Católica Lisbon School of Business and Economics

Dissertation Research

The disruptive role of cloud computing in global distribution strategies

The case of Quatenus at Sinfic

Candidate:

Mónica Anacleto Telhado

Advisor:

Professor Paulo Cardoso do Amaral

Dissertation submitted in partial fulfillment of requirements for the degree of Master of Science in Business Administration, at Católica Lisbon School of Business and Economics, June 4th 2012

Abstract

Cloud computing is emerging as a computing paradigm wherein virtual distribution channels are enabled and used as innovative entry modes (Brown and Johnson, 2012). Through this technology, global scale efficiency is promised, delivering operational capabilities with important value to the development of hybrid international marketing strategies underlying today's global competitive set (Brown and Johnson, 2012) where access to contextualized knowledge is becoming crucial (Bughin, Byers and Chui, 2011).

Current practices however indicate that companies are not addressing these capabilities to build flexible delivery platforms and engage knowledge-driven strategies (Brown and Johnson, 2012). Boosted by the gap between these initiatives, this research explores how to develop knowledge-driven internationalization strategies based on cloud architectures, pursuing a case study analysis on a Portuguese software vendor, which recently invested on a cloud-based delivery platform to assemble a knowledge-driven internationalization strategy.

Significant influences of cloud computing were found in the development of flexible delivery platforms during the process of externalization of the company. These findings contribute with further insights into understanding the coupling between cloud-based distribution strategies and knowledge-driven internationalization patterns. A consistent example of a cloud enterprise as a business enabler in knowledge-driven economies is thus proven possible, suggesting how flexible delivery platforms can be engaged within the development of metanational strategies in the current competitive environment.

Acknowledgements

In the current international economy, organizations are reviewing emerging paradigms on technology and management that promise to redefine together the competitive landscape as it is presently known. In this defiant setting, I am most grateful for this opportunity to have had engaged in a large learning experience in the area of international management, which will reveal itself even more important when facing the challenges of the future.

I would like to thank Professor Paulo Amaral for challenging and encouraging me to take on such a complex subject and for mentoring me with much valuable support throughout my work. But most importantly, I owe him much gratitude for all the confidence bestowed in me and his great expertise that continuously challenged me to defy fundamental learning in international strategic management, delivering new insightful questions to this great area of study.

Additionally, I thank all the collaborators at Sinfic Portugal that dedicated their time and enthusiasm to my empirical study, allowing me to collect much valuable information for the development of the case study analysis.

Lastly, my sincere, and hopefully big enough, thank you to all my family and friends whose support was and will always be the foundation of my success.

.

Table of contents

Index of tables

1 Introduction

Introduction to the Chapter

The Chapter at hand introduces the motivation of the research topic and brings information about the knowledge gap which this thesis aims to fill through the discussion of previous research. The argumentation is realized with the placement of the problem statement, its research question and required assumptions, disclosing the research methodology which sustains the validation of this study.

1.1 The cloud computing novelty

Software as a Service (SaaS) is a software delivery model (Desisto et al., 2011). What discerns this increasingly prevalent distribution model from the software itself is that the former is delivered over the Internet, a standard-based network, and therefore new economic value and competitive advantage that are capitalized from it should stream from this difference (York, 2009). This rationale puts forward the need for software vendors to capitalize over the internet, building delivery models based on vertical integrated structures which, in sense, enable cost advantage and further differentiation opportunities (York, 2009). With this competitive advantage in place, these vendors should build products that leverage the potential of the internet.

In reality, during the last years, it has been noticeable the creation of a new type of software distribution channel due to the growing use of the internet and globalization trends (Greenwald, 2010). Whereas software distribution was commonly based over servers or desktops, this new type of software distribution channel is primarily installed over the internet, i.e. over the cloud, developing the concept of SaaS (Greenwald, 2010).

Cloud computing, the underlying technology, emerged then as a method of computing which delivers, through Internet technologies, scalable and elastic Information Technology (IT) capabilities as a service to customers (Desisto et al., 2011). With the introduction of cloud-based information systems driving through distribution strategies, it has been placed a drift from enterprise's product-centric and firm-based model to a global, distributed, IT service-centric model (Iyer and Henderson, 2010).

This new wave of software distribution innovation has proved to facilitate organic growth by building flexible business models and dynamic scalability together (Raichura and Vayanippetta, 2009). This capability on demand stimulates a new market which is expected to grow from its current $81.3 billion network to over $148 billion by 2014 (Pring et al., 2010). But whereas the market has seen a great hype around cloud computing, the actual use of this technology has been falling behind, struggling with security and agility issues when reaching a global scale (Smith et al., 2011).

The challenge in place is therefore to develop multiple channels for a sustainable global distribution strategy which is enabled through the elasticity of delivering cloud-based information systems as a utility (Armbrust et al., 2009).

1.2 Motivation

Considering the changes and impacts of cloud computing in international distribution strategies for business intelligence software, it thus seems important to assess how to understand its adoption by the enterprise and what impacts might be expected (GoodData, 2012). This technology allows organizations to overcome physical distribution and hardware deployment (Greenwald, 2010); and the capability to amplify business intelligence service on a virtualized environment is a key potential for cloud-based information systems (Rossback and Welz, 2011). This research thus aims to evaluate to what extent this technology influences distribution channels when building an internationalization strategy, in order to help organizations understand important insights to strategically respond to challenges placed in the marketplace from an international perspective.

Accordingly, this research further narrows the scope of internationalization strategies, centering on the metanational concept which refers to a system of knowledge management (Doz, Santos and Williamson, 2001). This system approaches international management as the process of capturing knowledge from a global pool, which needs to be further harnessed for innovation, harvesting its value for the stakeholders involved (Doz et al., 2001). Considering the current information structure and how the technological evolution is reducing the cost of distance, this system explains how international companies today need to explore beyond geography and national clusters, to take advantage on knowledge which is disperse around the world achieving new strategic and competitive competences (Doz et al., 2001). This approach is based on operational capabilities which are currently promoted through cloud-based

information systems, delivering the rationale of studying this technology together with internationalization strategies of metanational nature (Doz et al., 2001).

For the purpose of discerning the factors which drive the influence of cloud-based information systems towards distribution channels, the research further decomposes this technology's influence over distribution channels through the assessment of the key issues which SaaS providers should explore to plan and implement a winning international distribution and support strategy.

These key issues will be withdrawn from the analysis of one Portuguese organization in light of what is being realized and pursued in the software industry worldwide. A case study structure will be applied to the study of this software organization – Sinfic – enabling to further evaluate and sustainably argue its growth path concerning the chosen internationalization strategy and global management challenges.

The choice of the software industry relies on the fact that high technological industries are usually more knowledge-intensive gathering more naturally the conditions for international metanational strategies to emerge (Doz et al., 2001). Additionally, the Portuguese market falls into the idea of being born in the wrong place as it does not sustain strong national clusters to take advantage from, hence the higher motive to strive for knowledge across borders (Doz et al, 2001).

1.3 The research question

When building the research problem, the line of reasoning was underpinned in several hypotheses which allowed the outline of the thesis' statement:

It is feasible with today's cloud-based information systems to build internationalization strategies of metanational nature in the software industry by leveraging cloud-based distribution channels and their enabled capabilities.

As explained above, the focus of this research is on the importance of internationalization in today's organizations where achieving a strong global presence through dynamic and innovative distribution channels of metanational nature has become vital. These innovative architectures are possible to be explored through cloud-based information systems posing this hypothesis over a concrete organization where SaaS can be delivered through cloud computing

technology, opening new opportunities. With this, concerning the future perspectives towards this challenge, the following Research Question (RQ) is addressed:

(RQ) Can cloud-based information systems leverage the development of innovative distribution channels when building internationalization strategies of metanational nature?

Accordingly, this research aims to understand what opportunities and challenges are yet to be explored in order to innovatively turn worldwide spread knowledge into profit and value to the shareholder, specifically within the scope of the case study.

The feasibility and limitations of both technologies, namely cloud computing and SaaS, are not the purpose of this research, as neither is the validation of the rationale underlying each internationalization strategy, which is too complex and beyond the scope of this research.

Ultimately, to pursue this analysis it is assumed that both predictions for cloud computing and SaaS will come true.

1.4 Methodology

In order to validate the technological hypothesis elaborated from the research question, the research model undertaken in this qualitative study is based on a exploratory case study analysis (Marshall and Rossman, 1989) through which an empirical inquiry is pursued by examining a concrete phenomenon within a real and defined context, delivering herewith a cross-sectional study (Yin, 2002).

To first examine this context, an industry review is conducted disclosing a set of innovative practices and characterizing the competitive set wherein the company, in which the case study analysis focuses, currently operates. From this, a set of semi-structured interviews is conducted (Preece et al., 2002), collecting insights to understand the information system of the company and the elected distribution model along with the perceived benefits and drawbacks related to them.

Using accounts of different perspectives, namely the case study analysis, the industry characterization and the literature review, multiple outlooks within real life context are drawn, building an important feature of data triangulation whereby data converges around a particular proposition strengthening the validity of the technological hypothesis (Bergen and While, 2000). Deductively, the case study is reviewed against the theoretical framework,

structuring thus a response to the research question which is further discussed in detail based on the empirical findings collected.

1.5 Structure

The structure of this research is disposed as follows:

In Chapter 2 cloud computing technology and enabled delivery models are presented and analyzed discerning their impact upon organizations. International management theories are further illustrated along with international marketing tools and the rationale of studying them together with cloud computing is also deployed.

In Chapter 3 the methodology undertaken in this research study in order to validate the technological hypothesis is disclosed, detailing the conditions and criteria sustaining the underlying research model.

In Chapter 4 an industry analysis is conducted disclosing how several innovative practices are configured as concrete examples of the theoretical approaches described in the previous Chapter. Furthermore, a case study is presented deploying the empirical analysis which underpins the methodology of this research.

In Chapter 5 the potential benefits of cloud-based distribution models on internationalization patterns are extrapolated from the triangulation of the conceived theoretical framework, the characterization of the industry's dynamics and the case study analysis. Further reasoning of these benefits is conducted through a discussion of the resulting impacts in line with the research question.

In Chapter 6 final conclusions about the impacts of cloud-based information systems over internationalization strategies of metanational nature are withdrawn from the discussion in Chapter 5. Further challenges and proposals for future research are also presented.

Conclusion of the Chapter

The purpose of this research is to evaluate to what extent cloud-based information systems influence the growth of delivery models when building an internationalization strategy of

metanational nature. This assessment will center on exploring the capabilities underlying knowledge-driven international distribution strategies for intelligence business software.

With the challenge in place, the subsequent purpose is the elaboration and response to the scientific concepts within the theoretical framework of this research, through the assembly of the literature review, which will be conducted in the following Chapter.

2 Literature review

Introduction to the literature review

A set of cloud computing tools are presented in this Chapter together with examples of their practical use and impacts, withdrawing the features which can be leveraged and scaled-up when building global distribution channels.

Together with this, a board of traditional international management theories is fronted with new realities and challenges placed over worldwide industries. The cluster concept is also analyzed in a global value chain reality, enunciating the arguments which have been fronting the validity and broadness of this concept.

Furthermore, it is explained the new paradigm placed over internationalization strategies by the development of a new knowledge economy where competitive advantage is no longer based on clusters, but on metanational strategies which challenge the critical role that cloud-based delivery models can play, disclosing the characteristics which will be further discussed throughout Chapters 3 and 4.

2.1 Cloud computing enabling technologies

Introduction

Prior to the cloud computing idea, it is reasonable to understand the technologies which underpinned the evolution of distributed computing, turning the technology of cloud computing possible to deploy today.

2.1.1 Utility computing

Utility computing is the business model in which computing resources are offered on-demand and as metered services charged per usage (Foster et al., 2008). The evolution laid over the usage of other computing infrastructure, such as Grids, introducing additional accounting and monitoring services which, in whole, represented a shift in computing resources delivery model (Foster et al., 2008). This ground-breaking step enabled service providers to fully maximize resource utilization and minimize operating costs, both benefits withdrawn from the

adoption of this transformational utility-based pricing scheme (Zhang, Cheng and Boutaba, 2010).

2.1.2 Distributed computing

Distributed computing describes the capability to collaboratively process computational problems through the usage of distributed systems which consist on multiple autonomous computers that communicate via computer networks (Foster et al. 2008). These systems, depending on location or homogeneity of communications, are underpinned in different subsets, such as clusters, supercomputers, grids and clouds, which together, allow the placement of new business models that take advantage of each computer's full capabilities through the technology frugality (Foster el al., 2008).

2.1.3 Clusters

The convergence of several computing trends including the availability of low cost microprocessors, high speed networks and software for high performance distributed computing, led to the emergence of computer clusters (Bader and Pennington, 2001). A computer cluster is the set of computers distributed locally and linked to each other in order to sustain several networked work stations which are used as a supercomputer (Buyya et al., 2009). The shift to supercomputers allowed improving performance and availability, delivering a wide range of applicability and deployment possibilities for this technology (Bader and Pennington, 2001).

2.1.4 Supercomputers

A supercomputer consists in a machine in which several processors are merged together delivering high performance capabilities, offering a new concept different from clusters since it is no longer locally interconnected with other machines (Buyya et al., 2009). However, the expenses in sustaining this type of machine and the required energy to run it, sum up to higher complexity in access and maintenance (Yang and Liao, 2011).

2.1.5 Grids

The Grid technology enables heterogeneous, interconnected and globally distributed computers to deliver geographically distributed resources that are shared, selected and aggregated in order to solve scientific, engineered and commercial problems driven by large scale, computational and data intensive scientific applications (Buyya et al., 2009).

Grid computing offers the capability to manage network resources through a distributed computing paradigm achieving a common computational objective (Zhang, Cheng and Boutaba, 2010).

2.1.6 Clouds

Driven from a distributed system, the cloud concept stands for a set of interconnected and virtualized computers which are dynamically provisioned and offered as one or more integrated computing resources, which are based on Service Level Agreements (SLA) established between service providers and users (Buyya et al., 2009). Cloud, together with virtualization, is an abstract concept to describe a globally networked computer with the availability of a pay per use model (Armbrust et al., 2009). As one or more cloud services are delivered to one or more customers, the cloud comes to existence in three different deployment models which will be introduced below (Iyer and Henderson, 2010).

A public cloud encompasses the traditional concept of cloud computing where cloud servers deliver an infrastructure available to the general public or large industry groups (Iyer and Henderson, 2010).

A private cloud infrastructure is operated exclusively for one organization, displaying the possibility to be managed by the organization itself or a third party, existing on or off premise (Iyer and Henderson, 2010). Given the lack of technological maturity and further security concerns, this option for a private network is preferable to the majority of organizations (Iyer and Henderson, 2010).

The infrastructure of a hybrid cloud encompasses several clouds as different entities which are bound together by regulated or registered technology, enabling data and application portability (Iyer and Henderson, 2010).

2.1.7 Virtualization

Virtualization technology exhibits the capability to abstract the physical hardware providing virtualized resources for high level applications (Zhang, Cheng and Boutaba, 2010). With virtualization, application and infrastructure independence is achieved allowing applications to run virtually all over the world sharing common servers (Armbrust et al., 2009).

2.1.8 Load balancing

The load balancing capability distributes evenly the working processes between two or more computers, enabling resources to be efficiently used as a whole, building up performance and availability (Bourke, 2001). A load balancing solution sustains different amount of work capacity through automatically distribution decisions given the moment that each request is made, becoming thus a key capability for internet services (Bourke, 2001).

Synthesis

The evolution of the aforementioned technologies enabled the development of a wider value premise, delivering the cloud computing reality. The intent is to identify how the combination of virtualization and load balancing capabilities together with distributed systems has allowed the development of the concept of cloud computing and ultimately the delivery of the utility computing business model which is explained and detailed in the following subChapter.

2.2 Cloud computing

Introduction

From the concepts clarified before, it is enlightened the concept of cloud computing, disclosing its service models. Differences between related concepts are also considered in order to accomplish a more straightforward and comprehensible view of the strategic shift of cloud computing technology.

Further intelligence regarding the relationship between cloud computing and SaaS will be withdrawn, unveiling how the latter has leveraged cloud computing architecture and infrastructure.

2.2.1 Cloud computing technology

Cloud computing is not a new technology; on the contrary, it leverages existing technologies such as virtualization and utility based pricing, to achieve technological and economic requirements sustaining today's information technology demand (Zhang, Cheng and Boutaba, 2010). As it brings together existing technologies to work differently in various business environments, cloud computing can be seen as a new operational model (Zhang, Cheng and Boutaba, 2010).

Given these enlightenments, cloud computing is a method of computing which delivers, through internet technologies, scalable and elastic IT capabilities as a service to customers (Desisto et al., 2011). The shift on the competitive advantage of this new approach of computing is the concept of capability on demand, where time to business and expenses are reduced (Hunter, 2011).

2.2.2 Cloud computing architecture

Cloud computing is a layered model where services of different nature are encompassed in a set which offers three classes of technology capabilities as services (Zhang, Cheng and Boutaba, 2010) to customers who select the most suitable and test for interoperability (Iyer and Henderson, 2010).

The architecture of cloud computing, as opposed to traditional service hosting environments, is modular, gathering layers of abstraction which together build up a new form of hosting platform, where dominant, scalable and reliable hosting capabilities are delivered based on clustered load-balanced servers and utility-based billing schemes (Foster et al., 2008).

Cloud computing, in resemblance to grid computing, uses distributed resources to accomplish application level objectives, leveraging virtualization technologies at multiple levels which in whole, achieve resource sharing and provisioning (Zhang, Cheng and Boutaba, 2010). As it is also based on the principles of utility computing, employing utility-based pricing scheme,

service providers have the opportunity to maximize resource utilization and minimize their operating costs with on-demand outsourced resource provisioning (Zhang, Cheng and Boutaba, 2010).

2.2.3 Cloud computing business model

In cloud computing hosting environments, infrastructure, i.e. hardware, and platform level resources are delivered as services on an on-demand basis, characterizing a service-driven business model (Zhang, Cheng and Boutaba, 2010).

In practice, cloud services are grouped in three categories, namely Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS), considering the first two as cloud providers since they are both commonly offered by the same organization (Zhang, Cheng and Boutaba, 2010). Hence, the business model of cloud computing encompasses cloud providers which deliver utility computing to service providers, which in turn deliver web interface to end users (Zhang, Cheng and Boutaba, 2010).

Infrastructure as a Service delivers on-demand provisioning of infrastructural (hardware) resources running in Virtual Machines (VM) (Zhang, Cheng and Boutaba, 2010), overcoming underutilization constraints associated with local resource investments, by switching to resource sharing and cost efficient usage (Armbrust et al., 2009).

Platform as a service provides both operating system support and software development frameworks (Zhang, Cheng and Boutaba, 2010), which together support a development environment where new applications can be created through programming language (Iyer and Henderson, 2010).

Software as a Service turns on-demand applications available to application software providers and end users over the Internet (Zhang, Cheng and Boutaba, 2010), sustaining load-balanced virtual machines which deliver a transformational elastic capability (Armbrust et al., 2009).

2.2.4 Understanding Software as a Service

Today, as cloud computing moves from a novelty to a more mainstream consideration in the IT industry, software vendors are turning their positioning from SaaS providers to cloud

computing providers in attempt to capitalize on the technology hype, without actually changing their offerings (Desisto et al., 2011). Thus it is important to discern how SaaS fits into the broader concept of cloud computing, and understand that it has been leveraging the latter technology without actually considering the underlying infrastructure components of the architecture (Desisto et al., 2011).

Cloud computing can be defined as a method of computing which delivers, through Internet technologies, scalable and elastic IT capabilities as a service to customers (Desisto et al., 2011). Considering software applications as IT enabled function it seems reasonable to consider SaaS a form of cloud computing if this same software application is written so that is scalable (Desisto et al., 2011). SaaS can be defined as application software, delivered over the Internet, which is owned and managed remotely by a provider which offers a one-to-many consumption model to its customers on a pay per use basis (Desisto et al., 2011). With both definitions in mind, it is understandable how cloud computing underpins SaaS providers when delivering a scalable offer to the global market (Desisto et al., 2011).

