν τις δικές τους δραστηριότητες. Όταν η επιχείρηση μεγαλώσει θα αγοράσει και άλλα modules που θα χρειάζεται όπως επίσης και περισσότερο χώρο για να λειτουργήσει στο cloud.

**Θα ήθελα να σας ευχαριστήσω για το χρόνο σας. Η συνομιλία μας ήταν πολύ εποικοδομητική με πάρα πολλά σημαντικά στοιχεία και συμπεράσματα!**

Παρακαλώ. Για οτιδήποτε συμπληρωματικό είμαι στη διάθεσή σου.

## Appendix 3b – Interview 2 original transcript

13/4/2013

**Συνέντευξη με θέμα: "Cloud ERP adoption, SMEs vs Big companies"**

**Ερευνητής : Βασίλειος Αλεξόπουλος**

**Θα ήθελα αρχικά να μου πείτε δυο λόγια για την εταιρία που εργάζεστε. Ποιό είναι το αντικείμενό της και τι υπηρεσίες προσφέρει?**

Η Softone ξεκίνηση τη δραστηριότητα της πριν 10-11 χρόνια. Ουσιαστικά ιδρύθηκε το 2002 αλλά δεν ήταν καινούργια εταιρία στο χώρο γιατί ο βασικός κορμός της προήλθε από μια προγενέστερη εταιρία που λειτουργούσε στην αγορά της πληροφορικής στην Ελλάδα, τη Unisoft, η οποία προυπήρχε για 15 χρόνια. Το υπολοιπο κομμάτι προήλθε από μια άλλη πολύ μεγάλη εταιρία του χώρου, τη Singular. Η Softone είναι ένας software vendor που δίνει έμφαση σε προϊόντα και υπηρεσίες που σχετίζονται με business λογισμικό. Έχει ένα βασικό προϊόν το οποίο το ονομάζουμε λογισμικό Softone, είναι το δικό μας ERP, το οποίο διατείθετε στην αγορά με μια σειρά απο εμπορικούς συνδυασμούς: Softone 100, Softone300, Softone ERP, my Softone. Ουσιαστικά ειναι διαφορετικά bundles του ίδιου λογισμικού. Το μεγάλο πλεονέκτημα του είναι ότι είναι ένα σύγχρονο προϊόν το οποίο γράφτηκε στις αρχές της δεκαετίας του 2000 και πρόλαβε να εκμεταλλευτεί όλες τις σύγχρονες τάσεις του software engineering. Δεν πατάει δηλαδή σε απολιθώματα από άλλες αρχιτεκτονικές, πλατφόρμες και εργαλεία γιατί και αυτό υπάρχει στην αγορά. Πολλά προϊόντα βασίζονται σε σχεδιασμούς και επιλογές που έχουν γίνει 15 και 25 χρόνια πριν.

**Χρησιμοποιήσατε δηλαδή όλο το innovation πουήταν διαθέσιμο εκείνη τη στιγμή.**

Ναι. Το λογισμικό μαε είναι σύγχρονο και έχει γραφτεί from scratch προφανώς επειδή υπήρχε η εμπειρία γιατί οι άνθρωποι που το έγραψαν προέρχονταν από τον χώρο και ήταν ήδη καταξιωμένοι. Ήξεραν τι να αποφύγουν και τι χρειάζοταν για να δημιουργήσουν πραγματική αξία. Το άλλο μεγάλο πλεονέκτημα της εταιρίας μας είναι ότι αντιληφθήκαμε έγκαιρα την αλλαγή που ερχόταν για το πως λειτουργεί η βιομηχανία του software, και είμασταν απ'τις πρώτες εταιρίες παγκοσμίως που διαμόρφωσαν λύσεις που θα λειτουργούν στο πλαίσιο του τότε νεου μοντέλου του SaaS. Ήδη απ'το 2007 αρχισαμε να προσφέρουμε, ως πρώτο βήμα στην τοποθέτηση της εταιρίας στην αγορά του SaaS, εφαρμογές λογιστικής φύσης κυρίως. Εκείνη την περίοδο ο όρος cloud δεν υπήρχε. Το 2007-2008 τον όρο αυτό σχεδόν δεν τον συναντούσες πουθενά. Στη συνέχεια η ενασχόλησή μαε με το SaaS πέρασε και στο ευρύτερο προϊόν μας και ακούμπησε όλο το κομμάτι του ERP και απ'το 2010 είναι εμπορικά διαθέσιμο μέσω SaaS. Απ'τις αρχές του 2011 το ERP είναι διαθέσιμο στην

πλατφόρμα Windows Azure μέσω της υπηρεσίας Softone on Windows Azure και πρόσφατα μετονομάστηκε σε Softone cloud ERP.

**Μιλάμε για ένα full ERP?**

Ναι. Δίνει τη δυνατότητα σε κάποιον απ'το 2010 να λειτουργήσει στο cloud οτιδήποτε έχει ανάγκη χωρίς περιορισμούς. Οτιδήποτε προσφέρει το λογισμικό μας σε μια on-premise εγκατάσταση το ίδιο παρέχεται και μέσω cloud. Εμείς στην περίπτωση του Softone on Windows Azure έχουμε επεκτείνει ακόμα περισσότερο την επένδυση που κάναμε γιατί γράψαμε πάνω στην πλατφόρμα και ενισχύσαμε την υπηρεσία από πλευράς λειτουργικότητας, γιατί έπρεπε να βρούμε λύσεις εκτός απ'το πως θα λειτουργήσει αποδοτικά το ERP στο web έπρεπε να βρούμε λύσεις και στο πως θα λειτουργούσε καλά ως υπηρεσία, δηλαδή πως θα γίνονται οι ανανεώσεις, οι αναβαθμίσεις, το balance των φορτίων στους cloud servers. Ολα αυτά είναι σημαντικά γιατί μιλάμε για έαν προϊόν SaaS, δηλαδή έχεις διαμοιραζομενους πόρους και είναι δύσκολο να ελεγχθεί η ανάγκη που έχει ο πελάτης. Έπρεπε να βρεθεί λύση που θα αντιμετώπιζε τις πιθανές κορυφώσεις στη διεκδίκηση πόρων από κάποιους και να δεν θα δέσμευε πόρους που ο πελάτης δε θα χρησιμοποιούσε αλλά θα τους δέσμευε μόνο όταν τους χρειαζόταν. Οπότε εμείς χτίσαμε πάνω στο Azure δικιά μας τεχνολογία που χείρίζεται τέτοιου είδους θέματα.

**Αυτό το κάνατε δηλαδή για να παρέχετε στους πελάτες όσο το δυνατόν πιο ακριβές measured service**

Ακριβώς. Γιατί απ'τη στιγμή που εμείς παρέχουμε ένα SLA με συγκεκριμένα χαρακτηριστικά, έπρεπε να διασφαλίσουμε ότι και στην πραγματική λειτουργία του προϊόντος θα ικανοποιείται. Γενικά το θέμα του cloud ERP στην Ελλάδα απ'την πλευρά του παρόχου δεν είναι δουλεμένο. Οι περισσότεροι θεωρούν οτι επειδή έκαναν hosting το ERP αυτό σημαίνει ότι είναι cloud.

**Θα μου πείτε και δυο λόγια για το ρόλο σας στην εταιρία?**

Ξεκίνησα το 2008 στη Softone, στην αρχή έκανα focus στο SaaS, απ'το πως θα χτίζαμε και θα αναπτύσσαμε τις υπηρεσίες μέχρι το πως θα τις διαθέταμε εμπορικά. Είμαι η κύρια έκφραση της εταιρίας αυτής όσον αφορά το cloud και το SaaS και πρόσφατα ανέλαβα και τη διεύθυνση marketing, με αρμοδιότητες όχι μόνο στη διαφήμιση και στηνεπικοινωνία αλλά και στο product management που δεν εέχει σχέση μόνο με το cloud αλλά και τα προϊόντα και τις υπηρεσίες της εταιρίας γενικά.

**Ποιά ERP delivery models υποστηρίζει η εταιρία?**

Παρέχουμε on-premise εγκατάταση αλλά και μέσω cloud. Σε on-premise εγκαταστάση όμως είναι ο κύριος όγκος των πελατών μας. Και επίσης να πω ότι παρέχουμε δύο pricing σχήματα στο on-premise μοντέλο. Την παραδοσιακή πώληση του license αλλά και παραχώρηση μέσω συνδρομής για κάποιο χρονικό διάστημα. Το δεύτερο μοντέλο ήταν ένα προοίμιο της συνδρομητικής υπηρεσίας που λειτουργεί στο cloud η οποία είναι η ετήσια συνδρομή.

**Αν μπορείτε να μου πείτε, πόσοι πελάτες σας είναι on-premise και πόσοι on cloud?**

Αν συμπεριλάβει κάποιος όλες τις υπηρεσίες μας, το Softone as a Service, δηλαδή το υποσύνολο ERP που αφορά μόνο τις λογιστικές υπηρεσίες, το Softone on-demand που τρέχει στον επίσημο Microsoft incubation provider στη θεσσαλονίκη και την υπηρεσία μας που τρέχει απευθείας πάνω στις υποδομές Windows Azure τότε η αναλογία on-premise και cloud θα ήταν κάπου ανάμεσα στο 85-15% και 90-10%.

**Και ποίο είναι το μέγεθος των επιχειρήσεων που είναι στο cloud?**

Η εμφαση που δίνει εταιρία μας είναι προς τις μικρομεσαίες επιχειρήσεις. Έχουμε και μεγάλους πελάτες αλλά η έμφαση που δίνουμε είναι προς τις μικρομεσαίες γιατίαυτό είναι και το business model που ακολουθούμε. Δηλαδή το business model μας δεν είναι να χτυπήσουμε τις πολύ μεγάλες επιχειρήσεις παρόλο που έχουμε και τέτοιες στο πελατολόγιό μας.

**Πώς φτάνει η συζήτηση στο cloud ERP? Ενημερώνετε εσείς συνήθως τους πελάτες σας ή σας ρωτούν οι ίδιοι?**

Και τα δύο συμβαίνουν αλλά μπορώ να πω ότι κυρίως εμείς τους ενημερώνουμε. Επειδή είμασταν από τους πρώτους στο χώρο ζήσαμε και ζούμε την ανωριμότητα της αγοράς σε χέση με το cloud. Φαντάσου το 2008 και το 2009 να μιλάς στην αγορά για SaaS και να λες σε κάποιον ότι αυτό που είχες μέσα στο χώρο σου θα σου πάρω και θα το βάλω σε κάποιο data center και θα το λειτουργώ εγώ. Αυτό ήταν πολύ ασαφές για τον έλληνα επιχειρηματία εκείνα τα χρόνια οπότε τουλάχιστον αρχικά έπρεπε να πάμε εμείς να ενημερώσουμε και να παρακινήσουμε τους πελάτες. Όσο όμως η αγορά του cloud ωριμάζει στην Ελλάδα αυτό αρχίζει και γυρνάει. Οπότε τώρα ενα σημαντικό κομμάτι της συζήτησης προέρχεται μέσα απ'τον πελάτη. Σημαντικά έχει βοηθήσει σ'αυτό και το γεγονός οτι έχουν αρχίσεινα τοποθετούνται και να χρησιμοποιούν το cloud και οι telcos στην Ελλάδα, έχοντας βγάλει προϊόντα και υπηρεσίες, που όμως δεν εκουμπάνε το επίπεδο των εφαρμογών αλλά περισσότερο του IaaS. Οπότε η αγορά ενημερώνεται όλο και περισσότερο για το θέμα cloud γενικότερα. Και όσο θα αυξάνονται οι άνθρωποι που θα σηκώνουν τις εφαρμογές τους στο cloud, θα φεύγει και ένας βαθμός ανησυχίας και όσοι είχαν αναστολές θα το σκέφτονται πιο θετικά να ακολουθήσουν. Σε συνδυασμό με τα θετικά χαρακτηριστικά του cloud που πλέον ακούγονται, όπως π.χ ότι το cloud μπορεί να μειώσει το κόστος, αυτό κάνει τους επιχειρηματίες πιο θετικούς στο να το δοκιμάσουν και έτσι πλέον ρωτάνε οι ίδιοι.

