ISCTE Business School
Instituto Universitário de Lisboa

Departamento de Gestão

THE RELATIVE IMPACT OF CUSTOMER AND TECHNOLOGY ORIENTATIONS ON INNOVATION AND EXPORT PERFORMANCE

Paula Hortinha

Tese submetida como requisito parcial para obtenção do grau de

Doutor em Gestão
Especialidade em Marketing

Orientador:
Profª. Doutora Carmen Lages, Professora Auxiliar,
ISCTE-IUL

Co-orientador:
Prof. Doutor Luís Filipe Lages, Professor Associado com Agregação,
Universidade Nova de Lisboa

Julho 2010

Aos meus filhos, Guilherme e Duarte

ACKNOWLEDGEMENTS

Many great people and institutions have contributed in different ways to this research.

First, I would like to thank my supervisors, Carmen Lages and Luís Filipe Lages. I thank Carmen for having believed since the beginning that I could complete this project, despite being working full time; for being so supportive, especially in emotional downturns; and for making me step forward and backward until we got a solid model. I thank Luís for his push to go for the PhD, when this objective was about to become just a dream; for having passed me his pragmatism and passion for research, both key determinants of the completion of this project.

Next, my debt is to IBS/ISCTE, for all the support during these years. I am particularly grateful to Professor Reinaldo Proença, for his kindness and for being always available. I thank Professor Paulo Rita, for his support, especially in the late stages of this work.

I am also indebted to Professor Pedro Pita Barros, Professor Luís Catela Nunes and Professor Clara Costa Duarte, from Universidade Nova de Lisboa, for having taken me "on board" in 2004, as this affected my motivation to pursue the doctoral degree.

I thank Professor Luís Moutinho, for all the time dedicated to me, for the pleasant and fruitful conversations we have maintained.

I am also grateful to over 400 Portuguese managers, whose collaboration was invaluable to the completion of this project. I thank each one of them as well as their organizations for providing the data used in the empirical part of this research. I also thank Marta Bicho and Renato Henriques for their great help in establishing and following up contacts with those managers.

I acknowledge Fundação para a Ciência e Tecnologia that funded the last months of this research.

To my PhD colleagues, now my friends: Ana Lisboa, Ana Comporta and Graça Silva. This was a very enriching journey together, I do remember all we have laughed and cried, the ideas we have exchanged. A special thanks to Graça, for her precious help with the data analysis.

Finally, I am grateful to my family. It is to them that this dissertation is dedicated: To my parents for their unconditional help; To Joaquim, for his vision, love and encouragement to start this project; To Alfonso, for his dedication, love and patience during these years; To my sons, Guilherme and Duarte, for their love, for so many comforting hugs and kisses and for their inciting daily "good night" question, "Mom, when do you finish the PhD?".

ABSTRACT

Firms are constantly challenged by the trade-off between two types of strategic orientations: customer and technology. Yet, research directly addressing this topic is scarce and few recommendations exist on which orientation to emphasize. Using resource based view and organizational learning theory, this thesis addresses the relative impact of customer and technology orientations on export performance by considering the mediating role of innovation. Two innovation capabilities are considered: exploratory innovation – aimed at developing new product-market domains - and exploitative innovation – aimed at improving existing product-market positions. With the purpose of gaining more insights on those relationships, they are also examined under the influence of internal factors – past financial performance – and external factors – customer turbulence and technological turbulence.

An exploratory study supported the survey instrument development. Data was collected through an on-line survey, resulting in a sample of 170 Portuguese exporters operating in technological manufacturing industries. We gathered data from two respondents within the each firm, the export manager and the R&D manager. Data analysis was conducted using Partial Least Squares, a variance-based structural equation modelling technique.

Our results support the mediating role of exploratory and exploitative innovations. Moreover we have found that a customer orientation is as important as a technology orientation to the development of innovation capabilities. However, when past performance is low or the technological environment is highly turbulent, customer orientation plays a greater role.

Implications of these findings for international marketing researchers and managers are presented and future research directions are provided.

Keywords: strategic orientations, innovation, export performance, contingency perspective, PLS

JEL: M31, M16

RESUMO

As empresas são constantemente desafiadas pelo *trade-off* entre duas orientações estratégicas: cliente e tecnologia. No entanto, a investigação sobre este tema é limitada e poucas são as recomendações existentes sobre qual destas duas orientações reforçar. Com base nas teorias de Resource Based View e Organizational Learning, esta dissertação estuda o impacto relativo das orientações para o cliente e para a tecnologia no desempenho da exportação, através do efeito mediador da inovação. São consideradas duas capacidades de inovação: "exploratory", destinada a desenvolver novos produtos-mercados – e "exploitative" – destinada a melhorar produtos-mercados existentes. Estas relações são também examinadas sob a influência de factores internos – desempenho anterior da empresa – e externos – turbulência na procura e tecnológica.

A recolha de dados foi feita através de um inquérito on-line que foi desenvolvido com base num estudo exploratório prévio, tendo resultado numa amostra de 170 exportadores Portugueses, produtores em sectores tecnológicos. Foram utilizados dois respondentes, o responsável pela exportação e o responsável pela I&D. Para a análise de dados recorreu-se à modelação com equações estruturais baseada nas variâncias, através do Partial Least Squares.

Os resultados confirmam o efeito mediador da inovação. Verificou-se ainda que uma orientação para o cliente é tão importante como uma orientação para a tecnologia no desenvolvimento das capacidades de inovação da empresa. Contudo, em cenários de baixa performance anterior ou elevada turbulência tecnológica, a orientação para o cliente desempenha um papel mais importante.

Finalmente, são apresentadas as implicações deste estudo para investigadores e gestores nas áreas do marketing internacional, bem como sugeridas direcções para investigação futura.

Palavras-chave: orientação estratégica, inovação, desempenho de exportação, perspectiva de contingência, PLS

JEL: M31, M16

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1 - INTRODUCTION

The subject of this thesis is the relative impact of customer and technology orientations on innovation and export performance. By relative impact we mean the difference between the strengths of the relationships customer orientation-innovation and technology orientation-innovation. The subject of the thesis is addressed by developing and testing an empirical model that links customer and technology orientations to export performance through exploratory and exploitative innovation capabilities. Furthermore, we test the model under external- and internal-to-the-firm contingency factors.

Our main research questions are: 1) What is the relative impact of customer and technology orientations on the firm's innovation capabilities and export performance? 2) To which extent is this impact affected by environmental and organizational factors?

The first section of this chapter discusses the scope and the objectives of this research. After, we devote a section to introduce the context of our study, the Portuguese technological exporters. Then, we address the research contributions, both at theoretical and managerial levels, as well as the already performed research. Finally, the structure of the thesis is summarized.

1.1 – Research scope and objectives

Researchers agree on the fact that firms need to pursue customer and technological competences *simultaneously*, as they both provide a foundation to innovation (Danneels, 2002; Gatignon and Xuereb, 1997; Yalcinkaya, Calantone and Griffith, 2007; Zhou, Yim and Tse, 2005). For more than 50 years managers have been told to "stay close to the customer" to increase share and fight off competitors (Drucker, 1954; Day, 1994). Researchers have pointed out the many benefits of being customer oriented (Jaworski and Kohli, 1993; Narver and Slater, 1990) and a considerable amount of research has evidenced the role of innovation

as a facilitator of the customer orientation-performance positive relationship (see Kirca, Jayachandra and Bearden, 2005).

More recently, firms have been warned that by being too much customer oriented they might lose innovation competences, because customers are not completely knowledgeable about the latest market or technological trends (Christensen, 2006; Christensen and Bower, 1996; Hamel and Prahalad, 1994). An example is the case of Moto Razr, one of the most successful cell phone models from Motorola (Verma, Momin and Girija, 2008). Launched in 2004, the Moto Razr was an innovative telephone that entered very quickly in a low-end market. Motorola market share went from 15% to 18% in 2005, and the Razr soon became a commodity. After that, Motorola missed out the next-generation technology as it was unable to develop products that could replicate the success of the Razr. Motorola had just become too much customer oriented.

Literature on innovation has showed that the ability to bring new products to the market is also critical to a firm and that this capacity to innovate is influenced by a firm's technology orientation (Gatignon and Xuereb, 1997; Kleinschmidt and Cooper, 1991; Zhou, Yim and Tse, 2005). A technology oriented firm is committed to R&D and to the acquisition and use of sophisticated technologies in new product development. Therefore, the more technology oriented a firm is, the more it will develop radical innovations. Nonetheless, an excessive emphasis on technology may lead to a failure in marketing the innovations.

For example, Philips was for many years at the vanguard of technology with inventions such as the audiocassette, the CD and the DVD. However, in the 1990s, Philips witnessed a deterioration of its financial health partly because of a lack of customer focus (Georg and Govind, 2007). In 2004, Philips repositioned using the "sense and simplicity" campaign, helping to promote its new products based on an easy access to exciting technological benefits. Innovations were then developed jointly by teams of design, marketing, and technology professionals. Despite some criticism of the campaign, in 2007, Fortune magazine (p.13) commented on the transformation "of a sleepy European electronics company with mediocre margins into a consumer-oriented powerhouse capable of producing both strong earning gains and consistent returns for investors".

Because resources are limited, firms have to make choices about which resources to allocate to what, and to decide the extent to which they will emphasize one strategic orientation over the other. Thus, the trade-off between customer and technology orientations is of utmost importance, as it is intrinsically linked to innovation. While the individual roles of customer and technology orientations on innovation and performance have attracted considerable attention, rare studies have assessed their relative importance. With this study, we seek to enrich this area of research, particularly in an innovation context, answering a recent call from a meta-analysis on the relationship capabilities-performance (Krasnikov and Jayachandran, 2008). Thus, we directly address the relative benefits of emphasizing either a customer or a technology orientation on the performance of the firm.

Furthermore, drawing on the organizational learning literature, we consider the mediating role of innovation on the aforementioned relationships. Noble, Sinha and Kumar (2002) noted that high-performing firms can not only gather and understand market information but also translate this knowledge into learning. They further suggest that a technology orientation also leads to knowledge-learning behaviors. Following recent literature (Atuahene-Gima, 2005; Baker and Sinkula, 2007; Yalcinkaya, Calantone and Griffith, 2007), we use exploratory and exploitative innovation as mediators. These reflect two different organization capabilities, towards developing new, or improving existing, customer and/or technological competences (Benner and Tushman, 2003). Both capabilities are essential to a firm (March, 1991). Choices regarding the balance between exploration and exploitation are related to the choices made about the emphasis on one strategic orientation over the other (Kyriakopoulos and Moorman, 2004; Quintana-Garcia and Benavides-Velasco, 2008). This study also advances the literature by considering the interaction between those two key trade-offs: customer versus technology and exploration versus exploitation.

Research typically addresses these trade-offs in a domestic context. This is quite surprising considering the fact that today innovation and internationalization are two critical, and highly related, drivers of the business. Firms can leverage their innovations by taking business opportunities in international markets (Knight and Cavusgil, 2004). This study intends to explore the topic in the context of exporters, more specifically, technological exporters. While valid for any organization, our topic is particularly important for a technological firm. Because these firms operate in markets characterized by very complex environments, with

high technological and demand uncertainties, they have the need for a sophisticated marketing (Dutta, Narasimhan and Rajiv, 1999; Mohr, Sengupta and Slater, 2009; Mohr and Sarin, 2009). Additionally, the fact that a technology orientation is inherent to those firms is no guarantee for success (Workman, 1993).

Finally, we extend our main research question by examining the trade-offs for innovation under the contingency effect of internal and external factors. We use the contingency perspective which asserts that firms should fit their strategic choices with external and internal factors (Schoonhoven, 1981).

As internal factors we consider the past financial performance of the firm. Organizational learning literature has demonstrated that firms tend to rely on their past experience and performance for decision making (Cyert and March, 1963; Lages, Jap and Griffith, 2008; Lant and Mezias, 1992; Levinthal and March, 1981). More specifically, innovation related decisions are affected by past performance due to limitation of resources (Durmuşoğlu *et al.*, 2008). A poor past performance constrains the innovation possibilities by limiting the availability of resources. We follow a different perspective from researchers exploring the impact of past performance on strategy. Thus, we use past performance as a moderator (rather than as an antecedent to firm strategy), following the work of Mizik and Jacobson (2003), as our aim is *not* to examine the effect of past performance on innovation. Rather, we intend to investigate whether technological exporters have a different response under different past performance scenarios.

We study customer turbulence and technological turbulence as external factors because they represent two of the most significant forces in the market (Kotler, 2002). The influence of these factors as moderators of the relationship between strategic orientations and innovation or performance outcomes is widely acknowledged in prior research (Gatignon and Xuereb, 1997; Han, Kim and Srivastava, 1998; Li and Calantone, 1998; Song *et al.*, 2005). Those types of environmental turbulence are particularly important for technological firms, operating in industries characterized by frequent and unpredictable market and technological changes (Calantone, Garcia and Dröge, 2003).

1.2 – The context: Portuguese technological exporters

As a background to the study, we provide a brief introduction to the context of our research, the Portuguese technological exporters.

Thus, in the first section we highlight the importance of exporting to economies and businesses. We outline some of the reasons that drive firms to export and the risks they face in foreign markets. We devote some paragraphs to characterize Portugal with respect to exporting and emphasize the importance of exporting strategies to Portuguese firms.

In the second section we discuss the role of technology in international strategies, particularly exporting. We also explain the importance of technology to Portuguese policy makers as a means to ensure sustainable growth and competitiveness of our economy and businesses.

Finally we briefly characterize the Portuguese technological exports.

1.2.1 – Exporting and the Portuguese exporters

Exporting is defined as the selling of goods or services across national boundaries using indirect or direct methods (Cateora and Graham, 2009). During the last decades exporting has been an increasingly important economic activity, having reached, in 2007, 28.9% of the world's gross domestic product, coming from 19% in 1990 (World Bank, 2010). Exporting is today the most widely used firm strategy for international expansion (Katsikeas, Leonidou and Samiee, 2009).

That popularity is due to a number of reasons. From a macro-national perspective, exporting increases domestic employment and foreign trade levels, supports the development of innovative technologies, and enhances general standards of living (Czinkota and Ronkainen, 2007). At the micro-business level, and compared with other entry modes, exporting has lower levels of risks, implies fewer resources and involves less fixed and operational costs. Furthermore it improves the firm's financial position, allows firms to use idle operating capacity thus improving production efficiency, assists firms in transferring innovative

technologies and knowledge to less advanced markets; improves firm's market knowledge and competitive position; and also enriches managerial skills (Cateora and Graham, 2009).

Despite the many advantages of exporting, the firm's entry into and operation in foreign markets is not easy. Rather, firms face many serious obstacles, the most common being limited organizational and managerial resources; inappropriate international marketing strategy; restrictive international trade rules and regulations; unfamiliar and/or differing business practices and customer behaviors abroad; dissimilarities between domestic and international environments; and excessive risks and costs due to large geographic and psychological distances separating nations (Miesenböck, 1988). These obstacles can narrow the potential of foreign market opportunities, undermine export financial performance and delay firm's progress along the internationalization path or even originate its complete withdrawal from overseas markets (Welch and Wiedersheim-Paul, 1980).

The potential for extra growth is an incentive to initiate and/or expand exports, especially for small firms that aim to gradually become larger and play a significant role in the marketplace (Leonidou, Katsikeas, Palihawadana and Spyropoulou, 2008). Exporting can assist in this direction, since the firm will be in a position to increase its assets by exploiting some of the innumerous opportunities existing in overseas markets. This is particularly true in the case of small domestic markets, such as Portugal, where the potential for company growth is restricted (Sousa and Bradley, 2006).

Portugal is an interesting context of research due to the importance of exporting to the country and its membership of the European Union (Lages, Jap and Griffith, 2008). The European Union is by far, the world's largest exporter of goods, with a share, in 2008, of 16.6% of the total world exports (Eurostat, 2010). As in many countries in the European Union, economic growth in Portugal depends heavily on the exporting success of its firms. In fact, exporting is viewed as an important means for quickly decreasing the nation's deficit. Portuguese total exports were 46 873 million Euros in 2009, representing approximately 28% of our GDP and 2.8 % of the EU-27 total exports of goods (Eurostat, 2010).

1.2.2 – Technology and the Portuguese technological firms

International markets offer technological firms an opportunity to leverage their technological competences (Autio, Sapienza and Almeida, 2000). Therefore, the development of special technologies by a firm in the domestic market is very likely to stimulate its motivation to go abroad (Leonidou, Katsikeas, Palihawadana and Spyropoulou, 2007). First, because those technologies have already proven successful in the domestic market, thus reducing the perceived risk of failure abroad; and second, because the opportunity costs of exploiting this technology for export purposes is almost negligible, since the costs associated with its development have already been absorbed in the home market. That stimulus is even more significant in the case of high-technology manufacturer companies (Johnston and Czinkota, 1982).

Having a unique and/or patented product may also stimulate the firm to export (Johnston and Czinkota, 1982). Unique products are very likely to attract the attention of new customers and create a competitive advantage in overseas markets with few additional costs. The strength of this stimulus is also higher when the product is internationally patented, thus ensuring a constant flow of revenues to the company for a period of time, until the appearance of other competing technologies decreases this product advantage.

In 2005, the Portuguese government has assumed technology to be a priority in terms of the implementation of its public policies, through the Technological Plan (Plano Tecnológico, 2005). This plan constituted the pillar for Growth and Competitiveness of the Portuguese National Reform Plan, during the period 2005-2008, and is integrated in the Lisbon Strategy, from European Commission.

Three priority areas were defined by the plan: Knowledge/education, technology/R&D and innovation. As an example, in the area of technology, the proposed target for 2010 was 0.80% of R&D investment in percent of the GDP. In 2007 this indicator was at 0.76%, coming from 0.24% in 2003 (in EU-27 this value was 1.21% in 2008). For the area of innovation one of the indicators defined is related to the number of technological firms created, being the target 12.5% for 2010 and the value, in 2007, 3.28%.

1.2.3 – The Portuguese technological exports

The priority of technology as an engine for the growth and competitiveness of the Portuguese economy is also reflected in our exports. The Technological plan defined a target for 2010 of 11.40% of high tech exports as a percent of the total exports. In 2006 that value was at 7%, when in EU-27 it was at 16.6%. Another indicator of the progress of technology in Portugal is the technological balance of payments[1], which is now positive, since 2007 (AICEP, 2010).

Export growth has being driven by new sectors rather than by the traditional industries, and this reflects the structural changes stemming from the impact of foreign investment and the strength of those sectors that incorporated the most technology and value added. The most important groups of products exported in 2009 were machinery and tools (16.2%), vehicles and transport equipment (11.8%), base metals (6.8%), clothing (6.8%), plastics and rubber (6.3%), food products (5.9%), minerals and mineral products (5.7%) and agricultural products (5.3%), all of which represented close to 66% of total Portuguese sales abroad (AICEP, 2010).

For example, machinery and tools is classified as a high-technological industry and is growing in importance. It includes modern companies offering certified products and high technology such as exporters of moulds for the plastics industry and electrical machinery and apparatus, as well as of electric lines and cables, transformers and integrated circuits and electronic microchips (Eurostat, 2009).

As a concluding remark we may say that the context of the Portuguese technological exporters is quite appropriate for studying the trade-off between customer and technology orientations for export performance. First, because Portugal depends significantly on exporting and second, because technology is a priority for export development; therefore, insights on how to achieve superior export performance will be highly valued by technological exporters.

[1] The technology balance of payments registers the commercial transactions related to international technology and know-how transfers. It consists of money paid or received for the use of patents, licences, know-how, trademarks, patterns, designs, technical services (including technical assistance) and for industrial R&D carried out abroad, etc. (OECD, 2010).

1.3 – Expected research contribution

1.3.1 – Performed research

During the preparation of this thesis three papers were prepared as listed below. Not only are they a performed contribution to the exiting literature, but also a significant contribution to the improvement of this thesis. The feedback gathered during the presentation of the papers in conferences as well as during their review process was of utmost importance for this work.

Hortinha, P., L.F. Lages and C. Lages (2010), Innovation and performance implications of the trade-off between customer and technology orientations, *Journal of International Marketing*, under (second) review process.

Hortinha, P., L.F Lages and C. Lages (2010), Trading Off Customer and Technology for innovation: Which one leads in good and bad times?, *Proceedings of the 39th European Marketing Academy Conference (EMAC)*, Copenhagen.

Hortinha, P., L.F. Lages and C. Lages (2009), Technology-Market Transfer Orientation: Matching Technology and Market Orientations, *Proceedings of the 38th European Marketing Academy Conference (EMAC)*, Nantes.

1.3.2 – Theoretical contributions

We attempt to contribute to the literature in several ways. First, we propose a framework that integrates two theories, the resource based view and the organizational learning theory. Thus, in the field of international marketing, particularly, export marketing, this research offers a new theoretical perspective for the strategy-innovation-performance link.

Second, we seek to contribute to the contingency perspective on the strategy-performance relationship. Particularly, we aim at clarifying mixed findings in the literature about the role of external and internal factors on that relationship.

With respect to the internal factor, the past performance of the firm, we additionally add to the literature a new perspective, by using past performance as a moderator rather than as an antecedent to strategy.

Third, we also advance the theory testing and generalization by testing the hypotheses from a cross-sectional sample of technological exporters.

Finally, we contribute at a methodological level: 1) by exploring the relative impact of two strategic orientations rather than studying their individual role; 2) by using two respondents within the same exporting firm, the export manager and the R&D manager ensuring that respondents are knowledgeable about the assessed variables (Leonidou and Katsikeas, 1996); and 3) by using objective data on performance. The use of measures from three different types of sources (two from different types of respondents and one from financial reports) are important to reduce possible common method bias (Podsakoff and Organ, 1986).

1.3.3 – Managerial contributions

This research intends to offer important insights to technological exporters. First, while exporting is becoming increasingly important for the survival and development of firms, they also face higher levels of market uncertainty and risk. Therefore, export managers need to understand the external forces affecting export operations, to improve chances of being successful.

Second, because technological exporters operate in technological industries, they also face high rates of technological turbulence. Often, innovation is the only way for firms to get opportunities in those markets; therefore, it is important for managers to understand customers and technologies in foreign markets jointly with the role of innovation in satisfying customers in those markets, and thus, in driving export performance.

Finally, because export managers' decisions are affected by the resources available in the firm, knowing the proper strategies to emphasize for future superior performance is of outmost importance.

1.4 – Structure of the thesis

This thesis comprises six chapters, outlined in Figure 1.1. The remainder of this document is organized as explained below.

In this first chapter we introduced the subject of the dissertation, its scope and the objectives. Then, we briefly present the context of this study by giving an overview of the importance of technology and of exporting to the Portuguese companies. Before presenting the structure of this thesis, we outlined the main intended research contributions.

Chapter 2 presents a brief review of the literature on the main concepts underlying this research: strategic orientations, innovation, and export performance. First, the concepts are introduced, after, the state-of-the-art is outlined and then the major gaps in the literature are identified. The chapter ends with a review of the contingency perspective related research.

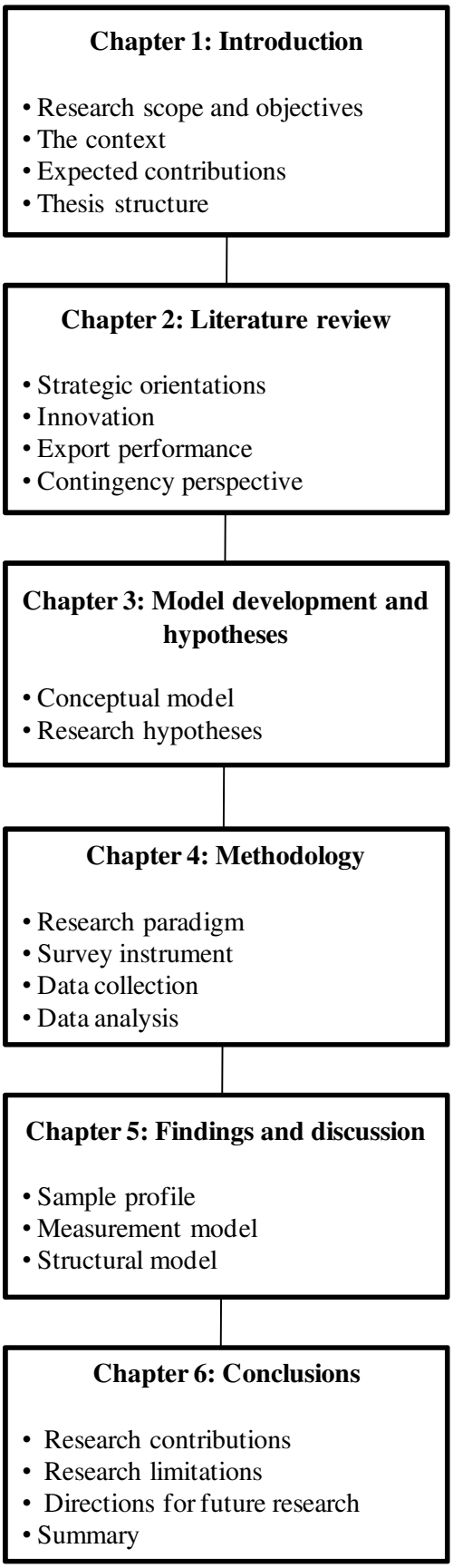
Chapter 3 explains the hypotheses leading to the proposed conceptual framework. Strategic orientations are related to export performance using innovation capabilities as mediators. Hypotheses are mainly based on the relative importance of those strategic orientations. Internal and external factors are hypothesized to moderate those relationships.

In chapter 4 the methodology used to test the hypotheses developed in chapter 3 is described. Steps associated with sampling, survey instrument development, pre-test and administration, data collection and data analysis are discussed in detail.

Chapter 5 shows the findings and examines the extent to which the results support or refute each of the hypotheses. The discussion is supported by the literature.

Finally, in chapter 6, the research contributions are presented, and the key implications for export managers are discussed. Research limitations are indicated suggesting future avenues of research. This chapter ends with a summary of the main conclusions.

Figure 1.1 – Thesis structure



CHAPTER 2 – LITERATURE REVIEW

The objective of this chapter is to present the main marketing and management literature related to the concepts of this research: strategic orientations, innovation, and export performance. It is not our purpose to review the whole body of literature on those areas. Rather we aim at introducing the concepts by providing an overview of the most relevant research about them. We give particular attention to technological innovation, the focus of our work.

In the first section, dedicated to strategic orientations, we introduce Resource Based View as a supporting theory to the importance of strategic orientations. Strategic orientations are two important firm capabilities linked to innovation and key constructs in this work. Then, we present the concepts of customer orientation and technology orientation and we review the literature on the relationship of these orientations with innovation and performance. To finalize this section we introduce the debate on the trade-off between both customer and technology orientations.

The second section of the chapter looks at innovation; first we define it and present its different typologies. Then, we address specifically two innovation capabilities, exploration and exploitation, which are central constructs of our study. The last topic of the section focuses on the support theory to the importance of the two capabilities to performance: the Organizational Learning Theory.

A third section considers the literature on export performance, first through a research overview, then by discussing its conceptualization and measurement, and lastly by outlining its determinants. Export performance is our dependent variable; therefore its deep understanding is crucial here.

In the fourth section we present the contingency perspective. The section starts with a brief introduction to the topic followed by a review of the main organizational and environmental contingency factors covered in the literature. This overview is relevant for this work as we

consider our theoretical framework to be contingent upon three of those factors, which are identified and discussed.

We end the literature review chapter presenting our conclusions, by discussing the various knowledge gaps in the literature, and identifying potential research contributions.

2.1 – Strategic orientations

2.1.1 – The Resource Based View

How does a firm achieve and sustain a competitive advantage and performance is a fundamental question in the field of strategic management (Porter, 1985). One of the theories dominating the explanations of firm performance is the Resource Based View[2]. According to this theoretical approach, resources are central to firm performance (Wernerfelt, 1984). Resources are defined as internal attributes, including tangible assets (equipment, location), specific internal capabilities (human skills), processes, routines, and knowledge that are linked to or are controlled by the organization. Firms are conceptualized as a bundle of resources which are heterogeneously distributed across firms, being this difference persistent overtime (Barney, 1991). Accordingly, a sustainable competitive advantage can be achieved when firms have resources that are valuable, rare, inimitable and non-substitutable, because they allow for the implementation of strategies that will not be easily duplicated by competitors.

A distinction is normally made between resources and capabilities, being the resources available factors that are owned or controlled by the organization, and capabilities organizational capacities to deploy resources (Amit and Schoemaker, 1993). Scholars of the RBV argue that it is through the conversion of firm resources into capabilities that the firm obtains competitiveness (Teece, Pisano and Shuen, 1997).

Day (1994: 38) uses the terms “Assets” to define the resources endowments accumulated by the firm and “Capabilities” as the “glue” that brings those assets together and enables them to

[2] hereafter RBV

be deployed advantageously. Assets are the more tangible resources - like economies of scale, brand equity, reputation, location, financial condition – and capabilities are more difficult to quantify monetarily – such as skills underlying innovativeness and the superior quality of the firm's products. Capabilities are deeply embebbed in organizational routines and practices and, unlike assets, cannot be traded or imitated easily. Capabilities can be thought of in terms of three broad groups: outside-in capabilities, such as market sensing and channel bonding; inside-out capabilities, such as integrated logistics and technology development, and spanning capabilities, such as new product development capabilities and customer order fulfillment processes.

An important firm capability is its strategic orientation, which reflects the strategic direction taken by the firm to lead to the proper behaviours for continuous superior performance (Narver and Slater, 1990). Strategic orientations have a long-term focus, both in relation to profits and in implementing the behaviors leading to the broad strategic choices (Anderson, 1982). A strategic orientation represents the elements of a firm's culture that guide interactions with the marketplace (Noble, Sinha and Kumar, 2002).

Linked to innovation, two major strategic orientations are customer orientation and technology orientation (Gatignon and Xuereb, 1997; Zhou, Yim and Tse, 2005). Customer orientation is a part of the aggregate concept of market orientation, which has been extensively documented in the literature (for a review see Kirca, Jayachandra and Bearden, 2005). Customer orientation is broadly recognized as essential to a firm' success and technology orientation is seen, since long, as having a key influence on the performance of the firms (Narver and Slater, 1990) and, more recently, considered as a strategic orientation (Gatignon and Xuereb, 1997).

Technology orientation focuses predominantly on advanced technologies. Therefore, it has direct impact on innovation. Firm's technological capabilities have been shown to be a source of competitive advantage and superior performance (Lee, Lee and Pennings, 2001). Companies operating in technological industries are inherently technology oriented (Slater, Hult and Olson, 2007).

2.1.2 – Customer orientation

2.1.2.1 - Conceptualization

Customer orientation conceptualization is tightly linked to the concept of market orientation, being part of it. Therefore, we introduce market orientation first.

The market orientation concept has gained a lot of importance along the past two decades and is nowadays considered as the central concept in marketing (Kotler, 2002). It is seen as being crucial to the organizational success (see Cano, Carrillat and Jaramillo, 2004). A company that adopts market oriented behaviors will affect in a positive way its profitability (Morgan, Vorhies and Mason, 2009; Slater and Narver, 1994; Webster, 1992). Due to the importance of this concept, there has been extensive research in an attempt to determinate its antecedents and consequences (see Kirca, Jayachandran and Bearden, 2005 for a review).

Researchers have identified three components of the marketing concept: the customer as a focal point for business activities, the necessity of integrating functions and the need for profit orientation. Somehow consistent with this concept, in the late 1980's the market orientation concept started to be used as a synonymous of the marketing concept (Shapiro, 1988; Webster, 1992).

Market orientation has been conceptualized from both the behavioral and the cultural perspectives (Homburg and Pflesser, 2000). Therefore, different definitions of market orientation emerge from those different perspectives. From a behavioral perspective, Kohli and Jaworski (1990) have defined market orientation as firm's ability to generate market intelligence pertaining to current and future costumer needs, to disseminate it across departments and, respond to it. From a cultural perspective, Narver and Slater (1990) defined market orientation as an organizational culture that creates the behaviors leading to a superior customer value. Three behavioral components are part of this market orientation definition: customer orientation, competitor orientation and interfunctional coordination.

Customer orientation refers to the understanding and monitoring of customers and their needs. It includes gathering and generating knowledge about current and future customers and

disseminating it within the firm (Jaworski and Kohli, 1993; Narver and Slater, 1990). A customer orientation requires the understanding of the complete value chain of the customers as well as of the environmental constrains at every level of the chain (Day and Wensley, 1988). Firms with a strong customer orientation have a competitive advantage because they consider the creation and maintenance of customer value a top priority (Olson, Slater and Hult 2005).

Competitive orientation relates to the understanding of competitor's strengths and weaknesses, capabilities and strategies to satisfy customers (Porter, 1985). Therefore, it is about generating information about current and future competitors and disseminating it within the firm (Jaworski and Kohli, 1993; Narver and Slater, 1990).

Interfunctional coordination refers to the extent to which all the departments in the firm interact, communicate and coordinate between them to promote the wide use of firm's resources and the creation of superior customer value (Jaworski and Kohli, 1993; Narver and Slater, 1990). Interfunctional coordination enables the transfer and the integration of current and new knowledge within the firm (Kogut and Zander, 1992).

Despite the fact that Narver and Slater (1990) have conceptualized market orientation as being constituted by three equally important components, scholars have been taking a "component-level" approach by disaggregating market orientation when analyzing performance. Researchers have showed that customer and competitor orientations have differentiated roles over performance (Day and Wensley, 1988; Han, Kim and Srivastava 1998; Im and Workman, 2004; Lukas and Ferrell, 2000; Voss and Voss, 2000; Zhou *et al.*, 2007). Some researchers went further by suggesting that market orientation is essentially customer orientation (Deshpandé, Farley and Webster, 1993), representing the concept of "customer pull" in a firm's strategic planning and implementation (Day, 1994).

With respect to interfunctional coordination, this construct has been used differently, more as an organizational contingency factor that affects the relationships between strategic orientations and performance (Atuahene-Gima, 2005; Gatignon and Xuereb, 1997). Han, Kim and Srivastava (1998) concluded that both competitor orientation and interfunctional

coordination didn't impact significantly on innovation, except when firms face high environmental uncertainty.

Some researchers (Han, Kim and Srivastava, 1998; Im and Workman, 2004) demonstrated the importance of examining the market orientation construct in a disaggregated way, because this approach offers managers more precise insights on the role of each component over performance. Noble, Sinha and Kumar (2002) argue that the focus on the aggregate market orientation construct may explain some of the inconsistencies found in market orientation research. In this work we follow the disaggregate perspective.