The key concern towards SaaS providers is to guarantee the delivery of business application services which meet performance benchmarks focusing therefore, on the business value that can be offered (Desisto et al., 2011).

For software providers to achieve a global presence it is required to deliver massively scalable IT-based offerings underpinned by cloud computing technology (Desisto et al., 2011). Still only SaaS offerings which leverage specific concepts, such as multitenant architecture, or architecture with resource sharing in application processing, are capable to fit in on scalable and elastic SaaS offerings based on cloud computing capabilities (Desisto et al., 2011). Indeed, these multitenant architectures enable software providers to accomplish economies of scale through the management of infrastructure costs to serve several users, achieving thus a global distribution scale (Desisto et al., 2011).

Enlightening the enabled capabilities through SaaS, it becomes necessary to understand the underlying reasoning of this technology evolution, disclosing thus how SaaS is moving from supporting business process, to an actual business process (Infosys, 2009).

2.2.5 Cloud computing characteristics

Cloud computing delivers a set of different features which differ from traditional service computing (Zhang, Cheng and Boutaba, 2010). These capabilities are addressed bellow.

Multi-tenancy

Through cloud computing technology, performance and management challenges are shared among service providers, as multiple providers are located simultaneously in one single data center (Zhang, Cheng and Boutaba, 2010). In this multitenant architecture, the responsibilities and objectives associated to each provider are directly linked to each layer of the technology architecture (Zhang, Cheng and Boutaba, 2010).

Shared resource pooling

Dynamic resource assignment capability is offered through Infrastructure as a Service providers enabling a pool of computing resources to be assigned to multiple resource consumers, which delivers advantages such as management flexibility and operating cost efficiency to infrastructure providers (Zhang, Cheng and Boutaba, 2010).

Geo-distribution and ubiquitous network access

Location and high network performance is accomplished through location-wise information independency, which enables the access to service and information assets regardless of their location within the data center, allowing thus service providers to leverage geo-diversity in order to achieve maximum service utility (Zhang, Cheng and Boutaba, 2010).

Accordingly, as it is based on a service delivery network, cloud computing technology enables information assets accessible across multiples form factors, including different programs and different devices (Iyer and Henderson, 2010). This ubiquitous network access may require further intelligent catching techniques and high bandwidth connectivity to achieve its full value proposition (Iyer and Henderson, 2010).

Further traceability of history, location and application of information are enabled through this technology, addressing information flows according to compliance restrains (Iyer and Henderson, 2010).

Virtual business environment

Considering the adopted service-driven operating system, cloud computing provides decision makers with integrated, settled access to a set of capabilities required to evaluate and implement decisions in a virtual business environment (Iyer and Henderson, 2010). This virtual business environment concept enables the same advantages offered by a virtual machine allowing users to share resources while running simultaneously different business processes (Iyer and Henderson, 2010).

Furthermore, this feature is complemented with cloud computing **dynamic resource provisioning** as this technology enables service providers to attain and allocate resources in line with current demand, allowing operating costs to be lowered proportionately (Zhang, Cheng and Boutaba, 2010). Accordingly, the automation of resource management yields higher quality of service wherein service providers are offered the capability to respond in accordance to rapid changes in service demand, i.e. the flash crowd effect (Zhang, Cheng and Boutaba, 2010).

This **self-service** capability together with rapid elasticity, allows cloud computing to perform automatic scale up or down of service usage, overcoming underuse losses as sourced capacity mirrors the processing demands of the company (Iyer and Henderson, 2010).

Utility based pricing

Considering scalability and the delivery of computing services as utilities, cloud computing is based on a utility-based pricing scheme where service operating costs are capable of being lowered according to usage rates (Zhang, Cheng and Boutaba, 2010). This pay per use model allows customers to understand and rationalize resource consumption, further sustaining the flexibility and allure of cloud computing technology (Zhang, Cheng and Boutaba, 2010).

Synthesis

The combination of virtualization, distributed computing and service-oriented architecture has delivered the cloud computing paradigm which emerges today as a key change for managing and delivering services over the Internet. Although the development of this technology still presents itself today at an early stage, it is rapidly transforming the information technology setting, building up the landscape required to deliver computing resources as utilities, achieving thus the long-held desire for utility computing.

The capabilities of cloud computing combine a higher value premise in comparison with traditional service computing, delivering a new competitive advantage to organizations, when setting their own cloud strategies, by enabling new opportunities for cost advantage and organizational agility.

However, these capabilities have not matured enough to accomplish the full potential of cloud computing, providing organizations with several key challenges yet to explore in the context of the development of innovative distribution models and internationalization strategies.

2.3 Internationalization motivation and theories

Introduction

From the capabilities and strategic advantages explored with cloud computing technology, it is enlightened the global challenge of accessing the knowledge disperse around the world and the quality to link this knowledge with specific capabilities scattered over the worldwide operations network of an organization. This challenge is directly linked with the development of internationalization strategies and their imposing realities which are changing the course of global competition.

The following section describes how traditional internationalization models have been evolving throughout the years, placing a new metanational reality where it seems reasonable to link the capabilities of cloud computing technology with the development of new innovative and scalable distribution channels across industries, across markets, and ultimately across countries.

As new challenges can be leveraged through cloud computing based information systems, it makes sense to explore this relationship, especially in IT enabled capabilities such as SaaS where cloud computing stands as a strong delivery model.

Further innovative pricing models adjustable to these new models of distribution are disclosed, deploying the rational of studying both marketing tools together.

2.3.1 Motivation and paradigms underlying internationalization strategies

The internationalization reality has been traditionally based over two propositions, namely resource seeking, i.e. provisioning, where access to key production factors is guaranteed at competitive prices, and market seeking where economies of scale are aimed to be achieved in order to sustain additional advantages over competitors (Bartlett, Ghoshall and Birkinshaw, 2004).

This theoretical board concerning the process of becoming international has thus been placed over three elementary paradigms (Santos, 1997). First, the international competitive strengths are deducted from the leadership achieved in the country of origin (Santos, 1997). Second, the process from which the companies become multinational and engage the opportunities of a global market has an ordered and sequential long process (Santos, 1997). And third, achieving this international presence, the multinationals still face the decision of global integration or local response (Santos, 1997).

According to these theories, multinational enterprises along the years have been projecting at a global scale what had succeeded locally, extrapolating thus the capabilities developed in the origin country in line with the life cycle of the product (Doz, Santos and Williamson, 2001).

The advantage has been focused on being born on the right place, where it is easy to sell, cheaper to build and access to new cultural and economic similar countries is facilitated (Doz et al., 2001). Following the life cycle of the product, which commonly has been homogenized to ease the entry in different markets, multinational enterprises have moved to new low-price markets where their operational costs can be reduced through economies of scale and learning (Doz et al., 2001). As they mature, the objective becomes to maximize the profits and minimize the costs at a global scale, which in detail, means moving production to low-cost factor countries achieving the ultimate stage of internationalization (Doz et al., 2001).

2.3.2 A traditional framework of multinational companies

The first module of the traditional framework claims how the company gains its competitive advantage in the origin country (Santos, 1997). Conventionally, the most renowned thesis is the national diamond thesis which defends that, from local agglomeration, i.e. cluster, innovation and competitive advantages' development, the company is internationally exploited, suggesting a strong geographical, political and economical determinism (Porter, 1990). The business model is thus, created locally and its inherent strategic advantages are raised from the capabilities and opportunities initially developed on the country of origin where the best conditions to succeed, concerning marketing tools, competition level and complementary markets, are guaranteed (Porter, 1990).

The succeeding module states how the company grows into the international market and then, accomplishes the multinational profile (Santos, 1997).This thesis defends that the international expansion process of enterprises accompanies the life cycle of their products, which in detail means that enterprises become international at a certain stage of their development accordingly to this predetermined evolutionary path (Vernon, 1966). During the initial stage of introduction and development, the production remains on the origin country and the company begins to project its commercial activities into similar external markets (Vernon, 1966). At this stage, operational costs are still high and the market is not yet relevant (Vernon, 1966). As the product matures and becomes standardized, the company begins to enter simultaneously into new markets, raising the pressure on operational costs which redirects the company to transfer the production to emergent countries where lower wage costs are assured and production is entirely to export (Vernon, 1966). Following this stage, the company begins to relocate its project and engineering capacity to other countries in order to adapt its products to the different national markets' specifications, developing, at the most advanced ones, laboratories of Research and Development to fulfill this requirement (Vernon, 1966).

Latter this thesis was complemented with the adding feature of considering the development of international presence as a learning and knowledge process over the external markets (Johanson e Vahlne, 1977). As the company grows in different countries it begins to learn how to serve external markets and further manage operations abroad (Johanson e Vahlne, 1977), characterizing this process as a diversification dynamic based on a learning process (Santos, 1992).

Still in this module, another thesis was further developed considering the stage of multinational a consequence of the natural evolution of the company across different

geographies, where it is required to secure the OLI paradigm to operate on an international basis as an organizational form (Dunning, 1981). This eclectic theory defends Ownership, Location and Internalization as key competences to sustain operations between countries (Dunning, 1981).

2.3.3 New conceptual frameworks: Global integration strategies *versus* Local response strategies

As companies grow into the international market they are faced with the trade-off between global integration strategies and local response strategies (Prahalad and Doz, 1984). This decision is placed in context with the growing globalization of markets where it has become demanded to sustain a strategic integration between units spread worldwide in order to rationalize international operations achieving efficiently centralized coordination and control (Doz et al., 2001). Simultaneously, companies are expected to guarantee the sensibility towards each local market characteristics, placing a new dilemma between global coordination and integration, or local differentiation and responsibility, which consequently creates a double dimension where different strategic approaches are deployed (Prahalad and Doz, 1984). The third and latest module in internationalization literature is concerned over this dilemma, giving place to new theories over the multinational concept.

The multinational strategy identifies a company who sustains a low stage of global integration, but a strong sensibility and adaptability to local challenges, considering thus each country as a results center (Santos, 1997). In this setting, each national market, with little coordination of operations across countries, is responsible to commercialize a product or service set customized to different targets, with respective different marketing strategies (Santos, 1997).

Further, multinationals started to reverse this balance placing instead a strong level of integration and control between operations worldwide, centralizing the decisions and viewing the world as one single homogenized market (Prahalad and Doz, 1984). Given the centralization and standardization of operations, new advantages are driven from developed economies of scale and gamma (Santos, 1997).

Still the necessity to be flexible in light of local challenges, and simultaneously be able to integrate efficiently worldwide operations to place a competitive front, led to the emergence of new transnational organizations (Bartlett and Ghoshall, 1989), multifocal strategies (Prahalad and Doz, 1987) and heterarchy (Hedlund, 1986). Accordingly, the transnational

concept emerges as the last stage of internationalization bringing together the global efficiency and local response, becoming world-oriented (Santos, 1997).

The rationale underlying the evolution of internationalization strategies also depends on the distribution patterns assembled (Bartlett and Ghoshall, 1989). Supporting how standardized solutions are channeled through economies of scale, it is perceived significant influences of centrally coordinated marketing programs on the development of global integration strategies during the process of internationalization (Bartlett and Ghoshall, 1989). Supporting however, how customized and locally controlled solutions are created, it is realized significant influences of strong established local distribution strategies on the development of local response strategies during the process of internationalization (Bartlett and Ghoshall, 1989).

Synthesis

According to the traditional view of global competitive advantage, the innovative and competitive companies emerge in the context of national clusters gaining further their international dimension through a sequencial process of projection in which two different models can be discerned: trough replica of operations from the country of origin, or through extension of operations from the country of origin.

Either case, the competitive advantage is undermined by the geographical contex in which resources and capabilities are limited, placing a strong constraint in companies over the location of their country of origin. In this line of reasoning, the traditional framework of multinationals considers that in order to succeed, multinationals are required to be born on a national diamond.

2.3.4 The evolution of clusters and competitive advantage

Introduction

In line with this evolution among traditional frameworks of multinationals, the concept of cluster has also been evolving delivering also new challenges, in the process of globalization (Porter, 1998). These challenges concern how the concept itself as mutated to adjust to environment changes, and how it no longer succeeds in the concept of knowledge economy. A new type of cluster needs to be considered, and the concern over location also needs to be

surpassed. The idea here is to understand how in a world where geographic distance no longer seems to matter, with improved communications and developments over information technologies like cloud computing, location and the concept of clusters remains having such a big importance.

2.3.5 Importance of location

The growing hype around geographic distance based on the evolution of communications and informations technologies has placed a new paradigm over the importance of location on the global economy (Doz et al., 2001).

With this new challenging reality taking place, where boardless markets take over, financial markets integration develops and transnational companies emerge, the importance of location is overcomed by a new stage of globalization (O'Brien, 1992). In fact, information and knowledge have begun to redefine the economic order pushing companies to concentrate on core competences, desagregating the value chain through the support of outsourced resources (Nonaka and Takeushi, 1995).

However, the perspective of location as an important asset to grow in an international competitive landscape is still considered in different theses where competitive advantages remain under the differentiation and proximity to regional economies (Porter, 1998). Further this approach acknowledges the strategic factor of innovation and the importance of companies to locate industrial units near attractive innovation regions to remain competitive in the global market (Porter, 2001).

2.3.6 Strategic proposition of clusters

Given the growing challenges over the importance of location, the concept of cluster emerged. A cluster is defined as a geographic concentration of a set of economical agents who share activities along the value chain or the supply chain with the intent to establish competitive and cooperative relationships (linkages) (PROINOV, 2002) deploying new competitive tools which deliver higher production growth rates (Marques, 2003).

With the concentration of resources, assets and capabilities (knowledge), the clusterization of economic activities has allowed companies to overcome growth constraints (Porter, 1990).

From the close proximity and cooperative set that are built together, immediate lower transaction costs are naturally accomplished and further technological and knowledgeable externalities are streamlined (Marques, 2003). Comprehensively, the concept of cluster can be seen as a source of innovation, and broadly a global competitive advantage (Doz et al., 2001).

This concept of cluster has thus been exhibited by multinationals that have clusters based on national markets and embrace this primary source of strategic advantage to explore new markets through projection of these capabilities developed internally (Doz et al., 2001).

Furthermore, inside a cluster reality a virtuous cycle of competences and innovation is accomplished through polarization of capabilities, and constant new entrants, investments and quality customers (Porter, 1998). Inevitably, new knowledge inside the cluster is shared through the daily interactions turning these agglomerative economies, which can reach different dimensions from regional to global, into a powerful tool to build knowledge upon (Porter, 1998).

As globalization grew further, the concept of cluster has seen its role diminished to limited technical and design functions inside comprehensive international chains (Gereffi, 1994). This shift based on the unbundling process of large corporations where activities were decentralized and outsourced over global production and distribution chains (Markusen, 1996).

Overall, the fragmentation of the local supply chain has scattered the geography of capabilities diminishing the agglomerations effects inside clusters, which combined with the innovations over communications and information systems, have turned reconfiguration of clusters a demanded course (Chiaversio et al., 2003).

Synthesis

The concept of cluster has placed a new reality in global management discerning the importance of bundling strategic competences and capabilities in one geographic set where competitive and cooperative advantages bring together collective learning processes.

This concentration phenomenon, in line with the challenges placed over location, led companies to activities' specialization and integration inside clusters, delivering new strategic advantages related to cost reductions and knowledge sharing.

However, changes in the competitive international landscape, together with the evolution of information and communication technologies, have been pacing new challenges that question the validity of the concept of cluster. Still with time, this concept has been evolving accordingly and it has become harder to understand the strategic advantage that once was pledged, but no longer seems to adjust to what the new international reality demands.

2.3.7 The emergence of the knowledge economy

As competition and the evolution of information and communication technologies grown, companies begun establishing partnerships and strategic alliances along the value chain, gaining new competences and collaboration benefits (Doz and Hammel, 1998). Accordingly, a new perspective is suggested defending how the only sustainable competitive advantage for companies is their capability to integrate knowledge from different sources along the process of production, which is fundamented in the resource-based theory wherein the intangible resources, the competences and capabilities of a company are its drivers to succeed (Grant, 2001). From this new corporate model, international competition no longer ties exclusively to global efficiency or local response, but further the company's capacity to integrate different sources of knowledge into its production process as a consistent learning program (Grant, 2001). Hence, the challenge in place becomes the capability to access and manage knowledge from widely disperse resources (Doz et al., 2011).

As geographic clusters become less significant, a new economic order where companies' competitive resources result from their expertise at organizational knowledge creation, a new knowledge-driven competitive set begins to emerge in the international environment (Nonaka and Takeushi, 1995). Accordingly, their competitive resources are of different nature emerging as both explicit and implicit knowledge, depending on the context (Santos, 1997). These types of knowledge are classified according to different levels of complexity which characterize the explicit knowledge as simple, processed, transmitted and stored, and the implicit knowledge as more complex, hard to formalize and rooted on a specific context (Nonaka et al., 2001).

The first one can further be decomposed into two different types of knowledge: the explicit and the experimental, but both are raised through experience and practice based on a process of learning, so they both can still be moved and shared (Doz et al., 2001). But in reality most of the knowledge is tacit, which means it is required to understand the context in which it is developed, hindering its articulation and management (Doz et al., 2001).

From this difference, a new model is introduced to explain the process of knowledge creation throughout the interactions between tacit and explicit knowledge (Nonaka and Takeushi, 1995). Accordingly, the process begins when undeclared knowledge is transmitted through observation and imitation from one person to another, converting from tacit to tacit among social interactions (Nonaka and Takeushi, 1995). This knowledge is then externalized through codification into any media which allows it to become understandable to the general public (Nonaka and Takeushi, 1995). Following this conversion, the knowledge is melded with other explicit knowledge producing new combined knowledge, which is further converted back into tacit knowledge by means of internalization (Nonaka and Takeushi, 1995). From this dynamic process, the idea of an endless spiral of knowledge creation emerges and introduces a new knowledge-driven competitive advantage (Nonaka and Takeushi, 1995).

From the emerging challenge of building competitive advantages through knowledge, another idea is introduced in the market: the concept of knowledge assets, against tangible assets (Boisot, 1998). The underlying idea to this new concept is that a company's distinctive competences, capabilities and technologies derive from the interactivity between its knowledge assets and its physical assets (Boisot, 1998). Accordingly, this new conceptual framework explores how a new type of knowledge flows inside the organization: the encapsulated knowledge which derives from the application of tacit knowledge upon physical assets, delivering then a concealed marketable knowledge (Boisot, 1998). Given that the process of encapsulation preserves the complexity of the knowledge, the strategic value underlying knowledge assets is thus the avoidance of the cost of learning facilitating its transaction within the company (Boisot, 1998).

As this new concepts were continuously introduced in the market, the development of knowledge-based capabilities became more significant (Doz et al., 2011). Understanding how information could be strategically moved through information and communication technologies, overcoming the geographic dispersion of knowledge became a new challenge driving the international management framework (Doz et al., 2011). Hence, the traditional problems concerning internationalization were enlarged with the challenge of access and management of dispersed knowledge (Doz et al., 2001).

2.3.8 The creation and management of knowledge: a new competitive challenge

Historically, multinationals focused their concerns over location as it was perceived to be directly linked to cost and differentiation advantages (Porter, 1985). Accordingly, as technological developments and competition increased, partnerships and strategic alliances were conducted in order to achieve competences and share the benefits of collaboration (Doz and Hamel, 1998).

However, competing in this new knowledge-driven industry requires, aside from cost and differentiation strategies, a new competitive advantage: the speed of the value proposition delivered to the client, which acknowledges the speed of bringing together worldwide spread resources as more important than the speed of establishment (Murtha, 2004).

This means, the Globalization process no longer based on projections, but on the strengthening of multiple national forces, i.e. contextualized knowledge, through international cooperation with the ultimate purpose of learning from the world (Murtha, 2004). Furthermore, technology and location are no longer critic factors to succeed (Doz et al., 2001). Instead they have become enabling features to promote and distribute simple forms of knowledge (Doz et al., 2001).