**Αν εστιάσουμε στις μικρομεσαίες επιχειρήσεις, ποιά είναι τα πλεονεκτήματα που αυτοί οι πελάτες σας αντιλαμβάνονται ως θετικά και που τους ωθούν να πάνε σε ένα cloud ERP?**

Δε μπορούμε να ξεφύγουμε απ'τα πλεονεκτήματα που μπορεί να δώσει το SaaS στην επιχείρηση που θα λειτουργήσει τις εφαρμογές της σε κάποιο data center. Σε γενικές γραμμές αυτά ισχύουν για τις πεισσότερες επιχειρήσεις, είτε είναι μικρές είτε μεγάλες, αλλά αυτό δεν είναι κανόνας. Δηλαδή δε σημαίνει ότι κάθε μικρομεσαία επιχείρηση θα έχι τα ίδια οφέλη με κάποια άλλη. Παίζουν πολύ σημαντικό ρόλο τα ιδιαίτερα χαρακτηριστικά της κάθε

επιχείρησης. Για παράδειγμα μια επιχείρηση που λειτουργεί μέσα στο γραφείο της και δεν έχει υποκαταστήματα και εξωτερικούς πωλητές ή εξωτερικές δραστηριότητες και μία άλλη ίδιου μεγέθους αλλά με π.χ δύο υποκαταστήματα ή 5 εξωτερικούς πωλητές. Δεν είναι απαραίτητο ότι θα έχουν το ίδιο όφελος απ'την πλευρά του cloud. Κάποιες επιχειρήσεις μπορεί να λύσουν όλα τα προβλήματα τους αν πάνε on cloud και κάποιες άλλες να έχουν πολύ μικρότερα οφέλη. Άρα πολύ σημαντικό ρόλο παίζουν τα ιδιαίτερα χαρακτηριστικά που κουβαλάει η κάθε επιχείρηση στο επίπεδο του business που δραστηριοποιείται.

**Αν πάρουμε τον περιορισμό και μιλήσουμε για μικρομεσαίεςς εταιρίες που έχουν καθαρά και μετρήσιμα οφέλη μέσω cloud, ποία θα ήταν αυτά?**

Το πρώτο που θα αναφέραμε είναι το κόστος. Το κόστος της αγοράς του εξοπλισμού και της υποδομής για να λειτουργήσεις το σύστημα σου αν πας on cloud φεύγει. Βέβαια ένα μεγάλο ομμάτι του κόστους ο πάροχος το περνάει μέσα απ'τη συνδρομή που ο πελάτης πληρώνει. Αλλά επειδή απ'την πλευρά του παρόχου λειτουργούν μεγαλύτερες οικονομίες κλίμακος, δηλαδή ο πάροχος δεν θα αγοράσει την υποδομή που θα αγόραζε ο πελάτης στην ίδια τιμή και όλους αυτούς τους φυσικούς πόρους (computing instances, βάσεις δεδομένων, τηλεπικοινωνιακής σύνδεσης) θα τους μοιράσει σε πολλούς, δημιουργώντας οικονομίες κλίμακος και συνέργεια που ο πελάτης μόνος του δεν θα μπορούσε να δημιουργήσει. Έτσι όλο αυτό το πακέτο το προσφέρει σε πιο οικονομική τιμή και αυτό είναι πάρα πολύ σημαντικό. Αλλά δεν έχεις μόνο οικονομία επειδή δε αγοράζεις τον εξοπλισμό. Η αγορά του λογισμικού και του hardware δεν είναι στατική, δηλαδη δε μένεις μόνο σ'αυτή την επένδυση κατά τη δάρκεια του κύκλου ζωής αυτής της λύσης. Γιατί σ'ενα ορίζοντα κύκλου ζωης 5-6 χρόνια η υποδομή χρειάζεται συντήρηση κάθε ένα ή κάθε τρία χρόνια. Και υπάρχουν και στατιστικά μοντέλα που λένε ότι κάθε τρία χρόνια ανάλογα με τον τύπο της επιχείρησης πρέπει να βάζεις ένα ποσό που κυμαίνεται από 10-30% επί της αρχικής επένδυσης. Μίλησα για ορίζοντα ζωής της υποδομής 5-6 χρόνια γιατί λόγω των ρυθμών ανάπτυξης της τεχνολογίας και των προϊόντων δε μπορεί να κρατήσει παραπάνω από αυτό. Οπότε μετά απ'αυτό το χρονικό διάστημα θα χρειαστεί να ξανακάνεις νέα επένδυση, αντικατάσταση δηλαδή καια υτό ανεβάζει ακόμα περισσότερο το κόστος του hardware. Αλλά και το λογισμικό θέλει συντήρηση. Για να είναι το λογισμικό updated πρέπει κάθε χρόνο να αγοράζεις ένα συμβόλαιο συντήρησης απ'τον πάροχο. Θα σου λύνει δηλαδή τα bugs, θα σου στέλνει τα fixes, θα σου κάνει αναβαθμίσεις και θα προσθέτει νέο functionality κτλ. Και αυτό είναι ένα δυναμικό κόστος. Αν πάει ο πελάτης όμως on cloud όλα αυτά θα περιέχονται μέσα στη συνδρομή και ο πάροχος θα είναι αυτός που αναλαμβάνει τη συντήρηση.

**Αν εξετάσουμε το TCO στον κύκλο ζωής του συστήματος τα στοιχεία τι λένε?**

Αν η επιχείρηση συνυπολογίσει όλες τις παραμέτρους κατά κανόνα βγαίνει κερδισμένη. Γενικά όταν μια επιχείρηση έχει κόστη που προέρχονται από ανάγκη χρήσης αξιόπιστων τηλεπικοινωνιακών υπηρεσιων (που κόστιζουν ακριβά) ή της σύνδεσης διαφόρων δρστηριοτήτων που η επιχείρηση έχει σε διάφορα γεωγραφικά σημεία τότε η πλευρά του cloud υπερτερεί κατά πολύ. Όταν είναι πιο κλειστό το business περιβάλλον, δηλαδή δεν έχεις χτίσει business process που να περιλαμβάνει εξωτερικές οντότητες τότε μειώνεται αυτό το

ενδεχόμενο κέρδος αν πήγαινες στο cloud. Άρα γενικά θα έχεις κέρδος ανάλογα με τις ιδιαιτερότητες που εκφράζεις σαν business model.

**Κρατάω τότε ότι κέρδος από μείωση του κόστους σίγουρα υπάρχει.**

Ναι. Και αυτό γιατί προστίθενται και άλλες παράμετροι οι οποίες δεν είναι απόλυτα κοστολογημένες. Το γεγονός δηλαδή ότι σε μια on-premise εγκατάσταση εσύ είσαι υπεύθυνος για τη συντήρηση, τη διαχείρηση και τη λειτουργία του εξοπλισμου, σημαίνει ότι έχεις ένα μεγάλο βαθμό ευθύνης και αναλαμβάνεις ένα ρίσκο. Άρα μιλάμε για την παράμετρο ρίσκο στο κόστος της επένδυσης, δηλαδή ότι αν δεν κάνω κάτι σωστά θα υπάρχει κίνδυνος για την επιχείρηση. Αυτό το ρίσκο μπορεί να λυθεί αν κάνεις κάποιο συμβόλαιο για τεχνική υποστήριξη με κάποιον ειδικό ή προσλάβεις IT ανθρώπους που θα την αναλάβουν, αλλά αυτό ειναι κόστος. Άρα πρέπει κ αυτό να προστεθεί στο συνολικό κόστος. Με το cloud ERP όμως αποδεσμεύεις την υποδομή απ'το κεντρικό σου συστημα και έτσι δεν έχεις ανάγκη από ένα IT manager. Και αν πάλι έχεις κάποια άλλα πραγματα που κάποιος πρέπει να τα βλέπει σε επίπεδο IT σου δίνεται η δυνατότητα να προσλάβεις κάποιον που επειδή θα κάνει κατά βάση λιγότερα πράγματα θα τον πληρώνεις και λιγότερο. Θα μπορείς να πάρεις έναν πιο junior IT που θα στοιχίζει λιγότερο στην επιχείρηση. Οπότε κερδίζεις χρήματα και από ανθρώπινο δυναμικό και από τρίτες συμβάσεις outsourcing. Ένα άλλο πολύ σημαντικό πλεονέκτημα είναι ότι έτσι κάνεις καλύτερο focus πάνω σε πιο σοβαρά και αξιόλογα πράγματα για τοίδιο το business της εταιρίας. Μια μικρομεσαία επιχείρηση το μόνο που πρέπει να την ενδιαφέρει είναι το πως θα φτιάξει πιο ανταγωνιστικά προϊόντα έτσι ώστε να βγάλει χρήματα. Δεν έχει κάποιο λόγο να έχει IT skills. Για ποιό λόγο να έχει υπαλλήλους που δεν ασχολούνται με το focus της εταιρίας ως προς το αντικείμενο της? Σε κάθε περίπτωση τους IT η εταιρία πρέπει να τους στρέφει σε πιο παραγωγικές διαδικασίες από τη συντήρηση του συστήματος και τα ενδεχόμενα προβλήματα. Για παράδειγμα να βγάζει με εργαλεία BI κάποια reports που θα βοηθήσουν στη λήψη καλύτερων αποφάσεων και όχι να ασχολείται με εργασίες που δεν έχουν προστιθέμενη αξία. Επίσης τις εργασίες που απλά διασφαλίζουν την καλή λειτουργία του συστήματος είναι καλύτερο και πο αξιόπιστο να τις κάνει ο πάροχος που είναι και πιο εξειδικευμένος σ'αυτό, έχει πιο πολλά εργαλεία αφού αυτό είναι και το core business του. Ένα άλλο πλεονέκτημα για τις μικρομεσαίες επιχειρήσεις είναι το εξής. Ο πάροχος διατηρεί τις υποδομές του και τις υπηρεσίες του πάντα σε επίπεδο state of the art. Δηλαδή κάνει συνεχή επένδυση σε επίπεδο εξοπλισμού και υποδομών για να λειτουργεί την υπηρεσία που παρέχει. Οι υποδομές πάνω στις οποίες στήνεται μια υπηρεσία έχουν συνεχή εξέλιξη π.χ σε επίπεδο roadmap σε σχέση με την αρχική τους κατάσταση, αφού ο πάροχος φροντίζει να είναι συμβατές με ότι καλύτερο μπορεί να διαθέση η τεχνολογία τη δεδομένη στιγμή. Και το ίδιο το datacenter που συνεργαζόμαστε έχει αυτή τη φιλοσοφία και παρακινεί προς αυτή την κατεύθυνση. Αυτό η μικρμεσαία επιχείρηση δεν μπορεί να το κάνει εύκολα γιατί δεν έχει το budget και την κατάρτιση για να το κάνει. Συνήθως στον κύλο ζωής του συστήματος γίνονται μόνο κάποιες μικρής κλίμακας αναβαθμίσεις αλλά ο εξοπλισμός λίγο πολύ παραμένει ο ίδιος. Στο cloud ο πάροχος φροντίζει να είναι οι πελάτες του και οι υπηρεσίες που παρέχει ευθυγραμμισμένοι με την τελευταία λέξη της τεχνολογίας. Οπότε όταν η εταιρία είναι πάντα state of the art μέσω τον υποδομών που αξιοποιεί και έτσι μπορεί να εκμεταλλεύεται και τα επιχειρηματικά μοντέλα της το οποίο είναι πολυ μεγάλο κέρδος. Μπορεί η εταιρία έτσι να

στήσει τα επιχειρηματικά μοντέλα της με τρόπο που είναι πιο προσαρμόσιμα και άμεσα στις ανάγκες των πελατών.