As such, we do not include either competitor orientation or interfunctional coordination. While acknowledging the importance of competitor orientation as a firm strategic orientation, when in the context of exporting firms tend to have a rather limited knowledge of competitors (Lages, Silva and Styles, 2009). Even if export managers are aware of who are their competitors abroad, they reveal much more difficulty in gathering information about their strategies[3]. Because competitive orientation is about gathering competitor's knowledge, exporter's competitive orientation would be difficult to assess.

This decision has found further support in the export marketing literature. Market orientation is most often operationalized following Jaworski and Kohli (1993), therefore avoiding a strong focus on the competitor-related dimension. Examples are the studies of Cadogan *et al.* (2006, 2001), Cadogan, Kuivalainen and Sundqvist (2009) and Rose and Shoham (2002). Other studies, also in the international context, have employed competitor orientation but found out that its impact on performance was not significant (see Zhou *et al.*, 2007).

With respect to interfunctional coordination, as explained before this construct has been seen as intrinsically different from market orientation (Atuahene-Gima, 2005; Gatignon and Xuereb, 1997), and therefore from customer and competitor orientations. We exclude interfunctional coordination because the focus of this study is to directly compare customer orientation with technology orientation. These two strategic are seen as opposite to each

[3] These findings are consistent with the information we gathered from export managers and R&D managers during the preliminary interviews.

other, making it pertinent to examine their relative impact, independently of other orientations or processes of the firm.

2.1.2.2 – Customer orientation and performance

Customer orientation (and, more broadly, market orientation) is widely recognized as driver of business performance (Atuahene-Gima, 1995; Baker and Sinkula, 1999; Day, 1994; Hult and Ketchen, 2001; Hurley and Hult, 1998; Jaworski and Kohli, 1993; Matsuno, Mentzer and Ozsomer, 2002; Narver and Slater, 1990). Firms with a superior customer orientation achieve superior business performance because they understand better than their competitors the customer's needs, both existing and latent.

In a recent meta-analysis (see Kirca, Jayachandran and Bearden, 2005) the market orientation's positive impact on performance - both revenue and profit-based – was shown to be consistent across most of the studies. Hult, Ketchen and Slater (2005) also demonstrated that both cultural and behavioral conceptualizations of market orientation contribute to performance.

Nonetheless, contradictory findings exist in the literature – please see Table 2.1. For example, in some studies it was found a negative relationship of customer orientation to performance (Grewal and Tansuhaj, 2001; Voss and Voss, 2000). In other works, weak or non-significant results were reported (Atuahene-Gima, 1996; Han, Kim and Srivastava 1998; Subramanian and Gopalakrishna, 2001).

Table 2.1 presents a summary of the most recent studies that covered the direct relationship between customer orientation and firm performance. The list is not exhaustive and only includes works published after 2000. Examples were selected from different journals (according to Theoharakis and Hirst, 2002). Studies using the aggregate construct of market orientation, thus not providing results at customer orientation level, are distinguished from those that do provide that information or examine customer orientation individually. The objective of this table is to provide a picture of the mixed recent findings related to the relationship between customer orientation and firm performance.

Debate on how does market orientation contribute to performance is still evolving. As Hult, Ketchen and Slater (2005: 1179) noted, "market orientation is not typically a lever that can be pulled to directly increase performance". As such, many different variables have been tested as mediators between customer orientation and performance. The next topic will provide some insights into these mediators. This is an area of contribution of this thesis.

Due to the disparate findings in the literature, researchers have also suggested that the relationship between customer orientation and performance may be contingent upon other variables related to environmental characteristics or organizational factors. These contingencies will be discussed in topic 2.4, later on in this chapter. This is also an area where this research intends to provide additional insights.

2.1.2.3 – Customer orientation and innovation

Customer orientation is an important contributor to new product development[4] activities and performance (see Kirca, Jayachandran and Bearden, 2005). However, the nature of the relationship between market orientation and innovation is still an unresolved issue (Im and Workman, 2004; Lukas and Ferrel, 2000). Researchers argue that being too customer-oriented may lead the firm to overlook knowledge coming from other industries, from non-traditional competitors or related to future markets, thus lowering the possibility of generating innovations for emerging markets (Zhou, Yim and Tse, 2005). An exclusively customer focused firm may risk itself in the "tyranny of the served market", developing innovations that address existing customers' unsatisfied needs, and unlikely investing in innovations that departure from the existing market segment (Christensen, 1997; Hamel and Prahalad, 1991). Firms may lose their industry leadership because they listen too much to customers (Christensen and Bower, 1996), a poor source of extreme innovation.

[4] New product development, hereafter NPD, is used, in this thesis, interchangeably with innovation. When referring to product innovation (and also technological innovation) it is common in the literature to find both designations, NPD and innovation, used with the same meaning (Henard and Szymanski, 2001). However, it is acknowledged that new product development is an aspect, among others, of the broad topic of innovation (Hauser, Tellis and Griffin 2006).

Table 2.1 – Empirical studies relating customer orientation and firm performance

Study	MO or CO[(1)]	Effect		
		Profit	Market share	Sales
De Luca, Verona and Vicari (2008)	CO			No effect[(2)]
Gao, Zhou and Yim (2007)	CO	No effect		No effect[(3)]
Paladino (2007)	MO	Positive[(2)]		
Jeong, Pae and Zhou (2006)	CO	No effect		
Hult, Ketchen and Slater (2005)	MO	No effect		
Baker and Sinkula (2005)	MO	Positive		
Sin *et al.* (2003)	MO	Positive	No effect[(4)]	
Singh (2003)	MO	Positive		
Matsuno, Mentzer, and Ozsomer (2002)	MO	Positive	Positive	
Noble, Sinha and Kumar (2002)	CO	No effect		
Perry and Shao (2002)	MO	No effect		
Rose and Shoham (2002)	MO	Positive		
Shoham and Rose (2001)	MO	Positive	No effect	
Deshpande and Farley (2000)	MO	No effect	No effect	
Homburg and Pflesser (2000)	MO	No effect		
Matsuno and Mentzer (2000)	MO	Positive	No effect[(4)]	
Sin and Tse (2000)	MO	No effect		
Slater and Narver (2000)	MO	Positive		
Voss and Voss (2000)	CO			Negative

(1) MO=market orientation; CO= customer orientation
(2) Overall performance
(3) Sales growth
(4) Partial effect

In addition, intelligence generated from existing customers or even lead users may not provide critical guidelines for introducing products that are desired by new markets with new preferences (Hamel and Prahalad, 1994). As von Hippel, Thomke and Sonnack (1999) note, lead users—the most sophisticated and demanding users of current products—can offer insights into existing value systems but not into markets with different values. Im and

Workman's (2004) unexpected finding that customer orientation negatively affects new product novelty provides further support to this logic. Henry Ford, pioneer in the mass production of affordable cars, is known to have said once something like "if I would have asked my consumers what they wanted, they would have said a faster horse, not a car" (Crane, 2009: 9).

Atuahene-Gima, Slater and Olson (2005) tried to counter those criticisms by arguing that market orientation is composed by two dimensions, a responsive and a proactive one, with different effects on performance. The responsive dimension refers to the generation, dissemination, and use of market information related to the current customers and product domains and focuses on expressed customer needs (Jaworski, Kohli and Sahay, 2000; Slater and Narver, 1995). By contrast, the proactive dimension reflects the discovery and satisfaction of the latent, unarticulated needs of customers. Responsive and proactive behaviors are key capabilities that reflect superior skills and processes which cannot be readily imitated by competitors (Hunt and Lambe, 2000). They are therefore sources of competitive advantage.

Those scholars have found a U-shaped relationship between responsive market orientation and new product program performance. This finding suggests that performance benefits from a market-oriented behavior only after a certain point. As the firm gains greater customer knowledge, it reduces the risk of failures and increases productivity in new product development (Levinthal and March, 1993).

The inverted U-shaped relationship between the proactive dimension and new product program performance implies that beyond a certain level of customer orientation becomes harmful to new product program performance. Previous literature suggests that excessive pro-activity in information search may be detrimental because too many exploratory projects reduce the chances of building experience with a specific new knowledge base (Levinthal and March, 1993; March, 1991).

Related to the newness of the products, customer orientation's impact on new product performance was found to be different for radical and for incremental products (Atuahene-Gima, 1995, 2005). The finding of a weaker influence of customer orientation on the

performance of radical products was justified by the fact that there are fewer competitors for those products; therefore, the need for a customer orientation is probably lower in the beginning (Kohli and Jaworski, 1990). Other researchers have found opposite findings (Baker and Sinkula, 2007).

Table 2.2 presents some studies relating customer orientation to innovation-relate constructs. The objective of this table is to provide a brief picture of the main recent research developed on the topic. Studies with the aggregate market-orientation construct are also included.

From the table it is clear that many researchers have been testing different variables as mediators between customer orientation and (new product or firm) performance. For example, organizational responsiveness (firm's propensity to act based on the acquired knowledge) has been shown to mediate that relationship (Hult, Ketchen and Slater, 2005).

Innovativeness has been closely tied to customer orientation and performance in a range of research (Deshpandé, Farley and Webster, 1993; Gatignon and Xuereb, 1997; Han, Kim and Srivastava 1998; Hult and Ketchen, 2001; Hurley and Hult, 1998; Noble, Sinha and Kumar, 2002). Creativity has also been tested by arguing that it is a more concrete construct than innovation (Im and Workman, 2004). Results confirmed the mediating effect of this construct.

Baker and Sinkula (2007; 2002) tested learning style (adaptive/generative) and innovation priority (radical/incremental) as mediators between market orientation and new product success. They confirmed learning as a key element in helping market-oriented firms to balance radical and incremental innovation programs.

As a concluding remark to this section (Customer orientation), we may say that the use of innovation-related constructs has been made it possible to better understand the customer orientation-performance relationship.

Table 2.2 – Empirical studies relating customer orientation to innovation

Study	Independent variable[1]	Mediator Variables	Dependent Variables
Ledwith and Dwyer (2009)	MO	NP Performance	Organizational Performance[2]
Wei and Atuahene-Gima (2009)	MO		NP Performance[2]
Zhou and Li (2010)	CO		Adaptative Capability
De Luca, Verona and Vicari (2008)	CO	R&D effectiveness	Organizational Performance[2]
Baker and Sinkula (2007)	MO	Learning Innovation type	NP success[2]
Gao, Zhou and Yim (2007)	CO		Firm performance[2]
Homburg, Grozdanovic and Klarmann (2007)	CO	Customer responsiveness	Market and firm performance[2]
Paladino (2007)	MO	Innovation	Performance[2]
Jeong, Pae and Zhou (2006)	CO		NP performance[2]
Atuahene-Gima (2005)	CO	Exploration Exploitation	Radical NP Performance[2] Incremental NP Performance[2]
Atuahene-Gima, Slater and Olson (2005)	MO		NP Performance[2]
Baker and Sinkula (2005)	MO	NP Success[3]	Firm performance[2]
Hult, Ketchen and Slater (2005)	MO	Organizational responsiveness	ROA, ROE, ROI
Salavou (2005)	CO		Innovativeness
Zhou, Yim and Tse (2005)	MO	Organizational learning Breakthrough innovations	Product Performance Firm performance[2]
Im and Workman (2004)	CO	Creativity	NP success[2]
Calantone, Garcia and Dröge (2003)	MO	NPD speed	NPD Program Performance[2]
Baker and Sinkula (2002)	MO	Learning	Product Innovation
Noble, Sinha and Kumar (2002)	CO	Organizational learning Innovativeness	ROS, ROA
Li and Atuahene-Gima (2001)			
Lukas and Ferrell (2000)	CO		Product innovation type

(1) MO=market orientation; CO= customer orientation
(2) subjective measure

2.1.3 – Technology orientation

2.1.3.1 – Conceptualization

Technology orientation is defined as "the ability and the will to acquire a substantial technological background and use it in the development of new products" (Gatignon and Xuereb, 1997: 78). A technology oriented firm is committed to R&D and is pro-active in acquiring and integrating new and sophisticated technologies in the new product development process (Slater, Hult and Olson 2007); It also promotes openness to ideas that employ state-of-the art technologies, as opposed to market orientation which favors ideas that better satisfy customer needs (Zhou, Yim and Tse, 2005). A technology orientation reflects the philosophy of "technological push", as opposed to the "customer pull" philosophy of customer orientation.

A technology oriented firm possesses greater technological capabilities, which consists of technological knowledge, patents, trade secrets and other technology-specific intellectual property (Hsieh and Tsai, 2007). Technology oriented firms need to largely invest in R&D to nurture its capability, which is critical, especially in high-tech firms.

Other terms appear in the literature that seem to parallel technology orientation. For example, Srinivasan, Lilien and Rangaswamy (2002) have designated by "technological opportunism" (a form of benign opportunism) the ability of the firm to sense and respond to new technologies. A technology-sensing capability is the ability of the firm to acquire knowledge about new technological developments, being that knowledge developed internally or externally; it implies that a firm is constantly scanning for new technological opportunities and threats. A firm is said to possess a technology-response capability if it is willing and able to respond to the new technological threats or opportunities that may affect it. This response may be through alliance formation, technology adoption in the firm, doing experimentation, etc. However, as those authors point out, technological opportunism does not implicate that technologies are used to develop new products, therefore, it is conceptually different from technology orientation.

Voss and Voss (2000), while studying strategic orientations in the theater industry, used "product orientation" to define a firm's commitment to integrate innovation into the product development and marketing process. This is an equivalent concept to technology orientation.

Ettlie and Bridges (1982) defined "technology policy" as the firm's innovative attitude and commitment to innovation. It involves such things as recruiting technical personnel, investing in new technology development and building or maintaining a tradition of being at the forefront of technology. Soderquist, Chamaron and Motwani (1997) quoted several empirical studies relating a technology policy to a firm's innovative performance and argue that the presence of an explicit policy to deal with the issues of development of new ideas, products and processes indicates the firm's technology orientation.

Lindman (2002) suggested some indicators for high technology orientation: strong R&D orientation, active search for new technological knowledge, product uniqueness and products with technological newness and large application scope. Often, R&D strength alone is seen in the literature as an indicator of the technology orientation of the firm (Li and Calantone, 1998). Firms with greater R&D resources are more likely to create more innovative products, ones that have differential advantages (Cooper, 1983).

2.1.3.2 – Technology orientation, innovation and performance

Technology orientation is, by definition, intrinsically linked to innovation, therefore, researchers studying it in relation to firm performance frequently include an innovation-related construct in their models.

Generally, it was shown that technology orientation positively influences innovativeness (the degree of newness of the innovations) and new product performance. For example, Gatignon and Xuereb (1997) demonstrated that a technology orientation is crucial to a firm that wants to develop superior innovations. Nonetheless, while this is true for technology-based innovations, in the case of market-based innovations a technology orientation seems to have no effect (Zhou, Yim and Tse, 2005).

Technology-based innovations address the needs of existing markets and provide greater customer benefits than do existing products (Chandy and Tellis 1998). In contrast, market-based innovations disrupt the existing customer-preference structure by introducing new benefit dimensions (Zhou, Yim and Tse, 2005). Therefore, market-based innovations are often perceived as highly different, and they require current mainstream customers to undergo major changes in thinking and behaviour (Benner and Tushman, 2003). Mainstream customers may not easily recognize or appreciate the new benefits, and market-based innovations may be initially difficult for them to adopt or use (Zhou, Yim and Tse, 2005).

The positive impact of technology orientation on new product performance and profitability of the firm was found to be contingent upon environmental turbulence, particularly from average to high levels of technological turbulence (Gao, Zhou and Kim, 2007).

Jeong, Pae and Zhou (2006) evidenced a strong positive impact of technology orientation on technical performance and profitability of new products, and, to a lesser degree, on customer acceptance. The authors concluded that, while technology orientation is an effective strategic orientation to new product performance, a customer focus is also necessary to increase the acceptance of the new products. The next topic will address this synergic need.

2.1.4 – The relative impact of customer and technology orientations

2.1.4.1 – The trade-off between the two strategic orientations

Since long managers have been told to focus on the customers as a way to keep competitors away (Drucker, 1954; Day, 1994). Researchers have demonstrated the many benefits of being customer oriented (Jaworski and Kohli, 1993; Narver and Slater, 1990). Even today, managers keep saying that the customer is the boss (Lafley, 2009).

Nonetheless, managers have also been advised to "ignore their customers" (Martin, 1995). Customers have been characterized as being inherently shortsighted, not necessarily knowing what they really want (Christensen, 2006; Christensen and Bower, 1996). Firms focusing on

current customers risk themselves to miss opportunities from emerging markets (Narver and Slater, 1995).

More recently, a strong technology orientation has been proposed as a critical driver of new product success and firm performance (Gatignon and Xuereb, 1997; Zhou, Yim and Tse, 2005). However, as researchers have pointed out, the fact of having innovative technologies in-house is no guarantee for creating and sustaining a competitive advantage in the market (Zhou, Yim and Tse, 2005). Matching technological features with real customer needs is the key challenge of innovation.

Today, researchers agree on the fact that firms need to pursue customer and technological competences simultaneously, to be able to develop successful innovations (Danneels, 2002; Gatignon and Xuereb, 1997; Yalcinkaya, Calantone and Griffith, 2007; Zhou, Yim and Tse, 2005). Literature suggests that new product development is a process of linking technology and customers (Dougherty, 1992), that both technological and market knowledge are required inputs for a firm to innovate. Particularly, technology-driven firms have the most to gain from combining their technological skills with a customer orientation (Atuahene-Gima, Slater and Olson, 2005; Dutta, Narasimhan and Rajiv, 1999; Lukas and Ferrel, 2000; Zhou, Yim and Tse, 2005).

However, a technology orientation implies a strong investment in R&D and the integration of sophisticated technologies in the innovation process, leading to higher innovation costs (Gatignon and Xuereb, 1997; Slater, Hult and Olson, 2007). On the other hand, a customer oriented firm entails a process of customer knowledge gathering and development which is also dependent on the amount of resources available (Renko *et al.*, 2005). Again, because resources are limited, firms have to make choices in their allocation, and to decide the extent to which they will emphasize one strategic orientation over the other.

Thus, the study of the trade-off between customer and technology orientations is of utmost importance, because of its link with innovation. While the individual roles of customer and technology orientations on innovation and performance have attracted considerable attention, rare studies have assessed their relative importance (see Krasnikov and Jayachandran, 2008, for a study on the relative impact of marketing and R&D capabilities).

In Table 2.3 we summarize the few studies found in the innovation-related literature that address simultaneously customer orientation and technology orientation and their impact on innovation and/or performance. From the analysis of the studies presented on the table we can conclude that the two strategic orientations impact differently on both innovation and performance. The differences arise mainly from 1) the newness of the innovation; 2) the measures of performance considered and 3) the contingency factors. These are aspects that we briefly address, later on in this chapter.

So far, the literature has not provided answers to the questions: which strategic orientation – customer or technology – should a firm emphasize? Which is the best trade-off under different situations? An attempt to answer these questions on the relative impact of customer orientation and technology orientation is done in this dissertation. By relative impact we mean the difference between the strengths of the relationships customer orientation-innovation and technology orientation-innovation.

2.1.4.2 – The "ambidexterity" view of the two strategic orientations

Our discussion on the trade-off between the two strategic orientations seems to parallel the existing debate on ambidexterity related to exploration and exploitation (see Benner and Tushman, 2003; Gupta, Smith and Shalley, 2006; He and Wong, 2004; March, 1991). The issue under controversy is about how organizations should achieve a balance between two fundamentally different behaviors, such as exploration and exploitation. Ambidexterity is one of the possible mechanisms in building that balance. Next, we briefly approach the application of the ambidexterity concept to the trade-off between customer and technology orientations.

A firm is ambidextrous if it simultaneously exploits existing competences and explores new ones (Gupta, Smith and Shalley, 2006). These different behaviors are defined as complementary, rather than competing, meaning that the resources needed to develop each behavior are different. It is also argued that ambidexterity normally occurs across different

and loosely coupled domains, that is, in organizational subunits that are highly differentiated but weakly integrated (Benner and Tushman, 2003).

Table 2.3 – Empirical studies relating innovation and/or performance with customer orientation (CO) and technology orientation (TO) in simultaneous

Study	Endogeneous variables	Setting	Key findings
Zhou and Li (2010)	Adaptative capability	Consumer durable and non-durable goods	• CO and TO with positive effects on adaptative capability
Renko, Carsrud and Brännback (2009)	Product innovativeness Capital invested in the firm	Medical biotechnological firms (SME's)	• MO[(1)] positive effect on capital invested in the firm and no effect on innovativeness • TO[(2)] positive effect on capital invested in the firm and on innovativeness
Gao, Zhou and Yim (2007)	Business performance	Consumer durable, non-durable and services	• CO with no impact on performance (negative under high demand uncertainty) • TO relates positively to performance (negative for low technological turbulence)
Jeong, Pae and Zhou (2006)	NPD performance - customer acceptance - technical performance - profitability	Shanghai manufacturing firms	• CO with a positive effect on customer acceptance and technical performance but no effect on profitability • TO with a positive effect on all measures of performance
Salavou (2005)	Product newness to customers Learning Orientation New product uniqueness	Food, beverages and textile industries	• TO is more important than CO for new product newness to customers • TO and CO both important to learning orientation and new product uniqueness
Zhou, Yim and Tse (2005)	Performance (firm and product) Breakthrough innovation	Consumer durable and non-durable goods	• MO[(1)] negative effect on market-based innovation; Positive relation to performance • TO only impacts on tech-based innovation; Positive relation to performance
Voss and Voss (2000)	Performance - subscriber performance - single-ticket performance - financial performance	Theater industry	• CO with a negative effect on performance (subscriber and financial) • TO[(3)] with a positive weak effect on subscriber attendance
Gatignon and Xuereb (1997)	Innovation performance Innovation characteristics	Consumer durable goods, consumer packed goods, consumer services, industrial technology and computer firms	• TO leads to radical and superior products. • Positive effect of CO in highly uncertain markets

(1) MO= market orientation
(2) TO= technological capability
(3) TO= product orientation

First of all, because researchers argue that both strategic orientations are complementary, rather than opposed to each other (see 2.1.4.1), the ambidexterity concept fits into our discussion. Indeed, though being different in nature, customer and technology orientations cannot be seen as two ends of a continuum.

However, our discussion on the trade-off between the two strategic orientations of the firm was largely based on that resources are limited and thus need to be allocated between those orientations. This view seems to be somewhat opposed to the one underlying the ambidexterity concept, seeing the scarcity of resources as a non-issue because different sub-units require different resources which can even be sourced outside the firm (Gupta, Smith and Shalley, 2006). While this arguing is valid for different domains within the firm, when analyzing the firm as a whole, a fundamental issue is how it chooses to compete (Day, 1994); the definition of firm' strategic priorities and trade-offs between those orientations is a central aspect of this choice (Mizik and Jacobson, 2003).

These arguments suggest that a firm pursuing both customer and technology orientations may be ambidextrous, that is, it is composed simultaneously by one sub-unit - such as the marketing or sales - that are more customer oriented, and others – such as R&D - that are more technology oriented. However, because the focus of our research is on the firm as a whole, namely on the export businesses of the firm, the issue of ambidexterity is not further discussed.

2.2 – Innovation

2.2.1 – Definition and typologies

Innovation has been studied in a variety of disciplines, such as marketing, technology management, operations management, quality management, organizational behavior, product development, strategy and economics. There are, naturally, a wide range of approaches to conceptualizing innovation in the scholarly literature. From the marketing perspective, innovation is about the development of new or modified products for customer satisfaction

and profitability enhancement (Hauser, Tellis and Griffin, 2006). This section will be centered on innovation within the marketing related literature.

According to Garcia and Calantone (2002), "Innovation is the generation and/or acceptance of ideas, processes, products, or services that the relevant adopting unit perceives as new." The adoption of innovations is thus conceived to encompass the generation, development, and implementation of new ideas or behaviors. An innovation can be a new product or service, a new production process technology, a new structure or administrative system, or a new plan or program pertaining to organizational members. This definition is sufficiently broad to include different types of innovations pertaining to all parts of organizations and all aspects of their operation. Innovation is often confounded with invention. However, they are distinct: an invention only becomes an innovation when it is diffused in the marketplace.

Past researchers have argued that distinguishing the various types of innovation is necessary for understanding organizations' adoption behavior and identifying the determinants of innovation (Cooper and Kleinschmidt, 1995). Also, different types of innovation impact differently on markets and competition (Ettlie and Subramaniam, 2004). We may find several innovation classifications in the literature, however, they lack consistency resulting in a widespread confusion and jeopardizing academic advancements on NPD (Garcia and Calantone, 2002). Empirical research may be found that disregards relevant prior literature just because it doesn't use the same terminology as the research being undertaken. Additionally, those inconsistencies may lead to building hypotheses based on reversal causal notions.

Numerous typologies of innovation have been advanced in the relevant literature, among them, three have gained the most attention: administrative versus technical, product versus process, and radical versus incremental. The differentiation between administrative and technical innovations is important because it relates to a more general distinction between social structure and technology, and they imply potentially different decision-making processes (Damanpour and Evan, 1984). Technical innovations refer to the development of new products, services, and production processes and are different from technological innovations, which are innovations resulting merely from the use of technology. Administrative innovations involve organizational structure, administrative processes and

human resources. Administrative innovations have a main effect on efficiency while technical innovations mainly impact on effectiveness (Subramanian and Nilakanta, 1996).

Process innovations are "tools, devices, and knowledge in throughput technology that mediate between inputs and outputs and are new to an industry, organization, or subunit" (Gopalakrishnan and Damanpour, 1997: 18). Product innovations, in contrast, deal with outputs, new products and services, introduced for the benefit of the customer. Radical innovations represent fundamental changes in products or activities of an organization or an industry while incremental innovations marginally depart from the existing capabilities of organizations (Dewar and Dutton, 1986).

Technological innovations, the focus of this work, are defined in the Frascati Manual (OECD, 2002) as "all the scientific, technological, organizational, financial and commercial steps, including investments in new knowledge, which actually, or are intended to, lead to the implementation of technologically new or improved products or processes". The Oslo manual (OECD, 2005) considers that a technological product innovation is the implementation/commercialization of a product with improved performance characteristics to deliver objectively new or improved services to the consumer.

Two distinctions are important, the first being that a technological innovation combines two processes, the technological development of an invention and the market introduction of that invention for commercial success (Garcia and Calantone, 2002). Second, the innovation process is iterative, considering the first introduction of a new innovation and the reintroduction of an improved version. This iterative process implies distinguishing between types of innovation.

Innovativeness is often used in the literature as a synonymous of innovation when defining innovation types, however they are different concepts. Product innovativeness[5] is seen as the degree of discontinuity in marketing and/or technological factors, measured most frequently as the degree of "newness" of an innovation (Garcia and Calantone, 2002). The concept was

[5] Product innovativeness is different from firm innovativeness, which is the propensity of a firm to develop new products or to adopt innovations (Garcia and Calantone, 2002).

also defined as the extent to which a firm deviates from its current practices in developing new products/processes (e.g. Deshpandé, Farley and Webster, 1993).

Garcia and Calantone (2002) have differentiated two perspectives when analyzing innovativeness: macro and micro. From a macro perspective they see innovativeness as the capacity for the creation of new market or technological paradigms, while from a micro perspective, innovativeness is related to the way a new product influences the firm's existing market and technological capabilities and strategies.

Technological innovations have been classified based on their innovative characteristics or degree of innovativeness. Table 2.4 presents some examples of the many categorizations existing in the literature.

Table 2.4 – Categorizations of innovations in the marketing and management literatures

Categorization	Examples of studies
4 types	
Incremental/Modular/Architectural/Radical	Henderson and Clark (1990)
Incremental/Market breakthrough/ Technological breakthrough/Radical	Chandy and Tellis (1998, 2000)
Incremental/Architectural/Fusion/Breakthrough	Tidd (1995)
3 types	
Low/medium/High Innovativeness	Kleinschmidt and Cooper (1991)
Incremental/Really new/Radical	Garcia and Calantone (2002)
2 types	
Discontinuous/Continuous	Tushman and Andersen (1986)
Incremental/radical	Lee and Na (1994) Atuahene-Gima (1995) Schmidt and Calantone (1998) Song and Montoya-Weiss (1998)

Typologies based on radical versus incremental are the earliest observed. Radical innovation relies on a new technology in the industry, significantly changes the whole industry and it is totally new to the market (Song and Montoya-Weiss, 1998). Conversely, an incremental innovation is related to adaptation, refinement and enhancement of existing products and/or existing firm competences. Conventional pharmaceutical development is an example of innovation based on existing scientific paradigms while among radical innovation examples are typewriters, cellular telephones, and CD-players. Garcia and Calantone (2002) considered insufficient the split in two types of innovation, radical and incremental, as innovations using new technologies for existing markets do not fit either definition.

The most recent typologies are primarily based on two dimensions: technology and market. For example, Chandy and Tellis (1998, 2000) define four types of innovation based on: 1) the newness of technology, that is, the extent to which the new technology differs from the existing ones, and 2) the "customer need fulfilment", the extent to which new products satisfy customer needs better than existing ones – please see Figure 2.1.

Garcia and Calantone (2002) argued that newness should also be analysed from the "to whom" and "from whose" perspective. Thus, they proposed a typology based on market versus technology as well as macro-level (new to the world, market or industry) versus micro-level (new to the customers or the firm) dimensions. Thus they introduced a third category, the "really new" innovations which differ from the radical innovations in the fact that they do not represent market and technology discontinuities simultaneously at the micro- and macro-level – please see Figure 2.1.

Zhou, Yim and Tse (2005) characterized further those "really new" or breakthrough innovations. On the technology side, though both employ new technologies, the technological breakthroughs usually represent state-of-the-art technological advances (Chandy and Tellis, 1998). In contrast, the market-breakthroughs are not necessarily technologically advanced; instead, market-based innovations often use simpler new technology (e.g., off-road versus over-the-road motorcycles, personal computers versus minicomputers) and sometimes can be new ideas about business operations (e.g., discount retailing versus traditional retailing, health maintenance versus conventional health insurance) (Benner and Tushman, 2003).

Those innovations that fundamentally change the technological trajectory and improve customer benefits are called radical innovations (e.g., color versus black-and white television, diesel versus steam locomotive, jets versus turbojets) (Benner and Tushman, 2003; Chandy and Tellis, 1998). Zhou, Yim and Tse (2005) designated as disruptive innovations those market-based innovations that improve performance through subsequent development to a level superior to existing products and that eventually overtake existing products in mainstream markets (the introduction of personal computers was used as an example).

Figure 2.1 – Types of Innovation based on market and technology dimensions

Garcia and Calantone (2002)

	MICRO LEVEL	MACRO LEVEL (COMPLETE ON MICRO LEVEL)	BOTH
MARKET	INCREMENTAL	REALLY NEW	REALLY NEW
TECHNOLOGY	INCREMENTAL	REALLY NEW	REALLY NEW
BOTH	INCREMENTAL	RADICAL	

Chandy and Tellis (1998, 2000)

		NEWNESS OF TECHNOLOGY	
		LOW	*HIGH*
CUSTOMER NEED FULFILLMENT	*LOW*	INCREMENTAL	TECHNOLOGICAL BREAKTHROUGH
	HIGH	MARKET BREAKTHROUGH	RADICAL

2.2.2 – Exploratory and exploitative innovation

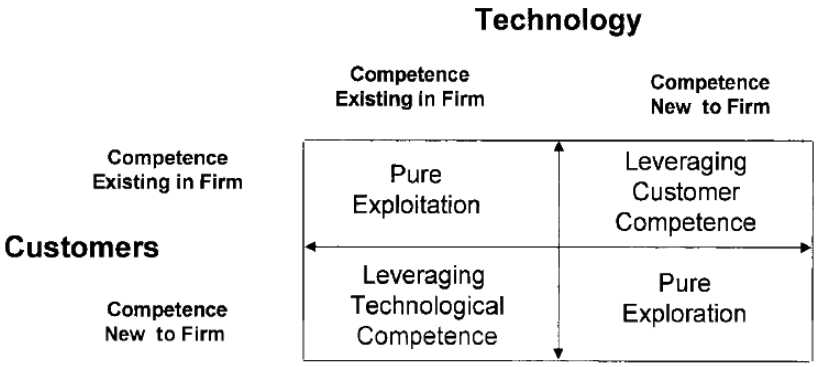
Exploration and exploitation represent two different capabilities for developing innovations (Leonard-Barton, 1992; March, 1991). In this study we use the definitions of He and Wong (2004: 694) due to their clearness. Exploratory innovations are here defined as the "technological innovation activities aimed at entering new product-market domains" and exploitative innovation are "the technological innovation activities aimed at improving existing product-market domains".

While exploration is more related to what is new - search for new products, ideas, markets or relations, experimentation, risk taking, discovery- exploitation is more about using and refining what already exists, adaptation, efficiency and execution (March, 1991). Innovation through exploitation draws on the firm's existing knowledge and competences (Levinthal and March, 1993). Exploration requires new knowledge or departure from the existing one. Exploratory innovation lead to radical innovations, designed to meet the needs of new customers and representing fundamental changes in the firm's technological trajectory and market activities (Atuahene-Gima, 2005). Exploitative innovation generates incremental innovations, aiming at satisfying existing customers.

In Figure 2.2 a different typology for innovation is presented, based on exploration and exploitation concepts, the Danneels (2002) "competence-based new product typology". Compared with other frameworks classifying innovation (please see Figure 2.1), we find the one from Danneels (2002) more useful to our work as it considers simultaneously exploitation and exploration of customer and technological competences. Moreover, exploration and exploitation are here used with reference to the firm's ex-ante strategic directions in pursuing innovation. They refer to firm's capabilities, not at the competitor or at the industry level. An exploration capability to one firm might be an exploitative activity to another firm, or vice versa (He and Wong, 2004).

Danneels (2002) splits innovation in four types, based on two dimensions, the type of competence existing in the firm (technology/customer) and the newness of the competence to the firm (existing/new). In "pure exploitation" a firm uses existing technological and customer competences like in incremental innovations; in "pure exploration", new products are built on new customer and technological competences, like in radical innovations; in "leveraging customers competences", firms add new technological competences to serve existing customer's needs, like in tech-based breakthroughs; finally, in "leveraging technological competences", current technological competences are used to serve new markets, which is the case of market-based breakthrough innovations.

Figure 2.2 – Competence-based innovation types



Source: Danneels, 2002

Exploration and exploitation compete for the same resources and efforts within the firm. When focusing on exploring new alternatives, activities linked to improving existing competences are reduced and, on the other hand, increasing competences on the existing products and processes reduces the investment on new experiments (Levitt and March, 1988). Nonetheless, firms need to develop both exploratory and exploitative capabilities and to maintain an appropriate balance of both (March, 1991).