So the problem is no longer of penetration, but of access, internalization and deployment, where the success over competition relies on the arbitrage of knowledge (Doz et al., 2001). This means, location advantages are replaced with the companies' own advantages, and their former distributed resources are replaced with widely disperse ones on which access is granted to strategic partners (Doz et al., 2001).

Overall, the new challenge for managers, as stated in the beginning, has become to innovate through systematic learning of worldwide spread and differentiated knowledge over technology and markets, integrating those in their international strategic approach (Doz et al., 2001). This challenge is increased in born global companies who lack resources required to reach worldwide markets, as they are faced with viable channels that are considered by extant theories to imply additional business risk over time (Gabrielsson and Kirpalani, 2004). Thus, this new reality urges that born global companies should take advantage of large channels offered by multinationals, networks and the internet, which also enable new learning processes, technology and evolutionary growth (Gabrielsson and Kirpalani, 2004).

2.3.9 The challenge of the metanational company

The new competitive dynamism has pushed companies to overcome the determinism underpinned by the internationalization theories as it enlightens how geographical distance has become irrelevant when choosing the markets in action (Doz et al, 2001). Indeed, companies have begun to achieve strategic advantages from the development of global innovation chains beyond the concept of clusters, enriching their global operations through accomplished metanational innovations (Doz et al., 2001).

This reality has formed a new paradigm shift over internationalization strategies where competitive advantage no longer lies on projection of capabilities developed on the country of origin, but on the concept of metanational where companies succeed through the integration and arbitrage of worldwide spread factors and attributes becoming capable of accessing, linking and leveraging those resources in context (Doz et al., 2001).

With this, it is accomplished the shift from the penetration methodology to the integration one where metanational companies base their operations on a global network in which competences and opportunities are projected locally to further be channeled and dynamically integrated in different magnet innovation centers (Doz et al, 2001). Accordingly, new contextualized and differentiated knowledge is shared and integrated towards the development of a strong global performance of the metanational company (Doz et al., 2001).

However, important managerial constraints remain unanswered, such as where and how to search for new customers, new competences or even technologies, how to access these types of knowledge and the costs and benefits inherent, which configuration of systems, structures and incentives can be the most capable to launch these objectives (Doz et al., 2001).

Yet metanational pioneers in the industry have disclosed three key competences to succeed in this knowledge economy: sensing, as in being capable of establishing a sensing network where new strategic knowledge (i.e. technologies, competences, markets and consumers' knowledge) is identified and processed ahead of competition; mobilizing, as in being capable of integrating and scattering these knowledge through magnet structures transforming it in new innovative products and services; and operationalizing, as in being capable of optimize operations' efficiency, flexibility and financial control with the ultimate intent to grow sales and profitability (Doz et al., 2001).

Synthesis

With all this, it is comprehensible that the performance of innovative business strategies does not rely on the knowledge projected or replicated from the cluster of the country of origin. On the contrary, geographic distance from traditional clusters has begun to be seen as beneficial to companies in order to place more pressure to develop central competences to reach worldwide disperse knowledge building new competitive advantages.

Accordingly, it is shown that strategies of metanational nature have already had impact in building innovative channels, making the fair conclude that further impacts might be expected. In this line of reasoning, it is reasonable to develop a framework to understand and extrapolate these impacts in the current international set.

2.4 International marketing

Introduction

Facing the new knowledge economy, multinational enterprises need to consider the adjustment process according to the metanational profile at different internal levels, especially concerning two major marketing mix tools, namely Distribution and Pricing. It is vital for a company struggling in this competitive landscape to overview innovative approaches not only concerning the choice of entry mode, considering intermediate entry models, but also regarding the pricing model to deliver at global scale. The rationale of encompassing these models together is further disclosed.

2.4.1 Approaches to the choice of entry mode

When deciding which market or industry to enter it is required to consider how to enter it, and accordingly map the distribution channels when building an internationalization strategy (Hollensen, 2007). Entering foreign markets has traditionally been based on supplying new markets from domestic plants, implicit in any form of exporting (Hollensen, 2007).

However according to the new challenges placed on the knowledge economy it has become reasonable to consider deploying different entry modes (Hollensen, 2007). Indeed, given the lack of access to resources, the dispersion of knowledge, the lack of expertise for foreign

investment, the decline of clustering advantages, and further legal and political constraints, new intermediate entry modes have emerged with a new premise of shared knowledge, shared risk (Hollensen, 2007).

Apart from the traditional export modes, intermediate entry modes emerged thus as a middle structure for knowledge and skills transfer, where ownership and control are shared between the company and local partners accomplishing with this regional flexibility a new competitive advantage (Hollensen, 2007).

2.4.1.1 Contract manufacturing

Contract manufacturing enables an agreement between the company and an external partner where manufacturing is outsourced to this last one (Hollensen, 2007). This foreign sourcing allows the company to hand over the responsibility of production, focusing on developing and controlling all other activities concerning commercialization and implementation (Hollensen, 2007).

2.4.1.2 Licensing

Through licensing the company is offered a new mode of entry into foreign markets with shared responsibility, delivering to an external partner the licensor's technology and product development (Hollensen, 2007). In this model local production is established without capital investment from the licensor, who delivers most of the responsibilities and functions along the value chain to the licensee, such as patent, trade mark/name, manufacturing know how, technical and marketing guidance and assistance (Hollensen, 2007).

By transferring this capability, the licensee can further develop product improvements or even possibly new profitable products, which can be beneficial to both licensor and licensee (Hollensen, 2007). Also, licensing out enables the company to outsource production and potentially downstream activities to external partners, while focusing on improving its core activities, and simultaneously retaining the goodwill generated (Hollensen, 2007).

2.4.1.3 Franchising

Franchising is a marketing-oriented sales model where the franchisor delivers the right to practice a successful business model to independent investors, overcoming the need for investments and liability inherent to building a chain (Hollensen, 2007).

Concerning this model, there can be discerned two different types of franchising: the product and trade name franchising where a distribution process it established; or the business format package where a complete business model practice is transferred to the host country (Hollensen, 2007). This last, can reach different levels, transferring a variety of features, such as trade mark or name, copyright design, patent, business know how or even geographic exclusivity (Hollensen, 2007).

2.4.1.4 International joint venture

An international joint venture establishes a partnership between two or more parties from different countries, where usually it is settle´d equity cooperation (Hollensen, 2007). This type of partnership is usually undertaken when complementary technology or skills of both actors can place new opportunities across different industries achieving further cost reduction and higher speed of market entry (Hollensen, 2007).

International joint ventures can be established according to different types of coalition, where collaboration is based on upstream and downstream activities, or where collaboration is only based on the end of the value chain (Hollensen, 2007). Concerning the first type, collaboration can further be established over Research and Development (R&D) and production, or instead, over marketing activities (Hollensen, 2007).

However it is required to manage efficiently this partnership, guaranteeing that there are no diverging goals, double management concerns or inadequate pricing schemes, otherwise these changes in the bargaining power will undermine the sustainability of the model (Hollensen, 2007).

Synthesis

It is important to align your internationalization strategy with the approach to enter new markets. The requirements of the company's strategy must underpin accordingly the international growth mode.

There are innovative methods to reach new markets through intermediate entry modes, which can give the answer to your limitations concerning investment capacity and access to resources. Knowledge and capacity can be established through the association with third parties who can deliver better your products in different remote regions.

2.4.2 Innovative pricing models derived

In a global context, decentralized supply chains together with international marketing approaches have placed a new order over the coordination of supply chains' management, undermining the traditional pricing schemes (Zhou and Yang, 2008). Accordingly, sales channel models have been adjusted in light with the evolution of internationalization strategies, creating a new reality where innovative pricing schemes have emerged to respond to the decentralization of the value chain over several downstream marketing processes (Giannoccaro and Pontrandolfo, 2002).

2.4.2.1 The emergence of revenue sharing

Traditionally, the centralized control of supply chain management has sustained the system efficiency, i.e. channel coordination, delivering a unique decision center (Giannoccaro and Pontrandolfo, 2002). However, the premise of such centralized control has become unrealistic given the independence factor which turns actors to perform according to the optimization of their individual objectives (Giannoccaro and Pontrandolfo, 2002). This multi-company analysis under one single downstream market requires decisions over the supply chain to be aligned and coordinated in order to maximize the total profit and performance of the supply chain (Giannoccaro and Pontrandolfo, 2002). Indeed, to overcome the constraints aroused from lack of channel coordination, it is needed to place incentives to actors intervening along the supply chain to share both risks and revenues (Giannoccaro and Pontrandolfo, 2002).

Different models of supply chain management contracts emerged thus as coordination mechanisms in which revenue sharing becomes possible and channel coordination is accomplished through the centralization of the supply chain's decision making process (Giannoccaro and Pontrandolfo, 2002).

Further, through sophisticated software and monitoring technology, industries are offered the opportunity to develop more flexible distribution channels from upstream to downstream markets (Narus and Anderson, 1996).

Synthesis

New fragmented international distribution models have aroused to the international markets where vertical separated industries' constraints have required a new international approach to pricing schemes which are based on upstream profit maximization through revenue sharing pricing models.

In addition to traditional and linear pricing schemes, revenue sharing contracts thus emerged as pricing schemes capable of aligning incentives among supply chain actors which enable channel coordination through centralization of the decision making process and further profit maximization.

With this, it is reasonable to consider studying contracts adopted in one industry in order to better understand the empirical effects of these same contractual innovations both on the enterprise and consumer's welfare according to these settings.

Conclusion of the Chapter

Present research indicates that it is possible for software providers to consume cloud computing technologies extending their functionalities offered to software users, as these platforms have been proven to be cost efficient, scalable and reliable for hosting middleware. However, open questions concerning connecting software users to cloud providers still remain unanswered, namely how to design a complete framework, i.e. cloud-based distribution model, for SaaS users connected to cloud services.

This analysis suggests that an innovative architecture and strategic capabilities, allowed through cloud-based information systems, are in line with new challenges placed under the knowledge economy enabling new opportunities for international marketing activities, most specially, concerning distribution behavior. It thus seems reasonable to understand to what extent cloud-based information systems influence the development of innovative distribution models when building internationalization strategies, in context with a new metanational nature.

To Portuguese companies it places a new challenge, where geography no longer matters that much. These companies have the profile to become pioneers in the metanational strategy because they have the key advantage of being born in the wrong place.

Provisional board of hypotheses

Considering the theoretical set disclosed in this Chapter, it is formulated the central hypothesis wherein empirical research is built on:

In the software industry, it is possible to build internationalization strategies of metanational nature by leveraging cloud-based information systems enabled capabilities.

This means that the emergence of a new global knowledge economy placed a behavior paradigm transversal to different sectors of activity where innovative companies focus on metanational knowledge and skills spread worldwide, instead of projecting or replicating from their national cluster.

Herewith, the theoretical set underlying this research was reviewed and coupled with the intended board of hypotheses. In the following Chapter, the technological hypothesis is formally presented along with the research methodology undertaken to corroborate the accomplished empirical conclusions.

3 Research methodology

Introduction to the research method

In this Chapter, a research strategy is illustrated, enlightening the line of reasoning which sustains the research structure of this study built from the technological hypothesis. Accordingly, the methodology undertaken is reviewed illustrating the contours which configure both method selection and data analysis.

3.1 Technological hypothesis

Today a new paradigm over international management has emerged discerning the importance of leveraging access to knowledge spread around the world. This metanational reality has begun to compromise the method through which companies are becoming international, demanding innovative corporate structures based on distribution models wherein advances in information technology enable new strategic competences.

Accordingly, the need to overcome geography displaying these innovative distribution channels has begun to further boost new technology hypes such as cloud computing, which offers the capability to amplify business intelligent services on a virtualized environment, overcoming physical distribution and hardware deployment.

Considering the literature review and this current competitive international context, it is identified the opportunity to understand the relationship between the reality of cloud computing and the development of innovative distribution channels, and further discern the strategic competences which may derive from the integration of both. From this challenge, this research focus on understanding to what extent is it feasible to build internationalization strategies of metanational nature by leveraging cloud-based information systems and its enabled capabilities. Bringing these realities together, the technological hypothesis emerges as the following:

(H1) It is feasible to develop internationalization strategies of metanational nature by designing innovative distribution models based on cloud-based information systems' capabilities.

Underlying the validation of this technological hypothesis is the validation of important statements which together support the corroboration of the hypothesis on which this research focus. These statements explain how:

(H2) It is feasible to create innovative delivery platforms through the assembly of cloud-based information systems in the development of virtual distribution channels.

(H3) It is feasible to grow knowledge-driven strategies through the development of operational capabilities enabled by cloud-based delivery models.

The underlying rationale is to find evidence to support how cloud-based information systems enable the development of virtual distribution channels which sustain the assembly of innovative delivery platforms. Through the potentiation of these cloud-based delivery models, it is further intended to test for positive correlation between operational capabilities underlying the characteristics of cloud computing, and the leveraging of knowledge-driven strategies, i.e. metanational strategies. Last, it is also reviewed how these operational capabilities resemble the metanational capabilities underlying the knowledge-driven metanational strategy. Through all this, the idea is to validate how innovative cloud-based delivery models can leverage the development of internationalization strategies of metanational nature.

3.2 Research methodology

From the technological hypothesis, the research model is developed with the objective to describe, explain and justify the methodology[1] undertaken to elaborate a valid response to the research question delivering thus the purpose of this study.

Considering the nature of the research question, which inquiries what are the cloud computing enabled capabilities that push companies to shift to cloud-based information systems in order to build innovative distribution channels when establishing an internationalization strategy of metanational nature, it becomes reasonable to pursue an exploratory research (Marshall and Rossman, 1989). Accordingly, the method selected to conduct this research is an exploratory case study in which an empirical inquiry is executed to explore a phenomenon inserted in a real and concrete context, delivering thus a cross-sectional study (Yin, 2002).

[1] *See further detailed information on the conducted research methodology in Annex I – Research methodology*

The structure of the case study is developed in accordance with the study protocol which is first established with the intent to guarantee that the collected data origins from a single case, including the context and the perspective of the specific study, the field procedure, and the case study questions. Indeed, to undertake an accurate data collection a set of semi-structured interviews is selected (Preece et al., 2002) in order to get the overall understanding of the information system of the company and the elected distribution model along with the perceived benefits and drawbacks related to them.

Simultaneously, a characterization of the software industry at global scale is developed with the objective of disclosing a set of innovative practices within the scope of research to further be faced against the case study reality and the theoretical background already disclosed. To do so, a conceptual framework is outlined then structuring the key aspects from the three axes which will guide the empirical research and analysis, providing thus guidance and coherence to the empirical inquiry.

The purpose of developing this concise framework is to structure the features which will guide the analysis of the empirical and theoretical researches combined. Through this outline, the main variables and concepts within the metanational theory are mapped accordingly, delivering a rational guide to the case study analysis. Herewith, the features to be discussed are grouped in a set of key categories listed subsequently, in which a fair discussion based on the confrontation of theory and empirical data is conducted.

Using the accounts of three different axes, namely the case study, the industry analysis and the literature review, multiple perspectives within real life context are drawn, building an important feature of data triangulation whereby data converges around a particular proposition and strengthens its claim to be upheld (Bergen and While, 2000). With these three axes, the case study analysis is conducted through a theoretical framework supported by the richness of the data collection through the adoption of multiple perspectives (Cutcliffe and McKenna, 1999).

Through the triangulation method, structural requirements necessary to establish credibility and internal validity in the case study design are withdrawn (Lee, Mishna and Brennenstuhl, 2009). From this research design, cross-check data becomes possible enabling triangulation to be used and determine whether the collected data converges around a particular theory, i.e. the metanational concept. Accordingly, the triangulation takes place at two different levels, namely the theory level, wherein alternate hypotheses occur, and the data level, wherein multiple sources of data within one perspective occur, and further multiple perspectives,

timelines and settings occur as well (Lee, Mishna and Brennenstuhl, 2009). Regardless of the level, the robustness of the method is confirmed through the collection of multiple data samples which together help guard against research biases, by means of constant comparative method (Cutcliffe and McKenna, 1999).

Conducting the triangulation method, an analysis matrix[2] is elaborated matching the key evaluation questions with the different data sources selected, delivering then a set of key preliminary findings (Mills, 2003). The underlying idea to this methodological guidance is to consider major research areas, from perception to validation, which pledge together the comparison of the different data sources and inherent methods, enriching sequentially the process of data triangulation (Mills, 2003). Accordingly, this research begins with the case study dimension in which it is evaluated the strategic intent underlying the internationalization strategy of the company, disclosing then its planned competitive positioning supported by the technological investment. From this strategic framing, the second dimension is introduced with the purpose of evaluating the company's internalization strategy according to the industry review, which enables its contextualization within the global industry current practices. The underlying objective here is to compare the technological investment and strategic intent of Sinfic's internationalization strategy with the current practices in the global market, validating if there is a match. Through this comparison it becomes possible to frame the case study analysis with the third dimension, namely the state of the art dimension, in which it is evaluated if there is a match between Sinfic's strategic intent and the strategic statement underlying the metanational strategy. From this detailed and sequential analysis it becomes possible to complete the triangulation research methodology delivering key preliminary empirical findings which will be further discussed, along with the rationale of analyzing them together.

All data collected throughout the major research areas in the triangulation model is discerned between primary and secondary data, according to its nature and literature source (Dawson, 2002). The primary data concerns the information withdrawn from observations and conducted interviews, and the secondary data concerns the information collected from existing research in books, reports, journal articles and websites of reliable authors and organizations. Multiple points of data collection were considered to enable the triangulation of

[2] *See further detailed information on the analysis matrix in Annex II – Analysis matrix for the triangulation research methodology*

the evidences and increase the internal validity of the case study, based on the information available from February of 2012 to June of 2012.

In summary, according to the exploratory case study method it is elaborated a qualitative approach to answer the research question established. From this, it is intended to validate the technological hypothesis through the observation of concrete innovative practices which can confirm existing research on the subject of study. Deductively, the case study is reviewed against the theoretical framework, structuring thus a response to the research question which is further discussed in detail based on the empirical findings collected.

3.3 Data analysis

Once the process of data collection is accomplished, the data analysis is performed in accordance with the research method previously disclosed, through which it is intended to find concrete examples of the theoretical approaches, by facing the case study analysis with the general trends and emerging responses realized in the industry at global scale. By finding similarities and differences, it is feasible to establish a match between the case study reality and the current state of the industry, understanding both as a whole to validate a generalized knowledge, concerning the scope of this research.

Considering the qualitative nature of the following research, fundamental criteria are reviewed consistently to surpass data collection hazards and guarantee this study validity (Saunders et al., 2009). Accordingly, when collecting empirical data through the interviews it was supported that the interviewees showed a fundamental understanding of cloud computing and realized the current inflated expectations around this technology (Saunders et al., 2009).

As for the generalization of the empirical findings disclosed through the analysis of the collected data, the objective of this qualitative research is not necessarily to generalize, but rather to support a small set of companies, which then can give insights to a wider range of practices in the industry (Dawson, 2002). More on this, the low maturity of the technology of cloud computing, and its inherent low degree of adoption, further prevents this research to include several companies in this study.

Conclusion of the Chapter

In this Chapter the selected and conducted research model is revised from the technological hypothesis, disclosing the methodological process undertaken to validate this last, and further answer the research question of this study.

The next Chapter follows to characterize first, the current competitive set of the global software industry, and second, to analyze the case study from which empirical insights are expected to be withdrawn supporting the corroboration of this research.

4 Case study

Introduction to the case study

In this Chapter the research method is conducted through a case study analysis of a Portuguese software vendor which operations, competitive positioning and international growth prospects are compared to what current theory proposes and to the current developments that are happening in the commercial world.

Herewith, a set of effects defining the software industry's dynamics worldwide have been summarized, characterizing an international context for potential impacts derived from the use of cloud computing, allowing through this research, to extrapolate and assess further impacts exhibited in Chapter 5.