**Οπότε μέσω ενός cloud ERP η κάθε μικρομεσαία επιχείρηση έχει πρόσβαση σ'όλο το innovation που είναι διαθέσιμο την κάθε στιγμή.**

Βέβαια. Και αυτό ειναι πολύ σημαντικό αλλά όχι μετρήσιμο κέρδος. Ένα άλλο πλεονέκτημα είναι ότι μέσω του cloud περνάς από ένα μοντέλο κεφαλαιακής επένδυσης σε μια διαχείριση λειτουργικού εξόδου. Από capex σε opex δηλαδή. Έτσι αποφεύγεις προβλήματα τα οποία σχετίζονται με το πως αξιοποιείς τα κεφάλαια σου και τα οποία χαλάνε τους οικονομικούς δείκτες της επιχείρησης και άρα την οικονομική της εικόνα. Επίσης πηγαίνοντας απ'το μοντέλο της κεφαλαιακής επένδυσης σ'αυτό του λειτουργικού εξόδου περνάς στη λογική της υπηρεσίας που έχει επίσης εκτιμώμενο κόστος το οποίο είναι πιο ορθολογικό και μετρήσιμο. Άρα μιλάμε για διαφάνεια του συνολικού κόστους. Ακόμα πολλές εταιρίες δεν έχουν μεγάλες δυνατότητες να κάνουν τέτοιου τύπου κεφαλαιακές επενδύσεις γιατί απλά δεν έχουν τα κεφάλαια και στη δύσκολη οικονομική κατάσταση που υπάρχει πλέον ούτε οι μέτοχοι δίνουν χρήματα ούτε οι τράπεζες δίνουν δάνεια για να βρεθούν τα κεφάλαια. Οπότε το cloud δίνει τη δυνατότητα της ευελιξίας στις επιχειρήσεις, κυρίως σ'αυτές που δεν έχουν κεφαλαιακή επάρκεια και στις start-ups που έχουν ήδη κάνει μεγάλο οικονομικό άνοιγμα και έχουν και άλλα έξοδα. Αυτό που θα πλήρωναν όλο μαζί στην αρχή του κύκλου ζωής της επένδυσης τωρα το πληρώνουν σε δόσεις με έναν ορίζοντα 5,6,7 χρόνων. Άρα ειδικά για τις πιο νέες εταιρίες και αυτές με μειωμένη κεφαλαιακή επάρκεια έχει πολύ πιο μεγάλη αξία το cloud ERP γιατί τους δίνει το δικαίωμα να πάρουν το αποτέλεσμα που θέλουν, με καλύτερες προϋποθέσεις όπως είπαμε.

**Άρα το cloud μειώνει και το ρίσκο που παίρνει μια εταιρία**

Πολύ σωστα. Γιατί κάθε επένδυση όπως αυτή των υποδομών ενός συστήματος έχει το δικό της ρίσκο. Ακόμα και η αγορά του λογισμικού έχει ρίσκο. Μη νομίζεις ότι όποιος αγοράζει ERP το κρατάει και το λειτουργεί για πάντα. Υπάρχουν πολλές περιπτώσεις που μια υλοποίηση ERP δεν υλοποιείται σωστά ή ακόμα μπορεί να υλοποιείται όπως είχε σχεδιαστεί αλλά το αποτέλεσμα δεν ικανοποιεί. Τότε η επιχείρηση αποφασίζει να σταματήσει τη συγκεκριμένη υλοποίηση και να πάει σε μια καινουργια. Άρα τα χρήματα της πρώτης επένδυσης χάνονται. Στην περίπτωση του cloud ERP έχεις πολύ μικρότερο βαθμο ρίσκου. Αν το cloud ERP δεν μπορεί να αποδώσει πιθανότατα χάνεις μόνο τη μια ή τις 2 πρώτες ετήσιες συνδρομές και όχι όλη την επένδυση μιας υλοποίησης on-premise το οποίο είναι κατα πολύ υψηλότερη.

**Υπάρχουν άλλα πλεονεκτήματα τα οποία πείθουν τους μικρομεσαίους πελάτες σας να πάνε σε μια λύση cloud ERP?**

Το outsourcing της υπηρεσίας, της συντήρησης της και της ευθύνης για την σωστή λειτουργία της είναι επίσης πολύ σημαντικό πλεονέκτημα για πολλές επιχειρήσεις. Τα πρώτα χρόνια εμφάνισης αυτού του μοντέλου αυτό ήταν ένα πρόβλημα κυρίως για το IT τμήμα της επιχείρησης γιατί δημιουργούσε την ανησυχία ότι θα το IT προσωπικο θα έχανε τη δουλειά

του γιατί πολλά απ'αυτά που έκανε πριν πλεόν δε θα τα έκανε. Επίσης αυτό το πρόβλημα φαινόταν και στην πλευρά του συνεργάτη του software vendor που ερχόταν σε επαφή με τον τελικό πελάτη γιατί η αγορά της πληροφορικής συνήθως δεν λειτουργεί σε direct επίπεδο. Υπάρχει άλλοτε ισχυρότερο και άλλοτε λιγότερο ισχυρό ένα κομματι που βρίσκεται ανάμεσα στον πάροχο και τον πελάτη και είναι το δίκτυο συνεργατών που επικοινωνει με τους πελάτες και τους παρέχει της λύσεις του software vendor. Και αυτοί είχαν και ακόμα έχουν ένα φόβο ότι αν ο πελάτης πάρει τη λύση μέσω SaaS θα ακυρωνόταν ο ρόλος του αφου ο πελάτης θα μπορούσε να την πάρει κατευθείαν απ΄τον πάροχο. Εμείς όμως ακόμα και στο επίπεδο του cloud δεν καταργούμε τους συνεργάτες γιατί αυτοί είναι που πρέπει να το πουλήσουν αλλά και να βοηθήσουν στην παραμετροποίηση του προϊόντος στα μέτρα του πελάτη. Αλλά και το IT staff όσο κατανοεί ότι το cloud ERP δεν θα καταργήσει αλλά αντίθετα θα αναβαθμίσει το ρόλο και τα skill του με πιο business oriented δρασηριότητες τόσο περισσότερο αυτό το πλεονέκτημα του outsourcing θα λειτουργεί πιο αποδοτικά σε όλα τα επίπεδα της επιχείρησης.

**Ας μλήσουμε τώρα για μειονεκτήματα που αντιλάμβάνονται οι μικρομεσαίες επιχειρήσεις και πιθανότατα τις απωθούν απ'τονα πάνε σε ένα cloud ERP.**

Το πρώτο και το ισχυρότερο είναι το security.

**Αυτό είναι ένα πραγματικό πρόβλημα του cloud? Ρωτάω γιατί οι απόψεις διίστανται.**

Σε αρκετές περιπτώσεις μπορεί και να είναι. Είναι ένα θέμα που εξαρτάται απ'την αξιοπιστία του παρόχου. Δεν παρέχουν όλοι οι πάροχοι την ίδια ποιότητα υπηρεσίας και δε μιλάω για το security μόνο. Υπάρχουν πάροχοι που πουλάνε λύσεις χωρίς να δίνουν το απαραίτητο SLA που να διασφαλίζει τον πελάτη μέσω συγκεκριμένων κανόνων λειτουργίας με τους οποίους ο πελάτης να συμφωνεί.

**Δηλαδή το γεγονός ότι πολλοί πάροχοι δεν δίνουν σαφή SLA είναι σημαντικό μειονέκτημα.**

Οπωσδήποτε. Σε οποιαδήποτε μορφή outsourcing πρέπει να υπάρχει SLA. Όταν εμπιστεύεσαι σε κάποιον τρίτο την καρδιά της επιχείρησης σου, δηλαδή το ERP, χωρίς να εξασφαλίζονται προϋποθέσεις που είναι ευννοικές για σένα ή τουλαχιστόν συμφωνημένες είναι μεγάλο λάθος και πολύ επικίνδυνο για τη βιωσιμότητα της ίδιας της επιχειρησης. Λίγοι πάροχοι δίνουν ένα SLA που να περιγράφει τις πολιτικές ασφάλειας, τις υπηρεσίες διαχείρησης που παρέχουν, τα επίπεδα διαθεσιμότητας που διασφαλίζουν. Εμείς ίσως είμαστε η μοναδική εταιρία στην Ελλάδα που δίνει ένα πλήρες SLA που τα διασφαλίζει όλα αυτά όχι μόνο σε επίπεδο υποδομής και πόρων αλλά και εύρυθμης λειτουργίας της ίδιας της εφαρμογής. Για παράδειγμα ο χρόνος απόκρισης της εφαρμογής.

**Οπότε μιλάμε αυτή τη στιγμή για το θέμα της εγγύησης του performance της εφαρμογής.**

Βέβαια. Ένα ιδανικό SLA πρέπει να καλύψει και αυτή την παράμετρο. Και αυτό είναι ένα παρα πολύ δύσκολο σημείο, πάνω στο οποίο δουλεύουμε έτσι ώστε να δώσουμε ένα SLA που

να εγγυάται χρόνο απόκρισης. Κατά τη γνώμη ένα τέτοιο SLA είναι μεγάλο εμπορικό πλεονέκτημα για όποιον πάροχο το παρέχει.