Returns from exploration are uncertain, often negative and more long-term attained while exploitation generates more positive, proximate and predictable returns (Garcia, Calantone and Levine 2003; Levinthal and March 1993; March, 1991). However, too much exploration at the expense of exploitation can be costly, as the outcomes of exploration will only be realized, if they exist, in a distant future. Exploration might be effective but due to its long-term nature, it might lack efficiency.

Levinthal and March (1993) use the expression "the failure trap" to describe the situation where exploration drives out exploitation, because firms enter a dynamic of failure: failure leads to search and change which in turns leads to more failure. On the other hand, sometimes exploitation drives out exploration, which is called the "success trap". Firms engage in improving competences where they are already efficient. Thus a focus on exploitation without exploration discourages the persecution of learning and development, leading firms to focus only on the near future and potentially miss out long-term opportunities that may prove

valuable. The central argument of exploitation is that it is possible to maintain a comfortable position in the marketplace by committing sufficient organization's resources. It emphasizes operational efficiency, control and reliability, achieved by engaging in similar activities more efficiently (March, 1991).

The trade-off between those capabilities is difficult and most often biased towards exploitation where success might produce path dependence (Benner and Tushman, 2002; Gupta, Smith and Shalley, 2006; Levinthal and March, 1993). Therefore "established" organizations might gradually become obsolescent and fail. In contrast, organizations are often less effective at exploration and become vulnerable to technological and market changes (e.g., Siggelkow, 2001).

Exploration and exploitation require significantly different structures, processes, strategies and capabilities and they may impact differently on performance (He and Wong, 2004). They compete for the firm's resources, therefore, firms need to manage the trade-offs between the two.

More recently, researchers have been talking about ambidexterity, claiming that an appropriate balance between exploration and exploitation is critical for firm survival (Benner and Tushman, 2003; Gibson and Birkinshaw, 2004; Gupta, Smith and Shalley, 2006; He and Wong, 2004; Lubatkin *et al.*, 2006; Tushman and O'Reilly, 1996). An ambidextrous firm is the one that scores high in both exploration and exploitation.

2.2.3 – Organizational learning theory

Organizational learning theory asserts that firms engage in two forms of learning: exploratory and exploitative (Levinthal and March, 1993; March, 1991). Learning is defined as the development of insights and knowledge that facilitates change in behaviors and leads to enhanced performance (Fiol and Lyles, 1985; Sinkula, 1994). Organizational learning is a means of strategic renewal of an organization (Crossan, Lane and White, 1999).

Thus, central to both exploration and exploitation are the concepts of learning, improvement and acquisition of new knowledge. However, as seen before, those capabilities differ in relation to whether the learning occurs along the same trajectory or along a completely new one (Gupta, Smith and Shalley, 2006). Both of them involve learning but of different types and/or degrees (March, 1991). Exploitative learning is done through refinement of firm's capabilities; through exploitation of the existing knowledge; through the focus on certain domains. Exploratory learning occurs when firms experiment and take risks.

Organizational learning theory assumes that learning generally improves performance as more experienced firms do better than the less experienced ones (Levinthal and March, 1993). However, researchers acknowledge that learning is a complicated process as it has to deal with balancing the competing goals of developing new knowledge (exploration) and using the existing one (exploitation) (March, 1991).

Scholars have been using exploration and exploitation to better understand innovation and performance (Atuahene-Gima and Murray, 2007; Baker and Sinkula, 2007; Kim and Atuahene-Gima, 2010; Özsomer and Gençtürk, 2003; Yalcinkaya, Calantone and Griffith, 2007). Nonetheless, no study could be found that uses exploratory innovation and exploitative innovation as a means to understand how firms' customer and technology orientations drive performance. In this dissertation, we aim at advancing the literature by proposing that exploratory and exploitative innovation perform that role, that is, helps in explaining the conversation of those strategic orientations into export performance. Thus, we use organizational learning theory to support the development of our theoretical model.

2.3 - Export performance

2.3.1 – Research overview

Before the seventies only a few studies on exporting business focused on export performance. An exporter was considered to be performing if being active in exporting at the time of research, neither taking into consideration the magnitude of the export activities nor their effectiveness. When in the eighties, and especially the nineties, internationalization became a

topic of interest among politics, businesses and science, an increasing number of researchers started working on the explanation of firm's export performance. Examples are the works of Madsen (1987), Aaby and Slater (1989), Zou and Stan (1998), Leonidou, Katsikeas and Piercy (1998), among others. Export performance was then defined as the outcome of a firm's exporting activities (Shoham, 1998).

As a result of this growing stream of export research, export performance became a very widely studied topic – please see Table 2.5 for a list of the most significant reviews on export performance. However, even being one of the most widely researched areas in international marketing, export performance remains a controversial area for both managers and practitioners (Lages, Jap and Griffith, 2008; Morgan, Kaleka and Katsikeas, 2004). Related literature is fragmented, still atheoretic, and with methodological inconsistencies, preventing theory development and practical advancement in the field (Diamantopoulos and Kakkos, 2007; Sousa, Martínez-López and Coelho, 2008).

Morgan, Kaleka and Katsikeas (2004) summarize the three problems of the existing research: 1) most of it is descriptive and atheoretic (Katsikeas, Leonidou and Morgan, 2000) or based on divergent theories (Aaby and Slater, 1989; Zou and Stan, 1998); 2) most of the studies use the firm as the unit of analysis, failing in capturing differences in strategies according to different market needs (Cavusgil and Zou, 1994); and 3) individual measures of performance have being used by researchers, despite the fact that export performance is multidimensional (Zou and Stan, 1998).

Table 2.5 – Reviews on export performance from 1987 to 2009

Study	*Type*	*Research goal*
Madsen (1987)	Narrative review	Summarizes the conceptualization and findings of empirical export performance studies.
Aaby and Slater (1989)	Narrative review	Describes an integrative model of export performance and classifies the results of past decade's export research according to the parameters of the model.
Gemünden (1991)	Narrative review	Identifies key success factors of export marketing and accesses their influence by means of objective statistical procedures.
Chetty and Hamilton (1993)	Vote-counting method	Assesses current knowledge of influences on the export performance of companies.
Styles and Ambler (1994)		Major variables that have been found to influence export performance are considered; discusses the export performance models that have sought to bring these variables together incomprehensive conceptual frameworks.
Matthyssens and Pauwels (1996)	Review	Compares and evaluates approaches to measure export performance.
Zou and Stan (1998)	Combines vote-counting technique with narrative approach	Provides an updated review and synthesis of the empirical literature between 1987 and 1997 of determinants of export performance.
Katsikeas, Leonidou and Morgan (2000)	Comprehensive review	Reviews and evaluates empirical studies to assess and critique export performance measurement.
Shoham (2002)	Literature review, meta-analysis	Brings together the results of studies about the impact of the degree of standardization of the export marketing mix and export planning on export performance.
Leonidou, Katsikeas and Samiee (2002)	Literature review, meta-analysis	Assess the export marketing strategy– performance relationship.
Sousa (2004)	Review method	Reviews the measurement of export performance.
Sousa, Martínez-López and Coelho (2008)	Combines vote-counting technique with narrative approach	Provides an updated review and synthesis of the empirical literature between 1998 and 2005 of determinants of export performance.
Ruppenthal and Bausch (2009)	Narrative review	Documents export performance research from 1987 to 2007. Develops an integrative framework of export performance.

Source: adapted from Ruppenthal and Bausch (2009)

2.3.2 – Conceptualization and measurement

Conceptual definition

Several scholars point out difficulties in conceptualizing, operationalizing and measuring the export performance construct, leading to inconsistent and conflicting results. Most relevant studies have focused on its determinants rather than on the construct itself. Only more recently, efforts have been made to overcome this limitation (Diamantopoulos and Kakkos, 2007; Lages, Lages and Lages, 2005; Lages and Lages, 2004; Lages *et al.*, 2009; Sousa, 2004; Katsikeas, Leonidou and Morgan, 2000).

Shoham (1998) noted that any conceptual definition of export performance should have two parts: export and performance. Export was broadly related to the international, marketing-related decisions and activities of internationally active firms. Performance is an outcome of marketing and firm strategies that is context-specific and may address the concerns of multiple stakeholders. Therefore, export performance may be defined as the extent to which a firm's objectives, both strategic and financial, with respect to exporting, are achieved via the execution of the firm's export marketing strategy (Cavusgil and Zou, 1994).

Operational definition

In the export marketing literature there are as many as fifty different measures for performance (Sousa, 2004). However, only a few of them are frequently used such as export profitability, export sales intensity, export sales growth, overall export performance and export market-share. Table 2.6 lists the frequency of use of those measures (Sousa, 2004).

Researchers find it complex to assess export performance. For instance, shareholders and managers view export differently making it difficult to define targets (Cameron, 1986); then, no one measure is sufficient to provide a reliable assessment, as multiple items and multidimensions are more recommendable for the operationalization (Shoham, 1998).

Future studies may use objective or subjective measures. Among the objective measures, sales-related are widely used, being export sales intensity and export sales growth the most common (Katsikeas, Leonidou and Morgan, 2000). There is some criticism in the literature related to these two measures, export intensity and export growth, on the grounds that they

can be affected by factors which are not driven by the performance of the export operations (Sousa, 2004). For instance, in the case of export intensity (export-to-total sales ratio), a firm with a large market-share in a very small foreign market would be considered equivalent to a firm having a small market-share in a very large foreign market. In the case of export sales growth this indicator might be affected by price escalation and market growth or regression.

With respect to the profit-related measures, they are seldom used (Sousa, 2004) because export-related profit is often difficult to know with certainty and the comparability across studies is lower, due to the different accounting practices among firms (Lages and Lages, 2004). Market-share related objective measures are often difficult to measure, especially in niche markets, where small companies normally operate (Kirpalani and Balcome, 1987).

Subjective measures are the most supported in the export literature because of: 1) the reluctancy of the firms in providing data at the export level (Leonidou, Katsikeas and Samiee, 2002); 2) the unavailability of public objective information at the export level; 3) the difficulty in establishing a reference point across the firms (Lages and Lages, 2004); 4) the possibility of doing research at the export venture level (Morgan, Kaleka and Katsikeas, 2004); 5) the easiness to compare findings across countries and industries (Styles, 1998); and 6) the easiness to interpret subjective data (Covin and Slevin, 1989).

Within the group of subjective measures, export profitability is the most used, followed by export market-share (Sousa, 2004). Generic measures such as export managers' degree of satisfaction with overall export performance or perceived export success are commonly used, despite the fact they are don't capture adequately export performance (Katsikeas, Leonidou and Morgan, 2000).

A considerable amount of researchers use both types of measures, subjective and objective. Besides using multiple export performance measures, sometimes studies include a composite index of the construct, instead of a single indicator. An increasingly number of researchers finds that different performance measures are complementary (Shoham, 1998).

Katsikeas, Leonidou and Morgan (2000) showed that the choice of the measures depends on contextual factors, such as research method, idiosyncrasies of the export business or target

audience specificities. As such, a contingency approach when selecting export performance measures should be used.

Table 2.6 – Measures of export performance

Performance Measure	Frequency of Use
Objective measures	
Sales-related	
Export intensity	16
Export intensity growth	5
Export sales growth	12
Export sales volume	8
Export sales efficiency	2
Profit-related	
Export profitability	2
Export profit margin	3
Export profit margin growth	1
Market-related	
Export market share	2
Export market share growth	2
Market diversification	1
Subjective measures	
Sales-related	
Export intensity	4
Export intensity growth	4
Export intensity growth compared to competitors	1
Export sales volume	9
Export sales growth	14
Export sales volume compared to competitors	3
Export sales growth compared to competitors	5
Export sales return on investment	1
Export sales return on investment compared to competitors	1
Profit-related	
Export profitability	18
Export profit margin	6
Export profit margin growth	4
Export profitability compared to competitors	4
Market-related	
Export market share	11
Export market share growth	7
Export market share compared to competitors	4
Export market share growth compared to competitors	1
Market diversification	3
Rate of new market entry	4
Rate of new market entry compared to competitors	2
Gaining foothold in the market	1
General	
Overall export performance	12
Overall export performance compared to competitors	1
Export success	6
Meeting expectations	4
How competitors rate firm's export performance	2
Strategic export performance	7
Miscellaneous	
Contribution of exporting to the growth of the firm	1
Contribution of exporting to the quality of firm's management	1
Quality of distributor relationships	1
Quality of distributor relationships compared to competitors	1
Customer satisfaction	1
Customer satisfaction compared to competitors	1
Quality of customer relationships compared to competitors	1
Product/service quality compared to competitors	1
Reputation of the firm compared to competitors	1
Gaining new technology/expertise	1
Building awareness and image overseas	1
Achievement of objectives regarding response to competitive pressures	1

Source: Sousa (2004)

2.3.3 – Determinants

Many researchers have studied the determinants of export performance (see Sousa, Martínez-López and Coelho, 2008, and Ruppenthal and Bausch, 2009, for a more recent and detailed review). Two broad groups of determinants of export performance have been identified among researchers: internal- and external- related factors. Within each of these groups, other sub-groups exist – Please see Table 2.7.

Table 2.7 – Mostly used determinants of export performance

Internal factors	External factors
Firm characteristics	Domestic market characteristics
Size	Export support
International experience	
Firm capabilities	
Age	Foreign market characteristics
	Legal and political environment
Management-related	Environment turbulence
Export commitment	Cultural environment
Education/knowledge	Market competitiveness
International experience	Economic similarity
Strategy-related	
Market and other strategic orientations	
Marketing-mix strategies	
Export strategy	
Innovation	

Source: Adapted from Sousa, Martínez-López and Coelho (2008), and Ruppenthal and Bausch (2009)

Christensen, Da Rocha and Gertner (1987) proposed that the larger the firm, the more likely it is to export. However, despite the fact that firm size is, by far, the most widely used determinant of export performance, the relationship between firm size and export performance has been often found non-significant (Cavusgil, 1984; Moen, 1999), negative (Naidu and Prasad, 1994), and, rarely positive (Czinkota and Johnson, 1983).

The international experience of the firm is the second most frequently used variable (within the group of internal-related factors, sub-group of firm characteristics), and, indeed, a positive relationship with export performance is often found in the literature (e.g. Contractor, Hsu and Kundu, 2005).

Firm capabilities and competencies (e.g. resource commitment, product uniqueness, and product quality) have also received considerable attention from scholars. A very strong significant positive influence on export performance is broadly supported for most of the capabilities (e.g. Contractor, Hsu and Kundu, 2005; Guan and Ma, 2003; Piercy, Kaleka and Katsikeas, 1998; Prasad, Ramamurthy and Naidu, 2001).

Managerial-related factors are the characteristics of the decision maker within the exporting firm such as demographics, experiential, behavioral and attitudinal or others (Leonidou, Katsikeas and Piercy, 1998). Although empirical studies on the relationship between these factors and export performance are not conclusive, there is a determinant with strong and systematic associations with it, the management commitment (Cavusgil and Zou, 1994; Katsikeas, Leonidou and Morgan, 2000; Lages, Jap and Griffith, 2008). Moreover, management's international experience and knowledge also showed to impact significantly on export performance in some studies (e.g. Contractor, Hsu and Kundu, 2005; Lages, Jap and Griffith, 2008).

Strategy-related are the most researched group of factors (Sousa, Martínez-López and Coelho, 2008). Most of the studies with strategy variables suggest that these indeed determine export performance (Cavusgil and Zou, 1994). Marketing-mix determinants consist of product, price, distribution and promotion strategies, and their relationships with export performance have also been confirmed in many studies (Lages and Montgomery, 2004; Morgan, Kaleka and Katsikeas, 2004; Shoham, 1999; Zou, Fang and Zhao, 2003).

The category of strategic orientations, and particularly market orientation, is quite new as determinant of export performance (Cadogan, Diamantopoulos and Siguaw, 2002). Market orientation has been increasingly researched in the export marketing literature, as it represents the exporters' ability of sensing and responding to changes in the export market environment (Cadogan, Diamantopoulos and Siguaw, 2002). Market orientation has shown to impact

significantly, while sometimes contingently, on export performance (Cadogan, Cui and Li, 2003; Cadogan, Kuivalainen and Sundqvist, 2009; Rose and Shoham, 2002; Shoham, Evangelista and Albaum, 2002).

To our knowledge, research including technology orientation as a determinant of export performance is scarce (e.g. Solberg and Olsson, 2010). However, some researchers (e.g. Filatotchev *et al.*, 2008; Guan and Ma, 2003; Kumar and Siddharthan, 1994; Sterlacchini, 1999) have used R&D intensity as a measure of technology orientation, building on the fact that, particularly for small firms, investments in R&D help in developing innovative capabilities. Findings are mixed and studies are fragmented, offering insufficient analysis of technology-related factors.

With respect to innovation constructs, despite their importance, they were barely included in export performance-related research. Innovation is often seen as the most important way to internationalize and capitalize on opportunities in foreign markets (Knight and Cavusgil, 2004). The few studies including innovation constructs showed that innovation is positively related to export performance (e.g. Alvarez, 2004; Balabanis and Katsikeas, 2003; Guan and Ma, 2003; Lages, Silva and Styles, 2009; Robertson and Chetty, 2000). Further research is clearly needed in this area.

Finally, external to-the-exporting-firm factors influence both domestic and overseas markets where it operates (Aaby and Slater, 1989). Nonetheless, there seems to be little empirical research that enables us to generalize the effect of those factors on the export performance. While the number of studies addressing external factors is low, the number of factors considered is also limited. In the next topic we will expand the review of external factors, covering other bodies of literature, related to innovation and strategic orientation.

2.4 – The contingency perspective

2.4.1 – Research overview

Contingency perspectives have dominated the research on the strategy-performance relationship (Drazin and Van de Ven, 1985). This popularity is partly attributed to its assumptions: first, that there is no "best" set of strategic choices; second, that a given strategy results different depending on the firm-specific or environment-specific conditions (Ginsberg and Venkatraman, 1985; Glazer and Weiss, 1993). Therefore, for firms to achieve a superior performance they must fit their strategic decisions with a certain set of external and internal contingency factors (Schoonhoven, 1981).

Two types of contingency factors emerge from the innovation literature: organizational and environmental (Ginsberg and Venkatraman, 1985). Organizational factors are internal to the firm and include managerial style, organization structure and internal resources (e.g. technology). Environmental factors are exogenous and related to the market structure, demand uncertainty, market competitiveness, buying behaviour, and entry/exit barriers, among others.

In Table 2.8 we attempt to outline some of the more recent studies that have used the contingency perspective. The focus is on the works that examine the role of contingency factors on the relationships between strategic orientations and performance or between innovation capabilities and performance, therefore, mainly linked to the literature review presented in previous sections. Next, we will briefly address both external and internal factors.

2.4.2 – External factors

The sustainability of a competitive advantage depends on the influence of market forces (Porter, 1980). Market turbulence, competitive intensity and technological turbulence are among the most commonly used market forces in the innovation literature. They are also representative of the environmental conditions as they represent demand, competition and supply constraints.

Table 2.8 – Examples of studies from the strategic orientation- or innovation-related literature using contingency factors

Type	*Contingency factors*	*Study*
Environmental factors	Economic development	Zhou *et al.* (2007)
	Business conditions (political stability, infrastructure,…)	Zhou *et al.* (2007)
	Customer demandingness	Zhou *et al.* (2007)
	Potential of market entry	Homburg, Grozdanovic and Klarmann (2007)
	Market growth/potential Market opportunity	Atuahene-Gima (2005) Gatignon and Xuereb (1997) Homburg, Grozdanovic and Klarmann (2007) Hsieh and Tsai (2007) Rose and Shoham (2002) Slater and Narver (1990) Song and Parry (1997)
	Competitive intensity	Atuahene-Gima (1995) Calantone, Garcia and Dröge (2003) Gao , Zhou and Yim (2007) Gatignon and Xuereb (1997) Grewal and Tansuhaj (2001) Homburg, Grozdanovic and Klarmann (2007) Jansen, Van den Bosch and Volberda (2006) Jaworski and Kohli (1993) Joshi and Sharma (2004) Kim and Atuahene-Gima (2010) Rose and Shoham (2002) Slater and Narver (1990) Song and Parry (1997) Zhou and Li (2010)
	Demand uncertainty/market turbulence	Cadogan *et al.* (2005) Cadogan, Kuivalainen and Sundqvist (2009) Calantone, Garcia and Dröge (2003) Gatignon and Xuereb (1997) Gao , Zhou and Yim (2007) Grewal and Tansuhaj (2001) Han, Kim and Srivastava (1998) Homburg and Plesser (2000) Jansen, Van den Bosch and Volberda (2006) Jaworski and Kohli (1993) Joshi and Sharma (2004) Kim and Atuahene-Gima (2010) Rose and Shoham (2002) Slater and Narver (1990, 1994) Zhou and Li (2010)
	Technological turbulence	Cadogan *et al.* (2005) Calantone, Garcia and Dröge (2003) Droge, Calantone and Harmancioglu (2008) Gao , Zhou and Yim (2007) Grewal and Tansuhaj (2001) Han, Kim and Srivastava (1998) Jaworski and Kohli (1993) Joshi and Sharma (2004) Kim and Atuahene-Gima (2010) Slater and Narver (1990, 1994) Uotila *et al.* (2009)

Table 2.8 – Examples of studies from the strategic orientations- or innovation-related literature using contingency factors (continued)

Type	*Contingency factors*	*Study*
Organizational factors	Resource availability (qualified employees, suppliers, …)	Zhou *et al.* (2007)
	Interfunctional coordination	Atuahene-Gima (2005) Voss and Voss (2000)
	Structure: formalization/centralization	Lin and Germain (2003)
	Global-related activities	Luo, Sivakumar and Liu (2005)
	Product Newness Product Life Cycle	Atuahene-Gima (1995)
	Knowledge integration	De Luca, Verona and Vicari (2008)
	Internal commitment Institutional support	Song and Parry (1997) Li and Atuahene-Gima (2001)
	Learning orientation Strategic Consensus Mission rigidity Marketing functional power	Atuahene-Gima, Slater and Olson (2005)
	Strategic alliances for NPD	Li and Atuahene-Gima (2001)
	Degree of internationalization	Cadogan, Kuivalainen and Sundqvist (2009)

While acknowledging the importance of competitor's activities for the success of firm's strategies, when in the context of exporting, firms tend to have a rather limited knowledge of competitors activities and strategies (Lages, Silva and Styles, 2009). Therefore it is also difficult for firms to assess the competitive intensity on the foreign markets as survey respondents. This issue was already mentioned in section 2.1.2.1.

This difficulty is also reflected in the export marketing literature. When considering market-related factors, studies have been focused on market dynamism (Cadogan *et al.*, 2005; Cadogan, Kuivalainen and Sundqvist, 2009) or market growth (Salomon and Shaver, 2005). Some scholars have hypothesized the moderation of competitive environmental factors but often the effect was found non-significant (Cadogan et.al, 2006 IJRM; Rose and Shoham, 2002) or significant but whenever analyzed from an aggregate perspective of environmental turbulence (Cadogan et.al, 2006 IMM; Yeoh, 2000). Due to the aforementioned arguments we decided *not* to include competitive intensity in our study.

Market- or customer- turbulence is the rate of change in customers' composition and preferences/demands overtime (Kohli and Jaworski, 1990); and technological turbulence is the rate of technological change. Therefore, a turbulent market can also be originated by the dissolution of traditional boundaries in the industry, like what happened with the media and telecommunications industries (Chakravarthy, 1997).

Prior research using external factors as moderators acknowledged that market forces influence the relationship between strategic orientations and performance. However, findings have been disparate. For example, scholars such as Grewal and Tansuhaj (2001) have found significant interactions for the two market forces with market orientation whereas Jaworski and Kohli (1993) have found non-significant interactions for the same moderators.

A beneficial effect of market turbulence on the strength of the relationship between the two strategic orientations, customer and technology, and innovation performance has been demonstrated (Gatignon and Xuereb, 1997; Homburg and Pflesser, 2000). Zhou and Li (2010) found opposite results with respect to customer orientation, that is, the more uncertain the market the weaker the impact of customer orientation on the adaptive capability of the firm (capability to reconfigure resources and respond to environmental changes). The authors note that under high market uncertainty customers may not know what they need, so a customer orientation is not beneficial. Results from Gao, Zhou and Yim (2007) were aligned with Zhou and Li's work, but using firm performance as dependent variable, rather than innovation adaptative capability. Slater and Narver (1994) also reported that for greater market turbulence levels, the customer effect on financial performance was weaker. Han, Kim and Srivastava (1998) found a non significant impact of market turbulence on the relationship between market orientation and the type of innovation.

Although findings for the market turbulence interaction with customer orientation differs across researchers, for technology orientation the works of Gatignon and Xuereb (1997), Zhou and Li (2010) and Han, Kim and Srivastava (1998) obtained the same results: the more uncertain the market, the more a technology orientation is needed.

When we consider the effect of the technological turbulence on the benefits of a technology orientation, authors are also more compliant about a positive effect. Gao and its colleagues

(2007) found that the higher the technological turbulence, the more a technology orientation impacts on performance. Droge, Calantone and Harmancioglu (2008) found the same trend, that is, when facing high environmental turbulence firms get more payoffs from innovativeness than from customer orientation.

Finally, for the technological turbulence, but interacting with customer orientation, empirical findings are again mixed. Grewal and Tansuhaj (2001), Han, Kim and Srivastava (1998), Droge, Calantone and Harmancioglu (2008) and Slater and Narver (1994) have shown a positive effect. However, these findings contradict the meta-analysis of Grinstein (2008), where a market orientation is shown to be more effective when technology turbulence is low.

2.4.3 – Internal factors

Research including organizational factors as moderators is dispersed due to the innumerous factors considered. Therefore, comparability across studies is difficult.

In addition to the internal contingency factors presented in the Table 2.8, the level of performance was a factor that emerged more recently from the strategy literature (Ginsberg and Venkatraman, 1985). It is logical to assume that the strategic alternatives available to the firm whose performance has been declining are very different from those available to a firm with growing results (Porter, 1980). Therefore, performance should be considered as a key contingency variable.

Nonetheless, research using performance as a moderator is limited and scarce within the innovation literature. Moreover, researchers have mainly analyzed contingencies by splitting samples in high-performance and low-performance groups and comparing them (e.g. Bowen, Rostami and Steel, 2009; Certo *et al.*, 2006; Damanpour and Evan, 1984; Schoonhoven, 1981; Woo, 1983). Few have started by examining the underlying assumption of contingency relations as interactions (Hortinha, Lages and Lages, 2010; Lee and Grewal[6], 2004; Mizik and Jacobson, 2003).

[6] These authors used "slack resources" as moderator. Slack resources are the amount of idle resources that enables firms to be flexible and improvise (Grewal and Tansuhaj, 2001)

Organizational learning researchers have shown that firms make decisions based on their past experience and performance (Cyert and March, 1963; Lages, Jap and Griffith, 2008; Lant and Mezias, 1992; Levinthal and March, 1981). More specifically, innovation related decisions are affected by past performance due to limitation of resources (Durmuşoğlu *et al.* 2008). For example, Mizik and Jacobson (2003) used past performance as moderator, rather than as an antecedent, in analyzing the trade-off between the firms' value creation (i.e. creating new products and offering them to the market) and value appropriation (i.e. differentiating and communicating the new products to the market).

2.5 – Conclusions

The literature review we have just performed evidenced some knowledge gaps, indicating four directions for future research.

First, customer and technology orientations of the firm are central in driving superior performance. While they are both important in developing firm innovation capabilities, and thus performance, managers need to know which one to emphasize because resources are limited and imply a trade-off. However, marketing and strategy researchers have mainly focused on their individual role. Moreover, while customer (and market) orientation has been extensively researched, technology orientation was less frequently covered, and very few researchers examined both orientations simultaneously. Therefore, analyzing the relative impact of customer and technology orientations is an interesting avenue of research.

Second, the trade-off between exploratory and exploitative innovation capabilities has been a challenge for scholars, with still a lot to understand, for example, related to ambidexterity. The choices regarding the balance between exploration and exploitation are related to the choices made about the emphasis on one strategic orientation over the other; therefore, literature should further address this topic, especially in explaining performance.

Third, despite the existing large body of literature on export performance, the role of innovation in achieving it is not very well understood. While acknowledging that innovation

is critical to performance, this link needs further research. Moreover, as technology is intrinsically related to innovation, the role of the former in explaining the latter is clearly a need in the exporting context. Export marketing research has devoted considerable attention to the study of market orientation but much less to the role of technological competences and, to our knowledge, none to both (see Yalcinkaya, Calantone and Griffith, 2007, for a close study in the importers context).

Finally, we outlined several gaps in the literature related to the contingency perspective of strategy-performance relationship, particularly in those related to innovation. External contingency factors have been extensively studied but with disparate findings, which suggests the need for further testing (see Henard and Szymanski, 2001). With respect to internal factors, the performance level stands-out for being much less used, despite the theoretical support from the organizational learning theory. Therefore, a contribution here would also be important.

In this dissertation we examine the relationships between strategic orientations, innovation and performance under three contingency factors. We consider two of the most commonly used external factors: customer turbulence and technological turbulence. As internal factors we include the past performance of the firm.

CHAPTER 3 – MODEL DEVELOPMENT AND HYPOTHESES

This chapter presents the proposed framework for this research and the related set of hypotheses. Based on the review of the literature (chapter 2), we further discuss the relationships between our key constructs: strategic orientations of the firm (customer and technology orientations), innovation capabilities (exploratory and exploitative innovation) and export performance.

The chapter is divided in three sections: first, we introduce the research framework, second, we formulate the hypothesis to be tested and then we finalize by drawing some conclusions.

3.1 – Conceptual model

As explained in chapter 2, the resource based view supports the idea that firm's capabilities, such as the strategic orientations of the firm, are the drivers of its performance in a dynamic environment (Day, 1994; Teece, Pisano and Shuen, 1997). As such, this theory is used to support the proposed framework with respect to the relationships between firm strategic orientations and performance.

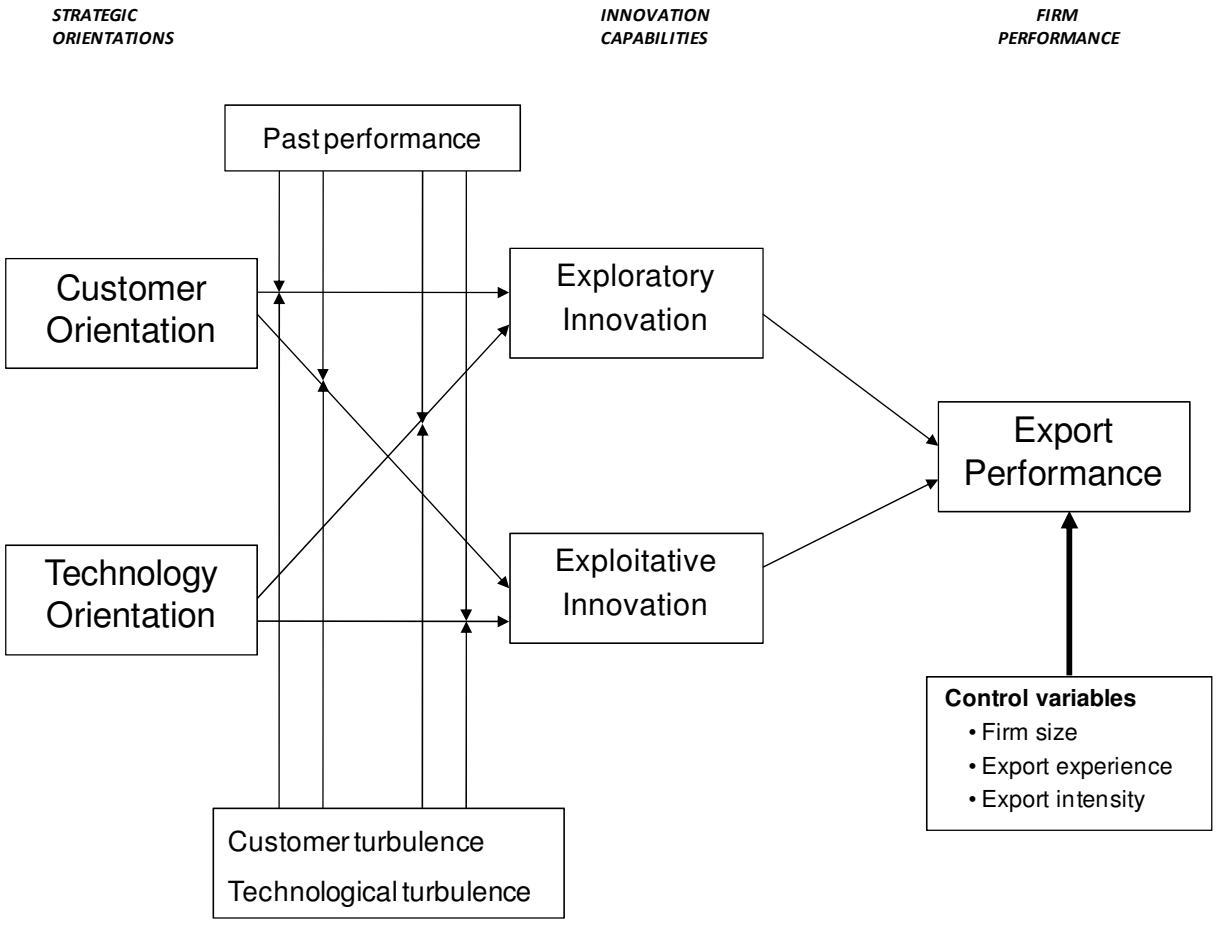
Organizational learning theory asserts that firms innovate by engaging in two forms of learning: exploratory and exploitative (Levinthal and March, 1993; March, 1991). Innovation is thus a vehicle for the renewal of firm capabilities leading to performance enhancement. Therefore, we use organizational learning theory to support the proposed framework with respect to the mediating effect of exploration and exploitation on the relationships between firm' strategic orientations and export performance.

Based on the contingency perspective we propose that the above mentioned relationships are contingent upon internal and external factors. Contingency perspective suggests that, for firms to achieve a superior performance, they must fit their strategic decisions with a certain set of

external and internal contingency factors (Schoonhoven, 1981). External factors considered here are recognized as the most relevant in the literature (Ginsberg and Venkatraman, 1985): customer turbulence and technological turbulence. As internal factor we consider the performance, particularly, the past performance of the firm. Organizational learning literature has demonstrated that firms tend to rely on their past performance for decision making (Cyert and March, 1963; Levinthal and March, 1981), and as such this theory supports the inclusion of past performance in the model.