4.1 The global software industry

In this section the global software industry is reviewed with the intent of understanding how software industries worldwide are advancing internationalization strategies. The purpose of this empirical analysis is to explore the relationship between cloud computing enabled distribution channels for SaaS and international strategies of metanational nature, disclosing a benchmark to be further discussed in Chapter 5 against the reality displayed next on the Case Study, and the theoretical approach displayed on the literature review.

4.1.1 The global information technology market

Combined effects derived from the emergence of new internet technologies, together with the growing computing power, have realized new organizational structures and further innovative methods for talent and asset management (Bughin et al., 2010). The deployment of these technologies, in accordance with the development of innovative business models is evolving, delivering new usage methods and reallocating technology costs (Bughin et al., 2010).

The reach of internet-based information technologies is simultaneously evolving, delivering new opportunities for companies to use the Web to extend their reach and further reduce operational costs (Bughin et al., 2010). In this line of reasoning, companies have begun to use web technologies to expand their access to worldwide spread knowledge and competences

not only within their collaborators, but further within new innovation communities engaging external top participants (Bughin et al., 2010). This share of content and network effect has allowed realizing co-creation processes, which together with social network analysis, have begun to speed up service delivery, mapping information flows and knowledge resources around the worldwide workforce (Bughin et al., 2010). Indeed, today's social networking tools are alleging valuable premises mostly over processes which involve competitive intelligence and further support marketing activities (Bughin, Byers and Chui, 2011).

The collaboration level is currently extending rapidly to external talent pools, leveraging talent beyond the established workforce which is modeled within existing organizational structures (Bughin et al., 2010). By promoting an open collaboration data base, a greater exchange of information is achieved along with a more rapid access to expertise within the worldwide intelligence community (Bughin et al., 2010). However, many companies today believe the added value is inherent to the technology itself, devaluing thus the understanding of how knowledge work in reality happens (Bughin et al., 2010). Accordingly, strategic choices concerning the extent of collaboration networks to customers, suppliers and external partners are becoming important within the evolution of knowledge yield (Bughin et al., 2010).

Complementary, companies are finding that establishing network collaboration through integrated core business activities, valuable data is generated as a by-product, i.e. as all data is tracked and analyzed, customer interactions and behavioral patterns are drawn (Bughin et al., 2010). From these data, companies are exploring to whom the information can be valuable, and further testing new services free of charge inducing a higher stage of competition (Bughin et al., 2010). Indeed, companies are starting to experiment the freemium model in which a set of customers enjoys free services supported by other customers who pay a premium for a specific use, establishing a cross-subsidization pattern that leverages the described effects of networks (Bughin et al., 2010). Still most companies are lacking the processes to use experimentation and extract business value from big data, which requires new capabilities driven from an organizational change along the different stages of management decision making (Bughin et al., 2010).

In the landscape of networking, web 2.0 technologies have been allowing higher interactivity and share of ideas between participants inside different pools of knowledge (Bughin, Chui and Miller, 2009). Fostering at low cost interactions across geographic borders and further across business units, web 2.0 is bringing a greater scope and scale to organizations which together

are strengthening the quality of relationships with customers, promoting at the same time the communications with suppliers and outside partners (Bughin, Chui and Miller, 2009).

The strategic shift that has been growing in the information technology industry today is how networked structures are evolving to a more flexible and adaptive modules where the capability to access knowledge is prospected along with innovation (Bughin, Chui and Miller, 2009). Further these web-based structures have proven to deliver market share and higher margins from the interactions with customers, business partners and employees, to organizations adopting these technologies to their businesses' organizations (Bughin et al., 2010).

4.1.2 The software industry's dynamics

Worth over $300B, the global software industry has been pressuring other sectors with higher competitiveness and innovation stages contributing to overall productivity and growth of the economy (Chitkara and Marty, 2010). With this surplus of technology advances, a time of transformation has arrived to the software industry where software providers have begun to rethink over their business models according to the new demands in the market, reshaping their strategies and roadmaps (Chitkara and Marty, 2010). This shift is simultaneously promoting a closer collaboration among IT stakeholders, including software hardware, IT services and Telecommunication Operators (Telcos) (Chitkara and Marty, 2010).

Underlying this evolution that is pushing the technology industry to revenue growth, is a set of mutually reinforcing trends, namely cloud computing, mobile computing and the consumerization of technology, that together are reshaping not only the design and deployment of the software, but further are restructuring important marketing tools, specifically the delivery channels for software and also the economics of software licensing (Chitkara and Marty, 2010). The hype effect together with the volatility of the customers' expectations has been responsible for the reduction of the life cycle of the software products, which in consequence, delivers higher standards of customization pulling marketing factors as determinants of the competitive positioning of the software brands (Chitkara and Marty, 2010).

These trends are underpinned in the concept of heterogeneity of digital resources which is promoting the flexibility and compliance embedded in these types of resources, delivering a new on-demand service model which discerns from the traditional on-premise software model (Chitkara and Marty, 2010).

This rapidly changing set is pushing software providers to actively monitor the key trends along with the customers' expectations that have begun to impact their business, concerning further on focus and control features which are together accelerating the emergence of cloud and mobile computing within the activity sector (Chitkara and Marty, 2010).

4.1.3 Key facts and figures of the worldwide software industry

The share of worldwide software product market is divided among three major regions, respectively America, Europe and Asia, evidencing the concentration of the most important technology clusters at global scale which will be reviewed in detail (Chitkara and Marty, 2010). Of these clusters, the Asian concentration has been assuming itself as the major force thriving from the market, holding a higher consistent growth in software products, although the top companies still remain in the other two areas, where the geographical concentration is more intense (Chitkara and Marty, 2010).

The international activity of software providers is not only recognized, but further given higher importance as the percentage of aggregate revenue derived from international operations increases. This figure evidences the key strategic positioning that has become required to play in the global software market: networking.

Once evaluating the transformation realized in this industry, it is important to further consider the reduced percentage of SaaS revenues in the total aggregate revenue stream, and face this fact with the emergent importance of the concept of on-demand service model.

4.1.4 **The emergence of cloud computing** (Chitkara and Marty, 2010)

The shift in the information technology market has become clear through the access to computer resources offered through networks instead of the traditional running software or storing data on a local computer. The disruptive emergence of cloud computing in the software industry has placed a greater challenge over software providers who dwell on how to incorporate this new value proposition into the value chain and evaluate to what extent it can be integrated with existing models.

The integration of cloud computing will continue to intensify, independently of the pace of this evolution seeing that each software vendor is adopting this technology according to its available resources, the nature of its products and naturally the expectations of its customers.

The multiplicity of models that derive is yet not seen as a threat, but rather an opportunity to differentiate and leverage the value proposition. Nonetheless, the delivery mode of election is, independently of the value proposition, SaaS.

The matureness of SaaS, as an innovative distribution channel for service offerings, is already changing the software vendors' structures and pricing strategies. With this disruptive impact over established software organizations, new engagement models based on cloud computing technology are emerging while sustaining growth and margins (Gopalakrishnan, Infosys technologies, 2010). Today SaaS is growing at a seventeen percent annual rate (Bughin et al., 2010).

However, this move to on-demand service models is not realize altogether within the software industry, leaving the software vendors with the concern to maintain traditional delivery modes while adopting newer on-demand service models, which can turn out to become too costly, as this multiplicity of business channels requires a different marketing and sales internal approach.

The SaaS approach also entails new platforms and application architectures capable of managing integration across business processes while handling high transaction volumes guaranteeing availability which are charged according to utility based pricing schemes (Snabe, SAP, 2010). Considering this cross-cloud application integration, software vendors are pushed to establish cooperation relationships through joint ventures or franchising agreements, defining then how the added value will be shared, according to value-based pricing methodologies (Bertrand, Cegid, 2010).

Threatening risks concerning data security and privacy in the cloud remain and are not expected to be easily exceeded.

Another feature already changing the business strategy of software vendors is mobile computing. The growing importance of mobility is driving companies to bring mobile technology into their portfolios through strategic business moves and new acquisitions. The underlying forces pulling mobile computing to transform the software industry are the customers' expectations towards new software capabilities enabling security and ubiquitous access management, and customers' requests for context, i.e. location and motion.

Digitalization has become an important driver to deliver value as the offered software integrates a knowledge-based intellectual reasoning (Rouvray, ESI Group, 2010). This union between large data systems and web services is allowing software providers to market their products in a higher competitive stage, by tying their customers' information collected online with their internal purchasing and customer information databases (Tarkoff, Adobe Systems, 2010).

The underlying figure of value creation has become knowledge over the customer, meaning knowing their business processes in order to be able to deliver quality and adequate solutions to their evolving needs, maintaining along a strong customer relationship through this social networking. Accordingly, the primary added value resides in consolidating this know-how developing intelligence platforms based on predictive systems capable of forecasting demand and customer behavior. This is translated within the software industry in a shift from manufacturing based skills to knowledge based skills where technological expertise no longer is the main value creation driver.

Customers' interaction in digital channels with providers and business partners, are growing and engaging new opportunities through social networking, cloud computing and electronic commerce.

But although customer knowledge and user interaction will continue to speed in these virtual environments, human interaction still remains as a feature of differentiation. This reality alerts to the fact that these technologies besides being an innovative and efficient delivery mode, may not stand as the right path to build a customer relationship.

Considering that seventy percent of the software companies' revenues derive from services, it makes sense to characterize software vendors more as service and content suppliers and less as technology providers, disclosing thus the value premise underlying the cloud computing model wherein software is no longer sold for the product itself, but rather for the service and output it provides. In this new set, the service component of the offering is becoming a key differentiating factor reshaping the current industry environment where mass customization of software is seen as a new driver of performance requiring software providers with a flexible supply of software elements. Accordingly, these service offerings rely mostly over on-site service features, which emerge as the key module for building quality customers' relationships. Herewith, the service is becoming both complementary and essential to SaaS (Lehucher, Berger-Levrault, 2010) and will be a key differentiating factor.

The new flat models that allow physical delivery of software and resources to a broad set of standardized purposes underlie the cloud computing model, where access to global distributed customers is guaranteed without building a local distribution model.

However this view of a flat world where proximity is becoming less relevant is not coherent with the growing complexity of business processes which require a closer services' provisioning and a more accurate analysis of customers' needs. According to this context, proximity remains one key driver to process and storage critical data, and to further maintain a quality local relationship network with customers.

Still this growing importance of local presence strives beyond physical location. How software vendors are delivering content and software products will become as important as the product's quality itself, considering how the convergence of nontraditional software providers is establishing a new heterogenic reality in the software and technology platforms. As new competitors continue to emerge from nontraditional places and with unconventional structures, i.e. from start ups and other industries, this consolidation process will continue.

The recent financial recession over the global economy has impacted the software industry, diminishing the investment volumes and motivating new mergers and acquisitions. In the same context, entrepreneur-led small businesses are rising from emerging markets to drive innovation and to thrive. From this fast paced development of software vendors, a new software more concerned over the customer and its analytics has begun to be developed in order to better supply customers which are currently rebuilding their business processes and growing in a new and more demanding context post-crisis. Herewith, the release of higher quality software with broader functionalities and flexible access is fostering a higher and more challenging stage of competitiveness in the industry.

4.1.5 **Review over national tops** (Chitkara and Marty, 2010)

The precedent review characterizes the present state of the industry, highlighting important insights from leading companies which together disclose on where the industry is evolving and how to best meet the challenges that are emerging. Following, and confirming that the value chain of the software industry is extended at a global scale, the analysis of this fact is sustained by the review of the fundamental axes of different regional competitive positioning, i.e. clusters, established along the value chain, recognizing with this, the competitive advantages locally generated.

China (Wong, PwC China, 2010)

Whereas the Chinese software market traditionally fell behind the top American and European software vendors, a dynamic and fast developing environment is expected to thrive in the following years. Accordingly, the strong effects of globalization in the Chinese economy have accelerated the need for new robust and well-designed software modules. This growing need for serviceable software along with the reality of a fragmented software industry, are placing great new opportunities for existing vendors and further new entrants to develop mass customized software to the Chinese great and growing demand for software utilities.

France (Marty, PwC France, 2010)

Stability is the core characteristic of the French software industry which has been dwelling between a strong concentration among the top key vendors and a remaining majority fragmented sector. This established industry, on the contrary of the usual dynamism and fast evolving pace of a technological sector, has remain stable and concentrated over the last years even in face of the recent international financial crisis. Accordingly, the emergent condition for this national top to catalyze the evolving nature of the software industry is to engage new vendors with critical mass capable of leveraging the key country strengths. This strangulation of the industry development poses great opportunities to explore and thrive from.

Germany (Menzies, PwC Germany, 2010)

In this country, the software industry concentrates around the activity of one key software vendor, namely SAP, which has emerged as the first non US operating at global scale, becoming today the biggest European software vendor. Indeed, the German software market is reflected through SAP's performance which has been stable even during the recent international financial crisis.

India (Rajagopalachari, PwC India, 2010)

The young Indian software industry has emerged as a large competitive national top, establishing high new standards for both delivery and process excellence.

Its key differentiating driver has been the focus on services since early, developing the next generation of software products without the traditional developing and commercializing high levels of investment. Instead, this engaging benchmark placed its competitive advantage on the strategic usage of disruptive technologies, such as cloud computing, social network and telecoms, to capitalize from its low competitive stage, overcoming then the traditional technological and marketing barriers.

Through this innovative positioning Indian software vendors have been leveraging the growth prospects of the Indian software industry, seeing foremost how innovation and intellectual property are underlying the most recent growth strategies. Gathering thus, the strategic conditions to thrive in the new international competitive environment, the Indian software products industry offers today the next generation service products engaging a software revolution which is expected to be worth $12 billion just by 2015.

United Kingdom (Sarai, PwC UK, 2010)

The UK software market has sustained a strong presence in Europe, gathering foothold of large software vendors with cash rich economies and successful SaaS offerings. To thrive in the current environment, these top vendors have uphold continuous innovation by changing focus to adapt to market conditions, undertaking further large corporate transactions.

The evolution and success of these top vendors has however continuously been undermined by the global American software vendors who benefit from an entrepreneurial culture and strong financial support through great innovation clusters like Silicon Valley. Aiming to project this cluster in the UK software industry, UK established software vendors have continuously driven innovation engaging intellectual property and industry know-how, which together with economic stability have attracted investment. Accordingly, the UK software market has already started to show the fruitfulness of these investments mostly from private equity interest, which has facilitated the development of good quality start ups.

United States (Archer, PwC US, 2010)

US software providers have been leading the change in the technology industry which encompasses a set of advances and trends that together are establishing a new heterogenic reality that favors mass customization. This customer individuality however makes the design

and delivery of software and services more difficult, leaving though, the challenge and opportunity for new entrants to rapidly succeed as significant providers and capitalize these key shifts driving the market disruption.

The change has begun with the availability of software and services on cloud-based information systems. This challenge placed a new more demanding and more competitive reality which drove top nationals to merge with smaller and entrepreneurial software providers with new competitive and innovative offerings, gathering with this, stronger product portfolios.

At the same time, great advances in mobile technology have begun placing new market opportunities yet to be explored to its full potential. Together with these advances, digital transformation is placing a new paradigm over software technology where interactions through digital means are building a new type of digital consumer behavior which requires a new approach for software vendors. Indeed, different stages along the value chain are being revised according to this new demanding reality, placing important updates over collaborative marketing tools.

4.2 Case study analysis

4.2.1 Introduction to the challenge

In an international context of growing computer power and the emergence of new internet technologies, software providers are faced with the key challenge of introducing new innovative internationalization strategies. Sinfic, as a software vendor and a global competitor, is fronted with the need to incorporate these strategic changes within its international delivery model undergoing with this, a new internationalization strategy in response to the business opportunities emerging in the global software industry.

4.2.2 Background on the company

The following information is extracted from Sinfic's annual management report and consolidated accounts, 2010.

4.2.2.1 Company profile

Sinfic – Industrial Information Systems and Consulting – was established in 1990, Portugal. Since its beginning, Sinfic has been able to achieve a solid place in the information technologies market over the countries in which it operates (Portugal, Angola, Mozambique, Guinea-Bissau and Brazil) with over 500 collaborators and an integrated annual business volume ascending 60 million Euros in 2010.

The company develops and offers integrated management system software applications to industry, public and service sector organizations. The delivered solutions are built up to deploy information, management and quality systems in line with organizations flexibility and competitiveness, within large strategic business axis.

Since its beginning, the company has been able to sustain a solid growth broadening its offered services in line with the development of new capabilities and strategic alliances. This set of alliances with worldwide partners who share the same vision and understanding of the market's demands, has moved Sinfic towards a higher stage of innovation in its ideas and solutions delivered throughout the years. Today, the company urges to become a reference of excellence in the worldwide IT market establishing competitive and reliable partnerships which in whole can reflect a strong commitment with innovation and the future.

4.2.2.2 The Software product: Quatenus solution

Quatenus is a worldwide intelligent location based service which delivers an innovative asset management platform, fully integrated and capable of satisfying corporate needs towards external assets through local integration with central corporate systems. From the integration of geo-reference information tools and the capacity to build communication and mobile data transmission protocols, it was structured this integrated offer of solutions incorporating a new strategic axis. The competitive solution deployed thus relies on the real-time geo-referenced intelligent response to corporate challenges.

This real-time asset management platform delivers information, location, real-time remote control and automation of information processing. Underpinned in Location Based Service Engines and Real Time Systems, this technology allows the screening and bidirectional communication with mobile assets.

Beyond a scalable architecture, the technology is entirely configurable with open interfaces which allow an easy integration with other applications. Hence, solutions are built over established frameworks, but adjustable to each business.

4.2.3 Business opportunities in the software market

All the following information is extracted from the reports and journal articles on which the industry review was elaborated in Chapter 4.1. From these empirical findings it is elaborated a summary overview to disclose the current business opportunities in the software industry.

New technology trends are emphasizing the need to enable a mobile computational control which is expected to disrupt a revolution in the current systems and architectures, both computational and organizational, since it allows the dematerialization and extension of organizations' value chains in a transformational way.

In line with this new wave of innovation, further advances in storage capacity and management of information are taking place underlying a new capacity and availability of computational processing. Coupling these accomplishments, computational models and systems are starting to be seen as utilities which in nature help emerging new business models.

In the IT industry, the continued need to follow evolution of both computer technology and the dominant business model for delivering IT-based solutions, has placed a new paradigm

over delivered solutions in a global context, extending thus the innovation stream. This new demanding reality entails software providers to assume a more flexible structure to adapt to emerging challenges in the market place in an international perspective. With the global presence premise in place, IT providers urge to realize scalable channels to deliver their products with faster deployment time and reduced time to market. And Quatenus is no exception.

The Quatenus key solution is in the real-time geo-referenced intelligent response to corporate challenges which makes sense in a global context. Given its capabilities and proven success in three different countries, with wholly different realities, it has come to sense the need to undertake the opportunities to advance the internationalization strategy considering the recent trends on global distribution models of software.

4.2.4 The problem

The following information is extracted from the Interview[3] of Eng. Carlos Silva, Member of the Board at Sinfic Portugal, conducted in 12th March, 2012 in visit to the company's headquarters in Alfragide, Lisboa.

Sinfic Portugal has already in place an international customer portfolio, but none of them has directly been sold. In these cases, this parent company has first established branches in selected foreign countries to leverage the international sales, which then are responsible for direct sales to the market in which they are placed.

Traditionally Sinfic sustained an integrated market approach wherein a coupled value chain was established and operationalized from production to after-sale services. Accordingly to this customized approach, Sinfic has delivered throughout the years products which are not susceptible of industrial application limiting the international stagger process.