**Αλλά το γεγονός ότι δεν υπάρχουν πολλοί πάροχοι που να δίνουν τέτοιες εγγυήσεις performance είναι μια μεγάλη αδυναμία γενικά του τομέα του cloud ERP που κάνει τις επιχειρήσεις πιο σκεπτικές απέναντι σε μια cloud λύση.**

Ναι. Και γι'αυτό στο αναφέρω. Πολλοί πάροχοι δεν διασφαλίζουν ούτε καν πολύ ικανοποιητικό επίπεδο διαθεσιμότητας πόρων. Πέρα από αυτό όμως ένα ERP περιλαμβάνει πολύ βαριές εργασίες οι οποίες πρέπει να διασφαλιστουν ότι θα είναι αποδοτικές μέσω web και αυτό γίνεται μέσα από σύγχρονες αρχιτεκτονικές σχεδίασης και γενικά της τεχνολογίας που το προϊόν είναι βασισμένο. Αν ERP δεν είναι χτισμένο πάνω στις σύγχρονες τεχνολογίες δε μπορεί να είναι αποδοτικό και είναι και αυτό ένα πολύ μεγάλο πρόβλημα. Το γεγονός ότι δεν έχουν κάνει όλοι οι πάροχοι την ίδια μεγάλη επένδυση πάνω στο λογισμικό έτσι ώστε να τρέχει αποδοτικά και γρήγορα στο web και το ότι δεν περιγράφουν ακριβώς τα χαρακτηριστικά της παρεχόμενης υπηρεσίας και των όρων λειτουργίας του συστήματος κάνει τις επιχειρήσεις διστακτικές να υιοθετήσουν μια λύση στο cloud. Αλλά το πιο ουσιατικό θέμα που κάνει τους πελάτες διστακτικούς είναι το θέμα του security το οποίο δεν εκφράζεται μόνο στο ότι μπορεί κάποιος να σου κλέψει τα data αλλά με την πιο γενική έννοια. Ότι δηλαδή αυτό που θα κάνει η εταιρία outsource στον vendor θα το λειτουργήσει αυτός σωστά. Το θέμα δηλαδή του uptime της υπηρεσιας που είναι θέμα ασφάλειας της λειτουργιάς. Αλλά και το θέμα της ασφάλειας της πληροφορίας είναι ένα πολύ σοβαρό θέμα. Η καρδιά της επιχείρησης είναι τα δεδομένα της και είναι δύσκολο για μια εταιρία να τα εμπιστευτεί σε κάποιον τρίτο. Υπάρχει ένας πολύ έντονος βαθμός ανησυχίας απ'την πλευρά της επιχείρησης σχετικά με την ασφάλεια της πληροφορίας. Και εδώ είναι πάλι δουλειά του παρόχου να εξηγήσει στον πελάτη πως τον ικανοποιεί ετσι ώστε να τον πείσει ότι δεν κινδυνεύει. Υπάρχουν τρία επίπεδα στο cloud ERP που πρέπει να προσεχτούν έτσι ώστε να μην υπάρχουν προβλήματα ασφάλειας. Το πρώτο είναι το επίπεδο του datacenter. Πάνω σ'αυτό εμεις λέμε στον πελάτη ότι τα δεδομένα του φυλάσσονται σε datacenter της Microsoft που τηρεί τα πιο αυστηρά μέτρα ασφάλειας αλλά και παρέχει τα πιό υψηλά επίπεδα διαθεσιμότητας πόρων. Τα στατιστικά δείχνουν ότι το SLA της Microsoft σε επίπεδο διαθεσιμότητας πόρων αντανακλά την πραγματική λειτουργία των datacenter της. Το δεύτερο επίπεδο είναι το κατά πόσο έχει ο πάροχος πρόσβαση στα data του πελάτη με κίνδυνο να τα κλέψει, να τα πουλήσει σε ανταγωνιστές κτλ. Και αυτό είναι πιθανό να συμβεί. Άρα πάλι πρέπει ο πάροχος να το διασφαλίσει αυτό. Πρέπει να βάλει κανόνες και να δημιουργήσει processes που να είναι διάφανα έτσι ώστε να ελέγχονται και έτσι να αποκλείεται αυτός ο κίνδυνος. Αν π.χ πάει κάποιος απ'τη Softone να έχει προσβαση σε δεδομένα πελάτη θα γίνει αμέσως αντιληπτός. Το επίπεδο ασφάλειας σ'αυτόν τον τομέα είναι αυτό που επιβάλει το ISO 27001, που είναι το πιο ισχυρό standard αυτή τη στιγμή σε επίπεδο ασφάλειας της πληροφορίας. Το τελευταίο κομμάτι της ασφαλειας είναι αυτό της επικοινωνίας. Στην περίπτωση μας, τα δεδομένα είναι κρυπτογραφημένα με ένα ίσως ισχυρότερο κώδικα απ'αυτόν που χρησιμοποιούν οι τράπεζες για την κρυπτογράφηση των δικών τους δεδομένων. Οπότε ακόμα και να κάποιος κλέψει δεδομένα θα του είναι άχρηστα γιατί δεν θα μπορεί να τα διαβάσει.

**Πόσοι όμως πάροχοι προσφέρουν τόσο υψηλά standards σε επίπεδο ασφάλειας?**

Αυτό είναι το πρόβλημα. Δεν τα προσφέρουν όλοι. Ούτε όλα τα datacenters είναι ίδια μεταξύ τους, ούτε όλοι οι πάροχοι έχουν πιστοποιημένες με ISO διαδικασίες και έχουν κάνει μεγάλες επενδύσεις σε επίπεδο επικοινωνίας.

**Άρα ένα πολύ σημαντικό πρόβλημα που αποθαρρύνει τις εταιρίες είναι ο ίδιος ο πάροχος και η παρεχόμενη υπηρεσία και όχι το Cloud ERP σαν τεχνολογία και προϊόν.**

Βέβαια. Και αυτό ειναι ένα θέμα που πρέπει να αναδειχθεί. Το να πάει ή να μην πάει μια επιχείρηση σε cloud ERP, πολλές φορές εξαρτάται και απο ποιόν πάροχο έχει μιλήσει. Πολλές φόρες εταιρίες μπαίνουν στην διαδικασία να αξιολογήσουν μια cloud λύση αλλά δεν πείθονται απ΄το προϊόν και τις υπηρεσίες του παρόχου, ενώ θα μπορούσαν να έχουν πειστεί από το προϊόν και τα επιπλέον πιθανώς χαρακτηριστικά που θα τους πρόσφερε ένα άλλος πάροχος. Δυστυχώς αγορά του cloud δεν είναι ομογενοποιημένη ως προς την ποιότητα της παρεχόμενης υπηρεσίας.

**Η συζήτηση με τους μικρομεσαίους πελάτες σας εξαντλείται σ'αυτά τα θέματα, κόστος, security και performance?**

Η αλήθεια είναι ότι τις περισσότερες φορές η συζήτηση κατευθυνεται σε δυο τρεις βασικούς άξονες. Το κόστος είναι πάρα πολύ βασικός παράγοντας, προφανώς η ασφάλεια είναι παρα πολύ βασικός παράγοντας. Όχι μόνο στο επίπεδο της ασφάλειας των δεδομένων αλλά και στο επίπεδο της διαθεσιμότητας και της αξιοπιστίας της λειτουργίας του συστήματος. Εκεί καταλήγει τελικά. Και στο πόσο εύκολα και πιο ωφέλημα μπορεί η επιχείρηση να εκμεταλλευτεί κάτι μέσω του cloud επιχειρησιακά, δηλαδή να έχει τη δυνατότητα να στήσει κάποιες νέες διαδικάσιες που θα χρειάζονταν πολλά χρήματα και χρόνο να στηθούν αν το σύστημα ήταν on-premise. Αν π.χ μέσω του cloud μια εταιρία μπορέσει μέσα σε 10 μέρες να βγάλει τους πωλητές της στο δρόμο και μ'ενα smartphone να μπορούν να δουλέψουν απομακρυσμένα πάνω σ'ένα συγκεκριμένο process είναι ένα κίνητρο αυτό να πάνε στο cloud. Γιατί μ'ένα on-premise σύστημα κάτι τέτοιο θα έπαιρνε πολύ περισσότερα χρήματα και χρόνο. Αλλά αυτές είναι ειδικές περιπτώσεις που έχουν σχέση με τα ιδιαίτερα χαρακτηριστικά της κάθε επιχείρησης.

**Αν πάμε τώρα στις μεγάλες επιχειρήσεις, πως εξηγείτε το ότι έχουν πολύ μικρότερο ποσοστό adoption απ'τις μικρομεσαίες? Πιστεύετε ότι μια μεγάλη εταιρία δεν το σκέφτεται σοβαρά να πάει on cloud το ERP της?**

Όχι. Αυτό δεν είναι κανόνας. Το να λέμε ότι δεν το σκέφτονται δεν είναι απόλυτο. Πιο σωστά θα έλεγα ότι δεν υπάρχει μεγάλη προοπτική ανόδου στην υιοθέτηση cloud λύσεων απ'την πλευρά της μεγάλης επιχείρησης.

**Ποιοί είναι οι λόγοι που ευθύνονται γι'αυτό?**

Ένας πολύ σημαντικός λόγος είναι ότι οι μεγάλες επιχειρήσεις έχουν κάνει πολύ μεγάλες επενδύσεις πάνω στο ERP που ήδη λειτουργούν, πολύ μεγαλύτερη απ'αυτή που μια

μικρομεσαία επιχείρηση πιθανώς να έχει κάνει. Συνήθως μια μεγάλη επιχείρηση έχει μια πολύ σύνθετη οργανική δομή γιατί π.χ δεν περιορίζεται σε ένα γεωγραφικό σημείο και έχει μια μεγάλη ποικιλία με δραστηριότητες που έχουν σχέση με πολλά γεωγραφικά σημεία και πολλές εξωτερικές οντότητες. Για να δουλέψει όλος αυτός ο μηχανισμός αποδοτικά πρέπει να έχει ήδη στήσει ένα δίκτυο με συνεργάτες, πελάτες και προμηθευτές. Επείδή αυτή η δομή είναι πολύ σύνθετη, για να χτιστεί απαιτεί ένα πολύ μεγάλοκόστο επένδυσης. Και εκεί είναι το πόβλημα γιατί δεν είναι εύκολο για την επιχείρηση να ξηλώσει όλο αυτό το μηχανισμό και να τον αντικαταστήσει με κάποιον καινούργιο. Και στο επίπεδο ότι έχει γίνει μια επένδυση την οποία πρέπει να εκμεταλλευτεί η επιχείρηση και στο ότι η επένδυση αυτή δεν είναι στατική γιατί οι μεγάλες επιχειρήσεις καθημερινά προσθέτουν νέα εργαλεία στον εξοπλισμό τους είτε για συντήρηση, είτε για ανάπτυξη. Οπότε αυτή η συνολικά πολύ μεγάλη επένδυση δεν επιτρέπει στην επιχείρηση να την αφήσει στην άκρη και να κάνει κάτι καινούργιο. Αλλά είναι και το business continuity που είναι πιο δύσκολο να διασφαλιστεί, λόγω της πολύ μεγάλης πολυκλοκότητας του συστήματος και των διεργασιών που υποστηρίζει, μεταβαίνοντας στο cloud. Αυτό δε σημαίνει ότι δε μπορεί να γίνει. Αυτό που λέω είναι ότι χρειάζονται πιο μεγάλες τομές για να ανατραπεί με επιτυχία η παρούσα κατάσταση. Οι μεγάλες επιχειρήσεις έχουν ένα πάρα πολύ σύνθετο περιβάλλον IT υποδομών που ειναι πολύ δυσκολο να αλλάξει. Στο μεσοδιάστημα αυτής της αλλαγής τι θα κάνει η εταιρία για να συνεχίσει να λειτουργεί αποδοτικά?

**Αρα το μεγάλο complexity των μεγάλων επιχειρήσεων επηρεάζει αρνητικά.**

Ακριβώς. Το μεγάλο level of complexity πολλές φορές λειτουργεί αποτρεπτικά. Ένας άλλος πολύ σημαντικός παράγοντας είναι ότι οι μεγάλες επιχειρήσεις έχουν πάρα πολύ ισχυρό εσωτερικό IT τμήμα με ένα μεγάλο αριθμό υπαλλήλων. Μπορούμε να πούμε ότι το IT στις μεγάλες εταιρίες είναι μια ξεχωριστή εταιρία μέσα στην ίδια την εταιρια. Το γεγονός ότι αυτό το μεγάλο IT τμήμα έχει διαμορφώσει μια κουλτουρα αντιμετώπισης όλων των σχετικων θεμάτων αλλά και το ότι η εταιρίαβλέπει αυτό το IT τμήμα ως μια εργασιακή επένδυση, κάνει ακόμα πιο δύσκολο το outsourcing και γενικά τις απότομες αλλαγές όπως τη μεταφορά στο cloud.