Figure 3.1 presents the proposed research framework. Our model aims at explaining the relative impact of customer and technology orientations on the firm's export performance through the development of exploratory and exploitative capabilities, under the effects of environmental turbulence and past performance of the firm.

Figure 3.1 – Conceptual model



3.2 – Research hypotheses

A summary of all the hypotheses that will be developed next is presented in Table 3.1, at the end of the chapter. Because the aim of this dissertation is to address the *relative* role of the two strategic orientations, in addition to considering the individual effects of the variables, we also hypothesize their *relative* impacts. For the moderating effects, we only develop hypotheses based on the effect of the moderators on the *relative* impact of the two strategic orientations (but not on the effect of the moderators on the individual impacts of the strategic orientations).

Firm strategic orientations and exploratory and exploitative innovation

We have seen in chapter 2 that organizational learning theorists suggest that firms achieve long-term success by having a balance between exploratory and exploitative innovation capabilities (March, 1991; Garcia, Calantone and Levine, 2003; Ozsomer and Gençturk, 2003). Therefore, firms need to properly manage the trade-off between those innovation capabilities, ensuring that investments will be done in both.

Both customer and technology oriented behaviours influence firm's ability to learn and to innovate (Noble, Sinha and Kumar, 2002; Slater and Narver, 1995). Day (1994) considers that new product development capabilities integrate "inside-out" capabilities – such as market sensing – and "outside-in" capabilities – such as technology development. Market sensing capabilities contribute to innovation by recognizing current and emerging customer needs, quickly assessing customer responses and reacting to them. Customer oriented firms are characterized by having this market sensing capability.

Technological development capabilities allow firms to develop a continuous stream of innovative products and services and are characteristic of technology oriented firms. Therefore, by contributing to innovation, we argue that customer and technology orientations may have a key role in solving the trade-off between exploratory and exploitative innovation.

A customer oriented firm is committed to understanding and serving the needs of current customers, therefore it excels in the capacity to search for and use market information (Day,

1994). By having that capacity, firms fine-tune products and services to better satisfy customer needs. For example, a firm may strengthen the relationships with its customers in existing export markets. So, a customer orientation will directly benefit an exploitative innovation.

A customer oriented firm also commits to uncover latent needs and anticipate future needs (Chandy and Tellis, 1998). Thus, this firm must build on new capabilities, as existing ones become inadequate (Huff, Huff and Thomas, 1992). This is particularly important for exporting firms desiring to expand and approach new markets. So, a customer orientation is also positive related to exploratory innovation. Thus, we posit:

> *H1*: Customer orientation is positively related to (a) exploratory innovation and to (b) exploitative innovation

When a technology orientation is predominant, firms are technically proficient and flexible, which facilitates the refinement of existing technologies to either cope with existing markets or leverage market research efforts and try new markets (Danneels, 2002). A technological ability also favors the experimentation of new technological alternatives to meet emerging technological trends (March, 1991). Therefore, we may argue that a technology orientation is important for both exploratory and explorative innovation. Thus, we posit:

> *H2*: Technology orientation is positively related to (a) exploratory innovation and to (b) exploitative innovation

The Relative Impact of Strategic Orientations on Exploratory and Exploitative Innovation.

In recent years, innovation research shifted from a dichotomous view between a customer-led or a technology-led to an interactive perspective (Gatignon and Xuereb, 1997; Slater and Narver, 1995; Zhou, Yim and Tse, 2005). Research showed that technology-driven firms have the most to gain from combining their technological skills with a customer orientation (Atuahene-Gima, Slater and Olson, 2005; Dutta, Narasimhan and Rajiv, 1999; Lukas and Ferrel, 2000; Zhou, Yim and Tse, 2005). Next we discuss the relative impact of customer and technology orientations in face of a more exploratory or a more exploitative innovation. We

use the results of three studies that have somewhat addressed this topic and may be comparable.

In their study on exploration and exploitation capabilities, Yalcinkaya, Calantone and Griffith (2007) have found that each capability is predominantly influenced by one resource. Whereas marketing resources only influenced exploitation capabilities, technical resources only impacted on exploration capabilities. They argued that, because exploitation relies on leveraging existent knowledge and capitalizing on existing opportunities, a deep understanding of current market needs is more beneficial to those activities than the technical resources possessed by the firms. Nonetheless, when firms innovate via exploratory activities, they need substantial technical resources and new product development abilities as those activities include developing new knowledge and capitalize on unexplored opportunities.

Zhou, Yim and Tse (2005) found different results. They considered two types of innovations, market-based innovations, which involve the creation of new values for emerging markets, and technology-based innovations, the ones adopting new and advanced technologies. They showed that market orientation relates significantly (but negatively) to market-based innovations but the impact of technology orientation on those innovations is not significant.

They also found that market orientation and technology orientation impact positively and significantly on tech-based innovations, the second impacting more strongly than the first. Since both market-based and tech-based innovations result from doing something new (Zhou, Yim and Tse, 2005), we may say that they are both developed through exploration activities. Therefore, we argue that exploration is affected by the two strategic orientations and that the extent to which the effect of one is higher than the other depends on the nature of the exploratory innovation rather than the innovation being either exploratory or exploitative, likewise stated by Yalcinkaya, Calantone and Griffith (2007).

Gatignon and Xuereb (1997) found that technology orientation significantly and positively affects product radicalness. Customer orientation was barely significant but impacting negatively on radicalness. These results are in line with those from Yalcinkaya and colleagues, considering that a radical innovation is an exploratory one in nature (Benner and Tushman, 2003).

These apparent disparate findings concerning customer and technology relative impact on exploration may be integrated by considering Danneels' (2002) "competence-based new product typology" – see Figure 2.2, chapter 2.

Based on this framework, we argue that customer and technology orientations equally favor exploration through "customer leveraging" (e.g. tech-based innovations). If on one hand, new technologies have to be incorporated into new products, on the other hand, these technologies will serve the existing customer base, that the firm needs to understand well. Customer and technology orientations are also equally important in "pure exploration" because in this situation new technologies need to be developed to appeal to unserved markets. Innovation through "technological leveraging" requires a great capacity to address new markets based on the same technologies, thus a customer orientation has more impact than a technology orientation in developing such innovations. Therefore, we conclude that both orientations influence exploration but, depending on the type of exploratory innovation, firms benefit more from having a greater extent of one over the other orientation. Thus, we posit:

> *H3*: The strength of the relationship between customer orientation and exploratory innovation is not different from the strength of the relationship between technology orientation and exploratory innovation

If a "pure exploitation" is developed, a customer orientation would benefit the firm to a greater extent than a technology orientation. In a "pure exploitation", a firm uses or develops existing technological competences to serve existing customers, thus, a technology orientation, that is, a strong commitment towards R&D investments and to the acquisition of sophisticated technology (and its use in the new product development process) becomes much less important. In this case, understanding well the customer base and being able to satisfy them is critical. Therefore, we argue that:

> *H4*: Customer orientation relates more strongly to exploitative innovation than technology orientation

The effects of exploratory and exploitative innovation on export performance

As discussed in chapter 2, learning generally affects performance positively (Cyert and March, 1963). Researchers showed that both types of learning, exploration and exploitation, are essential to enhance firm performance (Garcia, Calantone and Levine, 2003; March, 1991). Exploitation activities are important to exporters because they facilitate extending export operations at lower risk. Also, by searching for solutions within the existent competence base, exploitative innovation increases efficiency and productivity.

Although exploration innovation is more risky, it allows firms to develop new capabilities which foster innovation and firm's performance. Particularly, exporters may take new opportunities, which would not be possible without having new competences (Knight and Cavusgil, 2004). Also, because exporting markets are more complex, firms need to develop new technologies (e.g. to address existing markets) and/or new markets (e.g. by creating new customer values) to maintain export success. Thus, both exploration and exploitation relate positively to export performance. Thus, we hypothesize:

H5: Exploratory innovation is positively related to export performance.

H6: Exploitative innovation is positively related to export performance.

The mediating effect of exploratory and exploitative innovation

Because 1) RBV supports the positive impact of strategic orientations on performance; 2) organizational learning asserts that innovation lead to performance; and 3) *H1* and *H2*, we also contend that both exploratory and exploitative innovation activities mediate the relationship between customer and technology orientations and export performance. Thus, we posit:

H7: Exploratory innovation mediates the relationships between
(a) Customer orientation and export performance.
(b) Technology orientation and export performance.

H8: Exploitative innovation mediates the relationships between

(a) Customer orientation and export performance.

(b) Technology orientation and export performance.

The moderating effect of past performance

As we have seen in chapter 2, organizational learning literature suggest that a poor performance will pressure managers to make more precise decisions, since they have less margin for error than managers in good performing firms (Levinthal and March, 1981). It is known that a poor past performance increases the likelihood of a strategic reorientation of the firm (Lant, Milliken and Batra, 1992).

Researchers in organization theory often use the concept of "slack" when discussing the impacts of performance on organizations (Bourgeois, 1981). Cyert and March (1963) also discussed the introduction of innovations through the use of slack. Slack is defined as the resources readily available to finance organizational activities. Past performance is directly linked to slack. Organizations performing poorly showed lower levels of slack than those that are performing well (Singh, 1986). Therefore, we build on slack and innovation literature to theorize our next hypotheses.

Profitable organizations have resources that can be committed to innovation, particularly to the renewal of technological knowledge through exploration activities (Garcia, Calantone and Levine, 2003). However, firms in unprofitable situations are unlikely to have slack and to invest in the renewal of firm competences. Researchers agree on the fact that slack acts as a catalyser in the innovation process. First, slack protects organizations from the uncertainties linked to innovation projects, fostering search behaviours (Bourgeois, 1981; Nohria and Gulati, 1996). Second, slack allows going for innovation projects with high potential from a visionary point of view, but not justifiable according to standard internal criteria (Levinthal and March, 1981). Too low levels of slack are detrimental to innovation (Nohria and Gulati, 1996).

Based on these arguments, we hypothesize a moderating effect of past performance on the relationship between strategic orientations and innovation. As explained previously, our focus

is not in understanding the effects of past performance on the innovation activities of the firm; rather, we aim at having more insights about the way past performance affects the trade-off between the two strategic orientations when leading to innovation, either through exploration or through exploitation.

Firms with higher slack engage in more exploration activities while firms with low levels of past performance, thus low slack, will be pressured to conserve it to guarantee its availability for organizational ongoing activities, which provide more certain and close returns (Singh, 1986; Voss, Sirdeshmukh and Voss, 2008). However, firms need to maintain both exploratory and exploitative innovation activities, being the trade-off dependent on the resources available (March, 1991). Therefore we hypothesize the relationships between strategic orientations and both exploratory and exploitative innovations in situations of good and bad past performance.

We may argue that firms with lower past performance will more likely engage in "pure exploitation", therefore a customer orientation will be stronger than a technological orientation for this type of innovation. The reasoning is the same as discussed for hypotheses *H4*. Thus, we contend that:

> *H9* (a): In firms with lower past financial performance, customer orientation relates more strongly to exploitative innovation than technology orientation

Firms facing good past performance and low competitive intensity do not feel the pressure for continuous new product introduction (Garcia, Calantone and Levine 2003). Instead, those firms may take the opportunity to focus on refining manufacturing processes or innovation routines. Technological exporters are not likely to face situations where new product introductions are not critical, so they will allocate slack originated from good past performance to more exploratory innovation. Moreover, exploitative activities should be maintained for the refinement of existing competences. We then posit:

> *H10* (a): In firms with higher past financial performance, customer orientation relates more strongly to exploitative innovation than technology orientation

In what concerns exploratory innovation, and within the types of innovation earlier explained, firms with worst past performance can only afford to explore new opportunities and ideas through "technology leveraging". The other two types, "customer leveraging" and "pure exploration" imply technology acquisition, which represents higher innovations costs, according to Gatignon and Xuereb (1997). These authors examined the effect of customer and technology orientation on the innovation relative cost, a single dimensional scale composed by marketing, R&D, manufacturing/operations and overall costs, assessed by comparison with competitors. Results showed that firms with a technology orientation have higher innovation costs while a customer orientation has no significant impact on innovation cost.

Therefore, firms facing low past performance most likely address exploratory innovation through "technology leveraging". These firms benefit more from customer orientation than technology orientation, as the former provides the necessary skills to identify latent needs, uncover new market opportunities, search for unserved markets, and establish relationships with new customers (Slater and Narver, 1998). Logically, we posit:

> *H9* (b): In firms with lower past financial performance, customer orientation relates more strongly to exploratory innovation than technology orientation

When high levels of past performance occur, firms can afford to explore new ideas and opportunities by pursuing new and sophisticated technologies. So, besides "technology leveraging", "customer leveraging" or "pure exploration" are additional options available to these firms. "Pure exploration" requires both customer and technological orientations, as new products are developed building on new customers and new technological competences.

In the case of "customer leveraging", a technology orientation is as important as a customer orientation since firms need advanced technologies to serve existing customers (Slater, Hult and Olson 2007), which need to be well understood, for example, to facilitate technology adoption. We may then conclude that both customer and technology orientations are important for firms with higher past performance. We followed the same reasoning as discussed for hypotheses *H3*. In line with all these arguments, we hypothesize:

H10 (b): In firms with higher past financial performance, the strength of the relationship between customer orientation and exploratory innovation is not different from the strength of the relationship between technology orientation and exploratory innovation

The moderating effect of customer turbulence

Customer turbulence is related to the heterogeneity and the rate of change of customer preferences (Gatignon and Xuereb, 1997). When customers are stable, firms are more likely to innovate through the development of incremental innovations, that is, through the development of its exploitation capabilities. Thus a customer orientation will be more effective than a technological orientation for this path of innovation. The reasoning is the same as discussed for hypothesis *H4*.

However, as discussed in chapter 2, section 2.2.2, a balance must exist between exploratory and exploitative innovation. Because customers are predictable, firms will tend to engage in "customer leverage" innovations, that is, they need to develop new technologies to be offered to their current customers. A technology orientation is much more important in this case (Zhou, Yim and Tse, 2005). Moreover, there is no need to invest further resources to monitor customers' needs closely as they are quite stable (Gao, Zhou and Yim, 2007).

Thus, we contend that:

H11: In low customer turbulent environments,

(a) Technology orientation relates more strongly to exploratory innovation than customer orientation.

(b) Customer orientation relates more strongly to exploitative innovation than technology orientation.

The greater the customer turbulence, the more difficult it is to identify and track customer's changing needs and the more important it becomes the role of customer-oriented marketing activities, such as market scanning and responding (Slater and Narver, 1994); Organizations are also more likely to have the need to innovate to better satisfy customer' changing preferences (Jaworski and Kohli, 1993). In such a context, firms tend to develop "technology

leverage" or "pure exploratory" innovation capabilities as they provide the possibility to access new customer segments either with market-based (Zhou, Yim and Tse, 2005) or with radical innovations (Chandy and Tellis, 2000).

In either case, a customer orientation is important, because they aim new customers, which have to be scanned and satisfied. For the radical innovations a technology orientation is also needed as sophisticated technologies demand high investments in R&D. We may then say that a customer orientation is more important than a technology orientation when developing exploratory innovation capabilities.

In the case of exploitative innovation in more customer turbulent environments, the same holds as in more stable ones. Even when customers' needs change faster, an exploitative innovation has to be developed, by definition, through improvements in currents products to current customers. Therefore, a customer orientation is more important in that case.

Therefore, we propose that:

H12: In highly customer turbulent environments,

(a) Customer orientation relates more strongly to exploratory innovation than technology orientation.

(b) Customer orientation relates more strongly to exploitative innovation than technology orientation.

The moderating effect of technological turbulence

Technological turbulence is related to the pace of technological developments in the industry (Gatignon and Xuereb, 1997). In stable technological environments, changes are not so frequent and technologies are more mature allowing a more accurately refinement of products and better satisfying current customers' needs. Therefore, for firms to develop exploitative innovations, and following the same reasoning as discussed for hypothesis *H4*, we argue that a customer orientation is more important than a technology orientation.

As we have seen in chapter 2, topic 2.2.2, exploratory innovation consists of three different ways to innovate (Danneels, 2002): "pure exploration" (new customer/new technology), "customer leveraging" (existing customers/new technology) or "technology leverage" (existing technology/new customer). Firms that work in more technological stable environments are relatively poorly positioned to develop new technologies (Jaworski and Kohli, 1993); they can benefit from relying and making full use of current technologies (Gao, Zhou and Yim, 2007). Most probably those firms will develop exploratory innovations through leveraging existing technological competences to gain access to new markets, rather than by gaining new technological insights to serve current markets. Therefore, they need to build new market-related competences, gathering knowledge about customer needs, preferences and buying behaviors (Danneels, 2006). Moreover, because technology oriented firms are committed to investments in R&D, these may not be worthwhile in environments as such. So, we argue that a customer orientation is more important than a technology orientation to develop exploratory innovation capabilities.

We summarize the above arguments on the next two hypotheses:

H13: In low technological turbulent environments,

(a) Customer orientation relates more strongly to exploratory innovation than technology orientation.

(b) Customer orientation relates more strongly to exploitative innovation than technology orientation.

Whenever technologies changes fast, and life cycles are shorter, firms do need to promote their R&D efforts because prior technologies soon lose their impact (Srinivasan, Lilien and Rangaswamy, 2002). Competitive advantages are rapidly diluted, which instigate firms to develop new products (Zhou, Yim and Tse, 2005). They thus need to invest strongly in R&D and develop technological advanced innovations in order to maintain competitive advantages in the market. Hence, a strong technology orientation is important.

Some scholars posited that the link between customer orientation and performance is weaker in contexts of high rates of technological changes (Jaworski and Kohli, 1993; Slater and Narver, 1994). They argued that in technological turbulent environments, innovations are

developed based on R&D efforts, rather than in customers as they are not able to properly articulate their wants and needs. However, they could not find support for this hypothesis. Other researchers argued the opposite, gathering information about customers and trying to convert customers' insights in new products is critical (see Grinstein, 2008; Henard and Szymanski, 2001). In the export marketing literature, market orientation was found to be more important under conditions of high turbulence (Cadogan, Cui and Li, 2003). It is argued that the higher the turbulence, the more a firm needs information about customers and to act on it.

Facing technological instability firms are more prone to exploratory innovations through the development of new technological competences to serve existing markets or to "pure exploratory" innovations, where new technologies will serve new markets. In both situations a technology orientation is crucial (Zhou, Yim and Tse, 2005); in the second, a customer orientation is also necessary as it may provide insights about emerging customers. We may then argue that for exploratory innovations, under a highly technological turbulence, a technology orientation is more important than a customer orientation.

For the case of exploitative innovation in more technological turbulent environments, the same holds as in more stable ones. Even when technologies changes faster, exploitative innovations need to be developed, by definition, through improvements in currents products to current customers. Therefore, a customer orientation is more important in that case.

Based on the above mentioned, we posit:

H14: In highly technological turbulent environments,

(a) Technology orientation relates more strongly to exploratory innovation than customer orientation.

(b) Customer orientation relates more strongly to exploitative innovation than technology orientation.

Table 3.1 – Summary of the research hypotheses

	Main effects
H1	Customer orientation is positively related to
a	Exploratory Innovation
b	Exploitative Innovation
H2	Technology orientation is positively related to
a	Exploratory Innovation
b	Exploitative Innovation
H3	The strength of the relationship between customer orientation and exploratory innovation is not different from the strength of the relationship between technology orientation and exploratory innovation
H4	Customer orientation relates more strongly to exploitative innovation than technology orientation
H5	Exploratory Innovation is positively related to export performance
H6	Exploitative Innovation is positively related to export performance
	Mediating effects
H7	Exploratory innovation mediates the relationships between
a	Customer orientation and performance
b	Technology orientation and performance
H8	Exploitative innovation mediates the relationships between
a	Customer orientation and performance
b	Technology orientation and performance

Table 3.1 – Summary of the research hypotheses (continued)

	Moderating effects
	Moderator: past performance
H9	In firms with lower past financial performance,
a	Customer orientation relates more strongly to exploitative innovation than technology orientation
b	Customer orientation relates more strongly to exploratory innovation than technology orientation
H10	In firms with higher past financial performance,
a	Customer orientation relates more strongly to exploitative innovation than technology orientation
b	The strength of the relationship between customer orientation and exploratory innovation is not different from the strength of the relationship between technology orientation and exploratory innovation
	Moderator: customer turbulence
H11	In firms under lower customer turbulence,
a	Technology orientation relates more strongly to exploratory innovation than customer orientation.
b	Customer orientation relates more strongly to exploitative innovation than technology orientation.
H12	In firms under higher customer turbulence,
a	Customer orientation relates more strongly to exploratory innovation than technology orientation.
b	Customer orientation relates more strongly to exploitative innovation than technology orientation.
	Moderator: technological turbulence
H13	In firms under lower technological turbulence,
a	Customer orientation relates more strongly to exploratory innovation than technology orientation.
b	Customer orientation relates more strongly to exploitative innovation than technology orientation.
H14	In firms under higher technological turbulence,
a	Technology orientation relates more strongly to exploratory innovation than customer orientation.
b	Customer orientation relates more strongly to exploitative innovation than technology orientation.

3.3 – Conclusions

Resource based view and Organizational learning theory have been used to support the framework and hypotheses developed in this chapter. Both theories have been extensively used in the market orientation and innovation related literature. Nonetheless, few studies have integrated both (e.g. Atuahene-Gima, 2005; Knight and Cavusgil, 2004; Yalcinkaya, Calantone and Griffith, 2007) and, even fewer have done it in the exporting context (Hortinha, Lages and Lages, 2010; Lages, Silva and Styles, 2009).

The first set of hypotheses was related to the direct relationships between the main constructs of this research: strategic orientations, exploratory and exploitative innovations and export performance. The hypotheses of a mediating role of exploratory and exploitative innovation were then formulated. This is a key contribution of this dissertation because those innovation capabilities were, to our knowledge, not yet considered in the presence of both technology and customer orientations.

We included two external moderators, technological turbulence and customer turbulence. Both of them have been widely tested in the context of either market/customer orientation or technology orientation but mixed findings exist (see Grinstein, 2008 and chapter 2, section 2.4.1). With respect to the internal moderator, we add to the literature the use of past performance. Performance is seen in the literature as an antecedent (Lant, Milliken and Batra, 1992) rather than as a moderator (for an exception see Hortinha, Lages and Lages, 2010) and we have taken this latter perspective.

Finally, while the individual impact of customer and technology orientations on innovation and performance was broadly covered in the literature, in this dissertation we examine their relative impact (see chapter 2, section 2.1.4). Therefore most of the hypotheses were developed based on the differences in the strengths of the relationships, rather than on the single relationships.

CHAPTER 4 - METHODOLOGY

This chapter explains the methodology used to test the hypotheses developed in chapter 3. First, we discuss the research paradigm leading to our methodological options. Second, we explain in detail the methodology adopted in each step of the research design: sampling procedure, instrument survey development and pre-test, survey administration, data collection, and finally, data analysis.

4.1 – Research paradigm and methodological options

It is a common approach to define research methods based on the research question. And often, the choice of a method will be between quantitative or qualitative or mixed, without any reference to the assumptions regarding epistemology and ontology. Researchers tend to treat epistemology and method as being synonymous. Crotty (1998) suggest four questions to be asked when starting a research project, not only about methodology but also epistemological questions:

1. What methods do we plan to use?
2. What methodology drives our choice and use of methods?
3. What theoretical perspective is behind our methodology?
4. What epistemology feeds this theoretical perspective?

Table 4.1 presents examples of each of the categories referred in those four questions. The relevance of this questioning can be illustrated on the quantitative-qualitative methods discussion. Over the years the choice between quantitative and qualitative research paradigms has been characterized by ardent disputes with purists on both sides. Quantitative purists articulate assumptions that are consistent with what is commonly called a positivist philosophy. That is, quantitative purists believe that social observations should be treated as entities in much the same way that physical scientists treat physical phenomena. They contend

that the observer is separate from the entities that are subject to observation, that is, that social science inquiry should be objective.

Qualitative purists (also called *constructivists* and *interpretivists*) reject what they call positivism. Constructivism here refers to the form of research encompassed within the interpretativist paradigm, being the belief that the world is that of the meaning attributed by individuals. The radical constructivist position virtually excludes the existence of an objective world (as each individual produces his own reality). They claim that it is impossible to differentiate fully causes and effects, that logic flows from specific to general (e.g., explanations are generated inductively from the data), and that knower and known cannot be separated because the subjective knower is the only source of reality.

Table 4.1 – Elements of a research process

Epistemology	Theoretical perspective	Methodology	Methods
Objectivism Constructionism Subjectivism (*and their variants*)	Positivism (and post-positivism) Interpretivism • Symbolic interactionism • Phenomenology • Hermeneutics Critical inquiry Feminism Postmodernism *etc.*	Experimental research Survey research Ethnography Phenomenological research Grounded theory Heuristic inquiry Action research Discourse analysis Feminist standpoint research *etc.*	Sampling Measurement and scaling Questionnaire Observation • participant • non-participant Interview Focus group Case study Life history Narrative Visual ethnographic methods Statistical analysis Data reduction Theme identification Comparative analysis Cognitive mapping Interpretative methods Document analysis Content analysis Conversation analysis *etc.*

Source: Crotty (1998)

Some researchers (Huberman and Miles, 2002) suggest an alternative approach: more than a dichotomy between positivism and interpretativism, they argue that there is an epistemological *continuum*, in which the knowledge obtained through one approach adds to the knowledge obtained throughout the other. A mixed approach is suggested as adequate to the study of marketing (Douglas and Craig 1983).

In this research we follow the mixed approach, by combining the positivist and the interpretativist approaches. We use the interpretativist approach to develop the exploratory study, through in-depth preliminary interviews, aiming at better refining the theoretical framework and adjusting it to the context. The positivist approach fed a survey-based research, through the development of a questionnaire to test our hypotheses and validate our model.

4.2 – Development of the survey instrument

The survey instrument was developed by combining information from three sources: the literature, field interviews and a panel of academic researchers in international marketing and innovation. After having selected the scales from the literature, we assessed face validity with the panel of academics, trying to identify potential problems in their application to the research context (Hunt, Sparkman, and Wilcox 1982).

Then, ten face-to-face interviews were conducted with both export and R&D managers from firms in different industries. The objective was to evaluate the survey instrument regarding the clarity of instructions, response formats, design, items, and respondent's knowledge to answer. From these interviews we have confirmed the need for a different set of questions for each type of respondent – one for the export manager and another for the R&D manager – to ensure that they are knowledgeable enough about the questions addressed in the questionnaire.

The next stage was a pre-test with fifteen exporters, which enabled us to further refine the survey and the administration method. The final survey was administered from May to July of 2009, through an on-line survey.

4.2.1 - Measures

Measures were sourced from the literature and adapted to current research context (see Churchill, 1979). As they are originally in English, they were translated to Portuguese and back-translated to English. Original and back-translated versions were checked for consistency to enhance "translation equivalence" (Van de Vijver and Leung, 1997).

Constructs were measured with multi-item scales, except for the internal moderator (past performance) and the control variables (firm size, export intensity and export experience). Unless specified, we employed Likert type scales ranging from 1 (strongly disagree) to 7 (strongly agree). Scale items can be found in Table 4.2, at the end of this section.

Items were not measured versus competitors as some researchers in the export literature suggest (Morgan, Kaleka and Katsikeas, 2004); rather respondents just rated the extent to which they were agreed with the item statements. In our preliminary interviews, managers pointed out the difficulty of gathering information on capabilities, strategies and results of competitors at the export operation level. Therefore, we decided to follow the method of other researchers (Lages, Silva and Styles, 2009; Yalcinkaya, Calantone and Griffith, 2007) and to assess constructs based on the absolute perceptions of managers.

Strategic Orientations. We adapted the customer orientation construct from Narver and Slater's (1990) scale of market orientation in order to capture the degree to which firms' export activities are oriented towards understanding and monitoring customers and their needs. The respondents were asked to rate their level of agreement with statements concerning behaviors of the firm's export activities toward customers. We adapted the measure of technology orientation from the work of Zhou, Yim and Tse (2005) to assess the orientation of firm's export operations to using sophisticated technologies in new product development.

Exploratory and Exploitative Innovation. We adopted exploratory and exploitative innovation scales from Lubatkin *et al.* (2006) to capture two different dimensions of innovation capabilities in firm's export markets. Exploitative innovation is related to capabilities close to

the current technological trajectory/customers of the firm, while exploratory innovation is related to new technologies and/or new customer segments.

Export Performance. We decided to go for subjective measures, following the analysis of pros and cons in our literature review (see chapter 2, section 2.3.2). From our preliminary interviews, we also acknowledged managers' enormous resistance to provide objective data at the export level. Moreover, despite the fact that we indeed found some objective data about exporters, this was mostly at a company level, not at the export level. However, we controlled for the common method bias through the comparison of the gathered subjective data at the export level with the objective data at the company level, for those exporters to which exports account for over 60% - see section 4.3.4. We used items such as profit, sales, and sales growth, from Zou, Taylor and Osland (1998), which are the most widely used subjective indicators of export performance.

Customer turbulence. We adopted the scale from Joshi and Sharma (2004). Items of this scale capture both the heterogeneity (e.g. differences in customers) and the dynamism (e.g. rate of change in customer preferences) aspects of turbulence.

Technological turbulence. We adopted the scale from Joshi and Sharma (2004). Items of this scale capture the speed of technological changes in the environment.

Past performance. We chose the moderator for the past performance of the exporter firm to be the past Return on Assets (ROA). ROA is defined as the ratio of net operating profit to the firm's start-of-year assets recorded on its balance sheet. We gathered objective data on ROA at the firm level from the Bureau van Dijk database (2009), and calculated our measure as the average of the ROA for the firm in the three years preceding the data collection.

Most measures of financial performance fall into two broad categories: accounting returns and investor returns. ROA is an accounting-based indicator and these types of measure are the most common and readily available means of assessing firm's performance (Richard *et al.,* 2009). The validity of these measures is grounded in the extensive evidence showing that accounting and economic returns are related. Within the accounting-based measures ROA is a

very popular one. It has the advantage of capturing a firm's efficiency (Cochran and Wood, 1984) and reflects internal decision-making on capabilities and performance.

Control variables. We controlled for three of the most commonly used variables in the export marketing literature (Katsikeas, 1994) – please see Table 4.3. Despite mixed findings, previous research suggested that firm size influences the export performance of the firm (Chung, 2003; Cadogan *et al.*, 2005). Export experience and export intensity were also included as control variables, following previous exporting literature (Cadogan, Kuivalainen and Sundqvist, 2010; Cavusgil and Zou, 1994; Lages, Jap and Griffith, 2008). Both reflect the degree of internationalization of a firm, related to the scale – for the export intensity – and the scope – for the export experience - of the export activities.

Table 4.2 – Constructs, items and sources

Constructs and items [a]	Adapted from
Export performance	**Zou, Taylor and Osland 1998**
It has been very profitable.	
It has generated a high volume of sales.	
It has achieved rapid growth.	
Customer Orientation	**Narver and Slater 1990**
Our business objectives are driven primarily by customer satisfaction.	
We constantly monitor our level of commitment and orientation to serving customers' needs.	
Our strategy for competitive advantage is based on our understanding of customers' needs.	
Our business strategies are driven by our beliefs about how we can create greater value for customers.	
We measure customer satisfaction systematically and frequently.	
We give close attention to after-sales service.	
Technological Orientation	**Zhou, Yim and Tse 2005**
We use sophisticated technologies in our new product development.	
Our new products always use state-of-the-art technology.	
Technological innovation based on research results is readily accepted in our organization.	
Technological innovation is readily accepted in our project management.	
Exploratory Innovation	**Lubatkin et al. 2006**
We look for novel technological ideas by thinking "ouside the box".	
We base our success on our ability to explore new technologies.	
We create products or services that are innovative to the firm.	
We look for creative ways to satisfy our customer's needs.	
We dynamicaly risk entering new market segments.	
We actively target new customer groups.	
Exploitative Innovation	**Lubatkin et al. 2006**
We commit to improve quality and lower cost	
We countinuously improve the reliability of our products and services	
We increase the level of automation in our operations	
We constantly survey existing customers's satisfaction	
We fine-tune what we offer to keep our current customers satisfied	
We penetrates more deeply into existing customer base	
Customer turbulence	**Jaworski & Kohli 1993**
Customers' preferences for product features have changed quite a bit over time.	
We are witnessing demand for our products from customers who never bought them before.	
New customers tend to have product-related needs that are different from those of our existing customers.	
Technological turbulence	**Jaworski & Kohli 1993**
The technology in our industry is changing rapidly.	
It is unlikely that today's technological standard will still be dominant five years from now.	
Technological breakthroughs contribute to the development of new product ideas in our industry.	

[a] Scale format 1="completely disagree and 7="completely agree"

Table 4.3 – Control variables

Control variable	Measured by
Firm size	Total firm sales year, n-1
Export experience	Number of foreign countries with export operations
Export intensity	Sales due to export operations as a percent of total firm sales, year n-1

4.2.2 – Final version of the questionnaire

Two versions of the questionnaire were developed: the version for the R&D manager – that we designated by "the perspective of technology" - composed by 3 constructs and 10 items and the version for the export manager – "the perspective of the market" – with 5 constructs and 24 items plus the control variables. Table 4.4 contains a summary of both versions. The final versions of the questionnaire are in Appendixes 1 and 2.

Table 4.4 - Summary of the two versions of the questionnaire for two types of respondents: export manager and R&D manager

Variables	"the perspective of the market"	"the perspective of technology"
Export performance	✓	✓
Customer Orientation	✓	
Technological Orientation		✓
Exploratory Innovation	✓	
Exploitative Innovation	✓	
Customer Turbulence	✓	
Technological Turbulence		✓
Control variables	✓	

The questionnaire to export managers is longer because of the results from the preliminary interviews. We have found out that, for most of the exporters, R&D managers are responsible for both the domestic *and* the export businesses. Consequently, their knowledge on export operations, even if related to new product developments, is not so broad as the one of the export manager. We thus changed the initial split of the questions between the two versions of the questionnaire to accommodate the insights we have received at this stage. The questions allocated to the R&D managers were the ones they were more knowledgeable in answering.

We have included two questions, in both versions, related to respondent's job title in the firm and to his/her degree of knowledge regarding the topics in the questionnaire.