With this constraint in place together with a context of disruptive strategies based on innovative technologies, the company is faced with key challenges which require careful attention in order to place a new successful value proposition in the international software market. Indeed, Sinfic in order to remain committed to its vision of becoming an international

[3] *See further detailed information on the interview in Annex III – Interview of Eng. Carlos Silva, Member of the Board at Sinfic Portugal*

reference of excellence in the IT market needs to redesign its delivery model structure which underpins its internationalization strategy, configuring a new and more competitive positioning in the global market. This consequently demands considering important insights observed in the industry, namely reflected in other companies disruptive attempts, which have already started to incorporate innovative technologies in their delivery models. The hitch relies thus on building up a global network web to sustain the share of competences and knowledge undergoing this way a different, but innovative internationalization strategy capable of delivering the desired utility to its customers.

4.2.5 Implemented solution

The following information is extracted from an Interview with Eng. Carlos Silva, Member of the Board at Sinfic Portugal, conducted in 12th March, 2012 in visit to the company's headquarters in Alfragide, Lisboa.

According to the challenge in place, Sinfic has begun to rethink over its internationalization strategy considering advances on cloud computing technology as an enabler to deliver SaaS deployment model. Simultaneously, the company has recognized a new decoupled international value chain where third parties, established on the countries in which Sinfic intends to enter, become responsible for all commercial operations in that same geography. Accordingly, the structure underpinning the company's delivery model has been reconfigured.

Aiming to increase and maximize the offering of innovative solutions as a reply to the emerging challenges placed in the international market, Sinfic opt to decouple its value chain and drop direct sales delivery model. Instead, the distribution network was broaden including third parties responsible for all operations from commercialization to after sales services, withdrawing thus all complexity associated with the product (SaaS). The key idea when decoupling the value chain was to advance the benefits of SaaS through the technology of cloud computing without any complexity associated with product's installment or maintenance.

4.2.5.1 Building a new international distribution strategy

This new delivery model establishes over three levels of distribution specifically concerned over Quatenus: the international head office, local authorized centers and third parties. Further two transversal areas, namely an international board and a publishing contents team,

are introduced to complement this new international approach based on a decoupled value chain.

These two transversal areas are responsible for the approach to new markets aiming to capture opportunities of partnership according to the targeted profile, collecting and preparing key information to share with the product managers at the international head office.

The international head office of Quatenus is responsible for the development of the software, for the direct support to the local authorized centers and also for the business roadmap. This last one, beyond product management activities, delivers the international head office the responsibility to raise new local authorized centers according to the information collected from the international board, which will further be detailed.

The international head office most importantly becomes a global server, based on cloud computing technology, to all local authorized centers. Concerning the legal restrictions of each country, the servers are occasionally shifted to the local authorized center keeping the information inside boarders. Accordingly, the Quatenus solution is delivered to the user over local license installment or Software as a Service renting model.

This shift means that Sinfic aims to turn its partners into SaaS vendors supported by Sinfic, identified instead as a cloud provider.

The local authorized centers become responsible to collect, enable and support new partners in each one's responsible geography. Each of these certified centers is given a business package including certification, operations manual and templates for contractual agreements.

They are also responsible for proposing adjustments to the product's features according to the needs of the targeted market, mapping thus the software across geographies. These adjustments concern not only the product's composition, but further the pricing scheme in place, the Service Level Agreements with Telcos and contractual agreements with third parties.

The third parties concern new international partners supported by the local authorized center who are responsible for the before-sale, set up (configuration) and after-sale services. The key challenge to the local authorized centers is thus to gather non exclusive partners, who already have its own clients' portfolio established, and in which Quatenus solution is capable of complementing its current offering for only a marginal cost. All complexity is retracted from the software solution according to the SaaS paradigm.

Considering that the new established delivery model is based on a portfolio business wherein the idea to accomplish synergies with a set of partners is key to echelon clients. This synergy is based on becoming complementary to the partner's products or further to complement its installed based customers.

4.2.5.2 Establishment of innovative pricing schemes

Based on each geography context, the local authorized centers become responsible to recommend a price scheme to the international head office which is further responsible for its approval. Independently of the pricing scheme, which already incorporates de direct costs associated with the product's availability, the final revenue stream is shared between the partners, the local authorized centers and the head of office, according to the percentages disclosed upfront in the contractual agreements, i.e. revenue sharing model.

4.2.6 Benefits and future outcomes

As a business to business company, Sinfic's products share the opportunity of being used globally regardless the country of origin, delivering everywhere their corporate solutions fitting international challenges. Considering the lack of skills and knowledge the company still presents when dealing with foreign markets, naturally due to its reduced global presence, it makes sense to establish strategic partnerships worldwide to deliver solutions which can place challenging, but rewarding new value streams for all intervenient along the value chain.

With Quatenus new distribution model it is rational to understand the influence of cloud-based information systems over its internationalization strategy. However, once fronted with innovative practices of the industry, which are configured as practical examples of the recent theoretical approaches, the composed delivery model has the opportunity to be improved accordingly. In this line of reasoning, it is comprehensible to study the company's approach within the industry best practices in response to the emergent challenges in a new competitive international context.

Conclusion of the Chapter

In this Chapter an industry analysis was reviewed, disclosing how a set of innovative practices are configured as concrete examples of the theoretical approaches described on the literature review. Deploying the empirical analysis in which the methodology of this research underpins, the case study analysis was introduced wherein the redesign of Sinfic's internationalization strategy was explained, disclosing the underlying motivation of the company.

In the following Chapter and according to the triangulation methodology previously disclosed, the case study analysis is faced with current practices in the global software industry and advances in the state of the art, delivering key preliminary conclusions.

5 Discussion of empirical findings

Introduction

In this Chapter, according to the triangulation research methodology previously disclosed, the analysis of Sinfic's internationalization strategy is conducted through the development of the case study analysis, its contextualization within the global software industry and within the current state of the art. Through convergence, it is intended to see the strategic statement of the company reflected along these three different perspectives, constructing thus a consistent discussion based on the key preliminary empirical findings, which are further crossed with the posed hypotheses in order to check if the empirical knowledge can support the hypotheses and answer the research question.

5.1 Analysis of Sinfic's internationalization strategy

The following analysis[4] is based on the information extracted from an Interview with Eng. Carlos Silva, Member of the Board at Sinfic Portugal, conducted in 12th March, 2012; and an Interview with Eng. Paulo Amaral, also Member of the Board at Sinfic Portugal, conducted in 21th May, 2012 in visit to the company's headquarters in Alfragide, Lisboa.

Quatenus is a worldwide intelligent location based service which delivers an innovative asset management platform, fully integrated and capable of satisfying corporate needs towards external assets through local integration with central corporate systems (Amaral, 2012). Accordingly, the management solution delivered through Quatenus is based on verticals which need to be adapted to each local context, wherein tacit knowledge is activated, thus deploying the competitive advantage of the product (Amaral, 2012). Indeed, the Quatenus platform is purposely architected to host a multiple of applications, rapidly enabling its partners to begin earning revenue on their LBS investments efficiently and cost effectively (Silva, 2012). Furthermore, its partners are offered the capability to develop an endless number of tailored applications using only *Quatenus core edition* and, for faster time to market, Sinfic offers its partners packaged application templates (Silva, 2012). So, by deploying its services across potential partners, namely mobile operators and service providers, Sinfic can deliver complete

[4] *See further detailed information of each rationale underlying all the key preliminary findings on the analysis matrix in Annex II – Analysis matrix for the triangulation research methodology*

solutions in a comprehensive scale through its strategic partnerships that also take advantage of speed to market, ease of development, application integrity and early return on investment (Silva, 2012).

Recognizing the strategic value of activating the knowledge locally, Sinfic designed a new cloud-based distribution model building up a global network to sustain the share of competences and knowledge, experiencing this way an innovative internationalization strategy capable of delivering the desired utility to its customers (Silva, 2012). This strategy redesign focused thus on overcoming the constraints associated with the company's established coupled value chain, developing a more flexible structure with the prospect of achieving an operational network and deliver benchmarked solutions (Silva, 2012). From this decision, new real time multi-channel delivery models emerged inside Sinfic allowing the company to drive its capabilities worldwide, achieving economies of scale and experience curve effects (Silva, 2012).

Accordingly, the tactical intent underlying Sinfic's new internationalization strategy is based on an integration process in which the company's activity is supported by a global operational network wherein capabilities and investment opportunities are projected locally, to be further channeled to all authorized centers, i.e. operational network, and enable the company to sense the market (Silva, 2012). Consequently, the activation of knowledge networks through information and communication technologies, i.e. cloud computing, is expected to facilitate the access to economies of scale (Lopez, 2011), risk management (Infosys, 2008) and faster time to market (Pring et al., 2010).

See that the process of knowledge sharing among worldwide spread operational units is supported by capabilities enabled through cloud-based information systems wherein the combination of virtualization, distributed computing and service-oriented architecture delivers a key tool for managing and delivering services over the Internet (Zhang, Cheng and Boutaba, 2010). Through a service-driven business model, this disruptive technology enables the delivery of scalable and elastic IT capabilities as a service, streamlining the dynamics and capability on demand required to guarantee a global distribution scale (Desisto et al., 2011), as in Sinfic's new internationalization strategy (Amaral, 2012). Confirming this relationship between the capabilities enabled through cloud computing technology and the company's internationalization strategy, the rationale that Sinfic's strategic statement is based on the deliberate use of knowledge through cloud-based distribution channels is supported.

From the rationale followed in the previous review of Sinfic's internationalization strategy, it is realized how its underlying strategic intent is the activation of local knowledge supported by the technological investment on cloud-based information systems to create competitive advantages. Accordingly, these key preliminary findings structure the following analysis in the sense that the contextualization of the case study within the current competitive set and theoretical framework is guided by these two criteria, namely strategic intent and technological investment.

5.2 Contextualization of Sinfic's internationalization strategy in the global software industry analysis

Considering the key drivers underlying Sinfic's internationalization strategy previously detailed, it is realized the strategic intent of the company and the capabilities enabled through the deployment of cloud computing technologies.

According to the triangulation research methodology, from this first review of the company's internationalization strategy, the case study analysis undergoes next the evaluation of the strategic statement which underpins the internationalization strategy within the existing competitive scenario, fronting it with current practices in the global software industry. The objective here is to understand to what extent in this specific industry the most innovative players (Forbes, 2011) are realizing the strategic value of knowledge and using cloud-based information systems to support investments in new strategic directions. Furthermore, it is also intended to evaluate how companies are developing strong channel relationships and building new valuable entry modes, validating the emergence of a knowledge-driven economy.

5.2.1 Characterization of the current global software industry

All the following information is extracted from the reports and journal articles on which the industry review was elaborated in Chapter 4. From these empirical findings it is elaborated a summary overview to characterize the current international competitive set.

Cloud computing has been proved a paradigm as it strategically combines technology with personal interaction, experiencing great value proposition for companies (Chitkara and Marty, 2010). Given the current technological and economical context, the effects inherent to this

value proposition are expected to further deliver potential impacts in companies' boundaries and in the industry's structure overall, realizing thus an improved method of developing a new type of virtual business clusters (Bughin, Byers and Chui, 2011). Fundamentally, these virtual clusters, together with social software, can enable the development of value networks which fulfill the same role as the traditional geographical business clusters, but further deliver benefits related to productivity, access to resources and time to competitive advantage (Bughin, Byers and Chui, 2011). From this new networked enterprise, new cloud-based business communities enable the share of digital and information networks for collaboration and competition, which takes place in a new virtual space where co-creation processes among partners emerge as a driver to succeed (Bughin et al., 2010). Accordingly, it is unfolded companies' strong initiatives on the development of virtual supply chains through cloud-based delivery models (Brown and Johnson, 2012).

In a new dynamic environment, where gains from technological investments not always persist, it is realized how the most innovative companies in the industry already recognize the strategic value of accessing and activating locally contextualized knowledge (Bughin, Byers and Chui, 2011). Companies, observations indicate, are responding to this challenge with new strategic approaches to the market, although some CIOs remain bearish towards the high investments on big data and analytics, suggesting thus the need to wait for the market to mature and understand the managerial link between technological investments and strategic direction (Brown and Johnson, 2012). Still, by fronting observations with alternate perspectives, it is perceived how top trends in the market unveil companies' initiatives on the development of flexible delivery platforms and access to quality data, mostly related to customers' insights (Brown and Johnson, 2012). The relationship between the development of knowledge strategies and the investment on cloud computing and mobility is however, not yet realized by most companies who admit they are far from strongly prepared in what concerns developing capabilities to meet the current challenges (Brown and Johnson, 2012).

Nonetheless, the need to reach international business space using network, as partnerships, and internet, as a distribution channel, is becoming the main focus for companies competing in the global market (Bughin et al., 2010). Accordingly, cloud-based capabilities are emerging rapidly in the market delivering to companies the opportunity to reach a new type of hybrid structure capable of enabling several users to experience computer-generated physical spaces that are represented graphically (Bughin et al., 2010). From this opportunity, the development of innovative virtual distribution channels is becoming possible and new cloud-based delivery models are conquering the international market (Bughin et al., 2010).

Overall, companies are improving their mastering of cloud computing technology, using it to enhance global operations while exploring new market opportunities (Bughin, Byers and Chui, 2011). When adopted at scale across an emerging knowledge-driven economy, a new type of networked enterprise overcomes the traditional idea of projection from a national top as a successful business model (Chitkara and Marty,). Advances in information and communication technologies, like cloud computing delivery platforms, underlie the growing access to these resources, facilitating Small and Medium Enterprises (SME) in their internationalization processes (Chitkara and Marty, 2010).

Engaging thus new opportunities enabled through cloud-based information systems, SME and established multinationals are already building on co-creation effects through virtual business clusters exploring virtual customer integration to generate both local and global knowledge for their innovation activities and potential market opportunities (Bughin, Byers and Chui, 2011).

Synthesis

In the second dimension of the triangulation research methodology, the purpose of fronting the analysis of the case study with the current global software industry is to validate the recognition of a knowledge economy in the market, finding support to the rationale of Sinfic's strategic intent and technological investment.

From the observation of current practices in the industry, it is realized how companies are investing in cloud computing technology to build innovative delivery models, overcoming geographical constraints through the development of these open communication channels to worldwide dispersed markets. Accordingly, software providers are enjoying these virtual business environments to boost co-creation effects and access foreign market knowledge which is activated locally. Herewith, the software industry is beginning to understand the process of integration and orchestration of knowledge, technology and markets, which are spread, differentiated and dependent on the context.

From these evidences, it can be recognized a match between Sinfic's strategic course, and how the global software industry is investing in cloud computing technologies and experiencing new knowledge-driven strategies. With this, the contextualization of Sinfic's internationalization strategy in the knowledge economy is later assessed, discussing in further detail the key preliminary empirical findings.

5.3 Contextualization of Sinfic's internationalization strategy in the literature review

From the analysis of the first dimension, a set of key preliminary conclusions support the rationale that Sinfic's internationalization strategy is based on the activation of locally generated knowledge to develop and adapt the product's verticals, engaging new management solutions to deliver in the global market. Continuing on the second dimension, the industry review prior to this section confirmed the rationale of this strategic intent, as it was observed current practices in the market characterizing a set of new trends around the development of cloud-based delivery models to compete in a new and demanding knowledge-driven economy. Besides these findings, according to the triangulation research methodology, there is still the need to challenge the company's internationalization strategy within the current theoretical framework, which is now performed.

In Sinfic's strategic statement, underlying its new internationalization strategy, the competitive advantage of activating locally generated knowledge is recognized, experiencing then methodologies to access, integrate and disseminate to global scale the newly created tacit knowledge (Amaral, 2012). From this strategic intent, the company yielded a set of new competences to support the flexibility and magnitude required to develop the dynamics of the process of knowledge creation (Amaral, 2012). Understanding the key capabilities underlying Sinfic's internationalization strategy and how the metanational strategy defends the strategic use of knowledge, it becomes reasonable to analyze the case study through a knowledge management perspective. This means reviewing the company's strategy in light of what is required to create knowledge, realizing then the dynamic nature of knowledge creation and how to manage such process effectively. Accordingly, the continuous process of interaction between tacit and explicit knowledge underlies the spiral of knowledge creation disclosing the concern of reviewing the case study through the fundamentals of the SECI model (Nonaka, 1995).

The process of knowledge sharing, underlying the new internationalization strategy, begins in each authorized center wherein social interactions occur between the company and its partners and customers, generating locally contextualized tacit knowledge (Amaral, 2012). Through the company's open channels to the market, this knowledge is merged together and converted into explicit knowledge capable of being externalized, enabling then the dissemination practice and economies of scale (Amaral, 2012). Accessing this externalized and theoretical knowledge, the headquarters become responsible for compiling and integrating the

different elements of explicit knowledge collected which, as company's assets, are further internalized by each location converting back to tacit knowledge (Amaral, 2012). Hereupon, Sinfic's strategic intent evolves to a higher stage where a double loop learning process creates knowledge continuously and dynamically, establishing a greater discipline towards an innovative managerial culture (Amaral, 2012).

Considering thus how new knowledge is created within Sinfic's internationalization strategy and how competitive advantages are yielded, it is withdrawn a process analog to the metanational strategy wherein a set of metanational capabilities are developed and enhanced to succeed in the competitive set of the new knowledge economy. From this, it is next analyzed what this match implies to the company, scanning consistently how it has fostered these capabilities and what opportunities are yet to be further explored.

Summarizing, the review of Sinfic's strategic intent and underlying objectives has evidenced a match between these and the main characteristics of the concept of metanational strategy, wherein new contextualized and differentiated knowledge is shared and integrated continuously in order to develop a strong global performance (Doz et al., 2001). **Accordingly, this coupling delivers evidence to support how the metanational thesis, among other internationalization thesis previously discussed in the literature review, best matches Sinfic's strategic intent underlying its new internationalization strategy.**

5.4 Development of Sinfic's internationalization strategy in the knowledge economy

Realizing a match between the company's internationalization strategy and the metanational strategy, it is reasonable to evaluate a set of key metanational competences (Doz et al., 2001) disclosing then the current performance of Sinfic within this course. The underlying idea is to assess the development of the company's global expansion in the new contextualized knowledge economy.

The considered set of key metanational competences assembles the six lessons that, to varying degrees, draw together the capability to unlock metanational potential from the global knowledge economy (Doz et al., 2001). According to this, it is subsequently considered each competence individually in Sinfic's internationalization strategy, evaluating thus how the

company is implementing each rationale and, at large, how it is exploring the potential of the metanational strategy.

5.4.1 Current performance of the metanational capabilities underlying Sinfic's internationalization strategy

Considering the set of key metanational competences, in this section it is reviewed how the company is currently performing within each capability, to further assess, in this next section, what opportunities it can further engage. Accordingly, the following table illustrates synthetically the rationale of Sinfic's performance, through its new internationalization strategy, within each metanational competence (Doz et al., 2001), and is next discussed in detail.

The rationale of Sinfic's positioning within each metanational initiative is elaborated from the information extracted from an Interview with Eng. Carlos Silva, Member of the Board at Sinfic Portugal, conducted in 12th March, 2012; and an Interview with Eng. Paulo Amaral, Member of the Board at Sinfic Portugal, conducted in 21th May, 2012 in visit to the company's headquarters in Alfragide, Lisboa.

Table 1 – Sinfic's current performance in each metanational competence

Metanational competences (Doz et al., 2001)	Rationale of Sinfic's performance within each metanational initiative
Prospect new clusters of knowledge	Sinfic searches in local markets new potential global solutions, probing new knowledge of technologies and market needs.
Access new sources of dispersed and differentiated knowledge	Sinfic supports the development of a global network of operational units designed to access local knowledge stocks.
Install innovation magnets to make use of disperse knowledge	Sinfic created the international head office to become responsible for attracting and collecting (centralizing) local, i.e. tacit, knowledge accessed around the world.
Mobilize and integrate different sources of knowledge	Sinfic delivered to the international head office the responsibility to meld the knowledge from dispersed sources to create new solutions or products.
Transfer an understanding of the new solutions to operational staff	Sinfic instructed the international head office with the responsibility to share new knowledge among its authorized centers and sustain an open channel for bilateral communication.
Use global scale operations to leverage innovations	Sinfic prospects to leverage Quatenus solutions for a global customer through its worldwide operational network and strategic partnerships.