**Οπότε μιλάμε για ένα ισχυρό resistance to change από πλευράς της μεγάλης εταιρίας.**

Προφανώς. Το change management που απαιτείται είναι πολύ πιο απαιτητικό στην περιπτωση της μεγάλης επιχείρησης απ’αυτή της μικρομεσαίας. Επίσης το θέμα της ασφάλειας είναι επίσης μια πολύ μεγάλη ανησυχία που πολλαπλασιάζεται στην περίπτωση της μεγάλης επιχείρησης απ’αυτή της μικρομεσαίας. Οι μεγάλες επιχειρήσεις αντιμετωπίζουν μεγαλύτερο ρίσκο να δεχτούν κάποια κακόβουλη ενέργεια γιατί τα δεδομένα τους, π.χ πελατολόγιο, τιμολογιακές πολιτικές, πως έχουν στήσει το δίκτυο τους, θεωρούνται πολύ πιο σημαντικά και αξιοποιήσιμα απο μιας μικρότερης επιχείρησης. Επίσης και η πραγματική ζημιά αλλά και η ζημια στη φήμη μιας μεγάλης επιχείρησης θα είναι πολύ μεγάλη αν συμβεί κάτι τέτοιο. Έχει πολύ μεγαλύτερη αξία η πληροφορία της μγάλης επιχείρησης ως προς το εξωτερικό της περιβάλλον από την αξία της πληροφορίας μιας μικρότερς επιχείρησης και

αυτό ισχύει επειδή το ρίσκο που αναλαμβάνει μια μεγάλη επιχείρηση ως προς το business αποτέλεσμα είναι μεγαλύτερο απ'αυτό που αναλαμβάνει μια μικρότερη.

**Αν μιλήσουμε για το κόστος, μπορούμε να πούμε πως λόγω των πολύ μεγάλων φορτίων δεδομένων που διακινεί μια μεγάλη εταιρία θα ήταν πιθανως πιο κοστοβόρο να χρησιμοποιήσει μια cloud λύση απ'ότι να χρησιμοποιούσε μια on-premise?**

Δεν είναι απόλυτο αυτό. Ακόμα και οι μεγάλες επιχειρήσεις θα μπορούσαν να βρουν οικονομίες κλίμακος πηγαίνοντας σε public cloud. Και αυτό γιατί οι υποδομές πο έχουν δεν είναι απλές. Αντίθετα περιλαμβάνουν redundancy συστήματα με failover δυνατότητες και γενικά προσπαθούν να παραμένουν πάντα state of the art, και αυτό όπως είπαμε κοστίζει πάρα πολύ. Οπότε εκτιμώ ότι θα μπορούσαν να βρουν οικονομίες κλίμακος χρησιμοποιώντας τις υποδομές ενός public cloud. Αλλά η κουλτούρα όπως είπα πιο πριν και οι ισχυρές IT οντότητες που κάνουν το change management πολύ πιο απαιτητικό, είναι αυτό που δεν τους αφήνει να προχωρήσουν. Οπότε αυτό που κάνουν πολλές φορές είναι να εκμεταλλεύονται τουλάχιστον σε επίπεδο υποδομών τα οφέλη της cloud λογικής, όπως το virtualization στήνοντας private cloud. Αυτός είναι και ένας πολύ σημαντικός λόγος που δεν αυξάνεται σημαντικά η υιοθέτηση μιας ERP λύσης σε public cloud από τις μεγάλες εταιρίες γιατί σε πάρα πολλές περιπτώσεις στήνουν δικά τους datacenters στην λογική του private cloud. Έτσι εκμεταλλεύονται τη συνέργια στο επίπεδο των υποδομών και τελικά το μειωμένο κόστος από αυτή κρατώντας ταυτόχρονα τη λειτουργία και ης διαχείρησης της εφαρμογής στο εσωτερικό της επιχείρησης. Αλλά όπως είπαμε

**Μπορούμε να μιλήσουμε για άλλες ευκαιρίες που παρέχει το cloud ERP στις μεγάλες επιχειρήσεις?**

Μπορούμε να μιλήσουμε για μείωση κόστους από άλλες παραμέτρους. Κάνοντας outsource τη λειτουργία και τη συντήρηση του συστήματος στον πάροχο, μειώνεται η ανάγκη διατήρησης ενος πολυπληθούς IT τμήματος, μειώνοντας έτσι το κόστος σε εργατικό δυναμικό. Η αλλιώς όπως είπαμε και πιο πριν μπορεί το κόστος σε IT εργατικό δυναμικό να γίνει πιο παραγωγικό και με μεγαλύτερη προστιθέμενη αξία απελευθερώνοντας τους υπαλλήλους από χαμηλού επιπέδου εργασίες και απασχολώντας τους με εργασίες που έχουν στόχο το business growth. Απ΄την πλευρά της μεγάλης επιχείρησης, όταν το IT είναι εξαιρετικά δομημένο με ισχυρούς πόρους και λειτουργεί αποδοτικά είναι πολύ δυσκολο για τη διοίκηση να πάρει μια απόφαση και να το αλλάξει κάνοντας outsource το ERP που ειναι η καρδιά του. Θα σου δώσω ένα αντίθετο παράδειγμα. Αυτή τη στιγμή υπάρχει μια τάση σε πάρα πολλές χώρες όπως και στην Ελλάδα να πάνε τον δημόσιο τομέα, που θα μπορούσαμε να τον δούμε σαν μια πολύ μεγάλη επιχείρηση, σε λογική cloud computing και SaaS. Αυτό συμβαίνει επειδή σε καμία περίπτωση δεν είναι τόσο ισχυρή η δομή του IT, αφού η δημόσιοι τομείς χαρακτηρίζονται από μεγάλο κατακερματισμό στον τομέα αυτό γενικά. Το συμπέρασμα είναι ότι ο μεγάλος οργανισμός που δεν είναι τόσο δομημένος με ισχυρό IT είναι θετικός στο cloud ERP adoption, ενώ ο μεγάλος οργανισμός που είναι δομημένος με ισχυρό και αποδοτικό IT που είναι πολύ δεμένο με το business κομμάτι της εταιρίας και στο οποίο έχουν γίνει μεγάλες επενδύσεις είναι πολύ δύσκολο να κάνει μια τέτοια μεγάλης

κλίμακας αλλαγη γιατί το resistance είναι πολύ μεγάλο. Αυτός είναι ο βασικότερος λόγος. Το πόσο ισχυρό είναι το IT μέσα στην επιχείρηση. Οι μικρομεσαίες επιχειρήσεις πολλές φορές δεν διαθέτουν IT τμήμα και προσλαμβανουν IT συνεργάτες. Οπότε ο μικρομεσαίος πελάτης έχει ένα πολύ μεγαλύτερο βαθμό ελευθερίας να διεκδιίσει μια αλλαγή προς την κατεύθυνση του cloud.

**Ποιό πιστεύεται πως θα είναι το μέλλον του cloud ERP adoption σε μικρομεσαίες και μεγάλες επιχειρήσεις?**

Οι μικρομεσαίες εταιρίες προβλέπω ότι θα πάνε μαζικά σε cloud λύσεις κατά πάσα πιθανότητα. Για τις μεγάλες εταιρίες θεωρώ ότι το market share του cloud ERP θα μεγαλώσει και παράλληλα το κομμάτι των on-premise εγκαταστάσεων θα μειωθεί αλλά όχι δραματικά. Σε πολύ σύντομο χρονικό διάστημα, δηλαδή σε 2-3 χρόνια θα εμφανίζονται πολύ συχνά συγκροτημένες υβριδικές λύσεις. Δηλαδή το κομματί του core functionality όπως η παραγωγή θα παραμείνει on-premise και λειτουργίες ERP που θα λειτουργούν πιο αποδοτικά εκτός επιχείρησης θα πάνε στο cloud. Π.χ λειτουργίες όπως το timesheet, η μισθοδοσία, το CRM ή κάποιο project management εργαλείο δεν υπάρχει λόγος να μείνουν μέσα στην εταιρία και θα λειτουργούσαν πιο εύκολα, αποδοτικά και με μικρότερο κόστος στο cloud τα processes που βρίσκονται πίσω απ'αυτές τις λειτουργίες.

**Συνοπτικά ποιός θα μπορούσαμε να πούμε ότι είναι ο λόγος που οι core λειτουργίες όπως η παραγωγή θα μείνουν on cloud?**

Παίζει ρόλο το επίπεδο της αποδοτικότητας της λειτουργίας των σγκεκριμένων processes σε cloud. Αλλά επίσης όπως είπαμε και πριν σημαντικό ρόλο παιζει και το ότι τα core functions δύσκολα μπορεί η μεγάλη επιχείρηση να δεχτεί να τα βγάλει απ'το εσωτερικό της. Αλλά και οι πάροχοι πρέπει να εξελίξουν τα προϊόντα και τις υπηρεσίες τους έτσι ώστε να μπορούν να δώσουν τέτοιου είδους υβριδικές λύσεις, γιατί δεν είναι εύκολο να απομονώσεις μέρος του functionality ενος ERP στο cloud και το σύστημα να συνεχίσει να λειτουργεί σ'ενα ενιαίο περιβάλλον χωρίς προβλήματα συμβατότητας και απόδοσης. Άρα και οι πάροχοι πρέπει να επενδύσουν πάνω σ'αυτό για να μπορούν να δίνουν ικανοποιητικές λύσεις. Το υβριδικό μοντέλο μπορεί να εκφραστεί και σ'ένα κομμάτι της μικρομεσαίας αγοράς αλλά πιο έντονα πιστεύω θα το δούμε στις μεγάλες εταιρίες. Βέβαια θα ήθελα να προσθέσω ότι ακόμα και οι megavendors του χώρου όπως η SAP και η JD Edwards δεν έχουν προχωρήσει τόσο πολύ για να προσφέρουν στις πολύ μεγάλες εταιρίες απόλυτα δομημένες και αποδοτικές λύσεις για cloud λειτουργία οι οποίες να ανταποκρίνονται στην πολυπλοκότητα και στις πάρα πολύυψηλές απαιτήσεις ως προς τη λειτουργία και την απόδοση σε όλα τα επίπεδα. Άρα και αυτό είναι ένας παράγοντας που κρατάει χαμηλά το adoption όσον αφορά τις μεγάλες εταιρίες.

**Πολύ ωραία. Δεν έχω άλλες ερωτήσεις να σας κάνω. Έχω καλυφθεί. Έχετε κάτι περισσότερο να προσθέσετε?**

Δε νομίζω. Αν χρειαστείς κάτι περισσότερο μπορούμε να τα ξαναπούμε.

**Ευχαριστώ πολύ για το ενδιαφέρον σας καθώς και για το χρόνο που μας διαθέσατε!**

Καλή επιτυχία.

## Appendix 3c – Interview 4 original transcript

**Ας ξεκινήσουμε με μια εισαωγική ερώτηση. Μπορείς να μου πεις δυο λόγια για την εταιρία στην οποία εργάζεσαι? Ποιό είναι το core business της, τι προϊόντα και υπηρεσίες προσφέρει?**

Το core business της εταιρίας είναι η παροχή devices and services. Το κομμάτι των devices είναι σχετικό με το την εισαγωγή της εταιρίας στο κομμάτι του mobility που είναι μεγάλο trend μέσω της παρόχης smartphones, tablets etc. Στο κομμάτι των services βλέπουμε πια το κομμάτι του cloud μέσα απ'το οποίο η εταιρία θέλει να παρέχει το software της, δηλαδή SaaS. Δηλαδή η στρατηγική της εταιρίας είναι να κάνει focus στο SaaS.