4.3 – Data collection

4.3.1 – Unit of analysis

Data was collected at the export operation level, that is, at the firm level with respect to the export operation of the firm. Most of the studies in exporting use firm level as the unit of analysis as opposed to the export venture level (Sousa, 2004), which is explained by the greater willingness of respondents to provide information at this level. Moreover, our theorization is not specific for a product/market combination but valid for the overall export activities of the firm.

4.3.2 – Sampling procedures and questionnaire administration

Our hypotheses were tested through a random sample of 1031 manufacturer exporters in technological industries, listed in a database of the Portuguese business development agency AICEP Portugal Global (AICEP, 2007). The interest on Portuguese companies is due to the fact that for them exporting is a condition for survival, not only due to the current economic crisis but also due to their small market size. For a small economy such as Portugal, integration in the world economy is particularly important due to the access to opportunities for scale economies, specialization and access to technology (OECD, 2008).

From the database, we considered firms in multiple technological industries to increase variance and generalizability of the results (Lages, Silva and Styles, 2009; Morgan, Kaleka and Katsikeas, 2004). We focused exclusively on manufacturing firms because service firms and those engaged in primary activities are idiosyncratic in what concerns international expansion patterns, regulatory requirements and performance characteristics (Zou and Cavusgil, 2002). From the group of manufacturing firms, we selected only the firms operating in medium to low, medium to high and high technological industries using the Eurostat

classification, which is based on technological intensity (R&D expenditures) (Eurostat, 2009). Our research question addresses the relative impact of customer and technology orientations. Because a technology orientation is intrinsically related to strong investments in R&D, firms with low R&D expenditures were excluded from the sample. By using firms in more technological industries, we provide a similar context to respondents, while being broad enough to ensure the generalizability of results.

The database included the company's name, telephone number, address, industry, products, and number of employees. In a first step we contacted all the firms to confirm their eligibility for the participation in the study, that is, if they had exported in the previous year and if their exports operations were regular. For those that were eligible, we established the contact with the export manager (preferably), introduced him/her to the project, and asked for his/her e-mail and the name and e-mail of the second respondent, the R&D manager. We also asked him/her to brief the second respondent about the survey. This method was used following managers' suggestions gathered during the preliminary interviews. The flowchart for all these steps is presented in Appendix 3.

An e-mail invitation was then sent to respondents, explaining the academic purpose of the project, ensuring the confidentiality of the responses and including the respective link to the survey. This e-mail is presented in Appendix 4. In the e-mail incentives were given, such as 1) a report with the main findings after the completion of the study; 2) a significant discount in a course about the topic to be held by the end of the year; and 3) an invitation to a workshop on internationalization where the findings of the study will be presented. An e-mail reminder was sent three weeks after to the non-respondents, followed by a last reminder four weeks after that.

From the 1031 firms, 191 were not eligible and 94 firms were not available to answer the questionnaire, resulting in 746 questionnaires sent out. We obtained 193 usable questionnaires, yielding a response rate of 26%. This is a high response rate, considering that the average top management survey response rates are between 15 and 20 per cent (Menon *et al.*, 1996). Moreover, this response rate considers only the firms, from which two different questionnaires were received, a fact that values our response rate. From those questionnaires, we ended up with 170, after missing data analysis and data cleaning.

Because export performance was measured through two respondents we checked for the interrater correlations on the scale items and found them to be significant (greater than 0.60), similar to other studies (Gao, Zhou and Yim, 2007; Ramani and Kumar, 2008). Therefore, we computed and used unweighted mean scores of the two types of managers, export manager and R&D manager, to measure the aggregate perceptions. This method increases the accuracy in responses and reduces measurement errors (Gao, Zhou and Yim, 2007; Ramani and Kumar, 2008).

4.3.3 – Assessment of non response bias

Due to the high response rate obtained we were quite confident that non-response was not an issue (Weiss and Heide, 1993). However, we further tested for differences between early and late respondents, following the procedure suggested by Armstrong and Overton (1977), based on the assumption that, unlike early respondents, late respondents are more likely to be similar to non-respondents. According to Weiss and Heide (1993) early responses were defined as the first 75 per cent of returned surveys. The last 25 per cent were considered late responses and representative of firms that did not respond to the survey. Based on a t-test comparing early and late respondents, we confirmed that there were no significant differences (at the conventional 0.05 level) between those two groups in terms of firm size (number of full-time employees and total sales), export intensity (ratio of export sales to total sales) and export experience (number of countries with export operations).

Therefore, considering these results and the relatively high response rate, it was concluded that non-response bias is not a significant problem in this study. Furthermore, since anonymity was guaranteed, bias associated with those who did not respond for confidentiality reasons was also reduced (Bialaszewski and Giallourakis, 1985).

4.3.4 - Common method bias

In addressing common method bias, we followed some of the main recommendations from Podsakoff and colleagues (2003). First of all, we used different sources of information for our constructs: two respondents within the same firm for the main constructs and the control variables and objective secondary data for the past performance. We split the questions between the two respondents, export manager and R&D manager, according their respective area of knowledge.

As explained previously, we also gathered objective data at the firm level on profit (return on assets, net income), sales, sales growth, number of employees, and years of existence of the firms. Information was collected from the Bureau van Dijk database (2009) for the respondents' firms. We then calculated the correlation between the secondary data and the data obtained via questionnaire, a procedure already followed by other researchers (Morgan, Kaleka and Katsikeas, 2004).

The respondents' responses for firm's total sales and employees are given by over 8 and 4 interval measures, respectively, so, we coded the objective sales and employment data into the same intervals. Regarding the measures of export perceived performance - profit, sales, and sales growth - because the objective measures refer to total company figures and the data collected is at the export operation level, we performed the correlation analysis for both groups of firms: total firms and the firms with export intensity over 60%. All correlations were found to be significant, supporting the validity of our key informants' answers – please see Table 4.5. While not identical, the results of the correlations suggest that the objective measures were a key element of the respondent's subjective assessments (Sarkar, Echambadi and Harrison, 2001).

Second, the questionnaire clearly assured respondents about the confidentiality of the results of this study and that there were no right or wrong answers, only that their personal opinion mattered. Moreover, standard survey design and administration practices were followed.

Third, we have used the Harman single-factor test to control for the common method bias (Podsakoff *et al.*, 2003). Six factors with Eigen values greater than 1.0 were extracted and less

than 50% of the variance was explained by the first factor, leading us to conclude that common method bias is not a significant problem in this study.

Table 4.5 Correlations between the objective and the subjective measures

Correlations [1], presented as: Firms with over 60% of exports [2] (Total firms)[3]	**Database measure**					
Questionnaire answer	Number of employees closing 2008	Age of the company closing 2008	Net Sales 2008	Return on Assets (average 2006, 2007, 2008)	Net income (average 2006, 2007, 2008)	Net Sales variation 2008/2007
Number of full time employees in 2008	0.748 (0.395)					
Years of existence		0.572 (0.487)				
Total firm sales in 2008			0.361 (0.405)			
EP1 - Export operation has been very profitable				0.312 (0.196)		
EP2 - Export operation has generated a high volume of sales					0.269 (0.188)	0.247* (0.196)
EP3 - Export operation has achieved rapid growth						0.383 (0.196)

[1] All correlations are significant at 0.01 level (2 tailed) except otherwise stated; * Significant at 0.05 level

[2] Sample size of firms with over 60% of exports: 72-77

[3] Sample size of Total firms: 164-171

4.4 – Data analysis

Responses were imported automatically to an Excel worksheet from the on-line survey instrument. Necessary codifications and data cleaning were done before running data analysis with SPSS 16.0 software (SPSS, 2007). Standard procedures were followed for analysing and treating missing data and outliers (Hair *et al.*, 2006). In Appendix 5 we briefly outline those procedures, including a summary of the descriptives and outliers for the final sample.

4.4.1 – PLS path modelling

We assessed the measurement model and analyzed the structural model using partial least squares[7] (PLS) with Smart PLS 2.2 software (Ringle, Wende and Will, 2005). PLS is a distribution-free approach of partial least squares structural equation modeling and has been used by a growing number of researchers from various disciplines and publishing in top-tier journals (Eggert, 2007). As an example, recent publications appeared in Journal of Marketing (e.g. Johnson, Herrmann and Huber, 2006; Wagner, Thurau and Rudolph, 2009), Strategic Management Journal (e.g. Sarkar, Echambadi and Harrison, 2001; Tsang, 2002) and Journal of International Business Studies (e.g. Lee, Yang and Graham, 2006; Venaik, Midgley and Devinney, 2005).

Within the structural equation modeling techniques, PLS is characterized by being variance-based, as opposed to those represented by LISREL, which are covariance-based (Henseler, Ringle and Sinkovics, 2009). PLS is recommended for smaller samples and to estimate more complex models (with many latent variables and many items). For example, Boomsma and Hoogland (2001) concluded that there are non-convergence problems and improper solutions for the covariance-based technique in samples with 200 or fewer cases. By contrast, in PLS there can be more variables than observations (Tenenhaus *et al.*, 2005).

PLS was selected for this study mainly because of the sample size. Besides having a relatively small sample, when testing moderators the covariance-based techniques yielded convergence problems. Also, when doing subgroup analysis, samples are smaller, which makes PLS more appropriate. A rule of thumb for robust PLS suggests that the sample size be equal to the larger of the following (Barclay, Higgins and Thompson, 1995): (1) ten times the number of indicators of the scale with the largest number of formative indicators, or (2) ten times the largest number of structural paths directed at a particular construct in the inner path model. The problem with PLS biased results is not a concern in this study because we have 170 responses, which is greater than 10 times the largest number of paths affecting any endogenous variable (5 in the case of exploratory/exploitative innovation without the interaction terms, and 11 when interactions are included).

[7] Hereafter PLS

PLS does not provide a goodness-of-fit indicator. Consequently, Chin (1998) recommends a two-step approach in analyzing PLS results: first it is examined the measurement model (outer model), and, only after, the structural model (inner model). In Table 4.6 we summarize the criteria to assess both models.

4.4.2 – Measurement model

To assess the adequacy of our measurement model we look at 1) reliability, 2) convergent validity, and 3) discriminant validity (Hulland, 1999). First, we assess reliability through internal consistency reliability and individual items reliabilities. For internal consistency we use the composite reliability index (Bagozzi, 1980), which should be above 0.7 (Nunnally and Bernstein, 1994). We examine individual item reliabilities by checking the loadings of the individual items in the respective constructs. A minimum value of 0.7 (rule of thumb used by many researchers) was considered.

Second, we assess convergent validity by computing the average variance extracted (AVE). Results should be greater than the recommended value of 0.5 to ensure convergent validity (Fornell and Larcker, 1981).

Third, discriminant validity was assessed by a) comparing the correlation between each pair of constructs with the square root of the AVE among those constructs (Fornell and Larcker, 1981) and b) analyzing cross-loadings between items and constructs (Chin, 1998). The square root of AVE between any two constructs (diagonal) should be greater than the correlation between those constructs (off-diagonal), to confirm discriminant validity at the latent variable level. Looking at the cross-loadings one should confirm, for discriminant validity to exist at an indicator level, that the correlation of an indicator with its latent variables is greater than its correlation with the other variables.

Table 4.6 – Assessing measurement and structural models

Criterion	Description	Recommendation
Measurement Models		
Composite reliability, ρ_c	Measure of internal consistency[8]	≥ 0.7 (≤ 0.6 indicates lack of reliability)
Indicator reliability	Absolute standardized loadings (related to the variance of a single indicator explained by its latent variable)	≥ 0.7 (eliminate item if ≤ 0.4)
AVE (Average variance extracted)	Criterion of convergent validity (variance of the indicators explained by the latent variable)	≥ 0.5
Fornell and Larcker (1981) criterion	Criterion of discriminant validity (at latent variable level)	AVE of each latent variable $\geq$ highest squared correlations with any other variable
Cross-loadings	Criterion of discriminant validity (at an indicator level)	Correlation of an indicator with its latent variables $\geq$ correlation with the other variables
Structural Models		
R^2	For endogenous variables	0.67 – substantial 0.33 – moderate 0.19 – weak
Estimates for path coefficients	Interpret as beta coefficients of ordinary least squares regressions	Assess sign, magnitude and significance[9] Assess total effects
Effect size, f^2	Indicates the effect of a predictor latent variable at the structural level	0.35 – substantial 0.15 – moderate 0.02 – weak
Prediction relevance	Q^2 – blindfolding procedure for prediction of manifest variables f^2 – impact of the structural model	$Q^2 \geq 0$ For f^2 0.35 – substantial 0.15 – moderate 0.02 – weak

* reflective models

Source: Largely based on Henseler, Ringle and Sinkovics (2009)

[8] Traditionally, internal consistency is evaluated through Cronbach's α, which is based on the indicators intercorrelations and assumes that all indicators are equally reliable. A Cronbach's α tends to provide underestimations of internal consistency (Henseler, Ringle and Sinkovics, 2009), therefore we consider here the composite reliability, ρ_c.

[9] Bootsrapping procedure in PLS provides confidence intervals for all parameter estimates. In this research bootstrapping was done considering 1000 sub-samples.

4.4.3 – Structural Model

The overall fit of the model will be assessed by looking at three different criteria. The first is the R^2 of the endogenous variables. Chin (1998) describes R^2 values of 0.67 as substantial, 0.33 as moderate and 0.19 as weak. Moderate values can be acceptable if the endogenous variable is explained by only a few exogenous latent variables. In any case, R^2 values of the endogenous variables should satisfy the minimum of 10% (Falk and Miller, 1992).

The second criterion is the amount of significant relations among the constructs (Cool, Dierikx and Jemison, 1989). Individual path coefficients analysis, with respect to signs, magnitudes and absolute significances, is also helpful in evaluating a structural model (Henseler, Ringle and Sinkovics, 2009). Albers (2009) proposes the observation of the total effects, rather than the direct or indirect effects alone, as the first are more stable and thus provide more reasonable grounds for conclusions. For each effect in the model, the effect size, f^2, can be computed and should be 0.35 to be considered substantial (Cohen, 1988). A value of 0.02 is small and 0.15 is medium.

4.4.4 – Testing mediation

We follow Baron and Kenny's (1986) approach to test for the mediating effect hypothesized. Thus, we need to run three PLS models:

Model 1 - with the effect of the independent variable on the mediating variable;
Model 2 - with the effect of the independent variable on the dependent variable without the mediating variable;
Model 3 - with the effect of the independent variable on the dependent variable, in the presence of the mediating variable.

To confirm the mediation, three conditions need to be fulfilled:

(1) the relationships in model 1 and model 2 should be significant;
(2) the relationship between the mediator and the dependent variable should be significant in model 3; and

(3) the effect of the independent variable on the dependent variable in model 3 should be non-significant – for a full mediation – or less than in model 2 – for a partial mediation.

The assessment of the reduction in the strength of the relationships between the independent variable and the dependent variable from the model 2 to model 3 cannot be made by a visual inspection of the coefficients. The Sobel test (Sobel, 1982) is one of the most used to mathematically assess the significance of that reduction (Mackinnon *et al.*, 2002).

4.4.5 – Testing moderation

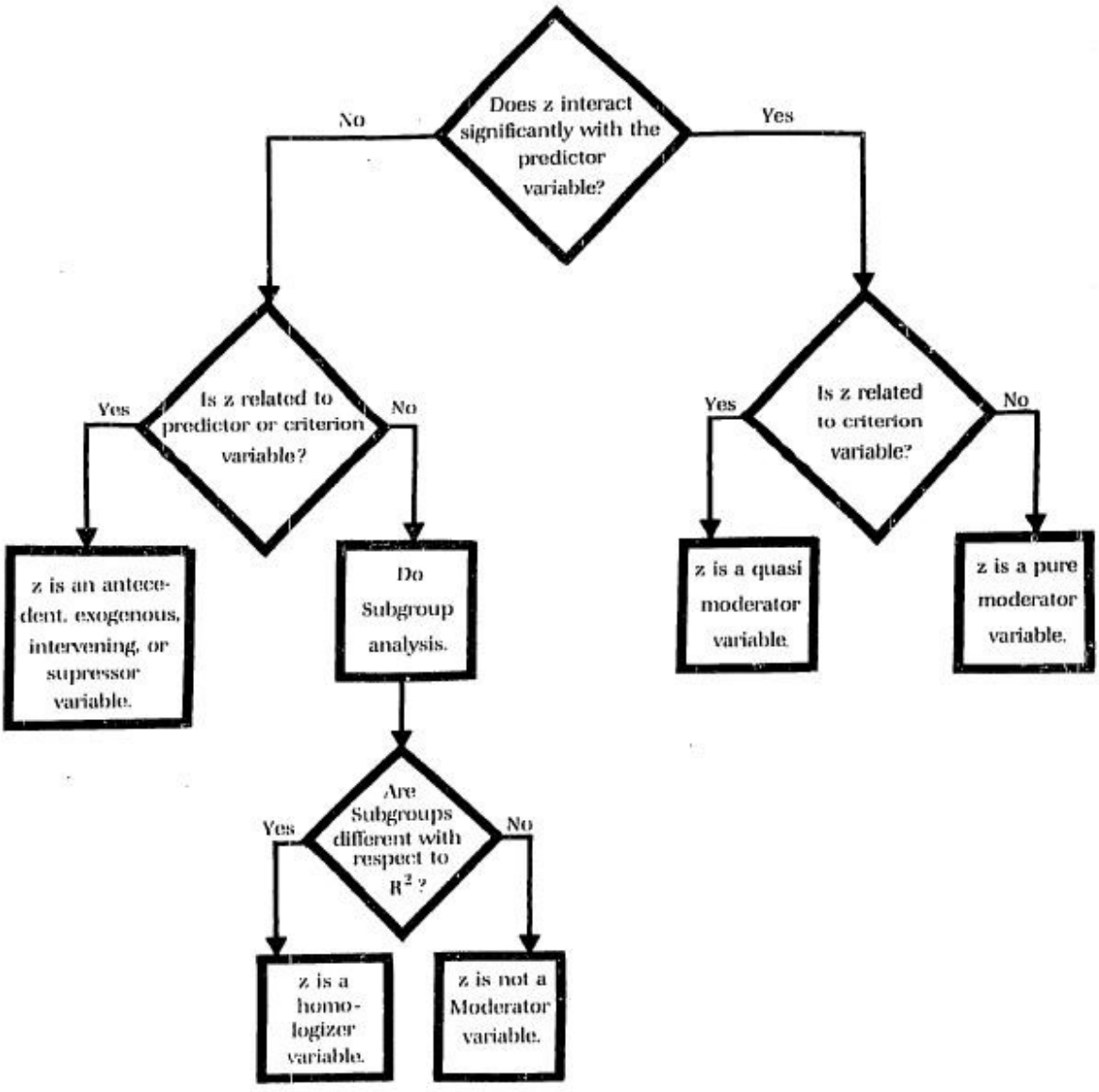
Moderating effects were examined following Sharma, Durand and Gur-Arie (1981) methodology – please see Figure 4.1. First of all, interaction terms between moderator variables and predictor variables were created in PLS. Indicator values of the variables were mean-centered before multiplication to reduce multicollinearity between main and interaction variables (Aiken and West, 1991). Second, we run the model with the moderator and check for the significance of the interaction terms. Based on the framework in Figure 4.1, the type of moderation is indicated.

In the case of a non significant relationship between the interaction term and the dependent variable and a non existing relation between the moderator variable and either the dependent or the independent variable, we proceed to sub-group analysis (see Figure 4.1). Sample is thus split in "low" group and "high" groups, by excluding the middle 15% of cases to ensure enough contrast (Kohli, 1989). Then, the models are run in separate for both groups and coefficients are compared. Group comparisons are done by means of a t-test, as described by Keil *et al.* (2000). If sub-groups are different, then we may conclude that the moderator is of the type homologizer.

As our hypothesis with respect to moderators rely on the relative impact of the two strategic orientations, in situations of low and high levels of the moderating variables, we run sub-group analyses for all the moderators, even if interactions were found to be significant.

Note that, conceptually, a homologizer is different from a pure or quasi moderator (Sharma, Durand and Gur-Arie, 1981). While the former changes the strength of the relationship between a predictor and a criterion variable, the latter change the form of that relationship.

Figure 4.1 – Identifying moderator variables



Source: Sharma, Durand and Gur-Arie (1981)

4.4.6 – Testing relative impacts

To understand the relative impact of two independent variables on the same dependent (or endogenous) variable, we run a *t*-test to the differences in β coefficients of those relationships. This is a very simple procedure aiming at comparing the strengths of two effects on the same outcome. This t-test is computed manually with the results from PLS, by dividing the difference between the original coefficients by the standard deviation of the differences between the bootstrapped coefficients.

While for hypotheses *H3* and *H4* we simply compute the *t*-test with the PLS path coefficients from the main effects model, for hypotheses *H9a* to *H14b*, the *t*-tests are done with the coefficients coming from the models that were run for each sub-group, high and low.

4.5 – Conclusions

In this chapter we presented the methodology proposed to test the hypotheses developed in chapter 3. In the next chapter, chapter 5, we present and discuss the results of the hypotheses testing, following the data analysis procedure just described.

The least straightforward methodological issue was the choice of the technique for measurement and structural model testing. We have selected PLS path modelling, a variance-based structure equation modelling technique, despite the widely used covariance-based methods (such as LISREL). The main reason for this selection was the sample size. This justification becomes more important due to the inclusion of moderators in the model. While covariance-based techniques may generate non-convergence problems with samples with fewer than 200 observations, PLS can handle smaller samples. Furthermore, PLS is also more suitable to more complex models. In our study, we include mediation and moderation effects, which increases the complexity of the model.

A final comment related to the methodological contribution of our study is relevant. We used two respondents within the same technological exporting firm, the export manager and the R&D manager. This is methodological important because 1) it reduces potential common

method bias; and 2) it ensures that respondents are knowledgeable enough about the assessed topics. To our knowledge, few studies, in either the innovation or the export marketing literature, have empirically tested a conceptual framework employing different respondents within the same firm in order to access different antecedents.

CHAPTER 5 – FINDINGS AND DISCUSSION

In this chapter we present and discuss in detail our findings. The chapter is structured as follows: in the first section, we characterize the sample profile; the second section contains the assessment of the reliability, convergent validity and discriminant validity of the constructs (measurement model); in the third section, we examine the findings for the structural model. The results are presented and discussed going through the theorized relationships that led to the hypotheses formulation, therefore following the scheme of chapter 4, section 4.2. Finally, section four outlines the conclusions of this chapter.

5.1 – Sample profile

Our final sample of exporters is characterized by the data presented in Tables 5.1 through 5.6. With respect to the split by industry, Table 5.1 shows that over half of the exporters belong to the medium to high and high technology categories. As mentioned in chapter 4, low technology firms were excluded from this research. The exporters in the category low to medium technology account for 47.65% of the total exporting firms.

In Table 5.2 exporters in the sample are split by size, measured by the number of full-time employees, according to the classification proposed by the European Commission (1996). The data reflect the Portuguese exporting industry, with the majority of the firms being small to mid-size, accounting, in our sample, for 85% of the total number of exporters. Exporters in the sample are distributed as follows: 6.1% with 1-9 employees, 45.4% with 10-49 employees, 40.5% with 50-249 employees and 8% with over 250 employees.

Table 5.1 – Sample composition by industry

Code (*)	Manufacturing industry (*)	Frequency	Percent
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	4	2
26	Manufacture of computer, electronic and optical products	9	5
30.3	Manufacture of air and spacecraft and related machinery	2	1
	Total High technology	**15**	**8**
20	Manufacture of chemicals and chemical products	6	4
25.4	Manufacture of weapons and ammunition	1	0,6
27 to 29	Manufacture of electrical equipment, Manufacture of machinery and equipment n.e.c., Manufacture of motor vehicles, trailers and semi-trailers	59	35
30	Manufacture of other transport equipment excluding 30.1	7	4
32.5	Manufacture of medical and dental instruments and supplies excluding 30.3 Manufacture of air and spacecraft and related machinery	1	0.6
	Total Medium to high technology	**74**	**44**
22 to 24	Manufacture of rubber and plastic products, Manufacture of other non-metallic mineral products, Manufacture of basic metals	27	16
25	Manufacture of fabricated metal products, except machinery and equipment excluding 25.4	51	30
30.1	Building of ships and boats	2	1
33	Repair and installation of machinery and equipment	1	0.6
	Total Medium to low technology	**81**	**48**
	TOTAL	170	100

(*) NACE Rev. 2 codes – 3-digit level, Eurostat.

Table 5.2 – Sample composition by number of full-time employees

Number of Full-time Employees	Frequency	Percent
1 to 9	10	6,1
10 to 49	74	45,4
50 to 249	66	40,5
More than 250	13	8,0
Total	163	100

Table 5.3 shows the sample divided according to the total firm sales. The average annual sales of these firms ranged from €1.5 million to €5 million, with 8% of the firms having sales less than €0.35 million, 24% from €0.35 million to €1.5 million, 22% from €1.5 million to €3.5 million, 9% from €3.5 million to €5 million, 30% from €5 million to €35 million and 7% greater than €35 million.

Table 5.3 – Sample composition by total company sales

Company Sales	Frequency	Percent
<=100 thousand €	5	3.2
100-350 mil €	8	5.1
350 mil €-1,5 million €	38	24.1
1,5-3,5 million €	34	21.5
3,5-5 million €	14	8.9
5-35 million €	48	30.4
35-145 million €	8	5.1
>=145 million €	3	1.9
Total	158	100

Exporting operations of the firms in the sample contributed with 0 to 9% to 8% of the firms, with 10 to 29% to 13% of the firms, with 30 to 59% to 33.5% of the firms, with 60 to 84% to 22% of the firms and with over 85% to 23.5% of the firms – see Table 5.4. This indicator was considered as the export intensity, a control variable in our model.

Table 5.4 – Sample composition by contribution of exports to total sales

Company Sales	Frequency	Percent
<=100 thousand €	5	3
100-350 mil €	8	5
350 mil €-1,5 million €	38	24
1,5-3,5 million €	34	22
3,5-5 million €	14	9
5-35 million €	48	30
35-145 million €	8	5
>=145 million €	3	2
Total	158	100

From Table 5.5, we see that the average age of the firms participating in this study was 32 years (SD = 23; range= 1-100). With respect to the exporting experience, the firms have, on average, 19 years running export operations (SD=12; range=1-100), and maintain a presence, on average, in 11 countries (SD=12; range =1-75).

Finally, the analysis of respondents' profiles reveal that many other job titles, either than export manager (for the "market perspective" version) or R&D manager (for the "technology perspective" version) answered the questionnaire – please see Table 5.6. First of all, due to the small size of the majority of our exporters, it is natural that a CEO, the owner, the marketing or the commercial manager takes over the responsibilities for the exporting operations. Yet, because the responsibilities of these types of managers do not cover only export operations, they are not designated by export managers. We have confirmed this argument by running three follow-up phone calls, after closing the survey. The low percentage of respondents with the job title of export manager that responded to the survey (6%) reflects that finding. In the same way, R&D managers are only a small percentage of the total job titles (7%). Again, we could confirm that, due to the small size of the vast majority of the exporters, the job of R&D manager is often performed by the CEO, the owner, or by the quality or technical manager.

We assessed respondent's quality by asking them to evaluate on a seven-point scale their degree of knowledge (1=very limited, 7= very substantial) about the topics in study. Results confirm that respondents were knowledgeable enough to answer the questionnaire: 78% and 76% of the managers recognized to have a substantial or very substantial degree of knowledge on the topic, respectively for the "market perspective" and the "technology perspective" versions of the questionnaire.

Table 5.5 – Sample descriptives of number and countries with export operations and company age

	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
Number of countries with export operations	170	1	75	10.6	0.941	12.273
Years with export operations	170	1	100	18.6	0.910	11.865
Age of the company	161	1	100	31.8	1.785	22.653

Table 5.6 – Respondent's job titles within the companies

The market perspective

Position	Frequency	Percent
Marketing manager	36	22
Commercial Manager	29	17
CEO	32	19
Owner	21	13
Logistics/Production manager	21	13
Export manager	10	6
Other managers (e.g. finance)	10	6
Non manager	7	4
Total	166	100

The technology perspective

Position	Frequency	Percent
Technical/quality manager	39	24
Owner	30	19
Export manager	27	17
CEO	20	13
Logistics/Production manager	13	8
R&D manager	11	7
Other managers (e.g. finance)	11	7
Non-manager	8	5
Total	159	100

5.2 – Measurement model

As explained in the methodology section (see Table 4.6), to assess the adequacy of the measurement model we looked at 1) the composite and individual item reliabilities, 2) the convergent validity, and 3) the discriminant validity. Results are presented in Tables 5.7 through 5. 9.

We confirm the reliability of the measurement model: first, because all the constructs meet the minimum value of 0.7 for the composite reliability (Table 5.7); second, because all the items, with the exception of 2 items (out of 31), present loadings well above 0.7 (Table 5.7). The two items with loadings below 0.7 are from customer orientation (loading of 0.624) and from customer turbulence (loading of 0.661). However, according to Chin (1998), a factor loading lower than 0.7, but higher than 0.5, may be accepted if other items in the same construct present high scores, which is the case for both constructs. Therefore, due to this fact and to the conceptual importance of those items, they were kept in the model.

Results of AVE, average variance extracted, are all greater than the recommended value of 0.5, thus confirming the convergent validity of our constructs and measurement model (see Table 5.7).

Discriminant validity of all the constructs is demonstrated, as the square root of AVE between any two latent variables (diagonal) is greater than the correlation between those latent variables (off-diagonal) (see Table 5.8).

Further analysis reinforces discriminant validity. Indeed, by analyzing cross-loadings between items and constructs we confirm that items load higher in the respectively construct than on any other construct (see Table 5.9).