From the rationale of the company's performance within each metanational competence, the following analysis integrates the six initiatives delivering an overview of Sinfic's internationalization strategy within the metanational landscape.

As explained before, Quatenus management platform is architected to host multiple applications which are realized as a set of verticals that offer potential partners the chance to perform tailored applications adapted to each local context and to each client's corporate needs (Amaral, 2012). To introduce this product in different contexts and capture dispersed knowledge, Sinfic has developed a network of authorized centers which enable the company to admit a strong local response and rapidly deliver to potential partners the opportunity to earn revenue on their LBS investments efficiently and cost effectively (Silva, 2012). The key idea underlying this strategy is the activation of knowledge networks with the support of information and communication technologies expected to guarantee the access to economies of scale (Lopez, 2011), risk management (Infosys, 2008) and faster time to market (Pring et al., 2010). These offered capabilities are built upon conjoint competences that are enabled through cloud computing technology, which underlies the complete restructuration of the company's distribution model (Silva, 2012).

However, the company lapses the integration of the collected knowledge that flows among a set of open channels underlying its flexible delivery platform, hence the consideration of a weak level of integration within the company's global response (Amaral, 2012). Diverging from this direction, current literature defends how local adaptation has become more important in a global perspective considering how the key initiative relies on the company's capability to develop learning economies in each context, becoming then able to cross this knowledge in the future with competences at its disposal throughout its global network of authorized centers, enhancing thus the creation of new products which can be value globally (Doz et al., 2001).

Realizing the gap between Sinfic's direction and what current literature defends (Doz et al., 2001), it becomes necessary to review how the company is not yet able to consistently integrate its operational units within its global network, as it is still missing a more participative role of the international head office in the process of knowledge creation in order to collect and integrate the contextualized knowledge accessed through each authorized center (Silva, 2012). From this fragmented communication among the company's operational units, it is realized a constraint that might compromise the integration between what each operational unit develops and what the global network, as a whole, delivers through Quatenus management platform (Amaral, 2012). More importantly, this gap reflects a more important breach between the strategic intent of the company's internationalization strategy and the operational performance of its network of authorized centers, enhancing the opportunity for the company in the future to merge its strategic alliances dispersed worldwide, consolidating

then its strategic intent (Amaral, 2012). According to the literature, this hinges on the improvement of the process of knowledge creation through a more centralized international management of the company's operational network (Doz et al., 2001), in the sense of developing managerial patterns for each vertical of Quatenus management platform capturing thus the suctioned competitive advantages (Amaral, 2012).

All these opportunities yet to be explored are further explained in detail in the following section, justifying the methodology to accomplish a stronger performance in each metanational competence and, in general, in the metanational strategy.

In sum, from Sinfic's current performance reviewed above, it is realized how the company urges to attain both national responsiveness and global integration through a pool of knowledge which, despite the company's intent, is fragmented. Howsoever, it is demonstrated that the key metanational competences are already in place and can be further developed towards a more solid performance in the knowledge economy.

5.4.2 Future development of the metanational capabilities underlying Sinfic's internationalization strategy

From the evaluation of Sinfic's performance within each metanational competence performed in the prior section, evidences suggest that there are still opportunities that the company can take advantage of in order to develop its strategic intent to its full potential. Accordingly, this section carries on evaluating how the company can still grow further within its internationalization strategy of metanational nature, engaging higher levels of commitment towards the metanational capabilities identified previously as key drivers to future developments. Within each metanational capability, a set of criteria is explained in order to justify the recommended process of change.

Herewith, the following table synthesizes the rationale underlying the set of recommended changes within Sinfic's internationalization strategy, which is explained below in detail. All the information included is based on the integration of the limitations previously withdrawn from the analysis of the company's current performance, with theoretical suggestions and successful practices in the global market (Doz et al., 2001). From this combination, fair actions are drawn within the company's context, sustaining the process of change towards a metanational profile.

Table 2 – Sinfic's future development in each metanational competence

Improvement of Sinfic's metanational competences	Rationale underlying the process of change
Become a global knowledge prospector	Create internal dedicated sensing units to complement the operational network in the process of local knowledge activation (i).
Explore accesses to plug new knowledge stocks	Redesign its operational units to access information from leading customers, innovative partnerships and specialized know-how (ii).
Create magnets to collect specialized knowledge accessed and developed locally	Renew and instruct the international head office with a more active role on the process of collecting knowledge generated in each authorized center, facilitating the communication within its operational network (iii).
Create innovative solutions by merging (centralize) worldwide spread knowledge	Instruct the international head office to meld the knowledge collected from dispersed sources into an integrated response and externalize it to its operational network (iv).
Transfer innovation knowledge to operational units (decentralize)	Operationalize new knowledge by instructing the international head office to transfer an understanding of the innovation and its potential to all operational units (v).
Leverage innovation patterns by establishing a global market pattern	Leverage new global market patterns of innovation for each vertical of Quatenus solutions through its operational units and strategic partnerships (vi).

(i) Create internal dedicated sensing units to complement the operational network in the process of local knowledge activation

Sinfic is currently established only in five markets, mostly Portuguese-speaking African countries, wherein the company holds direct investment on the development of subsidiaries (Silva, 2012). The transition to the new internationalization strategy has only recently begun, requiring from the company strong investments in the building of a global operational network through the development of several authorized centers in worldwide dispersed markets (Silva, 2012). Accordingly, this growth process further requires the company to rapidly spread its units into other countries in order to accomplish a sustainable and diversified large scale sensing network, capable of delivering different sources of contextualized knowledge (Silva, 2012).

In the process of activating local knowledge to create competitive advantages, the metanational strategy defends how the company has the opportunity to extend its global operational network broadcast by developing internal dedicated centers (Doz et al., 2001). In view of that, these units enable the company to establish presence in new markets where no operations are developed or there is no interest in doing so, allowing the company to access new knowledge stocks without the operational constraints and strong investment requirements (Doz et al., 2001). Also in accordance with the metanational strategy, these

units present themselves, not as operational ones, but rather as sensing units with responsibilities for quality in both the dedicated sensors and of the operational geographies (Doz et al., 2001). In the context of pursuing a metanational strategy and in resemblance to what literature states (Doz et al., 2001), Sinfic can instruct the international head office to concern over these sensing units, promoting actively this double activity capable of capturing new valued knowledge which emerges as a by-product of the selected operations. Accordingly, authorized centers, i.e. operational units, can also act as these sensing units, but it becomes more complicated, so ideally it should be separate units (Doz et al., 2001).

Howsoever, knowledge gathered through sensing units or operational units should be managed carefully, because knowledge locally collected is of little value if not mobilized in response to a focalized problem of innovation (Doz et al., 2001). Furthermore, literature puts into consideration the importance of extending these sensing tools up to partners in each geographical area, accompanying the actors intervening along the stages of the decoupled value chain (Doz et al., 2001). In practice, this requires a higher level of commitment from the international head office that becomes responsible for the development of more advanced methods to integrate these internal dedicated centers (Doz et al., 2001).

(ii) Redesign its operational units to access information from leading customers, innovative partnerships and specialized know-how

One of the key drivers of the metanational strategy is the access to local markets in order to activate local knowledge and derive from it innovative competitive advantages (Doz et al., 2001). Accordingly, with the restructuring of its internationalization strategy, Sinfic has selected partnerships as an entry mode to new markets, where Quatenus solution can constitute a part of a complete package sold by the partner (Silva, 2012). This complementary role is reasonable considering the limited marginal costs of production underlying the particular nature of software products (Silva, 2012).

Considering how Sinfic operates in niche markets with rapid pace of evolution, the company searches for competence, solidity and ability to generate sales when searching for a partner (Silva, 2012). However, Sinfic should not only be concerned over the complementary form of the products, but further consider a learning process when establishing a new partnership relationship (Doz et al., 2001). From this idea and in accordance with the metanational strategy (Doz et al., 2001), it is suggested that Sinfic assign its technology license only to

partners who can contribute with useful information about new technologies and market needs which the company can strategically use in further developments (Doz et al., 2001). To engage different accesses to new sources of knowledge, the company needs thus to search for partners who already have local knowledge and are not only capable of understanding how the Quatenus management platform can create value for them, but are also willing and capable of continuing the search for that contextualized knowledge which is reflected on their mission statement (Amaral, 2012). Concrete examples of this type of partnerships are potential targets, venture capital funds, Telcos, universities and local research centers, knowledge agents (who sell data base), emigrant population and also competitors (Doz et al., 2001). By overcoming these barriers, literature on the metanational strategy defends that the company, i.e. Sinfic, creates a more permeable environment, transferring then innovation, both inward and outward, engaging in an open innovation process (Chesbrough, 2003) where benefits and risk are both shared with strategic partners, as observed in literature (Doz et al., 2001).

(iii) Renew and instruct the international head office with a more active role on the process of collecting knowledge generated in each authorized center, facilitating the communication within its operational network

The need to identify and move globally dispersed knowledge to further marshal for innovative problem-solving activities can be rapidly outgrown if Sinfic instructs its international head office to become a global catalyst responding jointly to its international clients and delivering global solutions (Doz et al., 2001).

The company has the opportunity to develop a global growth synergy wherein a knowledge sharing process is established and the international head office can actively manage the operational network and further facilitate the communication between these units (Doz et al., 2001). The underlying idea here is that if the company is searching for global solutions and responds to international clients, it is reasonable that it also responds jointly throughout its operational network.

Simultaneously, considering that the authorized centers' main objective is to collect, enable, support and research new partners, it becomes sensible to also turn them into more active knowledge stocks incorporating in these operating units magnets capable of collecting knowledge over both their own and their partners' activities (Doz et al., 2001). The underlying

need here is to develop a global network capable of gathering a variety of new technologies, attracting skills and capturing different partners' needs and customers' expectations (Doz et al., 2001). Accordingly, the authorized centers could incorporate this project, converting their operating units into virtual business clusters (development of a community) enabling then the international head office to effectively capture geographically dispersed knowledge and share it through an atomized process with other geographies (Doz et al., 2001). Herewith, both objective and tacit knowledge collected locally can be accessed through a set of structures and processes capable of mobilizing them to other operational units and further to the international head office, overcoming the knowledge fragmentation constraint (Doz et al., 2001).

(iv) Instruct the international head office to meld the knowledge collected from dispersed sources into an integrated response and externalize it to its operational network

To develop the capability to meld knowledge from dispersed sources into consistent innovation, Sinfic, as a global catalyst, has the opportunity to mobilize an integrated response, externalizing complex knowledge to its operational network in a consistent innovation process (Doz et al., 2001). Accordingly, the international head office can be instructed to merge an understanding on the profile, needs and expectations of local partners, with the understanding on the customers' preferences and applications in different markets and with the company's marketing capabilities and innovation processes (Doz et al., 2001). Through these, Sinfic can become capable of integrating complex knowledge in new solutions, merging into a consistent innovation process knowledge concerning technologies and both customers' and partners' specific expectations (Doz et al., 2001). Herewith, Sinfic has the opportunity to grow its response capability by expanding to a global scale its local talent of relating and framing knowledge.

(v) Operationalize new knowledge by instructing the international head office to transfer an understanding of the innovation and its potential to all operational units

Once the process of mobilization of knowledge across disperse sources, Sinfic has the opportunity to operationalize it more efficiently, transferring it to its operational network as

an integrated response in order to activate once again the local knowledge and further leverage new innovation patterns in the global market (Doz et al., 2012). Accordingly, the international head office can become responsible for the transfer of this integrated response to its operational network educating daily operations through a reflective knowledge sharing process (Doz et al., 2012).

(vi) Leverage new global market patterns of innovation for each vertical of Quatenus solutions through the integration between its operational units and strategic partnerships

Sinfic has the opportunity to leverage innovation patterns in the global market by instructing the international head office to become a global knowledge management platform enabling then the potentiation of new patterns for each vertical of Quatenus solutions, extending these further along the value chain (Amaral, 2012). Accordingly, the company has to integrate flexibly all operational units and overcome the stigma of self-directed independent units which strangles the interdependency required to stimulate the knowledge sharing process (Doz et al., 2001). Through a more integrated operational network Sinfic has then the opportunity to boost innovations derived from geographical areas where the company operates and also where its partners operate, on partners' segments or on global applications, assembling global standard products to enhance sales and profits.

5.4.3 Recommended key opportunities for Sinfic to advance and grow its internationalization strategy

From the review of Sinfic's current performance and future development within each metanational competence underlying its internationalization strategy (in sections 5.4.1 and 5.4.2), it becomes clear that the key opportunity for the company on which to advance now is to bridge the gap between sensing and leveraging knowledge (Doz et al., 2001). Accordingly, this set of key preliminary conclusions explained throughout the discussion support that Sinfic needs to integrate its operational network, to further catalyze coherent innovations using global scale operations to leverage global innovation patterns. Literature on metanational strategy admits that, together, these capabilities can leverage the company to exceed consistently its competitors by capturing the opportunities emerging from the dispersion of

tacit knowledge, through the development of dynamic capabilities (Teece et al., 1997) that enable the company to adjust to the current rapidly-changing environment (Doz et al., 2001).

From the recommendations on the development of the key metanational capabilities (in section 5.4.2), it is demonstrated that Sinfic, through its current performance within each metanational competence, gathers potential to strive in the future as a strong metanational competitor. According to recent literature advances in international marketing and in the international industry response, the growth of these capabilities is underpinned on the access to new markets through strategic partnerships (Doz et al., 2001). Herewith, the entry mode reasonable to establish within the company's internationalization strategy of metanational nature is the international joint venture which value premise settles equity cooperation (Hollensen, 2007). This type of partnership becomes reasonable for a software vendor as it suggests partnerships between complementary competences or technologies enabling strategic opportunities within different industries across different geographical areas, and further enhancing higher speed to market entry and access to large customers' bases (Doz et al., 2001). This dynamic competitive scenario falls within the motivation underlying the strategic intent of Sinfic's internationalization strategy which matches with the metanational strategy, disclosing thus the validity of Sinfic adopting this type of entry mode.

Nonetheless, to manage efficiently the discontinued learning process underlying the metanational strategy, Sinfic needs to guarantee converging goals and adequate pricing schemes along all downstream activities within the international value chain (Doz et al., 2001).

See that the Quatenus platform is architected to host a multiple of applications, rapidly enabling its partners to begin earning revenue on their LBS investments efficiently and cost effectively (Silva, 2012). Through the capability of developing tailored applications, its partners are offered the advantage of speed to market, ease of development, application integrity and early return on investment (Silva, 2012). Accordingly, by deploying its services across its partners, namely mobile operators and service providers, Sinfic is also offered the capability to establish a dynamic revenue share model[5], sharing the revenues generated from subscribers' service usage (Silva, 2012). In a pragmatic perspective, the form of cooperation between Sinfic and its partners can thus be explained through the revenue share pricing model according to which Sinfic, as the software partner, endorses the software to the customer with the support of the revenue share partner who receives the endorsement service and sells it to the final

[5] *See further detailed information on the revenue share model proposed to Sinfic in Annex IV – Proposal for Sinfic's revenue share model*

client (Popp, 2010). In case of a purchase, the revenue share partner, who receives the revenue from the customer, delivers a share of this revenue to the software partner, i.e. Sinfic (Popp, 2010).

It is also interesting to consider how the revenue share partnerships are well-liked in the software industry because together with a flexible entry mode it enables the reach to other companies' customers through complementing offerings (Popp, 2010). Moreover as the cost of sales remains with the revenue share partner, Sinfic as the software vendor can capture the revenue that is generated by its revenue partners ensuring a limited cost (Popp, 2010).

Herewith, it is reasonable to agree that the revenue share model is adequate to Sinfic's knowledge-driven internationalization strategy and its underlying selected entry mode. Supporting also this match, the utility based pricing enabled through cloud computing facilitates the monetization process when delivering computing services as utilities, i.e. SaaS (Zhang, Cheng and Boutaba, 2010). With the flexibility and consumption tracking enabled through cloud-based delivery platforms (Zhang, Cheng and Boutaba, 2010), it is further supported the rationale of implementing a revenue share model in Sinfic's internationalization strategy.

Conclusion of the Chapter

The practical effects of cloud-based information systems over the development of a new type of distribution model have been summarized and abstracted in this Chapter. From this review of Sinfic's performance, it is evidenced that by changing and extending cloud computing enabled capabilities, cloud-based distribution models will necessarily change, extend and impact the capabilities of the company.

Considering how the competitive set's dynamics are positively responding to the emerging knowledge-driven economy, foreseen by current literature on the metanational challenge (Doz et al., 2001), the introduction and use of cloud-based distribution channels within the enterprise's internationalization strategy needs to be planned and managed in a strategic context (Doz et al., 2001). In view of that, the planning and management of Sinfic's current internationalization strategy was reviewed in accordance to the metanational strategy, disclosing how the company can develop its cloud-based delivery platforms to engage higher opportunities in the future through its knowledge-driven strategy. Its current performance was thus evaluated against the metanational thesis, realizing already a match between Sinfic's

operational capabilities and the metanational competences, suggesting how this thesis best matches with the company's strategic intent.

Further considerations on this need are conducted throughout Chapter 6, linking these key preliminary insights with the validation of the technological hypothesis of this research. Herewith, the following Chapter introduces the final conclusions of this research.

6 Conclusions

Introduction

In this final Chapter, a discussion is conducted in line with the technological hypothesis, which is intended to be validated, answering thus the research question. From the final conclusions withdrawn, some limitations constraining the strategic value and scope of this study are highlighted, delivering then suggestions to future research in the field.

6.1 Conclusion of the research

Cloud-based information systems engaged in distribution strategies have begun to drive companies into a new globally distributed service-centric set, which is based on vertically integrated structures (Iyer and Henderson, 2010). In response to this drift, a new style of cloud-based software distribution has emerged in the global software market to facilitate organic growth, delivering both flexible business models and dynamic scalability together (Raichura and Vayanippetta, 2009). Herewith, the disruptive challenge arising now on the market is the development of multiple channels for a sustainable global distribution strategy wherein cloud-based information systems delivered as a utility enable the required elasticity (Armbrust et al., 2009). From these impacts on international distribution strategies for business intelligence software, there is an opportunity to understand how cloud-based information systems promise to amplify business intelligence software through virtualized environments, delivering ergo the purpose of this research.

Assembling the disruptive role of cloud computing in international management of business intelligence services, the metanational strategy composes a new approach to international management, defending it as the process of accessing, melding and leveraging market knowledge and globally dispersed capabilities to build competitive advantage on a worldwide scale (Doz et al., 2001). To activate the contextualized knowledge, the metanational framework proposes companies to activate a set of operational capabilities, which can be enhanced through flexible delivery platforms (Doz et al., 2001) like cloud computing, delivering then the rationale of matching cloud-based delivery platforms with knowledge-driven strategies, i.e. metanational strategies. From this coupling, the research question was held with the intent to understand to what extent flexible delivery models leverage the development of internationalization strategies of metanational nature.

The research was conducted through a qualitative case study approach, selecting one business intelligence software – Quatenus –from a Portuguese software vendor – Sinfic – that designed its internationalization strategy based on the investment on global cloud-servers to develop flexible delivery channels. The rationale of selecting this company was also based on its positioning outside a traditional cluster within a knowledge-intensive industry, which established from its conception a higher motivation to strive for knowledge across borders.

To corroborate the thesis' statement in Sinfic's particular scenario, it was adopted a triangulation research methodology (Mills, 2003) wherein the case study analysis was contextualized within current practices in the global software industry and further within the current state of the art framework. Through this contextualization, convergence around one value proposition was expected, allowing then the validation of the technological hypothesis and answering consistently to the research question.