**Ποιός είναι ο ρόλος σου στην εταιρία?**

Partner account manager, βλέποντας κάθετα το κομμάτι των ERP και CRM προϊόντων της εταιρίας. Είμαι υπεύθυνος εμπορικά για όλο το κομμάτι του συγκεκριμένου business. Έχω επαφή με existing αλλά και με prospect πελάτες όπως επίσης και με existing και prospect partners. Η εταιρία δουλεύει με συνεργάτες και δεν υπάρχει καμια απ'ευθείας εμπλοκή της με τους πελάτες στο κομμάτι της πώλησης. Εμείς αυτό που προσφέρουμε είναι την πλατφόρμα του λογισμικού και ο partner προσφέρει τις δικές του κάθετες λύσεις πάνω σ'αυτή και τα services υλοποίησης και εκπαίδευσης πάνω στην πλατφόρμα.

**Αυτή τη στιγμή ποιό software delivery model υποστηρίζετε? παρέχετε cloud based software?**

Αυτή τη στιγμή το ERP δεν είναι διαθέσιμο μέσω cloud αλλά θα είναι σύντομα. Το σενάριο λέει ότι για το ERP όπως και για τα υπόλοιπα προϊόντα μας θα μπορούμε να παρέχουμε και υβριδικές λύσεις, δηλαδή είτε on-premises, είτε SaaS, είτε υβριδικές λύσεις

**Θα μπορούσες να μου δώσεις έναν ορισμό του cloud ERP όπως τον αντιλαμβάνεται η εταιρία και εσυ?**

Είναι ακριβώς η ίδια λύση που παρέχουμε on-premises η οποία είναι τοποθετημένη στο cloud. Αυτό πρακτικά σημαίνει ότι ο user έχει ακριβώς το ίδιο experience και υπάρχει ουσιαστική διαφορά τόσο στο maintenance αλλά και στη διαχείρηση του προϊόντος απ'το IT.

**Ποιά είναι η απήχηση του cloud ERP στην αγορά αυτή τη στιγμή?**

Το cloud ERP ειδικά όταν μιλάμε για μεγάλες εγκαταστάσεις αντιμετωπίζει προβλήματα εμπιστοσύνης απ'τις εταιρίες και δεν έχει την ίδια αντιμετώπιση με π.χ λογισμικό γραφείου η σε mail servers σε SaaS. Το κομμάτι του ERP επειδή θεωρείται η περιουσία της εταιρίας, τα data της εταιρίας, είναι ένα core προϊόν που ειδικά οι μεσαίες και οι μεγάλες εταιρίες τουλαχιστον επί του παρόντος προτιμούν να το έχουν on-premise. Το γεγονός αυτό σχετίζεται

πολύ με αποφάσεις ψυχολογίας που παίρνουν οι επιχειρήσεις και όχι επειδή υπάρχει κάποιο πρόβλημα ασφάλειας. Φυσικά και είναι αποδεδειγμένο ότι δεν υπάρχει πρόβλημα ασφάλειας. Και επίσης θα έπρεπε να λάβουμε υπ'αόψιν μας ότι και σε εγκαταστάσεις on-premise υπάρχουν προβλήματα ασφάλειας. Το κύριο θέμα είναι θέμα ψυχολογίας, ότι δηλαδή είναι critical data και θέλω να τα έχω on-premise, και επεκτείνεται σ'ενα πιο πρακτικό θέμα. Το θέμα αυτό είναι ότι οι μεσαίες και οι μεγάλες επιχειρήσεις έχουν ένα IT τμήμα το οποίο είναι hands-on στο κομμάτι του ERP,με την έννοια ότι τα εσωτερικά IT τμήματα επηρεάζουν πολύ την πλατφόρμα του ERP τόσο στο κομμάτι της τοπικής παραμετροποίησης όσο και στο κομμάτι του BI που είναι στημένο πάνω στο ERP και γενικότερα θέλουν να έχουν τον πλήρη έλεγχο αυτής της εφαρμογής.

**Ας εστιάσουμε στις μικρομεσαίες επιχειρήσεις. Διαβάζοντας την βιβλιογραφία πάνω στο αντικείμενο βλέπουμε μια σειρά απο πλεονεκτήματα που προσφέρει το cloud. Ποιάείναι κατά τη γνώμη σου όμως τα σημαντικά πλεονεκτήματα του cloud ERP όπως τα αντιλαμβάνονται οι μικρομεσαίοι που θα τους έκαναν να πάνε σε μία τέτοια εγκατάσταση και όχι σε μια παραδοσιακή on-premises εγκατάσταση?**

Το πιο σημαντικό πλεονέκτημα που βλέπουν οι μικρομεσαίες επιχειρήσεις στο cloud ERP είναι το κομμάτι της διαχείρησης. Δηλαδή οι μικρομεσαίες επιχειρήσεις εκτιμούν το γεγονός ότι έχοντας το ERP τους στο cloud δεν έχουν κανένα κόστος διαχείρισης αυτού του προϊόντος, δεν ανησυχούω πλέον για την συντήριση και διαχείρηση των servers που υπάρχουν στην εταιρία, για την πρόσβαση των users σ'αυτους τους servers και για την υποδομή που απαιτείται να υπάρχει στην εταιρία για να είναι δυνατή αυτή η επικοινωνία. Δηλαδή το mobility που προσφέρει το cloud ERP σε συνδυασμό με μηδενική επένδυση όσον αφορά την υποδομή και την συντήρηση του προϊόντος είναι πολύ σημαντικά πλεονεκτήματα του cloud που προσελκύουν μικρομεσαίες επιχειρήσεις.

**Μόλις αναφέρθηκες σε μια σειρά από πλεονεκτήματα. Το πρώτο είναι η μηδενική επένδυση, το δεύτερο είναι η αποφυγή του κόστους συντήρισης και τρίτον το mobility.**

Ακριβώς. Βέβαια η δυνατότητα του mobility υπάρχει και στις on-premise εκαταστάσεις αλλά το πλεονέκτημα που δίνει το cloud σ'αυτό το θέμα στις μικρομεσαίες επιχειρήσεις είναι ότι δε χρειάζεται η εγκατάσταση και συντήρηση μιας ολοκληρης υποδομής που εξυπηρετει αυτό το σκοπό, κάτι που έχει υψηλό κόστος αλλά και απαιτεί και effort απ'το HR της εταιρίας. Βέβαια πρέπει να έχουμε υπ'όψιν μας πως στο τέλος της μέρας όλα καταλήγουν στο κόστος και εννοείται πως αυτοί οι άνθρωποι που σε on-premise σύστημα θα διαχειρίζονταν αυτές τις υποδομές κοστίζουν.

**Υπάρχουν άλλα πλεονεκτήματα που το cloud ERP προσφέρει στις μικρομεσαίες επιχειρήσεις?**

Θα μπορούσαμε να μιλήσουμε για το πλεονέκτημα της ασφάλειας που δίνει το cloud. Πρακτικά για μια μικρομεσαία επιχείρηση το να στήσει μια υποδομή που να παρέχει υψηλά επίπεδα ασφάλειας στην on-premise εγκατάσταση και να μπορεί να τη συντηρεί είναι ένας μεγάλος πονοκέφαλος  που απαιτεί πάλι πολλά resources. Σε μια cloud εγκατάσταση από ένα

μεγάλο και σοβαρό πάροχο αυτή η υπηρεσία παρέχεται 100% σαν μέρος του συνολικού service χωρίς επιπλέον χρεώσεις και είναι μια επέκταση του πλεονεκτήματος της μείωσης κόστους που σου ανέφερα προηγουμένως. Θα μπορούσαμε ακόμα να μιλήσουμε για τη δυνατότητα disaster recovery που δίνει ο cloud πάροχος που πάλι απαιτεί κάποιο κόστος για να την έχει μια μικρομεσαία επιχείρηση in-house. Ακόμα το γεγονός ότι το cloud δίνει τη δυνατότητα για scalable λύσεις είναι ένα μεγάλο πλεονέκτημα το οποίο έχει πολύ μεγάλη αξία για επιχειρήσεις που παρουσιάζουν πολύ μεγάλη εποχικότητα. Η δυνατότητα δηλαδή που έχει μια εταιρία να αυξάνει και μειώνει χρήστες ανάλογα με τις ανάγκες που παρουσιάζονται σε εποχικό επίπεδο, που και πάλι συνδέεται με το θέμα του κόστους μιας και το κόστος χρήσης του συστήματος διαμορφώνεται ανάλογα με τις ανάγκες και δεν είναι fixed στα επίπεδα της μέγιστων αναγκών που θα ήταν με ένα in-house σύστημα.

**Υπάρχει το χαρακτηριστικό της εποχικότητας και στις μεγάλες επιχειρήσεις, έτσι ώστε να μπορούμε να μιλάμε για πλεονέκτημα που το cloud δίνει και σ'αυτές με το scalability που προσφέρει?**

Μπορούμε να πούμε ότι και σε αυτές μπορεί να παρατηρηθεί εποχικότητα στις ανάγκες, που μπορεί να αντιμετωπιστεί από ένα cloud ERP. Δεν είναι πολύ συχνό φαινόμενο στο ERP κομμάτι έτσι όπως το έχουμε αντιμετωπίσει εμείς εδώ, εννοώντας την πολυπλοκότητα που παρουσιάζουν σε ERP πλατφόρμα οι περισσότερες λύσεις να μπορεί να εξυπηρετηθεί ενδεχόμενη εποχικότητα. Ας πάρουμε το παράδειγμα των παραγωγικών εταιριών που μπορεί να παρουσιάζουν εποχικότητα. Υπάρχει εποχικότητα στην ζήτηση για παραγωγή αλλά δεν μεταφράζεται σε εποχικότητα στον αριθμό των ERP users. Μπορεί να υπάρχει εποχικότητα στους εργάτες ή στους υπαλλήλους του call center αλλά αυτοί το πιο πιθανό είναι να μην είναι χρήστες ERP αλλά χρήστες μιας πλατφόρμας που μπορεί να πλησιάζει μια CRM πλατφόρμα. Συνήθως οι ERP users είναι πιο core users και γι'αυτό η εποχικότητα μιας επιχείρηση δύσκολα τους ακουμπά. Ωστόσο, σε επιχειρήσεις που ασχολούνται με το retail μπορούμε να μιλήσουμε για εποχικότητα που ακουμπά ακόμα και τους ERP users. Υπάρχουν πλατφόρμες όπως και η δικιά μας που εξυπηρετούν retail λύσεις με τους users να είναι ταυτόχρονα ERP users. Παρόλα αυτά οι retailers κατά την άποψη μου προτιμούν να μην ανεβοκατεβάζουν αυτούς τους users, καθώς τη θεωρούν πιο safe επιλογή. Επίσης οι μεσαίοι και οι μεγάλοι retailers έχουν συνήθως ένα μεγάλο και πολύ ικανό IT τμήμα. Αυτά τα δύο χαρακτηριστικά τους ωθούν τουλάχιστον προς το παρόν να κρατούν και να διαχειρίζονται το ERP τους on-premise. Στο μέλλον βέβαια αυτό ίσως και να αλλάξει.