Table 5.7 - Scale Items and Reliabilities

Constructs [a]	Adapted from	Variance extracted	Composite reliability	Standardized factor loadings
Export Perceived performance	**Zou, Taylor and Osland 1998**	**0.808**	**0.923**	
Question: With regard to your company's exporting operation, to what extent do you agree with the following sentences?				
It has been very profitable.				0.867
It has generated a high volume of sales.				0.936
It has achieved rapid growth.				0.882
Customer Orientation	**Narver and Slater 1990**	**0.572**	**0.888**	
Question: With regard to your company's actions in the exporting markets, to what extent do you agree with the following sentences?				
Our business objectives are driven primarily by customer satisfaction.				0.624
We constantly monitor our level of commitment and orientation to serving customers' needs.				0.869
Our strategy for competitive advantage is based on our understanding of customers' needs.				0.733
customers.				0.788
We measure customer satisfaction systematically and frequently.				0.739
We give close attention to after-sales service.				0.764
Technological Orientation	**Zhou, Yim and Tse 2005**	**0.712**	**0.908**	
Question: With regard to your company's actions in the exporting markets, to what extent do you agree with the following sentences?				
We use sophisticated technologies in our new product development.				0.824
Our new products always use state-of-the-art technology.				0.866
Technological innovation based on research results is readily accepted in our organization.				0.820
Technological innovation is readily accepted in our project management.				0.864
Exploratory Innovation	**Lubatkin et al. 2006**	**0.665**	**0.923**	
Question: With regard to your company's actions in the exporting markets, to what extent do you agree with the following sentences?				
We look for novel technological ideas by thinking "ouside the box".				0.811
We base our success on our ability to explore new technologies.				0.827
We create products or services that are innovative to the firm.				0.846
We look for creative ways to satisfy our customer's needs.				0.811
We dynamicaly risk entering new market segments.				0.822
We actively target new customer groups.				0.774
Exploitative Innovation	**Lubatkin et al. 2006**	**0.659**	**0.920**	
Question: With regard to your company's actions in the exporting markets, to what extent do you agree with the following sentences?				
We commit to improve quality and lower cost				0.801
We countinuously improve the reliability of our products and services				0.877
We increase the level of automation in our operations				0.735
We constantly survey existing customers's satisfaction				0.770
We fine-tune what we offer to keep our current customers satisfied				0.871
We penetrates more deeply into existing customer base				0.806
Customer turbulence	**Jaworski & Kohli 1993**	**0.572**	**0.798**	
Question: Considering the exporting markets, to what extent do you agree with the following sentences?				
Customers' preferences for product features have changed quite a bit over time.				0.661
We are witnessing demand for our products from customers who never bought them before.				0.880
New customers tend to have product-related needs that are different from those of our existing customers.				0.711
Technological turbulence	**Jaworski & Kohli 1993**	**0.723**	**0.887**	
Question: Considering the exporting markets, to what extent do you agree with the following sentences?				
The technology in our industry is changing rapidly.				0.840
It is unlikely that today's technological standard will still be dominant five years from now.				0.826
Technological breakthroughs contribute to the development of new product ideas in our industry.				0.884

[a] Scale format 1="completely disagree and 7="completely agree"

Table 5.8 - Means, Standard Deviations and Correlations between Constructs

	Mean	Standard Deviation	Export performance	Customer Orientation	Technological Orientation	Exploratoty Innovation	Exploitative Innovation	Customer turbulence	Technological turbulence
Export performance	4.90	1.21	**0.895**						
Customer Orientation	5.86	0.89	0.379	**0.756**					
Technological Orientation	4.76	1.28	0.267	0.364	**0.844**				
Exploratoty Innovation	5.11	1.11	0.500	0.590	0.540	**0.815**			
Exploitative Innovation	5.65	0.99	0.478	0.657	0.449	0.727	**0.812**		
Customer turbulence	4.98	1.13	0.301	0.420	0.285	0.490	0.439	**0.756**	
Technological turbulence	4.66	1.30	0.209	0.227	0.498	0.328	0.205	0.407	**0.850**

Note: The diagonal shows the square root of the average variance extracted

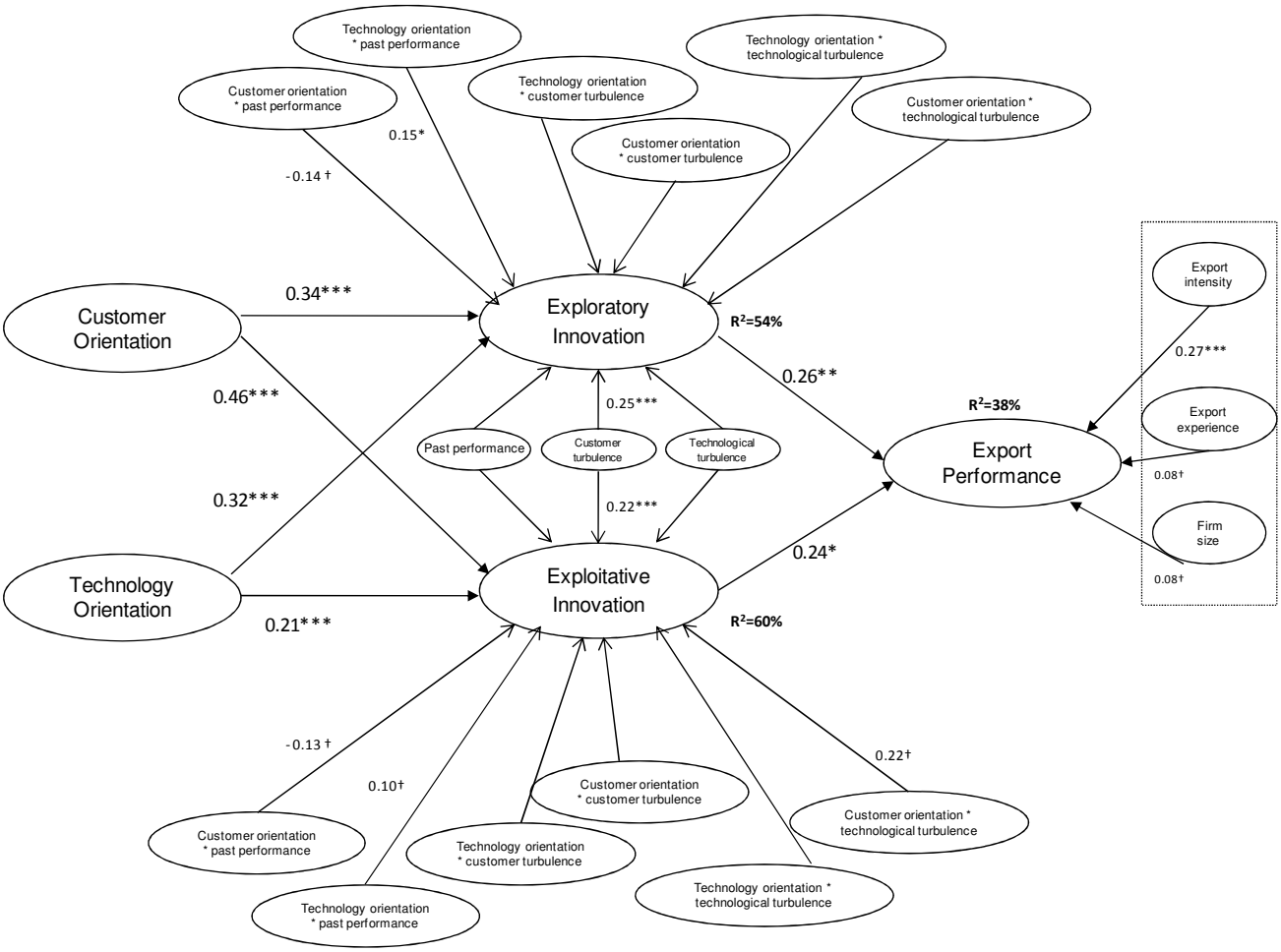
Table 5.9 – Items loadings and Cross loadings

	Exploratory Innovation	Exploitative Innovation	Export intensity	Customer turbulence	Export performance	Customer orientation	Export experience	Technology orientation	Technological turbulence	Firm size	Past performance
Exploratory Innovation 1	0.811	0.554	0.185	0.398	0.48	0.541	0.088	0.508	0.339	0.168	0.028
Exploratory Innovation 2	0.827	0.531	0.048	0.374	0.367	0.515	-0.003	0.542	0.374	0.128	0.049
Exploratory Innovation 3	0.846	0.608	0.094	0.387	0.381	0.509	-0.016	0.435	0.246	0.048	0.046
Exploratory Innovation 4	0.811	0.694	0.157	0.397	0.389	0.470	-0.069	0.379	0.169	0.047	0.102
Exploratory Innovation 5	0.822	0.593	0.217	0.413	0.38	0.407	0.003	0.351	0.232	0.084	-0.034
Exploratory Innovation 6	0.774	0.586	0.279	0.430	0.434	0.425	0.102	0.397	0.222	0.145	0.031
Exploitative Innovation 1	0.549	0.803	0.178	0.384	0.343	0.545	-0.054	0.322	0.126	0.051	0.098
Exploitative Innovation 2	0.674	0.877	0.163	0.378	0.489	0.561	-0.021	0.433	0.167	0.094	0.130
Exploitative Innovation 3	0.601	0.735	0.087	0.383	0.422	0.383	0.012	0.487	0.252	0.142	0.032
Exploitative Innovation 4	0.582	0.770	0.129	0.228	0.305	0.560	-0.002	0.363	0.216	0.122	0.106
Exploitative Innovation 5	0.555	0.871	0.192	0.313	0.401	0.567	-0.111	0.268	0.068	0.050	0.085
Exploitative Innovation 6	0.573	0.806	0.126	0.442	0.354	0.579	-0.142	0.314	0.181	0.022	0.064
Export intensity	0.199	0.181	1	0.074	0.401	0.100	0.307	0.043	0.125	0.129	0.193
Customer turbulence1	0.264	0.233	0.186	0.661	0.195	0.155	0.127	0.17	0.364	0.177	0.042
Customer turbulence2	0.498	0.437	0.008	0.880	0.320	0.445	0.043	0.256	0.373	0.068	-0.009
Customer turbulence3	0.291	0.277	0.026	0.711	0.126	0.280	0.019	0.211	0.181	0.007	0.034
Export performance1	0.406	0.376	0.289	0.264	0.866	0.264	0.119	0.139	0.182	0.103	0.192
Export performance2	0.428	0.419	0.469	0.240	0.936	0.330	0.217	0.204	0.160	0.239	0.137
Export performance3	0.504	0.483	0.303	0.306	0.882	0.413	0.156	0.359	0.221	0.193	0.173
Customer orientation1	0.313	0.375	0.056	0.297	0.241	0.624	-0.084	0.204	0.092	0.013	0.134
Customer orientation2	0.528	0.589	0.136	0.305	0.355	0.869	-0.085	0.290	0.176	0.007	0.032
Customer orientation3	0.374	0.406	0.042	0.299	0.227	0.733	-0.029	0.231	0.153	0.070	0.058
Customer orientation4	0.480	0.474	-0.030	0.361	0.302	0.788	-0.042	0.304	0.165	0.037	0.118
Customer orientation5	0.471	0.542	0.117	0.308	0.324	0.739	0.017	0.288	0.241	0.19	0.045
Customer orientation6	0.466	0.549	0.111	0.342	0.251	0.764	-0.034	0.314	0.178	0.105	0.069
Export experience	0.024	-0.066	0.307	0.073	0.187	-0.055	1	0.086	0.125	0.386	0.114
Technology orientation1	0.555	0.420	0.048	0.275	0.298	0.347	0.082	0.824	0.517	0.175	0.064
Technology orientation2	0.451	0.376	0.050	0.216	0.234	0.319	0.068	0.866	0.489	0.162	0.005
Technology orientation3	0.385	0.351	0.006	0.196	0.157	0.264	0.081	0.820	0.271	0.182	0.032
Technology orientation4	0.396	0.352	0.036	0.267	0.185	0.281	0.055	0.864	0.361	0.196	0.047
Technological turbulence1	0.248	0.168	0.071	0.381	0.203	0.178	0.126	0.392	0.840	0.148	-0.003
Technological turbulence2	0.208	0.148	0.063	0.363	0.120	0.135	0.085	0.345	0.826	0.087	0.014
Technological turbulence3	0.350	0.198	0.161	0.312	0.198	0.242	0.106	0.502	0.884	0.108	0.009
Firm size	0.130	0.098	0.129	0.100	0.205	0.096	0.386	0.212	0.135	1	0.098
Past performance	0.046	0.107	0.193	0.021	0.184	0.094	0.114	0.045	0.007	0.098	1

5.3 – Structural model

Our final conceptual model is presented in Figure 5.1. Data in the figure includes the estimated PLS path coefficients, levels of significance and the values of R^2 for the endogenous variables. This visual description of the model, while useful, does not provide information on some of the hypothesized relationships, namely those about the relative impacts of customer and technology orientations. Next we will examine each relationship in detail, by referring to the hypotheses listed in Table 3.1.

Figure 5.1 – Complete conceptual model

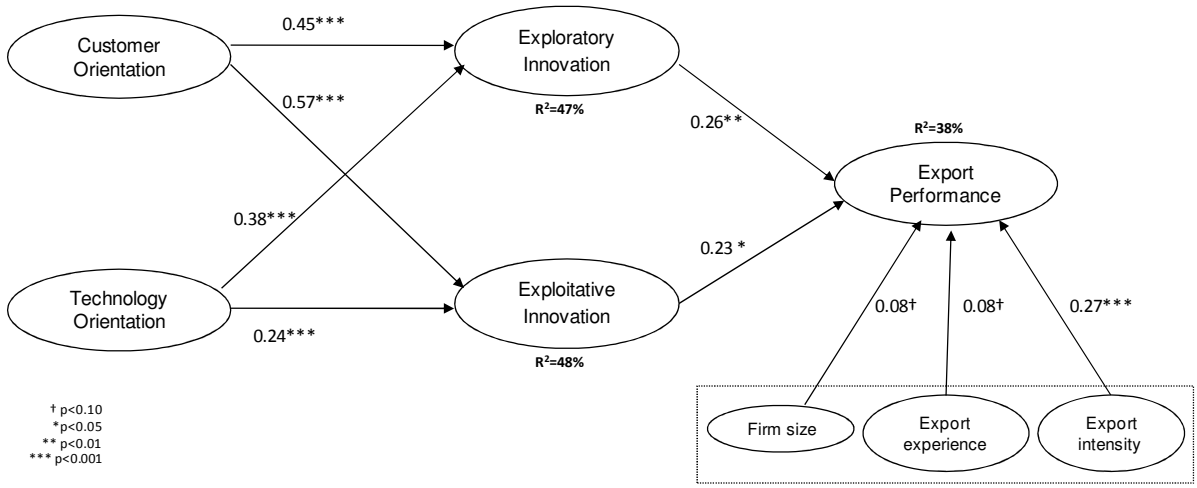


Notes:
-For simplicity of depiction we do not include non-significant relationships and t-values
-Significance: † p<0.10 *p<0.05 ** p<0.01 *** p<0.001

5.3.1 – Main effects model

We started by running the main effects model, presented in Figure 5.2.

Figure 5.2 – Main effects model



One of the criteria recommended to assess the structural model is, as explained in chapter 4, related to the R^2. From the figure above, we see that variances explained are 47%, 48% and 38% for exploratory innovation, exploitative innovation and export perceived performance, respectively. These values satisfy the minimum of 10% for the R^2 of the endogenous variables (Falk and Miller, 1992). Moreover they are in the range of moderate to substantial, according to the Table 4.6. The incidence of significant relationships is also an indicator to assess the structural model. It stands out from the figure the fact that all of the tested relationships are significant. Next we examine each of them.

Control variables

Starting with the control variables, export intensity is the only control variable with a high significant coefficient (β=0.27, t=3.91). Indeed, export intensity is often used in the export literature as a measure of export performance (Katsikeas, Leonidou and Morgan, 2000) although they are distinct concepts (Sousa, 2004).

Export experience (β=0.08, t=1.38) also revealed to have a slight influence on export performance, which is in line with most of the findings in the literature (e.g. Contractor, Hsu and Kundu, 2005). The more experienced the company is in foreign markets, the more qualified it is to achieve higher export performance levels.

For the firm size (β=0.08, t=1.37), we have found a barely significant impact on export performance. In chapter 2 we have seen that this relationship has been often found non-significant or negative and, rarely positive. Therefore this result is not so surprising.

The effect of strategic orientations on exploratory and exploitative innovation

Customer orientation is positively and significantly related to exploratory innovation (β=0.45, t=8.02) and to exploitative innovation (β=0.57, t=7.04), as predicted. Therefore, hypotheses *H1a* and *H1b* are supported. In the same way, hypotheses *H2a* and *H2b* are also supported, because technology orientation is positively and significantly related to exploratory innovation (β=0.38, t=6.09) and to exploitative innovation (β=0.24, t=4.02). These findings are in line with the literature.

To sustain a competitive advantage, a firm should be able to explore new ways of innovating, gathering new knowledge in the market and using it to better match customer's needs (Atuahene-Gima, 2005). We have just confirmed, through *H1a* results, that a customer orientation favors this process. However, a firm also needs capabilities to refine existing competences within the firm allowing for an improvement in understanding customers' needs and therefore for the development of innovations (mostly incremental) that better satisfy the current customer base. *H1b* makes it clear that customer orientation improves those capabilities.

A technological proficient firm is more able to effectively deal with the process of refining existing technological competences (Danneels, 2002). Additionally, it is also more prone to experiment new technologies (March, 1991), to meet new technological trends, to address emerging markets, or even to do both. Therefore a technology orientation favors both exploratory and exploitative innovations.

The relative impact of strategic orientations on exploratory and exploitative innovation

The t-test to the differences between β coefficients of the relationships of customer orientation and technology orientation with exploratory innovation, respectively 0.45 and 0.38, confirmed that they are not statistically different, supporting *H3* (Table 5.10). The t-test for the differences between β coefficients of the relationships of customer orientation and technology orientation with exploitative innovation, respectively 0.57 and 0.24, confirmed that they are statistically different, being the first higher than the second in support of *H4*.Thus, customer orientation relates more strongly to exploitative innovation than to technology orientation.

Table 5.10 – *t*-test to β differences in testing *H3* and *H4*

	Relationship	β[a]
β1	Customer orientation - Exploratory Innovation	0.45
β2	Technology orientation - Exploratory Innovation	0.38
	t[b] (β1-β2)	0,65 (n.s.)
β1	Customer orientation - Exploitative Innovation	0.57
β2	Technology orientation - Exploitative Innovation	0.24
	t[b] (β1-β2)	2,66 (p<0.005)

[a] standardized coefficients

[b] t-test of the difference between the β in the two relationhips, 1 and 2 (one-tailed)

n.s.=non significant

Literature agrees that a customer orientation is clearly important for a firm innovating through the process of refining existing customer and technological knowledge and competences; however, a technology orientation, being related to strong investments in sophisticated technologies, is comparatively less important for that process. Therefore the support of *H4* just strengthens these facts.

With respect to exploratory innovation capabilities, literature has shown that, depending on the nature of the innovations that are developed, those capabilities will request more orientation towards the customer or more orientation towards the technology development (Danneels, 2002). For example, a customer orientation is more important to develop market-based innovations while a technology orientation impacts stronger on tech-based innovations (Zhou, Yim and Tse, 2005). The results obtained here, in support of *H3*, demonstrate that a customer orientation is as important as a technology orientation when firms want to explore new ways of doing things, either in new product- or in new market- domains.

Considering the context of our study, these findings are particularly important. First, because while a technology orientation is inherent to a technological firm (Workman, 1993), a customer orientation is not. That means that a technological firm has to strategically take the option of being customer oriented; Moreover, the environment where those firms operate is characterized by being highly complex, with customers resisting to take the risk on new technological products, with shorten life cycles and high levels of market and technological uncertainties (Mohr, Sengupta and Slater, 2009). Therefore, for technological firms is far more challenging to pursue a customer orientation.

Second, while researchers agree on the facts that, on one hand, technological development stimulates exporting (e.g. Filatotchev *et al.*, 2008), and, on the other hand, a customer orientation is especially important in earlier stages of internationalization (Cadogan, Cui and Li, 2003), they have not been able to advance with a proposal for the *relative importance* of each of these strategic orientations. Our study confirms empirically that both are equally important.

The effects of exploratory and exploitative innovation on export performance

Based on the significant β coefficients for the relationships of exploratory innovation (β=0.26, t=2.64) and exploitative innovation (β=0.23, t=2.30) with export perceived performance, we may conclude that both *H5* and *H6* are supported, meaning that exploratory innovation and exploitative innovation relate positively to export perceived performance. These results are compliant with the organizational learning literature.

5.3.2 – The mediating effects

Table 5.11 presents the results of the models that were run for the mediating test of exploratory and exploitative innovation. Following the methodology discussed in chapter 4, three models are needed for a single mediating variable to be tested. In this case, two variables are being tested for mediation (exploratory innovation and exploitative innovation), therefore an extra model had to be run. In Table 5.11, first and fourth models are the same for both mediating variables, as they do not include any mediator; second and third models correspond to the models including, respectively, exploratory and exploitative innovations as mediators. When moderators exist in a model, mediating test should include them (Handelman and Arnold, 1999). We have followed the techniques explained in chapter 4, section 4.4.5 to create and test the moderators in these models.

Customer orientation is significant in models 1 and 2, but, in model 4 it becomes non significant, which suggests a full mediation by exploratory innovation of the customer orientation-export performance relationship. This result supports *H7a*. For the case of exploitative innovation, the findings also confirm that it fully mediates the customer orientation-export performance relationship, because customer orientation is significant in models 1 and 3, but, in model 4 it becomes non significant. Thus *H8a* is also confirmed.

Despite the weaker relationship with export performance, technology orientation is significant in models 1 and 2 and non-significant in model 4, supporting *H7b*, that is, exploratory innovation fully mediates the link between technology orientation and export performance. The same happens with *H8b*. From the table we confirm that technology orientation is non-significant in model 4 while in model 1 and 3, path coefficients are significant. This fact means that exploitative innovation fully mediates the relationship between technology orientation and export performance.

The significance of the mediation effects was assessed using the Sobel test. PLS provided the standardized regression coefficients, and unstandardized coefficients were calculated by multiplying the standardized coefficient by the standard deviation of the dependent variable and dividing it by the standard deviation of the independent variable. The *z*-values for the

indirect paths confirm the full mediations for *H7a* (z = 2.20, p <.025), *H7b* (z = 2.08, p <.025), *H8a* (z = 2.18, p <.025) and *H8b* (z = 1.57, p <.10).

Table 5.11 - PLS results - mediating effects of exploratory and exploitative innovation

	Export performance	Exploratory Innovation	Exploitative Innovation	Export performance
	Model 1	**Model 2**	**Model 3**	**Model 4**
Control Variables				
Export intensity	0.34			0.27
	(4.98) ***			(3.80) ***
Export experience	0.06			0.08
	(0.87)			(0.40)
Firm Size	0.09			0.08
	(1.33) †			(1.31) †
Main effects				
Customer Orientation	0.30	0.34	0.46	0.08
	(4.03) ***	(4.70) ***	(4.00) ***	(0.71)
Technology Orientation	0.13	0.33	0.20	-0.03
	(1.92) *	(4.91) ***	(2.78) **	(0.41)
Past ROA		-0.01	0.06	
		(0.21)	(1.14)	
Customer turbulence		0.25	0.22	
		(3.95) ***	(3.44) ***	
Technological turbulence		-0.03	-0.07	
		(0.41)	(1.02)	
Interaction Effects				
Customer Orientation x Past ROA		-0.14	-0.13	
		(1.45) †	(1.38) †	
Technology Orientation x Past ROA		0.15	0.10	
		(1.75) *	(1.41) †	
Customer Orientation x Customer turbulence		0.03	0.03	
		(0.25)	(0.29)	
Technology Orientation x Customer turbulence		-0.10	0.11	
		(0.87)	(0.95)	
Customer Orientation x Technological turbulence		0.02	0.22	
		(0.13)	(1.21)	
Technology Orientation Technological turbulence		-0.03	0.07	
		(0.41)	(0.79)	
Mediating variables				
Exploratory Innovation				0.23
				(2.11) *
Exploitative Innovation				0.22
				(1.88) *
R^2	0,32	0,54	0,60	0,39
R^2 Adjusted	0,30	0,51	0,59	0,37

† p<0.10 * p<0.05 ** p<0.01 *** p<0.001

Note: t-values in parenthesis; one-tailed tests for all the hypothesis

These findings are very important, advancing both innovation and exporting literatures. They mean that firms exporting to foreign markets can improve their performance by converting their strategic orientations into innovative products. While scholars have already acknowledge the role of customer orientation in driving innovation capabilities that, in turn, affect innovation performance (e.g. Atuahene-Gima, 2005), this has never been tested and confirmed simultaneously with customer and technology orientations and export performance.

Furthermore, these results imply that export performance of the firms is achieved through a trade-off between exploratory and exploitative innovation capabilities which have to be built upon both customer and technology orientations.

5.3.3 - The moderating effects

Table 5.12 presents the results for the model with the moderators. Note that, after the addition of the moderator effects, R^2 has increased from 0.47 to 0.54 for exploratory innovation and from 0.48 to 0.60 for exploitative innovation (see also Figure 5.2).

However, the effect size of the moderator variables are differentiated, according the results provided in Table 5.13. The addition of past performance interaction terms to the structural model has a weak effect. These values are justified by the fact that past performance has a barely significant moderation effect as pure or quasi moderators.

For the tested moderation of customer turbulence, the interactions have shown to be non-significant; nonetheless, customer turbulence is positively and significantly related to both exploratory and exploitative innovation, which supports its stronger effect on the structural model (moderate effect sizes – please see Table 5.13). Customer turbulence is not a moderator – please see Figure 5.1 - rather it is an antecedent to exploratory and exploitative innovation.

Table 5.12 - PLS path coefficients – moderator effects

Moderator	Path coefficient (t-value)[(1)]	
Control Variables		
Export Intensity → Export Performance	0.27	(3.94) ***
Export experience → Export Performance	0.08	(1.36) †
Firm size → Export Performance	0.08	(1.33) †
Main effects		
Customer Orientation → Exploratory Innovation	0.34	(4.46) ***
Customer Orientation → Exploitative Innovation	0.46	(5.77) ***
Technology Orientation → Exploratory Innovation	0.32	(4.48) ***
Technology Orientation → Exploitative Innovation	0.21	(2.97) **
Exploratory Innovation → Export performance	0.26	(2.62) **
Exploitative Innovation → Export performance	0.24	(2.40) **
Past performance		
Past performance → Exploratory Innovation	-0.01	(0.22)
Past performance → Exploitative Innovation	0.06	(1.12)
Customer Orientation x Past performance → Exploratory Innovation	-0.14	(1.53) †
Customer Orientation x Past performance → Exploitative Innovation	-0.13	(1.44) †
Technology Orientation x Past performance → Exploratory Innovation	0.15	(1.80) *
Technology Orientation x Past performance → Exploitative Innovation	0.10	(1.44) †
Customer turbulence		
Customer turbulence → Exploratory Innovation	0.25	(3.80) ***
Customer turbulence → Exploitative Innovation	0.22	(3.30) ***
Customer Orientation x Customer turbulence → Exploratory Innovation	0.03	(0.26)
Customer Orientation x Customer turbulence → Exploitative Innovation	-0.04	(0.29)
Technology Orientation x Customer turbulence → Exploratory Innovation	-0.10	(0.85)
Technology Orientation x Customer turbulence → Exploitative Innovation	0.11	(0.95)
Technological turbulence		
Technological turbulence → Exploratory Innovation	-0.03	(0.39)
Technological turbulence → Exploitative Innovation	-0.07	(1.08)
Customer Orientation x Technological turbulence → Exploratory Innovation	0.01	(0.10)
Customer Orientation x Technological turbulence → Exploitative Innovation	0.22	(1.28) †
Technology Orientation x Technological turbulence → Exploratory Innovation	-0.01	(0.13)
Technology Orientation x Technological turbulence → Exploitative Innovation	0.07	(0.86)
R^2 - Export performance	0.38	
R^2 - Exploratory Innovation	0.54	
R^2 - Exploitative Innovation	0.60	

(1) one-tailed tests for all the hypothesis

† p<0.10 * p<0.05 ** p<0.01 *** p<0.001

Table 5.13 – Effect sizes – moderator effects

effecct size, f^2	Exploratory innovation	Exploitative innovation
Past performance	0.02	0.02
Customer turbulence	0.13	0.09
Technological turbulence	0	0.15

Finally, technological turbulence really moderates customer orientation-exploitative innovation; therefore a higher effect size was found (0.15, Table 5.13). However, it does not explain any additional variance of exploratory innovation (effect size = 0, Table 5.13).

The moderating effects of past performance

Results from Table 5.12 indicate that past performance significantly interacts with both customer and technology orientations for both exploratory and exploitative innovations, but it is not related to any of the innovation capabilities. Therefore, we classify this moderator as a pure moderator of the four relationships – please see Figure 5.1.

We also acknowledge the effect of past performance interaction terms with customer orientation (β=-0.14, t=1.53) and technology orientation (β=0.15, t=1.80) on exploratory innovation. However, they work in opposite directions, that is, the worst the past performance of the firm, the more a customer orientation is important for exploratory innovation; and the less a technology orientation impacts on exploratory innovation.

For exploitative innovation, the same is found. The worst the past performance of the firm, the more a customer orientation is important for exploitative innovation (β=-0.13, t=1.44); and the less a technology orientation impacts on exploitative innovation (β=0.10, t=1.44).

To assess the *relative impact* of the two strategic orientations for low and high levels of past performance, a sub-group analysis was performed. This step was also also necessary to

confirm whether past performance is really a pure moderator (due to the barely significant β coefficients) or a homologizer. Results are presented in Table 5.14. First, we are able to support the homologizer type of moderation for past performance.

Then, we confirm that under conditions of low past performance of the firm, a customer orientation has a greater effect than technology orientation on exploitative innovation (β difference is significant at $p<0.05$). *H9a* is thus supported. For exploratory innovation the same happens, in support of *H9b* (β difference is significant at $p<0.05$). When past performance of the firm is high, we found non-significant β differences for both exploratory and exploitative innovations. Therefore, *H10a is not supported* but *H10b is fully supported*.

Table 5.14 – Results of sub-group analysis for past performance

		Past performance	
	Relationship	β[a] low	β[a] high
β1	Customer orientation - Exploratory Innovation	0.60	0.42
β2	Technology orientation - Exploratory Innovation	0.21	0.45
	t (β1-β2)	2.30 (p<0.05)	n.s.
β1	Customer orientation - Exploitative Innovation	0.60	0.48
β2	Technology orientation - Exploitative Innovation	0.12	0.37
	t[b] (β1-β2)	2.08 (p<0.05)	n.s.
	R^2 - Export performance	0.273	0.452
	R^2 - Exploratory Innovation	0.515	0.509
	R^2 - Exploitative Innovation	0.437	0.504

[a] standardized coefficients

[b] t-test of the difference between the betas in the two relationhips, 1 and 2 (one-tailed)

n.s.=non significant

These findings provide some interesting insights. One of them is related to the need of a firm to "compensate" for a low past performance with a stronger customer orientation. Organizational learning literature supports the idea that firms tend to favor exploitative innovation when firm lacks resources (Voss, Sirdeshmukh and Voss, 2008), and that a customer orientation is far more important than a technology orientation in that situation (Day, 1994), because gathering new knowledge and investing in new technologies is then

unnecessary. However, even when there is a poor past performance history, exploratory innovation capabilities are needed to ensure the long-term survival of the firm (Levinthal and March, 1993). Our study shows that, even in this situation, a customer orientation is more important.

A possible interpretation for this finding is that, because a firm lacks resources, it cannot invest in technologies due to the high cost involved (Gatignon and Xuereb, 1997), therefore, it relies on developing innovative capabilities based on new customer domains (e.g. market-based innovations) rather than based on new technology domains (e.g. tech-based innovations or even more radical ones). For example, technological exporters may enter into new geographical markets with existing offers, and for that they need to develop new skills and knowledge related to those markets.

Another insight coming out from these results is linked to what happens when past performance is higher. Surprisingly, technology orientation does not surpass customer orientation's relevance, rather they are found to be equally important for both exploratory and exploitative innovation. When having a good past performance record, a firm can afford to explore new ideas and opportunities by pursuing new and sophisticated technologies. Radical or tech-based innovations are the most probable outcome, requiring both customer and technology orientations (Danneels, 2006; Zhou, Yim and Tse, 2005).

The moderating effects of customer turbulence

From both Figure 5.2 and Table 5.12, we conclude that customer turbulence is not a moderator; rather it is an antecedent to exploratory and exploitative innovations. *Hypotheses H11a, H11b, H12a and H12b are not thus supported.*

As mentioned in chapters 2 and 3, literature is divided between those that found a positive, a negative or a non-significant moderating effect of customer turbulence on the customer orientations-performance relationship (see Kirca, Jayachandran and Bearden, 2005). It was suggested, by those that found no support for the moderating role, that a market orientation is somewhat robust and permanent to the firm, regardless of the rate of change in consumers'

preferences (Jaworski and Kohli, 1993; Narver and Slater, 1990). Moreover, because the context of exporting is characterized by the presence of a firm in many highly diversified foreign markets, we may say that this implies an overall constant focus on customers (Zhou *et al.*, 2007), that is used to develop both exploratory and exploitative capabilities.

With respect to technology orientation, we have shown that, under normal conditions (see results for *H3*), a technology orientation is not rewarded differently from a customer orientation when developing exploratory innovation capabilities. We may then argue that a technology orientation has a constant role in shaping innovation capabilities of the firm. Moreover, a technology orientation is intrinsically linked to technological firms (Workman, 1993).

Other researchers (Zhou, Yim and Tse, 2005) evidenced the role of customer turbulence as an antecedent rather than a moderator. They argued that it is the uncertainty in the market that pushes for breakthrough innovations, because incremental innovations are not likely to satisfy customers in those markets (Wind and Mahajan, 1997). Support was found for a positive impact of customer turbulence on those innovations, which is in line with our results, that evidence a positive impact of customer turbulence on exploratory innovation (β=0.25, t=3.80).

However, we also obtained a positive result for the impact of customer turbulence on exploitative innovation (β=0.22, t=3.30). This finding seems to contradict the literature, as it suggests that firms in stable markets do not feel the need to modify greatly their products to satisfy customers (Wind and Mahajan, 1997). A possible explanation for this fact is linked to our context of study, the exporters. The more customer turbulence exists in foreign markets, the more an exporter will try to refine existing products and improve satisfaction next to the current customer base. Of course those exporters will also develop exploratory innovations, which allow gathering new market and technological opportunities.

The findings obtained in this study with respect to customer turbulence reinforce two ideas that researchers have broadly discussed: first, the idea that the firms needs a balance between exploratory and exploitative innovation capabilities, a balance which is determined by environmental conditions; second, that customer and technology orientations constantly

influence firm's innovation capabilities, meaning that it is the trade-off between exploration and exploitation that defines the relative roles of customer and technologies orientations.

The moderating effects of technological turbulence

Results from Table 5.12 indicate that technological turbulence interacts significantly with customer exploitative innovation (β=0.22, t=1.28), but that all the other interactions were found to be non-significant. Technological turbulence does not relate significantly to exploratory and exploitative innovation.

Therefore, while Figure 4.1 suggests classifying technological turbulence as a pure moderator of the customer orientation-exploitative innovation relationship, it also recommends the sub-group analysis for the other relationships, to examine the possibility of technological turbulence being a moderator of the type homologizer. In Table 5.15 we present the results from this analysis.

Customer orientation is more important than technology orientation in all situations except when technological turbulence is low and the relationship under examination is with exploratory innovation. We may conclude that hypotheses *H13a and H14a are not supported* while *H13b and H14b are fully supported*.

Confirmation of *H13b* and *H14b* are in line with the literature. When developing and analyzing the results for hypothesis *H4*, we discussed that in order to firms develop exploitative innovations, a customer orientation is extremely important as it allows for the fine-tuning of existing products and a better match with existing customer's needs. In this case, a firm does not need to invest strongly in new and sophisticated technologies, being enough to improve existing technologies by, for example, increasing the understanding of how they work or can be more efficient and by providing customers with more value.

Table 5.15 - Results of sub-group analysis for technological turbulence

		Technological turbulence		
	Relationship	β^a low	β^a high	t^b (β_{low}-β_{high})
β1	Customer orientation - Exploratory Innovation	0.45	0.55	p<0.001
β2	Technology orientation - Exploratory Innovation	0.34	0.17	p<0.001
	t^c (β1-β2)	n.s.	p<0.001	
β1	Customer orientation - Exploitative Innovation	0.53	0.79	p<0.001
β2	Technology orientation - Exploitative Innovation	0.21	-0.01	p<0.001
	t^c (β1-β2)	p<0.01	p<0.001	

[a] standardized coefficients

[b] t-test of the difference between betas in high and low subgroups (one-tailed)

[c] t-test of the difference between the betas in the two relationhips, 1 and 2 (one-tailed)

n.s.=non significant

With respective to exploratory innovation, when there is a low level of technological turbulence, we have found that a technology orientation is equally important to customer orientation, against what we have hypothesized (customer orientation more important than technology orientation). Again, our context might explain this finding. When the technological environment is stable, firms can benefit from relying and making full use of the technologies they already have; in this situation, a customer orientation is crucial. However, because of their nature, technological firms commit resources to R&D activities even when they don't have to (Gao, Zhou and Yim, 2007). Therefore a technology orientation maintains an important role when in presence of low technological turbulence.

When technology is undergoing rapid changes, firms must invest in R&D, develop breakthrough and radical innovations; seize the opportunities created by technological turbulence to go for next-generation products (Zhou, Yim and Tse, 2005). Therefore a technology orientation is of outmost importance. However, our findings do not support its superiority versus customer orientation, as it was hypothesized (*H14a*).

Some scholars argue that gathering customer information is critical in contexts of technological turbulence because more information is available, and customer's insights can

be used to facilitate rapid acceptance by customers of the new technological products (see Henard and Szymanski, 2001). Furthermore, it is important that these products are not seen by customers as merely gadgets, rather that they are designed to serve their needs (Mohr and Sarin, 2009). A customer orientation helps in doing that job.

5.4 - Conclusions

Out of the twenty hypotheses formulated in chapter 4, fourteen were fully supported and six were not supported. Table 5.16 presents an overview of them.

Table 5.16 – Supported and non-supported hypotheses

Main effects		Mediating effects		Moderating effects	
H1		*H7*		*H9*	
a	Supported	a	Supported	a	Supported
b	Supported	b	Supported	b	Supported
H2		*H8*		*H10*	
a	Supported	a	Supported	a	Not supported
b	Supported	b	Supported	b	Supported
H3	Supported			*H11*	
H4	Supported			a	Not supported
				b	Not supported
H5	Supported			*H12*	
H6	Supported			a	Not supported
				b	Not supported
				H13	
				a	Not supported
				b	Supported
				H14	
				a	Not supported
				b	Supported

In this chapter (Findings and Discussion) we have discussed and drawn conclusions about the findings. We have related the findings with both chapters 2 (Literature Review) and 3 (Model development and Hypotheses). Important insights were provided, that will be reflected on implications to researchers and recommendations to managers. These will be presented in the chapter 6 (Conclusion). The discussion was also useful in outlining limitations of this study and opening avenues for future research. These will also be topics for next chapter.

CHAPTER 6 – CONCLUSION

This chapter provides the conclusion of this work, aimed at gaining a better understanding about the roles of customer and technology orientations on firm's innovation and export performance.