Before contextualizing the case study analysis within the two dimensions previously disclosed, **the technological investment and the strategic intent underlying Sinfic's internationalization strategy were perceived**, **establishing then a match between the rationale of activating local knowledge when building competitive advantage and the operational capabilities enabled through cloud-based information systems.**

From the validation of a match between Sinfic's knowledge-driven internationalization strategy and its investment on cloud computing, the strategic statement underlying its strategy was contextualized within the current competitive scenario in the global software industry (in section 5.2). From this analysis according to the second dimension of the triangulation research methodology (in section 5.2.1), it was perceived how strong initiatives on big data and analytics, social media tools and flexible delivery platforms stand up as strategic priorities at companies, as great value is expected to be withdrawn from these trends (Brown and Johnson, 2012). Furthermore, **companies are investing mostly on big data and analytics to access customers' insights** (Brown and Johnson, 2012), **suggesting thus how the market already recognizes the strategic value of using knowledge within the company to improve overall performance**. However, despite the evidenced fact that companies are already focusing on developing knowledge-driven strategies, uneven levels of adoption among these observed initiatives and cloud computing (Brown and Johnson, 2012) reveal how this technology is only being considered as a flexible delivery platform for products, but not yet to access and share dispersed knowledge. Thus, these observations show how the software industry is not realizing the full potential of cloud-enabled operational capabilities as drivers to

engage in knowledge-based patterns, suggesting that **the market needs to mature in order to further understand the managerial link between technological investments and strategic direction, unfolding how Sinfic, by means of Quatenus management platform, is given an open entry among the top investments in the industry.**

Displaying how the industry is pursuing knowledge-driven strategies by now, the case study analysis was next contextualized within the current state of the art (in section 5.3), with the intent of matching the company's strategic statement and the value proposition underlying the concept of metanational strategy. Facing both together according to the third dimension of the triangulation research methodology (in section 5.3), empirical evidences supported the coupling between Sinfic's strategic vision and the main characteristics of the concept of metanational strategy, wherein new contextualized and differentiated knowledge is shared and integrated continuously in order to develop a strong global performance (Doz et al., 2001). Through this analysis, it was demonstrated (in section 5.3) how **the metanational thesis, among other internationalization thesis previously discussed in the literature review, best matches with Sinfic's strategic intent underlying its new internationalization strategy.**

Considering the intermediary conclusions achieved, it was acknowledged (in section 5.4) the emergence of a knowledge economy in which Sinfic's internationalization was last evaluated according to the metanational strategy's criteria in order to understand the current performance of the company within this course. The purpose of this contextualization was to assess the development of the company's global expansion within the new contextualized knowledge economy, disclosing key opportunities for the company to advance further its internationalization strategy.

Concluding then the triangulation research methodology, it is realized a convergence among the emergence of cloud-based delivery platforms, as innovative distribution models and enablers in the process of leveraging operational capabilities necessary to engage knowledge-driven strategies, i.e. metanational strategies. The analysis of these empirical findings (in section 5.4) further suggests how the company can engage in a building process for the development of dynamic capabilities (Teece et al., 1997), which underlies the potential layers of competitive advantage. According to the theory on dynamic capabilities, to engage in this building process, Sinfic has to establish agility and interaction patterns, developing then an innovation-driven organization, which is also based on operational capabilities enabled through cloud computing technology, disclosing thus how the company is given the capability

to drive further its competitive advantage underlying its current internationalization strategy (Teece et al., 1997).

Validating the technological hypothesis through the discussed methodology, cloud computing is demonstrated of strong value proposition for Sinfic's internationalization strategy considering how it combines technology with innovative, large-scale-driven delivery platforms. Additionally, the activation of knowledge networks supported on cloud-based distribution models is proven to have clear benefits concerning time to competitive advantage, suggesting this initiative as a new and more dynamic growth method for the company, in comparison with the traditional organic growth model (in section 5.4). In view of that, it is demonstrated how **Sinfic's investment on cloud computing leveraged the development of a flexible delivery model to support the building of a knowledge-driven internationalization strategy**, i.e. metanational strategy, answering thus the research question. From this initiative, it is thus **clarified top investments on cloud-based delivery platforms for the development of new internationalization knowledge-driven patterns, helping Sinfic understand important insights to strategically respond to the current challenges on the marketplace**.

6.2 Limitations of this research

Although this dissertation succeeds in answering the research question and contributes with new useful knowledge for the professional and the scientific community, it is necessary to underline the constraints that bound to exist in the process of research and consequently limit the attained outputs. Accordingly, the bias and degree of detail of these outcomes is wrought by time, geographical broadness, confidentiality and the restricted number of companies that already have adopted cloud-based information systems.

In the observed practices within the current global software industry, companies' intent to implement cloud-based information systems was found variable, mostly due to the deafening hype around the technology (Smith, 2011), preventing this study to sustain a consistent and transversal pattern of commitment. However, when evaluating the robustness of the accomplished results, it needs to be taken into account the low maturity of both cloud computing technology and the concept of knowledge-driven strategy that underlies the metanational challenge, which together restrict the number of viable empirical observations to include in this study. Accordingly, the knowledge produced from the reduced number of data

sources available might not be further generalized to other settings, i.e. companies or industries.

More on the variables considered, it is important to underline the interdependency between the six metanational competences used as criteria for the evaluation of the knowledge-driven strategy, which as a qualitative measure weakens the evaluation of the company's internationalization strategy.

Considering the potential sources of error inherent to the qualitative nature of this study, a sensitivity analysis might be interesting to evaluate the magnitude of methodological roughness, determining which parameters are the key drivers of the accomplished empirical findings.

6.3 Future research

Realizing how the low level of maturity of cloud computing technology constraints the data collection in the present study, there is a great opportunity for future research to surpass them and produce a richer knowledge on the subject.

Cloud computing solutions will become more attractive to companies within the next year (Smith et al., 2011). By then, the hype around this technology will have ease, allowing researchers to review how the capabilities enabled through cloud-based delivery platforms are being used by companies, which can be interesting to use in testing the feasibility of the corroboration of the present study. When revamping the results, the additional information reviewed will provide a better understanding of the suitability of cloud computing within the internationalization decision process. Furthermore, researchers could approach the present subject through a quantitative methodology reinforcing the findings made in this qualitative study and deliver then a more confident statement concerning the generalization process. Thereunto, a trial could be conducted through a statistically significant number of companies. Still on this trial, it would of great value to also review the revenue sharing schemes by the time cloud computing becomes more mature, comparing then the structure and margins practiced.

Besides the general industry, it would also be interesting to evaluate further this thesis statement in the Portuguese context within a year, evaluating then how the disruptive role of cloud computing technologies impacts the development of internationalization strategies of

metanational nature. Here a Capability Maturity Model Integration process could be assembled, evaluating the process of maturity of this technology among Portuguese companies.

It would also be interesting to match this research with the growth of mobile cloud computing given that Sinfic already establishes partnerships with mobile operators for the delivery of Quatenus in each country. Accordingly, the company could extend the functionalities of the management platform, developing to a higher stage the cloud computing technology on which it has already invested at large scale.

The maturity of the concept of knowledge-driven economy is also a subject for further investigation. Considering its recent emergence, it is possible for researchers to forecast several changes in knowledge-based technologies, possibly generating growth by means of its adaptation to SMEs and also large organizations. Indeed, future research could explore the evolution and impact of this tool in diverse areas of IT outsourcing.

Still within the development of the knowledge-based economy, it would be innovative to approach the subject of the present study through a social cognitive perspective understanding the growth of knowledge networks in the international business competitive set as an observational learning, considering here the role of social interactions in the process of knowledge creation.

In summary, this study has assembled a fundamental analysis of a broad range of companies that can consistently be scrutinized further. Likewise, a quantitative approach can also be applied by future researchers to reinforce the key empirical findings in this study, as soon as cloud computing technology matures in the business environment.

7 References

- Armbrust, Michael; Fox, Armando; Griffith, Rean; Joseph, Anthony D.; Katz, Randy; Konwinski, Andy; Lee, Gunho; Patterson, David; Rabkin, Ariel; Stoica, Ion; Zaharia Matei . 2009. “Above the clouds: a Berkeley view of cloud computing”. **UC Berkeley Reliable Adaptive Distributed Systems Laboratory**.

- Bader, David A.; Pennington, Robert. 2001. “Applications”. **The International Journal of High Performance Computing Applications, Vol. 15, No. 2, pp. 181-185**.

- Bartlett, Christopher A.; Goshall, Sumantra. 1989. “Managing across borders: the transnational solution”. **Harvard Business Scholl Press, pp. 65-83**.

- Bartlett, Christopher A.; Goshall, Sumantra; Birkinshaw, Julian. 2004 (original edition in 1992). “Transnational management: text, cases and readings in cross-border management”. **McGraw-Hill/Irwin, 4th Edition, pp. 154-193/287-311**.

- Bergen, Ann; While, Alison. 2000. “A case for case studies: exploring the use of case study design in community nursing research”. **Journal of Advanced Nursing, Vol. 31, No. 4, pp. 926-934**

- Boisot, Max. 1998. “Knowledge assets: securing competitive advantage in the information technology”. **Oxford University Press**.

- Bourke, Tony. 2001. “Sever load balancing”. **O’Reilly & Associates, Inc, pp. 3-22**.

- Buyya, Rajkumar; Yeo, Chee Shin; Venugopal, Srikumar. 2009. “Market-Oriented Cloud computing: Vision, Hype, and Reality for Delivering IT Services as Computing Utilities”. **9th IEEE/ACM International Symposium on Cluster Computing and the Grid**.

- Brown, Brad; Sikes, Johnson. 2012. “Mind your digital business”. **Mckinsey Global Survey results**.

- Bughin, James; Chui, Michael; Miller, Andy. 2009. “How companies are benefiting from web 2.0”. **McKinsey Global Survey Results**.

- Bughin, James; Chui, Michael; Manyika, James; Byers, Angela Hung. August, 2010. “Clouds, Big data and smart assets: ten tech-enabled business trends to watch”. **McKinsey Quarterly**.

- Bughin, Jacques; Byers, Angela Hung; Chui, Michael. November, 2011. “How social technologies are extending the organization”. **McKinsey Quarterly**.

- Chesbrough, H.W. 2003. “The era of open innovation”. **MIT Sloan Management Review, Vol. 44, No. 3, pp. 35-41**.

- Chiaversio, Maria; Di Maria, Eleonora; Micelli, Stefano. April, 2003. “Innovation and internationalization of Italian districts: exploitation of global competencies or transfer of local knowledge?”. **Regional Studies Association International Conference Reinventing Regions in a Global Economy**, Pisa.

- Chitkara, Raman; Marty, Pierre. 2010. “Global 100 software leaders: key players and market trends”. **PwC**.

- Cutcliffe, John; McKenna, Hugh. 1999. “Establishing the credibility of qualitative research findings: the plot thickens”. **Journal of Advanced nursing, Vol. 30, No. 2, pp. 374-380**.

- Dawson, Catherine. 2002. “Practical research methods: a user friendly guide to mastering research techniques and projects”. **How to books Ltd., pp. 20-79**.

- Desisto, Robert P.; Plummer, Daryl C.; Smith, David Mitchell. August, 2011. “An Easy Way to Understand the Relationship Between Cloud Computing and SaaS”. **Gartner**.

- Doz, Yves; Hammel, Gary. 1998. “Alliance advantage: the art of creating value through partnering”. **Harvard Business School Press**.

- Doz, Yves; Santos, José Pinto; Williamson, Peter. 2001. “From global to metanational: how companies win in the knowledge economy”. **Harvard Business School Press**.

- Dunning, John H. 1981. “International production and the multinational enterprise”. **Allen and Unwin**.

- Foster, Ian; Zhao, Yong; Raicu, Ioan; Lu, Shiyong. 2008. “Cloud computing and grid computing 360-degree compared”. **IEEE Grid Computing Environments, pp. 1-10**, in conjunction with **IEEE/ACM Supercomputing**.

- Gabrielsson, Mika; Kirpalani, V.H. Manek. 2004. “Born globals: how to reach new business space rapidly”. **International Business Review, Vol. 13, No. 5, pp. 539-660**.

- Gereffi, Gary. 1994. “Commodity chains and global capitalism”, in Korzeniewicz, Miguel. “The organization of buyer-driven global commodity chains: how U.S. retailers shape overseas production networks”. **Greenwood Publishing Group, pp. 95-123**.

- Giannoccaro, Ilaria; Pontrandolfo, Pierpaolo. 2002. “Supply Chains through Revenue Sharing Contracts”. **International Journal of Production Economics, Vol. 89, No. 2, pp. 131-139**.

- Grant, Robert. 2001. “Knowledge and organization”, in Nonaka, Ikujiro; Teece, David. “Managing industrial knowledge: creation, transfer and utilization”. **SAGE Publications, pp. 145-169**.

- Greenwald, Jay. 2010. “International considerations for Software as a Service Vendors”. **International revenue acceleration**.

- Hedlund, Gunnar. 1986. “The hypermodern MNC. A heterarchy?”. **Human Resource Management, Vol. 25, No. 1, pp. 9-35**.

- Hollensen, Svend. 2007. “Global marketing: a decision oriented approach”. **Pearson Education, pp. 330-355**.

- Hunter, Richard. 2011. “The why of cloud”. **Gartner**.

- Iyer, Bala; Henderson, Henederson. 2010. “Preparing for the future: understanding the seven capabilities of cloud computing”. **MIS Quarterly Executive, Vol. 9, No. 2**.

- Johanson, Jan; Vahlne, Jan-Erik. 1977. “The internationalization process of the firm: a model of knowledge development and increasing foreign markets commitments”. **Journal of International Business Studies, Vol. 8, No. 1, pp. 23-32**.

- Kumar, R. Arun; Sarangan, Sunder. 2008. “Leveraging outsourcing during economic uncertainty”. **Infosys**, Bangalore, India.

- Lee, Eunjung; Mishna, Faye; Brennenstuhl, Sarah. 2009. “How to Critically Evaluate Case Studies in Social Work”. **Sage Publications, Research on Social Work Practice, Vol. 20, No. 6, pp. 682-689**.

- Lopez, Jorge. 2011. “The competitive advantage of cloud through the business model platform”. **Gartner**.

- Markusen, 1996. “Sticky places over slippery space: a typology of industrial districts”. **Economic Geography, Vol. 72, No. 3, pp. 293-313**.
- Marques, Alfredo. 2003. “Clusters e Inovação”. In Rodrigues, M., “Para uma política de inovação em Portugal”. **Dom Quixote, pp 65-88**.
- Marshall, Catherine; Rossman, Gretchen. 1989. “Designing qualitative research”. **Sage Publications, pp. 1-49**.
- Mills, G. E. 2003. “Action Research: A Guide for the Teacher Researcher”. **Merrill Prentice Hall, 2nd Edition**.
- Murtha, Thomas. 2004. “The metanational firm in context: competition in knowledge-driven industries”. **Advances in International Management, Vol. 16, pp. 101-136**.
- Narus, James; Anderson, James. 1996. “Rethinking distribution. Adaptive channels”. **Harvard Business Review, pp. 1-9**.
- Nonaka, Ikujiro; Takeushi, Hirotaka. 1995. “The knowledge-creating company: how Japanese companies create the dynamics of innovation”. **Oxford University Press**.
- O’Brien, Richard. 1992. “Global financial integration: the end of geography”. **Council on Foreign Relations Press**.
- Porter, Michael. 1985. “Competitive advantage: creating and sustaining superior performance”. **The Free Press**, New York.
- Porter, Michael. 1990. “The competitive advantage of nations”. **Macmillan, pp. 69-131**.
- Porter, Michael. November, 1998. “Clusters and the new economics of competition”. **Harvard Business Review**.
- Porter, Michael; Stern, Scott. 2001. “Innovation: Location matters”. **MIT Sloan Management Review, Vol. 42, No. 4, pp. 1-11**.
- Prahalad, C.K.; Doz, Yves. 1984. “Multinational mission: balancing local demands and global vision”. **The Free Press**, A division of Macmillan.
- Preece, J.; Rogers, Y.; Sharp, H. 2002. ”Interaction design: beyond human-computer interaction”. **New York: John Wiley & Sons, Inc**.

- Pring, Ben; Brown, Robert H.; Leong, Lydia; Couture, Adam W.; Biscotti, Fabrizio; Lheureux, Benoit J.; Frank, Andrew; Roster, Jeffrey; Cournoyer, Susan; Liu, Venecia K. 2010. "Forecast: public cloud services, Worldwide and regions, industry sectors, 2009-2014". **Gartner**.

- PROINOV. 2002. "Estudo e dinamização de clusters – metodologias de trabalho". Working papers **Mercados e Negócios TSI: dinâmicas e estratégias**.

- Raichura, Bhavin; Vayanippetta,Vijith. 2009. "ISV Strategy for revenue and customer growth". **Infosys**, Bangalore, India.

- Rossbach, Carsten; Welz, Bernd. 2011. "Survival of the fittest: how Europe can assume a leading role in the cloud". **Roland Berger Strategy Consultants, SAP**.

- Santos, José Pinto. 1997. "Multinacionais e mundialização". **Economia e perspectiva, Vol. 1, No. 2**.

- Saunders, Mark; Lewis, Philip; Thornhill, Adrian. 2009. "Research Methods for Business Students". **Harlow: Financial Times Prentice Hall, 5th Edition**.

- Smith, David Mitchell. 20115. "Hype cycle for cloud computing, 2011". **Gartner**.

- Smith, David Mitchell; Natis, Yefim V.; Petri, Gregor; Bittman, Thomas J.; Knipp, Eric; Malinverno, Paolo; Feiman, Joseph. 20113. "Predicts 2012: cloud computing is becoming a reality". **Gartner**.

- Teece, David; Pisano, Gary; Shuen, Amy. 1997. "Dynamic capabilities and strategic management". **Strategic Management Journal, Vol. 18, No. 7, pp. 509-533**.

- Vernon, R. 1966. "International investment and international trade in the product life-cycle". **Quarterly Journal of Economics, 80, pp. 190-207**.

- Yang, Xue-Jun; Liao, Xiang-Ke. 2011. "The TianHe-1A Supercomputer: its hardware and software". **Journal of Computer Science and Technology, Vol. 26, No. 3, pp. 344-351**.

- Yin, Robert. 2002. "Case Study Research, Design and Methods". **Sage Publications, pp. 19-53**.

- Zhang, Qi; Cheng, Lu; Boutaba, Raouf. 2010. “Cloud computing state-of-the-art and research challenges”. **Journal of Internet Services and Applications, Vol. 1, Bo. 1, pp. 7-18**.

- Zhou, Yong-Wu; Yang, Shanlin. 2008. “Pricing Coordination in Supply Chains through Revenue Sharing Contracts”. **Information and Management Sciences, Vol. 19, No. 1, pp. 31-51**.

- Other **r**eferences in Chitkara, Raman; Marty, Pierre. 2010. “Global 100 software leaders: key players and market trends”. **PwC**.