**Ας μιλήσουμε τώρα για πιθανά χαρακτηριστικά του cloud ERP που απωθούν μικρομεσαίες επιχειρήσεις απ'την υιοθέτηση μια cloud λύσης.**

Θα μπορούσα να πω πως το cloud απωθεί κυρίως απο πλευράς ψυχολογίας καθώς δημιουργεί μια ανασφάλεια το γεγονός ότι τον έλεγχο του συστήματος μου και των δεδομένων μου δεν τον έχω εγώ αλλά μια άλλη εταιρία. Για να σου πω την αλήθεια, ειδικά στις μικρές και μεσαίες επιχειρήσεις, εγω αισθάνομαι πως το μέλλον λέει ότι θα κάνουν outsource σχεδόν όλες τις υποδομές τους όχι μόνο επειδή αυτό λέει το trend αλλά επίσης επειδή αυτό είναι το κοστολογικό μοντέλο που μπορεί να αποδειχθεί κερδοφόρο γι'αυτές. Νομίζω ότι στο μέλλον

μια μικρομεσαία επιχείρηση για να είναι κερδοφόρα θα πρέπει να τρέχει μόνο το core business της, που στις μικρομεσαίες επιχειρήσεις που δεν ασχολούνται με το IT, σε καμία μερίπτωση δεν είναι το ERP. Θεωρώ ότι θα υπάρξει μια έντονη τάση όλος ο υποστηρικτικός μηχανισμός μιας μικρομεσαίας επιχείρησης, και σ'αυτό δε βάζω μόνο το ERP αλλά π.χ και το κομμάτι του finance, να γίνει outsourced σε τρίτους. Οπότε σ'αυτά τα πλαίσια και βλέποντας το cloud ERP ως SaaS και επομένως ως μια μορφή outsourcing θεωρώ ότι θα πάει πολύ πιο εύκολα προς τα εκεί για τις μικρομεσαίες παρά για τις μεγαλύτερες επιχειρήσεις. Προς το παρόν πάντωσε αυτό που θα μπορούσα να πω ώς μειωνέκτημα του cloud είναι αυτή η αίσθηση της απωλειας του ελέγχου των data.

**Άρα μιλάμε για ένα θέμα mentality και όχι για ένα πραγματικό πρόβλημα ασφάλειας.**

Πραγματικό πρόβλημα ασφάλειας δεν υπάρχει. Αν υποθέσουμε όμως ότι υπήρχε θα ήταν σίγουρα πολύ μικρότερο απ'το πρόβλημα που αντιμετωπίζει μια μικρομεσαία επιχείρηση η οποία όχι μόνο έχει δημιουργήσει μια υποδομή ασφαλειας που με το ζόρι μπορεί και συντηρεί αλλά και που μπορεί ο οποιοσδήποτε τεχνικός που έχει πρόσβαση στην εφαρμογή είτε στην εταιρία είτε εξ'αποστάσεως για να λύσει κάποιο πρόβλημα να πάρει ένα back-up απ'όλη τη βάση και ουσιαστικά να κλέψει όλα τα data της εταιρίας. Άρα το επιχείρημα αυτό είναι πολύ ισχυρό για να πείσεις ότι για μικρομεσαίες επιχειρήσεις που δεν έχουν τη δυνατότητα να διατηρούν τις υποδομές και το HR που απαιτείται για να δημιουργήσουν υψηλά επίπεδα ασφάλειας, το πρόβλημα είναι πολύ μεγαλύτερο σε on-premise εγκαταστάσεις. Ωστόσο όταν η συζήτηση μετακινηθεί στις μεγάλες επιχειρήσεις, οιοποίες συνήθως ασχολούνται ιδιαίτερα με το κομμάτι της ασφάλειας και έχουν τη δυνατότητα να στήνουν και να συντηρούν άριστες υποδομές, τα πράγματα είναι διαφορετικά καθώς προτιμούν ένα τόσο σημαντικό θέμα όπως αυτό της ασφάλειας των δεδομένων τους να το χειρίζονται οι ίδιες. Οι μικρομεσαίες επιχειρήσεις όμως πολύ δύσκολα μπορούν να εφαρμόσουν μοντέλα security που μπορούν να τους παρέχουν μεγάλοι cloud providers. Παρόλα αυτά είναι δύσκολο να πείσεις τους ιδιοκτήτες ακόμα και μικρών επιχειρήσεων να αποχωρηστουν τα data τους και να τα κάνουν outsource σε κάποιον τρίτο, και μιλάω κυρίως για το mentality που επικρατεί στην Ελλάδα. Σε πιο δυτικές χώρες ίσως αυτό να είναι πιο εύκολο και οι επιχειρηματίες πιο δεκτικοί και σχετικοί με το τι σημαίνει να δουλεύεις σε περιβάλλον SaaS.

**Οπότε αν καταλαβαίνω καλά εδώ θέτεις ενα θέμα ελλειπούς γνώσης και εμπειρίας πάνω στο cloud που δυσκολεύουν τη υιοθέτηση cloud λύσεων.**

Ακριβώς. Το κατά πόσο ξέρουν οι επιχειρήσεις τι σημαίνει cloud είναι ένα πολύ σοβαρό θέμα που επηρεαζει την ανάπτυξη τέτοιων λύσεων. Αλλά και κάτι πολύ σημαντικό είναι και το πόσο θέλουμε εμείς οι άνθρωποι της πληροφορικής να τον κάνουμε να μάθει. Οι ανθρωποι της πληροφορικής παίζουν ένα πάρα πολύ σημαντικό ρόλο στο κομμάτι της εκπαίδευσης των users. Ουσιαστικά εμείς κάνουμε το training. Δε μπορούμε να περιμένουμε από ένα επιχειρηματία ειδικά μικρομεσαίο, ο οποίος ασχολείται με δεκάδες πραγματα για να τρέξει σωστά την επιχείρηση του που όπως είπαμε το core business της δεν είναι το κομμάτι του IT, να γνωρίζει όλες αυτές τις νέες διαστάσεις και τα χαρακτηριστικά του cloud έτσι ώστε να νιώσει ασφαλης. Επίσης οι μικρομεσαίοι επιχειρηματίες συνήθως έχουν έναν εξωτερικό IT

provider που θα τους δώσει τις λύσεις που χρειάζονται και θα τους λύσει τα όποια προβλήματα γιατί δεν έχουν τη δυνατότητα να διατηρούν εσωτερικό IT τμήμα. Πολλές φορές εμπιστεύονται σχεδόν τυφλά αυτόν τον provider μετά από αρκετό καιρό συνεργασίας και αν αυτός ο συνεγάτης δεν υποστηρίξει ο ίδιος έντονα μια λύση ή μια μεταφορά σε λύση cloud ο επιχειρηματίας πολύ δύσκολα θα πάρει την απόφαση μόνος του γιατί δεν θα θέλει να ανατρέψει αυτή την προσωπική σχέση που έχει δημιουργήσει με τον IT provider. Και ειδικά στην Ελλάδα και σε αλλες αγορές που δεν είναι μεγάλες αναπτύσονται τέτοιες προσωπικές σχέσεις που η ανατροπή τους είναι ένα πρόβλημα για τους επιχειρηματίες. Οπότε καταλαβαίνουμε πως όταν ένας IT provider, παρόλο που μπορεί να γνωρίζει για το cloud και τα πλεονεκτήματα του πολύ δύσκολα θα τα συζητήσει με τον πελάτη του αφού θα φοβάται ότι θα τον χάσει, αν το προιόν του δεν διατηθεται μέσω cloud, είτε επειδή δεν έχει προλάβει να το κάνει διαθέσιμο σε cloud, είτε επειδή θεωρεί την επένδυση που πρέπει να κάνει για να μπει σ'αυτή την αγορά μεγάλη που με τα δεδομένα της σημερινης οικονομικής κρίσης, είτε γιατί υπερισχύει η δύναμη της αδράνοιας και προτιμά να συνεχίσει να παρέχει on-premise λύσεις. Επίσης μπορεί να μη θέλει να ασχοληθεί με το cloud και ως εκ τούτου να μην ενημερώνει τους πελάτες του σχετικά, γιατί μπορεί να πιστεύει πως το περιθώριο κέρδους του θα είναι μικρότερο απ'το να δουλευει με on-premises συστήματα. Όλα αυτά επηρεάζουν και τον IT συνεργάτη και τον τελικό πελάτη. Και θελω να τονίσω ότι πολύ σημαντική είναι η δύναμη της αδράνοιας. Τι θέλω να πω μ'αυτό? Κατ'αρχήν πολύ λίγες μικρομεσαίες εταιρίες αυτή τη στιγμή δεν έχουν ERP και οι μετρήσεις λένε ότι το ERP τους το αλλάζουν μια φορά στα δέκα χρόνια. Επομένως υπάρχει ένα σχετικό stability στην αγορά με τάση μάλλον να μεγαλώνει αυτός ο χρόνος και όχι να μικραίνει, οπότε βλέπουμε να υπάρχει έντονη αδράνεια στην αγορά που μπορεί να μεταφραστεί ως εξής: "το έχω, δουλεύει, είμαι καλά μ'αυτό, γιατί τώρα να το αλλάξω? Έχω πολύ περισσότερα να κερδίσω από μια αλλαγή σε cloud έτσι ωστε να έχει και νόημα αυτό το κόστος της αλλαγής σε σχέση μ'αυτό που έχω σήμερα και είμαι μια χαρά?". Και απ'την άλλη ο partner αναγνωρίζει ότι έχει μικρότερα περιθώρια κέρδους μέσω του cloud αφού ο πελάτης θα χρειάζεται λιγότερη υποστήριξη από αυτόν, οπότε τελικά βλέπει τη μετάβαση στο cloud ως ζημιά στην τσεπη του.

**Μίλησες για το κόστος της μετάβασης στο cloud για τον μικρομεσαίο πελάτη. Υπάρχουν μελέτες όμως που δείχνουν ότι μακροπρόσθεσμα οι μικρομεσαίες επιχειρήσεις μπορούν να πετύχουν μεγάλη μείωση στο κόστος χρήσης και συντήρησης μέσω του cloud.**

Είναι αλήθεια αυτό. Υπάρχουν μελέτης που δείχνουν πως για τις μικρομεσαίες επιχειρήσεις μακροπρόθεσμα μπορεί να υπάρξει μείωση κόστους η οποία όμως δεν είναι και δραματική ειδικά αν η εταιρία δεν έχει ένα business model που να παρουσιαζει εποχικότητα δηλαδή αυξομείωση στην ανάγκη για resources. Και αυτό συμβαίνει επειδή το on-premises μοντελο κοστολογικά φθίνει. Η τιμή που πλήρωνε ο πελάτης για συντήρηση στον partner π.χ από 60 ευρώ εύκολα συναντάται πλέον στα 40 ευρώ οπότε μιλάμε για μια μεγάλη μείωση που κάνει μικρότερη τη διαφορά στο κόστος μεταξύ cloud και on-premises συστημάτων. Επίσης οι servers και γενικά το hardware που απαιτείται για ένα in-house σύστημα μπορεί να αγοραστεί πλέον σε μικρότερες τιμές και μπορεί κάποιος να υποθέσει πως αυτή η πτωτική τάση θα συνεχιστεί. Άρα το on-premise μοντέλο δεν είναι ένα σταθερό κοστολογικά μοντέλο για να μπορέσουμε να κάνουμε μια ασφαλή συγκριση.