We start by presenting the main research contributions at both theoretical and managerial levels. After, we identify the limitations of the study, which are also useful in indicating directions for future research, the section that follows. We end the chapter with a concluding summary.

6.1 - Research contributions

6.1.1 - Theoretical contributions

This study contributes to the literature in several ways.

First, we advance the export marketing literature by integrating two powerful theories, resource based view and organizational learning. By showing that an export superior performance can be attained and sustained through the conversion of a firm' strategic orientations into innovation capabilities, *we offer a new theoretical perspective on the strategic capabilities-innovation-performance relationship*.

The literature examining the link between strategic capabilities of the firm and its performance evidenced contradictory findings, which were somehow address by researchers with the introduction of innovation in the models (starting with Han, Kim and Srivastava, 1998). High-performing firms gather knowledge from the outside and develop knowledge inside with both types of knowledge needing to be converted into learning, through, for example, the development of innovations (Noble, Sinha and Kumar, 2002). We translate these

theoretical underpinnings by using innovation as a mediator of the strategic orientation-performance relationship. In the export marketing literature this approach was barely developed, therefore our contribution to the field is significant.

Second, we address two strategic orientations of the firm, customer orientation and technology orientation. Although marketing scholars have theorized a great deal about the importance of both orientations to a firm's innovation, these linkages have been rarely addressed in simultaneous (Gatignon and Xuereb, 1997; Zhou, Yim and Tse, 2005).

Furthermore *we examine the relative benefits of emphasizing a customer orientation over a technology orientation*, which, to our knowledge, was not yet done, although the need for studying this topic in an innovation context has been already recognized (Krasnikov and Jayachandran, 2008). Because resources are limited, firms have to make choices about their allocation, and have to decide the extent to which they will emphasize one orientation over the other; while we acknowledge that this fact implies a trade-off, we have been able to confirm that firms need to develop both orientations. One orientation cannot replace the other; rather, they are seen as complementary to the development of firm's innovation capabilities.

Third, *by using exploration and exploitative as innovation capabilities of the firm, we advance the debate on the tension between those two types of learning*, a fundamental issue in innovation and organizational learning literature (Levinthal and March, 1993; March, 1991). We have found that exploratory and exploitative innovations are tightly linked to the two strategic orientations. Moreover, the emphasis on one strategic orientation over the other determines the trade-off between the two innovation capabilities.

Fourth, we analyse the context of exporters. Research typically addressed those trade-offs in a domestic context which is quite surprising considering the fact that innovation and internationalization are two critical, and highly related, drivers of business today (Knight and Cavusgil, 2004; Zhang *et al.*, 2007). Moreover, export marketing research has devoted considerable attention to the study of market orientation (Cadogan, Diamantopoulos and Siguaw 2002; Murray *et al.* 2007; Zou, Fang and Zhao, 2003), but much less to the role of technological competences (Filatotchev *et al.*, 2009; Salomon and Shaver, 2005). Thus, we contribute to fill this research gap.

More specifically, *we address technological exporters*. While valid for any organization, our research is particularly important for a technological firm. Because these firms operate in markets characterized by very complex environments, they have the need for a sophisticated marketing (Mohr, Sengupta and Slater, 2009). Additionally, the fact that a technology orientation is inherent to those firms cannot be seen as a guarantee for success (Workman, 1993). Therefore, we also advance the literature related to technological firms, particularly exporting technological firms.

Fifth, we contribute to the contingency perspective. Within the external factors, we explored two market forces: customer turbulence and technological turbulence. Disparate findings exist in the literature for both moderators*; our contribution resides on examining the moderating effect on the relative impact of the two strategic orientations*, rather than on their individual roles, on the innovation capabilities of the firm. Furthermore, the study of those market factors in the context of technological firms is conceptually relevant, as they operate in highly unpredictable markets (Calantone, Garcia and Dröge, 2003).

We study past performance as an internal contingency factor. Organizational learning literature supports the idea of past performance as an antecedent of strategy (Durmuşoğlu *et al.,* 2008; Lages, Jap and Griffith, 2008). We advance the literature by following a different perspective from other researchers; we demonstrate that past performance acts as a moderator of the relationship between strategic orientations and performance.

Moreover we suggest that the two strategic orientations play a "corrective" role on the trade-off between exploration and exploitation. Organizational learning scholars showed that the level of past performance unbalances that trade-off, leading firms to exploit more and explore less or vice-versa (Levinthal and March, 1981). We contribute to this debate by *finding support to the effect of past performance on the trade-off between customer orientation and technology orientation*, therefore also influencing the trade-off between exploration and exploitation.

Finally, we contribute at a methodological level by using measures from three different types of sources (two from different types of respondents and one from financial reports), which is

important to reduce possible common method bias (Podsakoff *et al.*, 2003), one of the most common limitations of survey-based research.

6.1.2 - Managerial contributions

This research offers important insights to technological exporters.

The main one is that *higher export performance is achieved through the conversion of firms' strategic orientations into innovation capabilities*. Innovations have been shown to drive export performance because firms can leverage them by taking opportunities in foreign markets (Knight and Cavusgil, 2004). Two innovation capabilities need to be balanced: those aimed at developing new technologies and/or new markets and those aimed at improving existing technological and/or customer competences. We show in this study that strategic orientations contribute not only to the development of those capabilities but also to the achievement of a balance between them.

The second insight is *that a customer orientation is as important as a technological orientation for the development of the technological firms' innovation capabilities*. This finding is particularly interesting for technological firms, because they have been told that customers do not know what they really need or want (Christensen and Bower, 1996); that if they focused on customers they would end-up developing mostly incremental innovations (Zhou, Yim and Tse, 2005).

A too strong emphasis in technology orientation would push firms to mostly develop technology-based innovations. But exporters cannot rely only on those types of innovations. Going abroad is about developing knowledge on new customers, with different needs, which require capabilities to innovate in those new markets. It is critical that exporters constantly update their local market knowledge, assimilate it into the organizational routines, and develop effective strategies to address local customers (Cadogan, Kuivalainen and Sundqvist, 2009). Therefore, they also need to nurture a customer orientation.

So far, it is clear that technological export managers should care in developing and maintaining both a customer orientation and a technology orientation. However, from their point of view, the most useful and expected recommendation is "which orientation to emphasize to ensure success" This study provides some answers to this concern. Nonetheless, there is no "one size fits all" recommendation. It all depends.

First, it depends on the past performance of the firm. We recommend that *firms under a poor past performance situation strengthen their customer orientation*. In that situation, where there is a lack of resources, a technology orientation is difficult to maintain or reinforce, due to the strong R&D investments it would require. However, firms should not give up of breakthrough innovations and, instead, rely on incremental innovations only. This attitude would compromise the long-run of the business, because returns from incremental innovations exist only in the short-term (e.g. Levinthal and March, 1981).

A stronger customer orientation can help technological exporters in a low past performance situation to maintain a proper balance between both innovations: incremental and breakthrough, the latter being mostly based on existing technologies to address new markets. Exporters can take this opportunity to enter in markets less technologically developed than the domestic market. By contrast, when past performance is high, customer and technology orientations should be equally emphasized. Exporters can take the opportunity of having more technological developments to either leverage existing markets, by offering them sophisticated products, or to go for new markets offering existing or newly developed technologies.

Second, which orientation to emphasize also depends on the technological turbulence of the environment. Firms in highly technological turbulent environments have been told to reinforce their technology orientation (Zhou, Yim and Tse, 2005). However, our findings recommend that *managers of those firms increase customer orientation*. When facing rapidly technology changes and shorter product life cycles, customers often resist to buy new products until perceived risk is reduced, thereby slowing the diffusion process; therefore, firms need a very sophisticated marketing to protect their innovations, for example by convincing customers that those products are not merely gadgets; rather they are designed to serve them better (Mohr and Sarin, 2009). Moreover, there is more information in the market

(e.g. customer insights), which could be useful for firms to increase the acceptance of the new technological products.

Third, we have found that the choice between technology and customer orientations does not depend on customer turbulence. We argue, along with previous researchers, that because exporters are present in such diversified markets, with different degrees of customer turbulence and of technological development, they need *overall constant levels of customer orientation and technology orientation*s. Moreover, instead of affecting the way the strategic orientations are converted into firms' innovation capabilities, a customer turbulence determines the balance between those capabilities, thereby impacting, even if indirectly, on the required strategic orientations to develop those capabilities.

Concluding, technological exporters cannot rely only on their inherent technological orientation. International markets are quite diverse in technological developments and customer preferences; therefore, a customer orientation is crucial to enable the development of innovation capabilities to successfully operate in those markets.

6.2 Research limitations

Although this work has provided very useful theoretical and managerial insights, it also has limitations, mainly related to the sample. Other limitations suggest fertile avenues for future research, which we address in section 6.3.

The sample of Portuguese exporters for this study was extracted from AICEP's 2007 database. Although this was considered to be the most extensive and up-to-date database on Portuguese exporters, the survey was conducted in 2009, two years after the database publication. In a two-year period many changes occur, especially because we are considering technological exporters, operating in markets where there are high levels of instability that may result in very quickly market withdrawals. Thus, the first limitation of the study is related to the possibility that the database could be somewhat outdated at the moment of the data collection.

A second limitation is linked to the respondents to the survey. Despite having used two respondents within the same firm, in some of the smaller firms the two versions of the questionnaire were answered by the same manager, because it was the responsible by both the export operation and the R&D department. However, even on those situations, we have taken the necessary steps to ensure that all the respondents were knowledgeable about the topics of the survey.

Portugal is particularly interesting context to study because it is strongly dependent from the exporting activities of its firms. Furthermore, the small size of the domestic markets drives firms to a strong export orientation. Nevertheless, the use of a sample of Portuguese exporters limits the generalizability of the results to other countries.

Finally, the cross-sectional design of the study is also a limitation, as it does not allow establishing causal relationships. A longitudinal study would provide additional insights on the tested model. However, due to financial and time constrains, this option could not be undertaken.

6.3 - Directions for future research

Most of the existing research on strategic orientations has focused on their individual roles on innovation and performance. With this study we advanced the literature by also examining the relative impact of two strategic orientations of the firm, customer and technology orientations. Nonetheless, knowledge about when and how those strategic orientations affect innovation and performance is still lacking.

For example, non-linear relationships between those two orientations and innovation should also be investigated. It has been shown recently that market orientation has an inverted U-shape relationship to export performance (Cadogan, Kuivalainen and Sundqvist, 2009), that is, firms should only develop a market orientation up to a certain point after which investing on it rather than on other orientations provides more harm than benefits. Would these results be the same for technology orientation? How would the trade-off between customer and technology orientations be different then?

Other strategic orientations could be included in the model, such as entrepreneurial orientation. This orientation of the firm is closely linked to internationalization and to innovation (Lumpkin and Dess, 1996).

We have shown that strategic orientations are both needed for exploratory innovations, although they have differentiated relationships. It would be interesting to investigate the role of the strategic orientations in each of the exploratory innovations: market-based breakthrough innovations, tech-based breakthrough innovations and radical innovations. Danneels (2002) suggested that each one needs different competences; however this was not empirically tested yet.

Moderators can also offer a fertile area of research with the use of other financial moderators, such as cash flow or by incorporating the literature of slack resources. For example, researchers have shown that, depending on the absorption and the rarity of resources, firms' decisions will balance more towards exploration or exploitation (Voss, Sirdeshmukh and Voss, 2008). Following this line of research, customer and technology competences could also be typified to increase the understanding of their impact on innovation and performance.

Organizational moderators, such as those related to marketing-R&D integration/coordination or to top management characteristics have being of interest for many scholars (e.g. Atuahene-Gima, 2005; Yadav, Prabhu and Chandy, 2007). However, they have not been studied yet as moderators of the customer and technology orientations-innovation relationships. The study of how the trade-off between those strategic orientations changes under higher levels of internal integration or more supportive or entrepreneur top managers could provide additional insights to export managers.

Finally, this research could also be extended through the inclusion of other measures of export performance, such as non economic measures, such as relationship performance (Lages, Silva and Styles, 2009), aiming at strengthening the understanding of strategic orientations' differentiated roles, particularly in the export context.

6.4 - Summary

This thesis proposes a different perspective of looking at two important strategic orientations of the firm and their impact on its innovation and performance.

Based on the integration of two theories, resource based view and organizational learning, we confirm that exploratory and exploitative innovation capabilities of the firm play a mediating role between its strategic orientations and export performance.

Moreover, we examined the relative impact of the two strategic orientations on those innovation capabilities and concluded that a customer orientation is as important as a technology orientation, which is a very interesting insight, particularly for technological exporting firms.

Finally, we acknowledged that the relative role of the two strategic orientations depends on environmental factors and on the past performance of the firm. Customer orientation becomes more effective in developing the innovation capabilities of the firm whenever past performance is lower and technological turbulence is higher.

Three papers were prepared during this dissertation, representing an additional contribution to the research in international marketing. These papers are:

Hortinha, P., L.F. Lages and C. Lages (2010), Innovation and performance implications of the trade-off between customer and technology orientations, *Journal of International Marketing*, under (last) review process.

Hortinha, P., L.F Lages and C. Lages (2010), Trading Off Customer and Technology for innovation: Which one leads in good and bad times?, *Proceedings of the 39th European Marketing Academy Conference (EMAC)*, Copenhagen.

Hortinha, P., L.F. Lages and C. Lages (2009), Technology-Market Transfer Orientation: Matching Technology and Market Orientations, *Proceedings of the 38th European Marketing Academy Conference (EMAC)*, Nantes.

We expect that this research, both the dissertation and the papers, may stimulate future research and discussion in the international marketing and strategy literature.

Important insights were also provided to managers, hoping to guide them in their export strategies and operations, namely, through the conversion of their firms' strategic directions into innovation capabilities that allow sustaining a superior export performance. Furthermore, specific recommendations were formulated on the complex task of trading-off the two important strategic orientations: towards the export customers and towards the technology development.

REFERENCES

Aaby, N. E. and S. Slater (1989), Management influences on export performance: a review of the empirical literature 1978–1988, *International Marketing Review*, 6 (4), 7-25.

AICEP (2007), *Base de Dados de Exportadores*, Agência para o Investimento e Comércio Externo de Portugal.

AICEP (2010), *Ficha Pais Portugal Global*, Agência para o Investimento e Comércio Externo de Portugal. Available from: http://www.portugalglobal.pt/PT/Biblioteca/LivrariaDigital/PortugalFichaPais.pdf.

Aiken, L. S. and S. G. West (1991), *Multiple Regression: Testing and Interpreting Interactions*, Newbury Park, CA: Sage Publications.

Albers, S. (2007), PLS and Success Factor Studies in Marketing, In: *Handbook of Partial Least Squares. Concepts, Methods, and Applications in Marketing and Related Areas*, Esposito Vinzi, V., Chin, W.W., Henseler, J. and Wang, H. (eds.), Springer, Heidelberg.

Alvarez, R. (2004), Sources of export success in small and medium-sized enterprises: the impact of public programs, *International Business Review*, 13, 383–400.

Amit, R. and P. J. H. Schoemaker (1993), Strategic Assets and Organizational Rents, *Strategic Management Journal*, 14 (1), 33–46.

Anderson, P. F. (1982), Marketing, Strategic Planning and the Theory of the Firm, *Journal of Marketing*, 46 (Spring), 15-26.

Armstrong, S. J. and T. S. Overton (1977), Estimating Nonresponse Bias in Mail Surveys, *Journal of Marketing Research*, 16 (August), 396–400.

Atuahene-Gima, K. (1995), An exploratory analysis of the impact of market orientation on new product performance, *Journal of Product Innovation Management*, 12, 275–293.

Atuahene-Gima, K. (1996), Market Orientation and Innovation, *Journal of Business Research*, 35 (February), 93–103.

Atuahene-Gima, K. (2005), Resolving the capacity-rigidity paradox in new product innovation, *Journal of Marketing*, 69(October), 61-83.

Atuahene-Gima, K. and J. Y. Murray (2007), Exploratory and exploitative learning in new product development: A social capital perspective on new technology ventures in China, J*ournal of International Marketing*, 15(2), 1–29.

Atuahene-Gima, K., Stanley F. S., and E. M. Olson (2005), The Contingent Value of Responsive and Proactive Market Orientations for Product Innovation, *Journal of Product Innovation Management*, 22 (6), 464-482.

Autio, E., H. Sapienza and J. Almeida (2000), Effects of Age at the Entry, Knowledge Intensity and Imitability on International Growth, *Academy of Management Journal,* 43(5), 909–24.

Bagozzi, Richard P. (1980), *Causal Models in Marketing*, New York: John Wiley and Sons.

Barclay, D., C. Higgins and R. Thompson (1995), The Partial Least Squares (PLS) Approach to Causal Modeling: Personal Computer Adoption and Use as an Illustration, *Technology Studies*, 2(2), 285-324.

Baker, W. E., and J. M. Sinkula, (1999), The Synergistic Effect of Market Orientation and learning Orientation on Organizational Performance, *Journal of the Academy of Marketing Science*, 27(4), 411-427.

Baker, W. E. and J. M. Sinkula, (2002), Market Orientation, Learning Orientation and Product Innovation: Delving into the Organization's Black Box, *Journal of Market Focused Management*, 5, 5-23.

Baker, W. E. and J. M. Sinkula (2005), Market orientation and the new product paradox, *Journal of Product Innovation Management*, 22, 483-502.

Baker, W. E. and J. M. Sinkula (2007), Does market orientation facilitate balanced innovation programs? An organizational learning perspective, *Journal of Product Innovation Management*, 24, 316-334.

Balabanis, G. I. and E. S. Katsikeas (2003), Being an entrepreneurial exporter: does it pay? *International Business Review*, 12, 233–252.

Baron, R. M. and D. A. Kenny (1986), The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations, *Journal of Personality and Social Psychology*, 51 (6), 1173–82.

Barney, J. B. (1991), Firm resources and sustained competitive advantage, *Journal of Management*, 17(1), 99–120.

Benner, M. J., and Tushman, M. (2002), Process management and technological innovation: A longitudinal study of the photography and paint industries, *Administrative Science Quarterly,* 47, 676–706.

Benner, M. J. and M. L. Tushman (2003), Exploitation, exploration and process management: The productivity dilemma revisited, *Academy of Management Review,* 28, 238-256.

Bialaszewski, D. and M. Giallourakis (1985), Perceived communication skills and resultant trust perceptions within the channel of distribution, *Journal of Academy of Marketing Science*, Vol. 13 No.2, pp.206-17.

Boomsma, A. and J. J. Hoogland (2001), The robustness of LISREL modelling revisited, In: R. Cudeck, S. du Toit and D. Sörbom (Eds), *Structural equation modelling: Present and future*, 139–168, Chicago, IL: Scientific Software International.

Bourgeois III., L. J. (1981), On the measurement of organizational slack, *Academy of Management Review,* 6(1), 29–39.

Bowen, F. E., M. Rostami and P. Steel (2009), Timing is everything: A meta-analysis of the relationships between organizational performance and innovation, *Journal of Business Research*, in press.

Bureau van Dijk (2009), *Sabi database*, Bureau van Dijk Group.

Burgel, O. and G. C. Murray (2000), The international market entry choices of start-up companies in high-technology industries, *Journal of International Marketing*, 8, 33-62.

Cadogan, J. W., Cui, C. C. and Li, E. K. Y. (2003), Export Market-Oriented Behavior and Export Performance: The Moderating Roles of Competitive Intensity and Technological Turbulence, *International Marketing Review*, 20 (5), 493–513.

Cadogan, J. W., C. C. Cui, R. E. Morgan and V. M. Story (2006), Factors facilitating and impeding the development of export market-oriented behavior: a study of Hong Kong manufacturing exporters, I*ndustrial Marketing Management*, 35, 634-647.

Cadogan, J. W., A. Diamantopoulos and J. A. Siguaw (2002), Export market orientated activities: Their antecedents, performance consequences, and moderating influences, *Journal of International Business Studies*, 33(3), 615–626.

Cadogan, J. W., O. Kuivalainen and S. Sundqvist (2009), Export market-oriented behaviour and export performance: quadratic and moderating effects under differing degrees of market dynamism and internationalization, *Journal of International Marketing*, 17(4), 71-89.

Cadogan, J. W., S. Sundqvist., R.T. Salminen and K. Puumalainen (2002), Market-oriented behavior: comparing service with product exporters, *European Journal of Marketing*, 36, 1076–1102.

Cadogan, J. W., S. Sundqvist, R. T. Salminen and K. Puumalainen (2005), Export marketing, interfunctional interactions, and performance consequences, *Journal of the Academy of Marketing Science*, 33(4), 520–535.

Calantone, R. J., R. Garcia and C. Dröge (2003), The effects of environmental turbulence on new product development strategy planning, *Journal of Product Innovation Management*, 20, 90–103.

Cameron, K. S. (1986), A study of organizational effectiveness and its predictors, *Management Science*, 32, 87-112.

Cano, R., F. A. Carrillat and F. Jaramillo (2004), A meta-analysis of the relationship between market orientation and business performance: Evidence from five continents, *International Journal of Research in Marketing*, 21(2), 179–200.

Cateora, P. R., A. Gilly, C. Mary and J. I. Graham (2009), *International Marketing*, 13th edition, Irwin/ McGraw-Hill.

Cavusgil, S. (1984), Organizational characteristics associated with export activity, *Journal of Management Studies*, 21(1), 3–22.

Cavusgil, S. T. and S. Zou (1994), Marketing Strategy–Performance Relationship: An Investigation of the Empirical Link in Export Market Ventures, *Journal of Marketing*, 58 (January), 1–21.

Certo, S. T., R. H. Lester, C. M. Dalton and D. R. Dalton (2006), Top management teams, strategy and financial performance: A meta-analytic examination, *Journal of Management Studies,* 43: 813–839.

Chakravarthy, B. (1997), A new strategy framework for coping with turbulence, *Sloan Management Review*, Winter, 69–82.

Chandy, R. K. and G. J. Tellis (1998), Organizing for radical product innovation: the overlooked role of willingness to cannibalize, *Journal of Marketing Research*, 35(4), 474–487.

Chandy, R. K. and G. J. Tellis (2000), The Incumbent's Curse? Incumbency, Size, and Radical Product Innovation, *Journal of Marketing*, 64(3), 1–17.

Chetty, S. K. and R. T. Hamilton (1993), Firm-level determinants of export performance: a meta-analysis, *International Marketing Review*, 10, 26–34.

Chin, W. W. (1998), The Partial Least Squares Approach to Structural Equation Modeling, in *Modern Methods for Business Research*, G.A. Marcoulides, ed. Mahwah, NJ: Lawrence Erlbaum Associates.

Christensen, C. M. (2006), The Ongoing Process of Building a Theory of Disruption, *Journal of Product Innovation Management*, 23, 39-55.

Christensen, C. M. (1997), *The Innovator's Dilemma*, Boston: Harvard Business School Press.

Christensen, C. M. and J. L. Bower (1996), Customer Power, Strategic Investment, and the Failure of Leading Firms, *Strategic Management Journal*, 17 (March), 197–218.

Christensen, C. H., A. da Rocha and R. K. Gertner (1987), An Empirical Investigation of the Factors Influencing the Exporting Success of Brazilian Firms, *Journal of International Business Studies*, 18, 61-77.

Chung, H. F. L. (2003), International Standardization Strategies: The Experiences of Australian and New Zealand Firms Operating in the Greater China Markets, *Journal of International Marketing*, 11(3), 48-82.

Churchill, Gilbert A., Jr. (1979), A Paradigm for Developing Better Measures of Marketing Constructs, *Journal of Marketing Research*, 16 (February), 64–73.

Cochran, P. L. and R. A. Wood (1984), Corporate social responsibility and financial performance, *Academy of Management Journal*, 27, 42–56.

Cohen, J. (1988), *Statistical power for the behavioral sciences*, Hillsdale, NJ: Erlbaum.

Contractor, J. J., C-C. Hsuand and S. K. Kundu. (2005), Explaining export performance: a comparative study of international new ventures in Indian and Taiwanese software industry, *Management International Review*, 45(3), 83–110.

Cool, K., I. Dierickx, and D. Jemison (1989), Business strategy, market structure and risk–return relationships: A structural approach, *Strategic Management Journal*, 10(6), 507–522.

Cooper, R. G. (1983), A process model for industrial new product development, *IEEE Transactions on Engineering Management*, EM-30(1), 2-11.

Cooper, R. G. and E. J. Kleinschmidt (1995) Product development: past research, present findings and future directions, *Academy of Management Review*, 20, 2, 343-378.

Covin, J. G. and D. P. Slevin (1988), The influence of organization structure on the utility of an entrepreneurial top management style, *Journal of Management Studies*, 25, 217-234.

Crane, F. G. (2009), *Marketing for Entrepreneurs: Concepts and Applications for New Ventures*, Sage Publications, Inc.

Crossan, M. M., H. W. Lane and R. E. White (1999), An organizational learning framework: From intuition to institution, *Academy of Management Review,* 24, 522-537.

Crotty, M. (1998), *The foundations of social research. Meanings and perspectives in the research proces*s, London: Sage publications.

Cyert R. M. and J. G. March (1963), *A Behavioral Theory of the Firm*. Prentice-Hall: Englewood Cliffs, NJ.

Czinkota, M. R. and W. J. Johnston (1983), Exporting: Does Sales Volume Make a Difference?, *Journal of International Business Studies*, 14/1 (Spring/Summer), 147-153.

Czinkota, M. R. and I. A. Ronkainen (2007), *International Marketing*, 8th edition, Thomson, South-Western

Damanpour, F. and W. M. Evan (1984), Organizational innovation and performance: the problem of organizational lag, *Administrative Science Quarterly*, 29, 392-409.

Danneels, E. (2002), The dynamics of product innovation and firm competences, *Strategic Management Journal*, 23(12), 1095–1121.

Danneels, E. (2006), Dialogue on the Effects of Disruptive Technologies on Firms and Industries, *Journal of Product Innovation Management*, 23, 2-4.

Danneels, E. (2007), The process of technological competence leveraging, *Strategic Management Journal,* 28, 511–533.

Danneels, E. (2008), Organizational antecedents of second-order competences, *Strategic Management Journal*, 29, 519-543.

Day, G. S. (1994), The Capabilities of Market-Driven Organizations, *Journal of Marketing*, 58 (October), 37-52.

Day, G. S. and R. Wensley (1988), Assessing Advantage: A Framework for Diagnosing Competitive Superiority, *Journal of Marketing,* 52 (April), 1-20.

De Luca, L. M., G. Verona and S. Vicari (2008), Market Orientation and R&D Effectiveness in High-Technology Firms: An Empirical Investigation in the Biotechnology Industry, *Journal of Product Innovation Management*, 27(3), 299-320.

Deshpande, R. and J. U. Farley (2000), Market-Focused Organizational Transformation in China, *Journal of Global Marketing*, 14(1–2), 7–35.

Deshpandé, R., J. U. Farley and F. Webster Jr. (1993), Corporate Culture, Customer Orientation, and Innovativeness in Japanese Firms: A Quadrad Analysis, *Journal of Marketing*, 57 (January), 23–37.

Dewer, R. and J. Dutton (1986), The adoption of radical and incremental innovations: An empirical analysis, *Management Science,* 32, 1422-1433.

Diamantopoulos, A. and Kakkos, N. (2007), Managerial assessments of export performance: conceptual framework and empirical illustration, *Journal of International Marketing*, 15(3), 1-31.

Dougherty, D. (1992), A practice-centered model of organizational renewal through product innovation, *Strategic Management Journal*, 13, 77–92.

Dougherty, D. and C. Hardy (1996), Sustained Product Innovation in Large, Mature Organizations: Overcoming Innovation-to-Organization Problems, *Academy of Management Journal*, 39 (5), 1120–53.

Douglas, S. P. and C. S. Craig (1983), *International Marketing Research*, 2nd Ed., Englewood Cliffs, NJ: Prentice Hall International Editions

Drazin, R. and A. H. Van de Ven (1985), Alternative forms of fit in contingency theory, *Administrative Science Quarterly*, 30, 514–539.

Droge, C., R. Calantone, and N. Harmancioglu (2008), New product success: is it really controllable by managers in highly turbulent environments?, *Journal of Product Innovation Management*, 25 (3), 272–286.

Drucker, P. F. (1954), *The practice of Management*. New York: Harper & Row.

Durmuşoğlu, S. S., R. C. McNally, R. J. Calantone, and N. Harmancioglu (2008), How Elephants Learn the New Dance When Headquarters Changes the Music: Three Case Studies on Innovation Strategy Change, *Journal of Product Innovation Management*, 25, 386-403.

Dutta, S., O. Narasimhan and S. Rajiv (1999), Success in High-Technology Markets: Is Marketing Capability Critical?, *Management Science*, 18 (4), 547-568.

Eggert, A. (2007), Getting your PLS research published: a personal and interpersonal perspective, in: *Proceedings of the academy of the marketing science 2007 world marketing congress*, July 11-14, Verona, Italy.

Ettlie, J. E. and W. P. Bridges (1982), Environmental uncertainty and organizational technological policy, *IEEE Transactions on Engineering Management*, 29, 2–10.

Ettlie, J. E. and M. Subramaniam (2004), Changing strategies and tactics for new product development, *Journal of Product Innovation Management*, 21(2), 95-109.

European Commission (1996), *Recommendation 96/280/CE*, April, 3rd.

Eurostat (2009), Statistical Office of the European Communities, available from: http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/htec_esms_an3.pdf.

Eurostat (2010), European Commission, Pocket Books edition, available from: http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-32-10-225/EN/KS-32-10-225-EN.PDF.

Falk, R. F. and N. B. Miller (1992), *A Primer for Soft Modeling*, Akron, OH: University of Akron Press.

Filatotchev, I., X. Liu, T. Buck and M. Wright, (2008), The export orientation and export performance of high-technology SMEs in emerging markets: The effects of knowledge transfer by returnee entrepreneurs, *Journal of International Business Studies***,** 40(6), 1005-1021.

Fiol, M. and M. A. Lyles (1985), Organizational learning, *Academy of Management Review*, 10(4), 803–813.

Fornell, C. and D. F. Larcker (1981), Evaluating Structural Equation Models with Unobservable Variables and Measurement Error, *Journal of Marketing Research*, 28 (February), 39–50.

Gao, G. Y., K. Z. Zhou and C. K. Yim (2007), On what should firms focus in transitional economies? A study of the contingent value of strategic orientations in China, *International Journal of Research in Marketing*, 24, 3–15

Garcia, R. and R. Calantone (2002), A Critical Look at Technological Innovation Typology and Innovativeness Terminology: A Literature Review, Journal of Product Innovation Management, 19 (2), 110–32.

Garcia, R., R. Calantone and R. Levine (2003), The Role of Knowledge in Resource Allocation to Exploration versus Exploitation in Technologically Oriented Organizations, *Decision Sciences*, 34(2), 323 – 349.

Gatignon, H. and J. M. Xuereb (1997), Strategic Orientation of the Firm and New Product Performance, *Journal of Marketing Research*, 34 (February), 77-90.

Gemunden, H. G. (1991), Success factors of export marketing: a meta-analytic critique of the empirical studies, in Paliwoda, S.J. (Ed.), *New Perspectives on International Marketing,* Routledge, London, 33-62.

George, S. and S. Govind (2007), *Philips: making sense of simplicity*, Case Study, ICMR Center for Management Research, India.

Gibson, C. B. and J. Birkinshaw (2004), The antecedents, consequences and mediating role of organizational ambidexterity, *Academy of Management Journal,* 47, 209–226.

Ginsberg, A. and V. Venkatraman (1985), Contingency perspectives of organizational strategy: A critical review of the empirical research, *Academy of Management Review,* 10, 421-434.

Glazer, R. and A.M. Weiss (1993), Marketing in turbulent environments: decision processes and the time-sensitivity of information, *Journal of Marketing Research*, 16, 509-521.

Gopalakrishnan, S. and F. Damanpour (1997), A review of innovation research in economics, sociology, and technology management, *Omega*, 25 (1), 15–28.

Grewal, R. and P. Tansuhaj (2001), Building Organizational Capabilities for Managing Economic Crisis: The Role of Market Orientation and Strategic Flexibility, *Journal of Marketing*, 65 (April), 67–80.

Grinstein A. (2008), The effect of market orientation and its components on innovation consequences: a meta-analysis, *Journal of the Academy of Marketing Science*, 36 (2), 166–173.

Guan, J. and N. Ma (2003), Innovative capability and export performance of Chinese firms, *Technovation*, 23, 737–747.

Gupta, A. K., K. G. Smith and C. E. Shalley (2006), The interplay between exploration and exploitation, *Academy of Management Journal,* 49: 693-706.

Hamel, G. and C.K. Prahalad (1994), *Competing for the Future*, Boston: HBS Press.

Han, J., K. Kim and N. Srivastava (1998), Market orientation and organizational performance: Is innovation a missing link?, *Journal of Marketing*, 62(4), 30–45.

Handelman, J. M. and S. J. Arnold (1999), The Role of Marketing Actions with a Social Dimension: Appeals to the Institutional Environment, *Journal of Marketing,* 63 (July), 33-48.

Hauser, J. R., G. Tellis and A. Griffin (2006), Research on innovation: A review and agenda for marketing science, *Marketing Science,* 25(6), 687–717.

He, Z. L. and P. K. Wong (2004), Exploration vs. exploitation: an empirical test of the ambidexterity hypothesis, *Organization Science* 15(4), 481–494.

Henard, D. H. and D. M. Szymanski (2001), Why Some New Products Are More Successful Than Others, *Journal of Marketing Research*, 38 (August), 362–75.

Henderson, R. M. and K. Clark (1990), Architectural innovation: The reconfiguration of existing product technologies and the failure of established firms, *Administrative Science Quarterly,* 35, 9-30.

Henseler, J., C. M. Ringle and R. R. Sinkovics (2009), The use of Partial Least Squares path modeling in international marketing, *Advances in International Marketing*, 20, 277-319.

Homburg, C., M. Grozdanovic and M. Klarmann (2007), Responsiveness to customers and competitors: the role of affective and cognitive organizational systems, *Journal of Marketing*, 71(3), 18–38.

Homburg, C. and C. Pflesser (2000), A Multiple-Layer Model of Market-Oriented Organizational Culture: Measurement Issues and Performance Outcomes, *Journal of Marketing Research*, 37 (November), 448–463.

Hortinha, P., L. F. Lages and C. Lages (2010), Trading Off Customer and Technology for innovation: Which one leads in good and bad times?, *Proceedings of the 39th European Marketing Academy Conference (EMAC)*, Copenhagen.