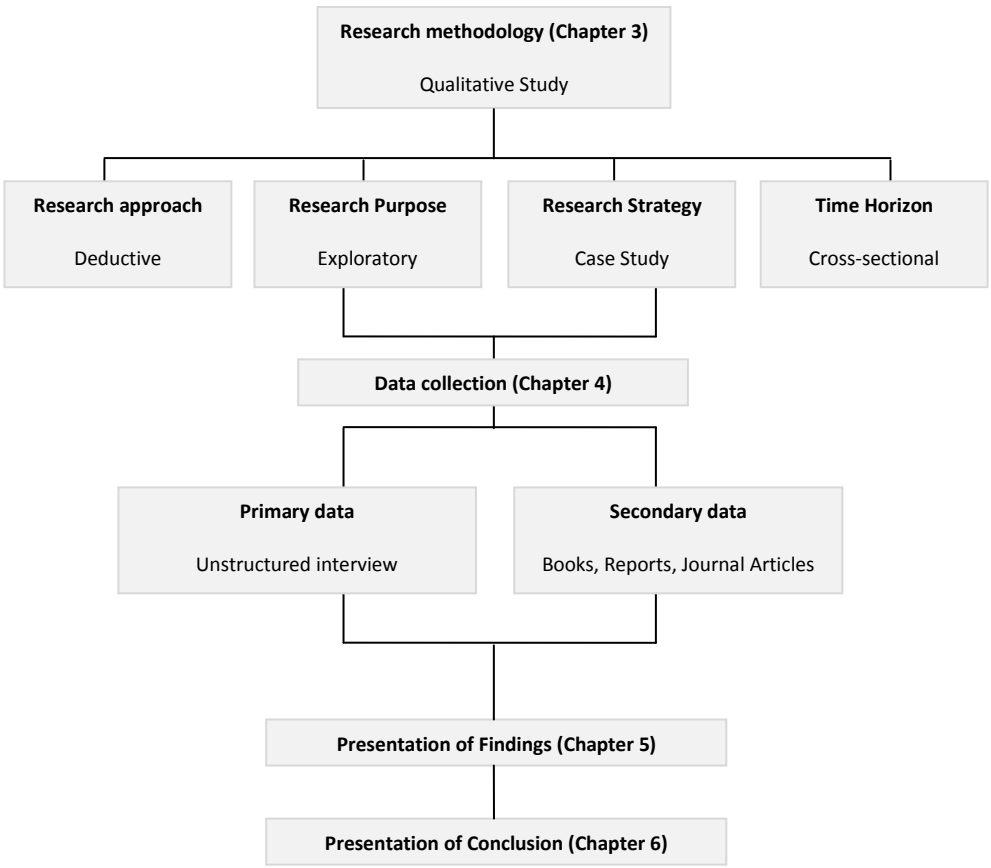
    - Gopalakrishnan, Infosys technologies, 2010
    - Snabe, SAP, 2010
    - Bertrand, Cegid, 2010
    - Rouvray, ESI Group, 2010
    - Tarkoff, Adobe Systems, 2010
    - Lehucher, Berger-Levrault, 2010

Web references

- Joel York: http://chaotic-flow.com/media/saas-sales-management-tips.pdf (accessed February 23rd, 2012)
- Karl Popp: http://www.drkarlpopp.com/PartnerModelsintheSoftwareIndustry.html (accessed May 4th, 2012)
- Forbes: http://www.forbes.com/special-features/innovative-companies-list.html (accessed May 16th, 2012)
- GoodData: http://www.gooddata.com/cloud-business-intelligence (accessed May 21st, 2012)
- MapInfo: http://www.pbinsight.com.br/files/resource-library/resource-files/lbs_whitepaper.pdf (accessed May 30th, 2012)

8 Annexes

Annex I – Research methodology



Annex II – Analysis matrix for the triangulation research methodology

The following analysis resumes the conducted triangulation research methodology. The key evaluation questions correspond to the posed hypotheses that, once validated together, answer the research question. Accordingly, each of these hypotheses is revised according to three different sources of information, on which emerged relevant findings are assembled to each of them. Cross-checking all the results collected in each evaluation topic, the empirical findings are consolidated in one key preliminary conclusion, delivering then three results which are reported on the right column of the matrix. At the end, it is reviewed in each key preliminary conclusion, the need for further analysis and suggested source of information.

See that all the results derived from each source of information are a result of an exhaustive discussion and review of data sources in each area, which is conducted in Chapter 5.

Table 3 – Analysis matrix for the triangulation research methodology

	Data sources			
Key evaluation questions	**Case study analysis (A)**	**Global industry review (B)**	**Literature review (C)**	**Key preliminary findings**
H1				
H2				
H3				

(H1) It is feasible to develop internationalization strategies of metanational nature by designing innovative distribution models based on cloud-based information systems' capabilities.

a) The company introduced a new flexible delivery platform, i.e. cloud computing, in its global distribution model building a knowledge-driven internationalization strategy based on operational capabilities, which can be directly linked with the metanational competences underlying internationalization strategies of metanational nature;

b) It is observed in the industry how companies have begun investing on the development of cloud computing as a platform to build flexible distribution models. Also, a key investment in big data and analytics is observed in the industry's current practices, unfolding how companies realize that knowledge is required to succeed in the current competitive scenario, i.e. knowledge economy. However, companies do not appear to be familiarized with the concept of metanational strategy and its

underlying competences, although their performances are already based on cloud-enabled operational capabilities.

c) The metanational theory consistently links the development of internationalization strategies of metanational nature with the development of flexible distribution models based on information and communication technologies, like cloud computing.

First key preliminary finding consolidated: convergence among the metanational theory, the company's initiatives and current practices in the industry suggests the strategic use of cloud computing to introduce new flexible delivery platforms which are capable to develop metanational competences and thus leverage internationalization strategies of metanational nature. Still observing the industry's dynamics, it is realized how companies do not yet link their investment on cloud computing and quality data, although both initiatives are largely engaged. Hereupon, this key preliminary conclusion might be enriched and strongly sustained through further analysis when cloud computing technology matures, which is suggested in the section of Future Research.

(H2) It is feasible to create innovative delivery platforms through the assembly of cloud-based information systems in the development of virtual distribution channels.

a) Through a strong investment in the development of cloud computing servers, the company was able to develop a large-scale delivery platform wherein the software product, i.e. SaaS, is delivered through virtual channels to worldwide spread customers;

b) The observation of current practices in the industry showed how companies are building the foundations for new delivery platforms like cloud computing and mobility;

c) Recent theory on cloud computing explains how this technology is realized as an internet-based distribution model, supporting the idea that cloud-based information systems are a new form of distribution based on virtualization and load balancing capabilities;

Second key preliminary finding consolidated: strong convergence around the company's initiatives, current practices in the industry and recent theory on cloud computing technology suggests that it is possible for organizations to introduce a new type of virtual delivery channel in their distribution models by investing in the development of cloud-based information systems.

(H3) It is feasible to grow knowledge-driven strategies through the development of operational capabilities enabled through the installation of cloud-based delivery models.

a) When redesigning its distribution model underlying its internationalization strategy, the company linked the investment on cloud computing with the objective of accessing local knowledge (reflected in the objective of establishing strategic partnerships with local entities) to develop benchmarked solutions capable of leveraging the company to a large scale distributer. In greater detail, Sinfic realized that by investing in cloud-based information systems in order to develop a flexible delivery platform, it was also developing important operational capabilities, like shared resource pooling, ubiquitous network access, virtual business environment and utility-based pricing, which together would allow the company to sustain global daily operations according to its new knowledge-driven strategy;

b) Top trends in the market unveil companies' initiatives on the development of flexible delivery platforms and access to big data and analytics. Accordingly, it is evidenced how companies understand the strategic value of accessing and managing quality data, mostly related to customers' insights. The relationship between this and the investment in cloud computing and mobility is however, not yet realized by most companies who admit they are far from strongly prepared in developing capabilities to meet the current challenges;

c) Different theories on cloud computing technology defend a convergent set of operational capabilities underlying this technology, which matches with capabilities defended in knowledge management theories as key to develop efficient knowledge-driven strategies. Specifically, these capabilities are reflected in the metanational competences which are reviewed in detail against the operational capabilities enabled through cloud-based information systems;

Third key preliminary finding consolidated: convergence around the company's initiatives and recent theory on knowledge-management and internationalization strategies, suggests that it is possible for organizations to invest in flexible delivery platforms, i.e. cloud computing, to gain operational capabilities required to develop knowledge-driven internationalization strategies. Observations in the industry also suggest that companies recognize this relationship between investments, but current practices still do not link the investment in cloud computing and the global sharing of quality data. Hereupon, this key preliminary conclusion might be

enriched, and strongly sustained, through further analysis when cloud computing technology matures, which is suggested in the section of Future Research.

Annex III – Interview with Eng. Carlos Silva, Member of the Board at Sinfic Portugal

Interviewer: Mónica Telhado

Interviewee: Eng. Carlos Silva, Member of the Board at Sinfic Portugal

Interview setting: Company's headquarters in Lisboa, Portugal

Data of the interview: 12th March, 2012

Duration of the interview: 90 minutes

The purpose of this interview is to learn more on the company's business model and internationalization strategy, understanding how the Quatenus management platform is distributed and generates value to Sinfic. Before beginning the interview it was further explained to the interviewee the motivation and objective of the research study.

The following information is adapted from the conducted unstructured interview.

What is the business model underlying Sinfic's operations, i.e. Quatenus?

Sinfic recently redesigned its business model because it sustained a customized approach which prevented the company from scaling its business to international markets. Before this change, Sinfic operated from A to Z through a coupled value chain wherein each product was sold as a project for each client. Accordingly, the company was responsible for all stages of the value chain, namely production, commercialization, implementation and post-sales service, leaving no operational capability or flexibility for the company to respond to a large scale market, maintaining relationships only with fifty clients at most.

Now with the new business model in place, Quatenus is delivered as a service, i.e. SaaS, through the company's cloud servers, in partnership with other organizations who become responsible for the direct sale of the product. The four stages of the value chain were thus divided between production, which remained responsibility of the company, and commercialization, that became responsibility of the new performed partnerships. The decoupling of the value chain enabled Sinfic to work on benchmarked solutions and enter more flexibly international markets. The company's organizational structure however, was not ready to deliver the product through this new flexible delivery platform, so a new distribution

model underlying the company's internationalization strategy was designed and further supported with strong investments in cloud computing. Accordingly, Sinfic set up global servers, building a global delivery platform capable of supporting a new internationalization model based on three different levels, namely the international head office in Portugal, the operational units, i.e. authorized centers, spread worldwide and the partnerships performed in each of these locations.

Why did the company decided to redesign its business model?

Sinfic redesigned its business model because the company's former approach was not flexible and impeded the company from reaching large scale operations and potentiate its products in international markets. To undergo the company's international growth vision it was necessary to overcome the customized approach to each customer and install a more flexible channel to access the international market and improve its operational capability. From the vision to enter international markets in large scale, it was defined that the reasonable entry mode for Quatenus was to become an integrated part of a product that other organizations already sold in different markets. This indirect entry mode required the company to decouple the value chain and become only responsible for the production and maintenance of the product, leaving thus the commercialization, implementation and post-sale service to other entities who would become Sinfic's partners. The underlying idea of selling Quatenus as SaaS was to remove all the complexity from the product and prevent the customers from worries with the installment or maintenance, since the Quatenus business intelligence platform would be delivered to them through the internet as a service. To support this new business model the company engaged strong investments in the development of cloud computing servers with global range. Overall, the strategic value underlies the idea of delivering benchmarked solutions through cloud-based delivery channels.

What responsibilities were addressed to each level of the new distribution model?

The international head office has three main areas of action, namely production, operations and business management. The first is concerned with the fabrication of the software. The second is concerned with the delivery, supporting and maintenance activities of the global servers through cloud-based information systems on a continuous basis. Operations are currently in Sinfic facilities, but they can always go to a hosting environment. Also, these

servers can be moved to the authorized centers, according to the legislation of each country. The third and last area of action is concerned with product's management and the responsibility to collect new authorized centers. Overall, the international head office becomes responsible for the managing the business strategic direction given that it actively communicates with all the dispersed operational units and guarantees, as an open channel, that knowledge is shared within the company's global network.

The authorized centers are organized according to geography. The key responsibility of these operational units it to collect, enable and support new partnerships. See that these centers are already strategic alliances for Sinfic as they are not assembled with collaborators from Sinfic. Instead, the company certificates these with important knowledge, delivering an autonomous status wherein their operations happen outside the company's perimeter. Accordingly, these centers become responsible for signing a communication protocol, in the country in which they operate, and mapping the availability of the product according to the dynamics of that market. Herewith, each authorized center is responsible for the product's composition, commercialization and pricing, and also for establishing the levels of service and contracting forms.

Supported by the authorized centers, the partners are responsible for the pre-sale, set up and post-sale services of the product. See that Quatenus is a management platform based on verticals, i.e. business portfolios that enable the company to echelon customers. Considering the nature of this platform, the idea is to gather non exclusive partners, already with products' and clients' portfolios installed in a market, where the Quatenus solutions can complement their offerings only for a marginal cost. Accordingly, mobile operators and service providers are the most targeted partnerships. With no costs of installment or maintenance, the complexity of the product is thus withdrawn, delivering to partners a new strategic business tool for only a rent. From this complementary role, it is assembled a synergy along the value chains of both Sinfic and its partners.

There are still two other levels within Sinfic's new organizational structure, namely the international area and contents' editing area that are transversal to all the company's products. The objective of the first level is to scout for new markets where the company could enter, collecting opportunities for new partnerships with the targeted profile. As for the second level, its objective is to support the product managers with important marketing tools, editing thus all types of brochures to help them in the process of selling products and contact potential partners.

What opportunities are expected through this new internationalization strategy?

Endless. The competitive advantage Sinfic has engaged through its new internationalization strategy is the knowledge-driven flexible delivery platform. Accordingly, Sinfic is going to access contextualized knowledge which local organization already collected and it is going to complement their offers with Quatenus business intelligence platform, engaging thus a continuous learning process through constant sharing of interactions and knowledge resources.

In the future, it is expected that the international head office becomes capable of developing further its business management area engaging a more participative role in the process of knowledge creation, integrating at a global scale the knowledge collected within each authorized center. This will allow Sinfic to compete at a higher stage, since the company will think locally, but still perform as a global player. So according to its new business model, the company develops an extended network of operational units and strategic partnerships which are enabled with constant communication supported by a flexible delivery platform, i.e. cloud computing, and further boost integration and growth synergies.

Why partnerships and not direct entry mode?

See that Quatenus Location Based Service (LBS) business intelligence platform is architected to host a multiple of applications, rapidly enabling its partners to begin earning revenue on their LBS investments efficiently and cost effectively. Accordingly, its partners are offered the capability to develop an endless number of tailored applications using only *Quatenus core edition*. For faster time to market, Sinfic further offers its partners packaged application templates like *Quatenus fleet edition, Quatenus team edition, Quatenus construction edition, Quatenus security and defense edition, Quatenus transports and logistics edition and Quatenus recycling edition.* Also, partners are offered the advantage of speed to market, ease of development, application integrity and early return on investment. By deploying its services across mobile operators and service providers, Sinfic is offered the capability to establish a dynamic revenue sharing model, sharing the revenues generated from subscribers' service usage.

Considering Sinfic's strategic intent and the nature of the product, i.e. Quatenus, partnering through international joint ventures is the most viable entry mode for the company to perform, and guarantee a flexible and efficient time to market. More on this, the company's plan to

sustain a global approach, but activate local knowledge to introduce effectively Quatenus into new markets, requires assembling strategic alliances with other entities which are already installed in the market and thus, have already access to contextualized knowledge.

What are the shared benefits?

Quatenus location based service offers revenue based on the generated value of service, value of content and the core services customers are already using. Indeed, through this business intelligence platform, partners are offered a facilitated access to a proven technology and expertise, to a robust and customizable platform with easy integration and fast time to market. Furthermore, partnering with Sinfic also delivers access to other key partnerships within the company's network.

Why the revenue share model for the new distribution strategy?

As an application provider, Sinfic's revenues were traditionally generated through a combination of licensing, transactions and hosting, which together reduced the company's revenue opportunity. Accordingly, there were different levels of service like annuities in Mozambique, or monthly payments with loyalty period in Portugal, or licensing and monthly payments in Angola.

But as mentioned before, Sinfic is offered the capability to establish a dynamic revenue sharing model by deploying its services across mobile operators and service providers, sharing then the revenues generated from subscribers' service usage. So according to the market's characteristics, each authorized center proposes a pricing, i.e. fixed revenue percentage agreed, that is after reviewed and validated by the international head office. The agreed percentage of revenue share is considered from the final price applied to the final customer that already contemplates the direct costs from the product's availability, i.e. SaaS.

In which countries and industries Sinfic plans to enter?

For now, Sinfic plans to install this new business model in the countries in which the company already operates, but in the future there is no need to enter only countries in which the company opens subsidiaries. That is the flexibility of the new model on which there is no need

to follow an organic growth model. Indeed, there are a lot of new possibilities to explore not only concerning the countries, but also concerning the industries and the type of customers.

Further information collected:

All information included in the following table is withdrawn from Sinfic's annual management report and consolidated accounts 2010, and from the interview to Eng. Carlos Silva, Member of the Board at Sinfic Portugal, conducted in 12th March, 2012 in visit to the company's headquarters in Alfragide, Lisboa. This information is synthesized below in order to display a set of important information concerning the company's performance, which is considered when evaluating the company's current performance and internationalization strategy in Chapters 4 and 5.

Table 4 – Highlights and competitive positioning of Sinfic 2012

Characterization of the company's activity and organization	
Featured competences	Sinfic;
Location (headquarters)	Portugal, Lisbon;
Beginning of activity	1990;
Legal structure	Private limited company;
Integrated business volume in 2011	EUR 60 million;
Number of collaborators	500 worldwide;
Operational structure and functional organization	Multi-structure; High level of formalization; Decentralized functions;
Production centers	Portugal (production center, storage center, and global cloud servers); (Cloud servers) established in Angola;
R&D investments	Portugal: technological and design center
Distributed technology	Cloud computing, Location Based Service Engine (LBS), Real Time Systems (RTS);
Distribution network	Portugal, Angola, Mozambique and Guinea-Bissau in coalition with 54 partners;
Components supply	Made in house;
Company's competitive positioning and growth strategy	
Brand awareness	Reference company in the Portuguese information systems' sector, affixed in the creation and development of its own brands and global distribution network;
Growth strategy	Affixed to the development of its own global distribution network with endogenous growth based on a vertical integration process;
Main strengths and distinctive competences	Partnerships and prospects of strategic alliances; Value chain expertise through self-directed strategic business units; Operational flexibility with the development of large channels through cloud-based information systems (global scale operations based on global servers);
Main weaknesses	Inconsistent capabilities to detect objective and tacit knowledge, and frail integration process within operational network to turn this knowledge into competitive advantage;
Level of control along the value chain	High;
Company's internationalization strategy	

Competitive positioning	Value chain expertise through self-directed strategic business units; Partnerships and subcontracting; Learning from the world;
Country selection and sequence	1999 – Sinfic Portugal; 2001 – Sinfic Angola investee (replica of strategic business units and business support units); 2006 – Sinfic Mozambique investee (replica of strategic business units and business support units); 2010 – Guinea-Bissau investee (with prospects of accessing two other African countries with close connection, namely Cape Verde and Sao Tome and Principe) 2012 – Current investments in Brazil (entry to the South America market)
Entry mode	Own distribution network; Direct investment; Indirect entry mode: licensing and joint ventures;
Company's positioning within the marketing mix variables (Product, Price, Place and Promotion)	
Type of product	Software platform for real time asset management;
Brand	Registered brand in Europe, U.S.A. and Asia;
Market positioning and scale extent	Medium; Wide range of products: core edition, fleet edition, team edition, construction edition, security and defense edition, transports and logistics edition, recycling edition;
Price	Medium;
Main export markets	Angola, Mozambique, Guinea-Bissau and Brazil;
Distribution channels	Own distribution network including strategic partnerships with exclusivity of Sinfic's software products over the four countries of operation;
Marketing	Marketing campaigns projected from the international head office and all the authorized centers into all the different markets where the company is established.

Annex IV – Proposal for Sinfic's revenue share model

The information included in the following table is a proposed structure for Sinfic's revenue share model, adapted from a competitor's pricing scheme that is also established among a content business value chain.

The operating diagram of Quatenus considered in the following table is extracted from Quatenus Official Presentation Form. Further considerations over each region's regulations needs to be further measured.

Table 5 – Proposal for Sinfic's revenue share model (adapted from MapInfo, 2002)

		Usage of cloud enablers	Monetization
Direct XML interface	**Customers** End-user device	**Client and presentation tiers** are managed by Quatenus allowing subscribers to access services through any internet-based mobile device	
Quatenus servers	**Partners** (and Carriers) Service provider Network equipment	**Business logic tier** manages LBS application and integration with other applications	Revenue share[1] on subscribers' service usage
Core Servers COMMSd EventProc BISP SMSd DWS	**Sinfic** Gateway and middleware Content and application	**Resource tier** consists of centrally managed core servers and data, along with data acquired from the wireless network	

[1] Fixed revenue percentage agreed to be paid.