**Είναι πολύ ενδιαφέρον αυτό που μου λες γιατί ειδικά για τις μικρομεσαίες επιχειρήσεις υπάρχουν πολλά άρθρα και έρευνες που αναφέρονται σε μειωσεις στο κόστος 30-40% μέσω cloud.**

Μπορώ να σου πω ότι τουλάχιστον στην Ελλάδα αυτές οι διαφορές στις τελικές του τιμές δεν είναι αυτές. Να σου εξηγήσω τι εννοώ. Όταν ξεκινάς μια διαπραγμάτευση οι τιμές είναι τιμές pricelist και οι διαφορές που διαμορφώνονται είναι αυτές που ανέφερες. Όταν όμως φτάνεις να δεις σε τι τιμές αγοράζει τελικά ο πελάτης ένα on-premises σύστημα διαπιστώνεις ότι η τιμή είναι σημαντικά χαμηλότερη. Για παράδειγμα υπάρχουν περιπτώσεις on-premises εγκαταστάσεων που local ISVs δίνουν τα licenses δωρεαν και χρεώνουν μόνο τα implementation services (που είναι σχεδόν τα ίδια με αυτά των cloud εγκαταστάσεων)και τα maintenance fees στα οποία και σ'αυτά κάνουν εκπτώσεις. Άρα αυτά τα στοιχεία που μου έδωσες είναι σαφή και αληθινά αν μιλάμε για pricelists και όχι για πραγματικές τιμές που τελικά αγοράζει ο πελάτης και αυτό γιατί αντίθετα με τις on-premises εγκατασάσεις οι cloud εγκαταστάσεις παρέχουν ελαχιστα περιθώρια εκπτώσεων. Εμείς σαν εταιρία στο cloud δεν συζητάμε έκπτωση ενώ σε on-premises σαφέστατα συζητάμε. Άρα πρέπει πάντα να παίρνουμε υπ'όψιν τις συνθήκες της τοπικής αγοράς όταν συζητάμε κοστολογικά μοντέλα. Αυτό που σου λέω τώρα δεν ισχύει μόνο για την Ελλάδα αλλά και για πάρα πολλές χώρες της κεντροανατολικής ευρώπης.

**Ας πάμε τώρα στις μεγάλες εταιρίες και ας μιλήσουμε για τα opportunities που παρουσιάζει η υιοθέτηση και χρήση ενός cloud ERP, παιρνοντας ως δεδομένο βέβαια ότι μια μεγάλη εταιρία έχει κάνει πιθανότατα μια σημαντική επένδυση στο in-house on premise ERP της.**

Θα σου πω. Ανάλογα με το που έχει κάνει focus μια μεγάλη εταιρία μπορεί σε κομμάτια των λύσεων που έχει αυτή η εταιρία να τη συμφέρει να πάει σε cloud. Συνήθως το κομμάτι αυτό για μια μεγάλη εταιρία δεν είναι το ERP γιατί έχουν κάνει πολύ μεγάλη επένδυση σ'αυτό και έτσι δύσκολα εξετάζουν να το πάνε στο cloud. Μια λύση cloud θα μπορούσε να την σκεφτεί μια μεγάλη εταιρία αν παρουσιαζει έντονη εποχικότητα η οποία όμως όπως είπαμε και πιο πριν ακουμπάει και το κομμάτι των ERP users με χαρακτηριστικό παρδειγμα αυτό των retailer.Ένα άλλο πλεονέκτημα που ισχύει για όλες τις επιχειρήσεις είναι η μετάβαση του ERP απο ένα κοστολογικό μοντέλο capital expenditure σε operating expenditure. Βέβαια αυτό το κοστολογικό μοντέλο δεν είναι αποκλειστικά παρεχόμενο μέσω cloud. Θελω να πω πιο συγκεκριμένα πως υπάρχουν μοντέλα συμφωνα με τα οποία μπορείς να κάνεις leasing τα licenses μιας on premise εγκατάστασης που και αυτό εντάσσεται στα πλαισια του operating cost.

**Δεν γλιτώνει όμως έτσι η εταιρία την μεγάλη αρχική κεφαλαιακή επένδυση που πρέπει να κάνει πάνω στην αγορά υποδομων, κάτι που γλιτώνει στο cloud.**

Αυτό είναι αλήθεια. Το cloud by default είναι opex και παρέχει και το πλεονέκτημα της αποφυγής της αρχικής κεφαλαιακής επένδυσης σε υποδομές αλλά και το πλεονεκτήματα του ότι οι cloud υπηρεσίες λογίζονται ως operating costs. Απλά σου τονίζω το ότι ακόμα και σε εγκατάσταση on-premise μέσω του subscription model σε επίπεδο licenses, μια εταιρία

μπορεί να κάνει μέρος του κόστους από capex opex. Η αλήθεια είναι ότι δεν μπορώ να σκεφτώ κάποιο άλλο λόγο που μια μεγάλη επιχείρηση θα σκεφτόταν για να πάει το ERP της στο cloud.

**Ας μιλήσουμε τότε για χαρακτηριστικά του cloud και για παράγοντες που δυσκολεύουν τη μετάβαση αυτή απ'το on-premises μοντέλο σ'ένα μοντέλο cloud για μια μεγάλη εταιρια.**

Η πολύ μεγάλη επένδυση που έχουν συνήθως κάνει οι μεγάλες επιχειρήσεις πάνω στην ίδια τη λύση του ERP τους όσο και στους ανθρώπους που τη χειρίζονται και την συντηρούν. Και οι άνθρωποι αυτοί ιδιαίτερα στην περίπτωση του ERP είναι πολύ σημαντικοί γιατί δεν έχουν μόνο τεχνολογικό background για να ασχολούνται μόνο με τη συντήριση και την επίλυση προβλημάτων αλλά έχουν επίσης business expertise που τους κάνει βασικό παράγοντα για τη στήριξη της σωστής και αποδοτικής για την επιχείρηση λειτουργίας του συστήματος. Είναι άνθρωποι που γνωρίζουν πάρα πολύ καλά το business της εταιρίας και στηρίζουν ουσιαστικά την εταιρία πάνω σ'αυτό το business, έχοντας τη δυνατότητα να υλοποιούν γρήγορα παραμετροποιώντας ανάλογα το σύστημα όποια αλλαγή επιβάλει το συνεχώς μεταβαλλόμενο περιβάλλον στο οποίο πλέον ζουμε. Το cloud προσφέρει πάρα πολλά τεχνολογικά πλεονεκτήματα αλλά δεν μπορεί να βοηθήσει μια μεγάλη εταιρία να αλλάξει τον τρόπο που θέλει να δουλεύει το ERP της οπως ακριβώς η εταιρία θέλει έτσι ώστε να ικανοποιούνται οποιεσδήποτε αλλαγές στο business της. Δε μπορεί ο cloud vendor να ξέρει ακριβώς πως η εταιρία θα ήθελε να αλλάξει το business της. Ειδικά οι μεγάλες επιχειρήσεις θέλουν αυτές οι αλλαγές στο business τους, που πολλές φορές γίνεται με μεγάλες ταχύτητες, να γίνονται άμεσα reflected στην ERP πλατφόρμα τους. Για να γίνουν αυτές οι αλλαγές άμεσα reflected αυτό σημαίνει ότι η εταιρία έχει ανθρώπους μέσα στην εταιρία τους οποίους δεν μπορεί να αποφύγει ακόμα και να ήθελε. Σ'αυτά τα επίπεδα χρειάζονται αυτοί οι άνθρωποι που είν αι experts στο business αλλά και άμεσα συνδεδεμένοι με την ERP πλατφόρμα. Άρα αφού τους χρειάζεται αυτούς και δεν μπορεί να τους καταργήσει θεωρεί ότι ακόμα και στο cloud model δεν έχει πολλά να κερδίσει από πιθανή μείωση του μισθολογικού κόστους. Και αυτό ισχύει γιατί το κόστος του IT δεν είναι στο τεχνολογικό κομμάτι και στους ανθρώπους που έχουν ρόλο τεχνικού, αλλά στο business κομμάτι, στους consultants δηλαδή που γνωρίζουν το business της εταιρίας πολύ καλύτερα απ'τον οποιοδήποτε vendor γι'αυτό και είναι και πολύ ακριβοί και απαραίτητοι ακόμα κ σε περιβάλλον cloud. Άρα το πλεονέκτημα του outsource που όπως είπαμε είναι πολύ σημαντικό για τις μικρομεσαίες επιχειρήσεις, στις μεγάλες μειώνεται κατά πολύ γιατί συνεχίζουν να χρειάζονται τους ανθρώπους που ξέρουν πολύ καλά το business της εταιρίας έτσι ώστε να μπορούν να το κάνουν apply στο ERP. Οπότε μια μεγάλη εταιρία μπορεί να κερδίσει απ'το cloud μείωση στο τεχνολογικό κομμάτι, δηλαδή σε υποδομές και τεχνικούς. Αλλά αυτό όπως είπαμε δεν είναι το μεγαλύτερο κομμάτι του κόστους. Και ακόμα πρέπει να προσθέσουμε πως αυτή τη στιγμή τα cloud models που υπάρχουν στην αγορά υποστηρίζουν πιο πολύ ένα μοντέλο έτοιμης εγκατάστασης που δεν δίνει το δικαίωμα στην εταιρία να κάνει οποιεσδήποτε αλλαγές εξυπηρετούν το business της. Αντίθετα το on-premise μοντέλο δίνει τη δυνατότητα στις εταιρίες να κάνουν οποτεδήποτε οποιαδήποτε customization θέλουν και οι μεγάλες εταιρίες μπορούν να το εκμεταλλευτούν

αυτό επειδή έχουν και τα funds και τους ανθρώπους για να το υποστηρίξουν, σε αντίθεση με τις μικρομεσαίες και κυρίως τις μικρές.

**Δηλαδή το cloud ERP δεν δίνει μεγάλα περιθώρια customization**

Αυτό που λέω εγώ είναι ότι δεν είναι προτινόμενο να αλλάζεις το source code της εφαρμογής που τρέχει στο cloud. Βέβαια μπορεί να έρθει ένας vendor και να πει ότι έγω παρέχω τις ίδιες δυνατότητες customization στο cloud όπως και στο on-premise. Σε κάθε περίπτωση όμως αυτό δεν είναι το προτινόμενο και ασφαλές σενάριο έτσι όπως διαμορφώνονται τουλάχιστον τα πράγματα αυτή τη στιγμή.

**Μπορείς να μου δώσεις την αίσθηση που έχεις για το μέλλον του cloud ERP στις μικρομεσαίες αλλά και στις μεγάλες επιχειρήσεις?**

Βλέπω πως το μέλλον ανήκει στις υβριδικές λύσεις. Δε μπορώ να πω ότι βλέπω μόνο cloud ή μόνο on-premise. Πιο συγκεκριμένα βλέπω το cloud να εισχωρεί στην αγορά και να παίρνει ένα σημαντικό κομμάτι της αλλά επειδή το ERP ειναι solution και όχι απλά υποδομή ένα μέρος του προβλέπω να παραμένει on-premise για τους λόγους που είπαμε πριν. Σίγουρα όμως στις μικρομεσαίες επιειρήσεις το ποσοστό του cloud προβλέπεται να είναι πολύ μεγαλύτερο απ'ότι στις μεγαλύτερες. Θα ήθελα να κλείσω όμως με το εξής. Οι σημερινές εκτιμήσεις μπορούν κάτω από άλλες συνθήκες οι οποίες διαμορφώνονται μέρα με τη μέρα να αλλάξουν. Αυτή τη στιγμή βλέπουμε ένα τεράστιο trend προς το cloud το οποίο ομολογουμένως υπάρχει αλλά δεν είναι καθόλου σίγουρο το που θα καταλήξει γιατί η αγορά είναι δυναμική κα αλλάζει με τεράστιες ταχύτητες.

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