Hsieh, M.-H. and K.-H. Tsai (2007), Technological capacity, social capital and the launch strategy for innovative products, *Industrial Marketing Management*, 36(4), 493-502.

Huberman, A. e M. Miles (2002), *The Qualitative Researchers Companion*, Sage Publications, California, USA.

Huff, J. O., A. S. Huff, and H. Thomas (1992), Strategic Renewal and the Interaction of Cumulative Stress and Inertia, *Strategic Management Journal,* 13 (Summer), 55-76.

Hulland, J. (1999), Use of partial least squares (PLS) in strategic management research: a review of four recent studies, *Strategic Management Journal,* 20, 195-204.

Hult, G. T. M. and D. J. Ketchen Jr. (2001), Does Market Orientation Matter? A Test of the Relationship between Positional Advantage and Performance, *Strategic Management Journal*, 22 (9), 899–906.

Hult, G. T. M., D. J. Ketchen and S. F. Slater (2005), Market orientation and performance: An integration of disparate approaches, *Strategic Management Journal*, 26(12), 1173–1181.

Hunt, S. D. and C. J. Lambe (2000), Marketing's contribution to business strategy: Market orientation, relationship marketing and resource-advantage theory, *International Journal of Management Reviews,* 2, 17–43.

Hunt, S. D., R. D. Sparkman, and J. B. Wilcox (1982), The Pretest in Survey Research: Issues and Preliminary Findings, *Journal of Marketing Research*, 19 (May), 269–73.

Hurley, R. F. and G. Hult (1998), Innovation, market orientation and organizational learning: an integration and empirical examination, *Journal of Marketing*, 62(July), 42-54.

Im, S. and J. P. Workman Jr (2004), Market orientation, creativity, and new product performance in high-technology firms, *Journal of Marketing*, 68 (April), 114-132.

Jansen, J. J. P., F. A. J. Van den Bosch, H. W. Volberda (2006), Exploratory Innovation, Exploitative Innovation, and Financial Performance: How do Organizational Antecedents and Environmental Moderators Matter?, *Management Science*, 52(11), 1661-1674.

Jaworski, B. J. and A. K. Kohli (1993), Market Orientation: Antecedents and Consequences, *Journal of Marketing*, 57 (January), 481–89.

Jaworski, B. J., A. K. Kohli and A. Sahay (2000), Market-Driven Versus Driving Markets, *Journal of the Academy of Marketing Science*, 28 (1), 45–54.

Jeong, I., J. H. Pae and D. Zhou (2006), Antecedents and consequences of the strategic orientations in new product development: The case of Chinese manufacturers, *Industrial Marketing Management*, 35, 348–358.

Johnston, W. J. and M. R. Czinkota (1982), Managerial Motivations as Determinants of Industrial Export Behaviour, in *Export Management: An International Context*, edited by M.R. Czinkota and G. Tesar, New York, 3-17.

Johnson, M. D., A. Herrmann and F. Huber (2006), The Evolution of Loyalty Intentions, *Journal of Marketing*, 70(2), 122-132.

Joshi, A.W. and S. Sharma (2004), Customer knowledge development: antecedents and impact on new product performance, *Journal of Marketing*, 68, 47-59.

Katsikeas, C. S. (1994), Export Competitive Advantages: The Relevance of Firm Characteristics, *International Marketing Review*, 11(3), 33-53.

Katsikeas, C. S., L. C. Leonidou and N. A. Morgan (2000), Firm-level export performance assessment: review, evaluation, and development, *Journal of the Academy of Marketing Science*, 28(4), 493–511.

Katsikeas, C. S., L. C. Leonidou and S. Samiee (2009), Research into Exporting: Theoretical, Methodological, and Empirical Insights, in M. Kotabe and K. Helsen (Ed.), *The SAGE Handbook of International Marketing*, SAGE Publications, London.

Keil, M., B. C. Y. Tan, K. Wei, T. Saarinen, V. Tuunainen and A. Wassenaar (2000), A cross-cultural study on escalation of commitment behavior in software projects, *MIS Quarterly*, 24, 299–325.

Kim, N. and K. Atuahene-Gima (2010), Using Exploratory and Exploitative Market Learning for New Product Development, *Journal of Product Innovation Management*, 27(4), 519-536.

Kirca, A. H., S. Jayachandran, and W. O. Bearden (2005), Market orientation: A meta-analytic review and assessment of its antecedents and impact on performance, *Journal of Marketing*, 69(2), 24–41.

Kirpalani V. H. and D. Balcome (1987), International marketing success: on conducting more relevant research, in: Rosson P.J., Reid S.D., editors, *Managing export entry and expansion: an international context*, New York: Praeger Publishers, 387–97.

Kleinschmidt, E.J. and R.G. Cooper (1991), The impact of product innovativeness on performance, *Journal of Product Innovation Management*, 8(December), 240–251.

Knight, G. A. and S. T. Cavusgil (2004), Innovation, organizational capabilities, and the born-global firm, *Journal of International Business Studies*, 35(2), 124–141.

Kogut, B. and U. Zander (1992), Knowledge of the firm, combinative capabilities, and the replication of technology, *Organization Science*, 3(3), 383-397.

Kohli, A. (1989), Determinants of Influence in Organizational Buying: A Contingency Approach, *Journal of Marketing*, 53 (July), 50-65.

Kohli, A. and B. J. Jaworski (1990), Market Orientation: The Construct, Research Propositions, and Managerial Implications, *Journal of Marketing*, 54 (April), 1-18.

Kotler, Philip (2002), *Marketing Management*, 11th ed. Englewood Cliffs, NJ: Prentice Hall.

Krasnikov, A. and S. Jayachandran (2008), The Relative Impact of Marketing, Research-and-Development, and Operations Capabilities on Firm Performance, *Journal of Marketing*, 72 (July), 1–11.

Kumar, N. and N. S. Siddharthan (1994), Technology, Firm Size and Export Behaviour in Developing Countries, *Journal of Development Studies*, 32, 2, 288-309.

Kyriakopoulos, K. and C. Moorman (2004), Tradeoffs in Marketing Exploitation and Exploration Strategies: The Overlooked Role of Market Orientation, *International Journal of Research in Marketing,* 21 (3), 219-240.

Lafley, A. G. (2009), What Only the CEO Can Do, *Harvard Business Review*, May.

Lages, L. F., S. D. Jap, and D. Griffith (2008), The Role of Past Performance in Export Ventures: A Short-Term Reactive Approach, *Journal of International Business Studies*, 39 (2), 304–25.

Lages, L. F. and C. R. Lages (2004), The STEP Scale: A Measure of Short-Term Export Performance Improvement, *Journal of International Marketing*, 12 (1), 36–56.

Lages, L. F., C. Lages and C. R. Lages (2005), Bringing Export Performance Metrics into Annual Reports: The APEV Scale and the PERFEX Scorecard, *Journal of International Marketing*, 13 (3), 70–104.

Lages, L. F. and D.B. Montgomery (2004), Export performance as an antecedent of export commitment and marketing strategy adaptation, *European Journal of Marketing*, 39, (7/8), 755-784.

Lages, L. F. and D. B. Montgomery (2005), The relationship between export assistance and performance improvement in Portuguese export ventures: an empirical test of the mediating role of pricing strategy adaptation, *European Journal of Marketing*, 39, 755–784.

Lages, L.F., G. Silva, and C. Styles (2009), Relationship Capabilities, Quality, and Innovation as Determinants of Export Performance, *Journal of International Marketing*, 17(4), 47–70.

Lages, L. F., G. Silva, C. Styles, Z. L. Pereira (2009), The NEP Scale: A measure of network export performance, *International Business Review*, 18(4), 344-356.

Lant, T. K. and S. J. Mezias (1992), An organizational learning model of convergence and Reorientation, *Organization Science*, 3(1), 47–71.

Lant, T. K., F. J. Milliken and B. Batra (1992), The role of managerial learning and interpretation in strategic persistence and reorientation: An empirical exploration, *Strategic Management Journal*, 13, 585–608.

Ledwith, A. and M. O'Dwyer (2009), Market orientation, NPD performance, and organizational performance in small firms, *Journal of Product Innovation Management*, 26(6), 652 – 661.

Lee, C., K. Lee, and J. M. Pennings (2001), Internal Capabilities, External Networks, and Performance: A Study on Technology-based Ventures, *Strategic Management Journal*, 22(6/7), 615–640.

Leonard-Barton, D. (1992), Core capabilities and core rigidities: A paradox in managing new product development, *Strategic Management Journal,* 13, 111-125.

Leonidou, L. C. and C. S. Katsikeas (1996), The Export Development Process: An Integrative Review of Empirical Models, *Journal of International Business Studies*, 27 (3), 517–51.

Leonidou, L. C., C. S. Katsikeas, D. Palihawadana and S. Spyropoulou (2007), An analytical review of the factors stimulating smaller firms to export: Implications for policy makers, *International Marketing Review*, 24, 6, 735-770.

Leonidou, L. C., C. S. Katsikeas and N. F. Piercy (1998), Identifying managerial influences on exporting: past research and future directions, *Journal of International Marketing*, 6, 74–102.

Leonidou, L. C., C. S. Katsikeas and S. Samiee (2002), Marketing strategy determinants of export performance: a meta-analysis, *Journal of Business Research*, 55, 51–67.

Levinthal, D. A. and J. G. March (1981), A model of adaptive organizational search, J*ournal of Economic Behavior and Organization,* 2, 307–333.

Levinthal, D. A. and J. G. March (1993), The myopia of learning, *Strategic Management Journal*, 14, 95-112.

Levitt, B. and J. G. March (1988), Organizational learning, *Annual Review of Sociology* 14, 319–340.

Lee, R. and R. Grewal (2004), Strategic Responses to New Technologies and Their Impact on Firm Performance, *Journal of Marketing*, 68 (October), 157–71.

Lee, M. and D. Na (1994), Determinants of technical success in product development when innovative radicalness is considered, *Journal of Product Innovation Management*, 11, 62–68.

Lee, K.-H., G. Yang and J. L. Graham (2006), Tension and trust in international business negotiation: American executives negotiating with Chinese executives, *Journal of International Business Studies*, 37(5), 623–641.

Li, H.Y. and K. Atuahene-Gima (2001), Product innovation strategy and the performance of new technology ventures in China, *Academy of Management Journal*, 44, 1123–1134.

Li, T. and R. J. Calantone (1998), The Impact of Market Knowledge Competence on New Product Advantage: Conceptualization and Empirical Evidence, *Journal of Marketing*, 62(October), 13–29.

Lin, X. and R. Germain (2003), Organizational structure, context, customer orientation, and performance: Lessons from Chinese state-owned enterprises, *Strategic Management Journal*, 24, 1131–1151.

Lindman, M. T. (2002), Open or Closed Strategy in Developing New Products? A case study of Industrial NPD in SMEs, *European Journal of Innovation Management*, 5, (4), 224-236

Lubatkin, M. H., Z. Simsek, Y. Ling and J. F. Veiga (2006), Ambidexterity and performance in small- to medium-sized firms: The pivotal role of TMT behavioral integration, *Journal of Management,* 32, 1-27.

Lukas, B. and O. C. Ferrell (2000), The Effect of Market Orientation on Product Innovation, *Journal of the Academy of Marketing Science*, 28 (2), 239-247.

Lumpkin, G. T. and G. G. Dess (1996), Clarifying the entrepreneurial orientation construct and linking it to performance, *Academy of Management Review*, 21, 135-173.

Luo, X., K. Sivakumar and S. Liu (2005), Globalization, marketing resources, and performance: Evidence from China, *Journal of the Academy of Marketing Science*, 33(1), 50–65.

MacKinnon, D. P., C. M. Lockwood, J. M Hoffman, S. G. West and V. Sheets (2002), A comparison of methods to test mediation and other intervening variable effects, *Psychological Methods*, 7, 83–104.

Madsen, T. K. (1987), Empirical Export Performance Studies: A Review of Conceptualizations and Findings, in *Advances in International Marketing,* Vol. 2, S. Tamer Cavusgil, ed. Greenwich, CT: JAI Press, 177-98.

March, J. G. (1991), Exploration and Exploitation in Organizational Learning, *Organization Science*, 2 (February), 71–87.

Martin, J. (1995), Ignore your customer, *Fortune Magazine*, 131(8), 121.

Matsuno, K. and J. T. Mentzer (2000), The Effect of Strategy Type on the Market Orientation–Performance Relationship, *Journal of Marketing*, 64, 1–16 (October).

Matsuno, K., J. T. Mentzer and A. Özsomer (2002), The effects of entrepreneurial proclivity and market orientation on business performance, *Journal of Marketing*, 66, 18–32.

Matthyssens, P. and P. Pauwels (1996), Assessing export performance measurement, in Cavusgil, S.T. and Madsen, T.K. (eds), *Advances in International Marketing*, New York: JAI Press.

Menon, A., S. G. Bharadwaj and R. D. Howell (1996), The quality and effectiveness of marketing strategy: effect of functional and dysfunctional conflict in intraorganizational relationships, *Journal of Academy of Marketing Sciences*, 24 (4), 299-313.

Miesenböck, K. J. (1988), Small business and exporting: a literature review, *International Small Business Journal*, 6(2), 42-61.

Mizik, N., and R. Jacobson (2003), Trading off between value creation and value appropriation: The financial implications of shifts in strategic emphasis, *Journal of Marketing*, 67(1), 63–76.

Moen, Ø. (1999), The relationship between firm size, competitive advantages export performance revisited, *International Small Business Journal*, 18, 53–72.

Mohr, J. and S. Sarin (2009), Drucker's insights on market orientation and innovation: implications for emerging areas in high-technology marketing, *Journal of the Academy of Marketing Science*, 37, 85-96.

Mohr, J., S. Sengupta, and S. Slater (2009), *Marketing of High-Technology Products and Innovations*, Upper Saddle River, Pearson Education, Inc.

Morgan, N. A., A. Kaleka and C. S. Katiskeas (2004), Antecedents of export venture performance: a theoretical model and empirical assessment, *Journal of Marketing*, 68 (1), 90-108.

Morgan, N. A., D. W. Vorhies and C. H. Mason (2009), Market Orientation, Marketing Capabilities, and Firm Performance, *Strategic Management Journal*, 30, 909-920.

Motwani, J., T. Dandridge, J. Jiang and K. Soderquist (1999), Managing innovation in French small and medium-sized enterprises, *Journal of Small Business Management*, 37(2), 106-114.

Murray, J. Y., G. Y. Gao, M. Kotabe and N. Zhou (2007), Assessing measurement invariance of export market orientation: a study of Chinese and non-Chinese firms in China, *Journal of International Marketing*, 15 (4), 72-80.

Naidu, G. M. and V. K. Prasad (1994), Predictors of export strategy on export sales performance, *Journal of Business Research*, 31, 107–115.

Narver, J. C. and S. F. Slater (1990), The effect of market orientation on business profitability, *Journal of Marketing*, 54 (October), 20–35.

Noble, C. H., R. K. Sinha, and A. Kumar (2002), Market orientation and alternative strategic orientations: A longitudinal assessment of performance implications, *Journal of Marketing*, 66(4), 25–39.

Nohria, N. and R. Gulati (1996), Is slack good or bad for innovation?, *Academy of Management Journal* 39(5), 1245–1264.

Nunnally, J. C. and I. H. Bernstein (1994), *Psychometric theory*, 3rd ed., New York: McGraw-Hill.

OECD (2002), *Frascati Manual: Proposed Standard Practice for Surveys on Research and Experimental Development*, OECD Publishing.

OECD (2005), *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data,* 3rd Edition, Eurostat, OECD Publishing.

OECD (2008), *Economic survey of Portugal 2008: Maximising the gains from integration in the world economy*, 25 June, OECD Publishing.

Olson, E. M., S. F. Slater and G. T. M. Hult (2005), The Performance Implications of Fit among Business Strategy, Marketing Organization Structure, and Strategic Behavior, *Journal of Marketing*, 69 (3), 49–65.

Özsomer, A. and E. Gençtürk (2003), A Resource-Based Model of Market Learning in the Subsidiary: The Capabilities of Exploration and Exploitation, *Journal of International Marketing*, 11 (3), 1–29.

Paladino, A. (2007), Investigating the Drivers of Innovation and New Product Success: A Comparison of Strategic Orientations, *Journal of Product Innovation Management*, 24(6), 534-553.

Perry, M. L. and A. T. Shao (2002), Market Orientation and Incumbent Performance in Dynamic Market, *European Journal of Marketing*, 36(9–10), 1140–1154.

Pestana, M. H. and Gageiro, J. N. (2000), *Análise de dados para ciências sociais*: A complementaridade do SPSS, 2nd ed., Lisboa, Ed. Sílabo, Lda.

Plano Tecnológico (2005), *Documento de apresentação*, available from: http://www.planotecnologico.pt/document/OPlanoTecnologico.pdf.

Podsakoff, P. M., S. B. MacKenzie, J.-Y. Lee, and N. P. Podsakoff (2003), Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies, *Journal of Applied Psychology*, 88 (5), 879–903.

Porter, M. E. (1980), *Competitive Strategy,* Free Press, New York.

Porter, M. E. (1985), *Competitive Advantage,* Free Press, New York.

Prahalad, C. K. and G. Hamel (1990), The Core Competence of the Organization, *Harvard Business Review*, 68, 79-91.

Prasad, V. K., K. Ramamurthy and G. M. Naidu (2001), The influence of internet-marketing integration on marketing competencies and export performance, *Journal of International Marketing*, 9, 82–110.

Quintana-García, C., and C. A. Benavides-Velasco (2008), Innovative Competence, Exploration and Exploitation: The Influence of Technological Diversification, *Research Policy,* 37(3), 492–507.

Ramani, G. and V. Kumar (2008), Interaction Orientation and Firm Performance, *Journal of Marketing*, 72 (January), 27–45.

Renko, M., A. Carsrud and M. Brännback (2009), The Effect of a Market Orientation, Entrepreneurial Orientation, and Technological Capability on Innovativeness: A Study of Young Biotechnology Ventures in the United States and in Scandinavia, *Journal of Small Business Management*, 47(3), 331 – 369.

Renko, M., A. Carsrud, M. Brännback, and J. Jalkanen (2005), Building Market Orientation in Biotechnology SMEs: Balancing Scientific Advances, *International Journal of Biotechnology*, 7(4), 250–268.

Richard, P. J., T. M. Devinney, G. S. Yip and G. Johnson (2009), Measuring organizational performance: towards methodological best practice, *Journal of Management*, 35, 718-804.

Ringle, C., M. Wende and S. Will (2005), *SmartPLS 2.0* (beta), University of Hamburg, Hamburg, Germany.

Robertson, C. and S. K. Chetty (2000), A contingency-based approach to understanding export performance, *International Business Review*, 9, 211–235.

Rose, G. M. and A. Shoham (2002), Export Performance and Market Orientation: Establishing an Empirical Link, *Journal of Business Research*, 55 (March), 217–25.

Ruppenthal, T. and A. Bausch (2009), Research on export performance over the past 10 years: a narrative review, *European Journal of International Management*, 3(3), 328-364.

Salavou, H. (2005), Do customer and technology orientations influence product innovativeness in SMEs? Some new evidence from Greece, *Journal of Marketing Management*, 21, 307-38.

Salomon, R., and J. M. Shaver (2005), Export and domestic sales: Their interrelationship and determinants, *Strategic Management Journal*, 26(9), 855–871.

Sarkar, M., R. Echambadi and J. Harrison (2001), Alliance Entrepreneurship and Firm Market Performance, *Strategic Management* Journal, 22 (6/7), 701-711.

Schmidt, J. B. and R. J. Calantone (1998), Are really new product development projects harder to shut down?, *Journal of Product Innovation Management,* 15 (March), 111-123.

Schoonhoven, C. B. (1981), Problems with contingency theory: Testing assumptions hidden within the language of contingency "theory", *Administrative Science Quarterly*, 26, 349- 377.

Shapiro, B. P. (1988), What the Hell is Market Oriented?, *Harvard Business Review*, (November–December), 119–125.

Sharma, S., R. M. Durand, and O. Gur-Arie (1981), Identification and Analysis of Moderator Variables, *Journal of Marketing Research,* 18 (August), 291-300.

Shoham, A. (1998), Export Performance: A Conceptualization and Empirical Assessment, *Journal of International Marketing*, 6 (3), 59-81.

Shoham, A. (1999), Bounded Rationality, Planning, Standardization of International Strategy, and Export Performance: A Structural Model Examination, *Journal of International Marketing*, 7 (2), 24-50.

Shoham, A. (2002), Standardization of international strategy and export performance: a meta-analysis, *Journal of Global Marketing*, 16 (1/2), 97–120.

Shoham, A., F. U. Evangelista, and G. Albaum (2002), Strategic Firm Type and Export Performance, *International Marketing Review*, 19 (3), 236-58.

Shoham, A. and G. M. Rose (2001), Market Orientation: A Replication, Cross-National Comparison, and Extension, *Journal of Global Marketing,* 14(4), 5-25.

Siggelkow, N. (2001), Change in the presence of fit: The rise, the fall, and the renaissance of Liz Claiborne, *Academy of Management Journal*, 44, 838–857.

Sin, L. and A. Tse (2000), How does Market Effectiveness Mediate the Effect of Organizational Culture on Business Performance? The Case of Service Firms, *Journal of Service Marketing*, 14(4), 295–307.

Sin, L., A. Tse, O. Yau, R. Chow and J. Lee (2003), Market Orientation and Business Performance: A Comparative Study of Firms in Mainland China and Hong Kong, *European Journal of Marketing*, 37(5–6), 910–936.

Singh, J. V. (1986), Performance, slack, and risk taking in organizational decision making, *Academy of Management Journa*l, 29(3), 562–585.

Singh, S. (2003), Effects of Transition Economy on the Market Orientation–Business Performance Link: The Empirical Evidence from Indian Industrial Firms, *Journal of Global Marketing*, 16(4), 73–96.

Sinkula, J. M. (1994), Market Information Processing and Organizational Learning, *Journal of Marketing*, 58 (January), 35-45.

Slater, S. F., G. T. Hult and E. M. Olson (2007), On the Importance of Matching Strategic Behavior and Target Market Selection to Business Strategy in High-Tech Markets, *Journal of the Academy of Marketing Science*, 35 (5), 5-17.

Slater, S. F. and J. C. Narver (1994), Does competitive environment moderate the market orientation–performance relationship?, *Journal of Marketing*, 58(1), 46–55.

Slater, S. F. and J. C. Narver (1995), Market Orientation and the Learning Organization, *Journal of Marketing*, 59(3), 63–74.

Slater, S. F. and J. C. Narver (1998), Customer-led and market-oriented: let's not confuse the two, *Strategic Management Journal*, 19(10), 1001–6.

Slater, S. F. and Narver, J. C. (2000), Intelligence Generation and Superior Customer Value, *Journal of the Academy of Marketing Science*, 28 (1), 120-127.

Sobel, M. E. (1982), Asymptotic Confidence Intervals for Indirect Effects in Structural Equation Models, in Leinhardt S. (Ed.), *Sociological Methodology*, San Francisco: Jossey-Bass, 290-312.

Soderquist, K., J. J. Chamaron and J. Motwani (1997), Managing Innovation in French Small and Medium Sized Enterprises: An Empirical Study, *Benchmarking for Quality Management & Technology*, 4(4), 259-272.

Solberg, C. A. and U. H. Olsson (2010), Management orientation and export performance: the case of Norwegian ICT companies, *Baltic Journal of Management*, 5(1), 28-50.

Song M., C. Dröge, S. Hanvanich and R. Calantone (2005), Marketing and technology resource complementarity: an analysis of their interaction effect in two environmental contexts, *Strategic Management Journal,* 26(3), 259–276.

Song, X. M. and M. M. Montoya-Weiss (1998), Critical development activities for really new versus incremental products, *Journal of Product Innovation Management*, 15(2), 124-135.

Song, X. M. and M. E. Parry (1997), A cross-national comparative study of new product development processes: Japan and the United States, *Journal of Marketing*, 61(2), 1-18.

Sousa, C. M. P. (2004), Export performance measurement: an evaluation of the empirical research in the literature, *Academy of Marketing Science Review*, Vol. 9, pp.1–22.

Sousa, C. M. P. and F. Bradley (2006), Cultural distance and psychic distance: Two peas in a pod?, *Journal of International Marketing*, 14(1), 49–70.

Sousa, C. M. P., F. J. Martínez-López and F. Coelho (2008), The Determinants of Export Performance: A Review of the Research in the Literature Between 1998 and 2005, *International Journal of Management Reviews*, 10 (4), 343–74.

SPSS (2007), *Statistical Package for the Social Sciences 16.0 for Windows*, SPSS Inc., Chicago, IL.

Srinivasan, R., G. L. Lilien, and A. Rangaswamy (2002), Technological Opportunism and Radical Technology Adoption: An Application to E-Business, *Journal of Marketing*, 66(July), 47–60.

Sterlacchini, A. (1999), Do innovative activities matter to small firms in non-R&D intensive industries? An application to export performance, *Research Policy*, 28(8), 819–832.

Styles, C. (1998), Export Performance Measures in Australia and the United Kingdom, *Journal of International Marketing,* 6, 12-36.

Styles, C. and T. Ambler (1994), Successful export practice: the UK experience, *International Marketing Review*, 11, 23–47.

Subramanian, R. and P. Gopalakrishna (2001), The Market Orientation–Performance Relationship in the Context of a Developing Economy: An Empirical Analysis, *Journal of Business Research*, 53(1), 1–13.

Subramanian A. and S. Nilakanta (1996), Organisational Innovativeness: Exploring the Relationship Between Organisational Determinants of Innovation, Types of Innovations, and Measures of Organisational Performance, *Omega, International Journal of Management Science*, 6, 631-647.

Teece, D. J., G. Pisano, and A. Shuen (1997), Dynamic Capabilities and Strategic Management, *Strategic Management Journal*, 18 (7), 509–533.

Tenenhaus, M., V. E. Vinzi, Y.-M. Chatelin and C. Lauro (2005), PLS path modeling, *Computational Statistics & Data Analysis*, 48(1), 159–205.

Theoharakis, V. and A. Hirst (2002), Perceptual Differences of Marketing Journals: A Worldwide Perspective, *Marketing Letters*, 13(4), 389–402.

Tidd, J. (1995), Development of novel products through interorganisational and interorganisational networks: the case of home automation, *Journal of Product Innovation Management,* 22(11), 307–23.

Tsang, E. W. K. (2002), Acquiring knowledge by foreign partners from international joint ventures in a transitional economy: learning-by-doing and learning myopia, *Strategic Management Journal*, 23(9), 835–854.

Tushman, M. L. and P. Anderson (1986), Technological Discontinuities and Organizational Environments, *Administrative Science Quarterly*, 31 (3), 439-465.

Tushman, M. L. and C. A. O'Reilly (1996), The ambidextrous organization: managing evolutionary and revolutionary change, *California Management Review,* 38, 1-23.

Uotila, J., M. Maula, T. Keil and S. A. Zahra (2009), Exploration, exploitation, and financial performance: analysis of S&P 500 corporations, *Strategic Management Journal*, 30, 221-231.

Van de Vijver, F. and Leung, K. (1997), Methods and data analysis of comparative research, in Berry, J.W., Poortinga, Y.H., Pandey, J. (Eds), *Handbook of Cross-Cultural Psychology*, Allyn and Bacon, Boston, MA, 247-300.

Venaik, S., D. F. Midgley and T. M. Devinney (2005), Dual paths to performance: The impact of global pressures on MNC subsidiary conduct and performance, *Journal of International Business Studies*, 36(6), 655–675.

Verma, M.; Momin, P. and P. Girija (2008), *Motorola: losing its 'Razr's' edge*, Case Study, ICFAI Business School, Pune.

Von Hippel, E., S. Thomke and M. Sonnack (1999), Creating Breakthroughs at 3M, *Harvard Business Review,* 77(5), 47-57.

Voss G.B., D. Sirdeshmukh and Z.G. Voss (2008), The effects of slack resources and environmental threat on product exploration and exploitation, *Academy of Management Journal,* 51(1), 147–164.

Voss, G. B. and Z. G. Voss (2000), Strategic Orientation and Firm Performance in an Artistic Environment, *Journal of Marketing*, 64 (January), 67–83.

Wagner, T., T. H. Thurau and T. Rudolph (2009), Does Customer Demotion Jeopardize Loyalty?, *Journal of Marketing*, 73(3), 69-85.

Webster Jr, F. E. (1992), The Changing Role of Marketing in the Corporations, *Journal of Marketing*, 56 (October), 1-17.

Wei, Y. and K. Atuahene-Gima (2009), The moderating role of reward systems in the relationship between market orientation and new product performance in China, *International Journal of Research in Marketing*, 26(2), 89-96.

Weiss, A. M., and J. B. Heide (1993), The nature of organizational search in high technology markets, *Journal of Marketing Research*, 30 (May), 220-33.

Welch, L. S. and F. Wiedersheim-Paul (1980), Initial exports - a marketing failure?, *Journal of Management Studies*, 17(4), 333-344.

Wernerfelt, B. (1984), A resource-based view of the firm, *Strategic Management Journal,* 5(2), 171-180.

Wind, J. and V. Mahajan (1997), Issues and Opportunities in New Product Development: An Introduction to the Special Issue, *Journal of Marketing Research*, 34 (February), 1–12.

Workman, J. P., Jr. (1993), Marketing's Limited Role in New Product Development in One Computer Systems Firm, *Journal of Marketing Research*, 30 (November), 405–421.

World Bank (2010), *World Development Indicators*, available from: http://data.worldbank.org/indicator/NE.EXP.GNFS.ZS.

Woo, C. (1983), Evaluation of the strategies and performance of low ROI market share leaders, *Strategic Management Journal*, 4, 123-135.

Yalcinkaya, G.R., R. J. Calantone, and D. A. Griffith (2007), An Examination of Exploration and Exploitation Capabilities: Implications for Product Innovation and Market Performance, *Journal of International Marketing*, 15 (4), 63–93.

Yadav, M. S., J. C. Prabhu and R. K. Chandy (2007), Managing the future: CEO attention and innovation outcomes, *Journal of Marketing*, 71 (October), 84-101.

Yeoh, P-L. (2000), Information acquisition activities: a study of global start-up exporting companies, *Journal of International Marketing*, 8(3), 36–60.

Zhang, Y., H. Li, M. A. Hitt and G. Cui (2007), R&D intensity and international joint venture performance in an emerging market: Moderating effects of market focus and ownership structure, *Journal of International Business Studies*, 38(6), 944-960.

Zhou, K. Z., J. R. Brown, C. S. Dev and S. Agarwal (2007), The effects of customer and competitor orientations on performance in global markets: a contingency analysis, *Journal of International Business Studies*, 38(2), 303–19.

Zhou, K. Z. and C. B. Li (2010), How strategic orientations influence the building of dynamic capability in emerging economies, *Journal of Business Research*, 63(3), 224-231.

Zhou, K. Z., C. K. Yim and D. K. Tse (2005), The effects of strategic orientations on technology- and market-based breakthrough innovations, *Journal of Marketing*, 69 (April), 42-60.

Zou, S. and S. T. Cavusgil (2002), The GMS: A Broad Conceptualization of Global Marketing Strategy and Its Effect on Firm Performance, *Journal of Marketing*, 66 (October), 40–56.

Zou, S., E. Fang and S. Zhao (2003), The effect of export marketing capabilities on export performance: An investigation of Chinese exporters, *Journal of International Marketing*, *11* (4), 32.

Zou, S. and S. Stan (1998), The determinants of export performance: a review of the empirical literature between 1987 and 1997, *International Marketing Review*, 15 (5), 333– 56.

Zou, S., C. Taylor, and G. Osland (1998), The EXPERF Scale: A Cross-National Generalized Export Performance Measure, *Journal of International Marketing,* 6 (3), 37-60.

APPENDIX 1

Questionnaire – "the market perspective" version

Note: for clarity purposes we present the complete administered questionnaire, despite the fact that only some of the questions were used in this thesis.

Transferencia de tecnologia p/exportacao - Mercado

1.

Antes de começar note que:

- não há respostas certas ou erradas, apenas a sua opinião é importante.

- no caso de perguntas que não se apliquem à realidade da empresa deve seleccionar N/A.

- muitas vezes as perguntas parecem repetir-se, não se preocupe, faz parte do método de estudo.

Transferencia de tecnologia p/exportacao - Mercado

2.

1. Em 2008, quantos colaboradores trabalharam a tempo inteiro na empresa em Portugal?

- 1-9
- 10-49
- 50-249
- >250

2. Há quantos anos existe a empresa em Portugal?

3. Quais foram, em 2008, as vendas TOTAIS DA EMPRESA em Portugal?

- ≤ 100 mil €
- 100 - 350 mil €
- 350 mil € - 1,5 milhões €
- 1,5 - 3,5 milhões €
- 3,5 - 5 milhões €
- 5 - 35 milhões €
- 35 - 145 milhões €
- ≥145 milhões €

4. Em 2008, qual foi o número de países estrangeiros nos quais a empresa em Portugal manteve actividades de exportação?

5. Há quantos anos está a empresa envolvida em actividades de exportação?

6. Qual foi, em 2008, a contribuição das vendas de Exportação para o total das vendas da empresa em Portugal?

- 0-9%
- 10-29%
- 30-59%
- 60-84%
- 85-100%

Page 2

Transferencia de tecnologia p/exportacao - Mercado

3.

7. Qual o seu grau de concordância com as seguintes afirmações relativas à actuação da empresa nos MERCADOS de EXPORTAÇÃO?

1= DISCORDO TOTALMENTE ... 7=CONCORDO TOTALMENTE

	1	2	3	4	5	6	7	N/A
Os nossos objectivos de negócio são definidos em função da satisfação do cliente	○	○	○	○	○	○	○	○
Verificamos constantemente o nosso nível de empenho e orientação em servir as necessidades dos clientes	○	○	○	○	○	○	○	○
A nossa estratégia para a obtenção de vantagem competitiva é baseada na compreensão das necessidades dos clientes	○	○	○	○	○	○	○	○
As nossas estratégias de negócio baseiam-se no modo como podemos criar mais valor para os clientes	○	○	○	○	○	○	○	○
Medimos a satisfação dos clientes frequente e sistematicamente	○	○	○	○	○	○	○	○
Damos muita atenção ao serviço pós-venda	○	○	○	○	○	○	○	○
Respondemos rapidamente às acções da concorrência	○	○	○	○	○	○	○	○
A nossa força de vendas partilha regularmente com toda a empresa informação sobre as estratégias dos concorrentes	○	○	○	○	○	○	○	○
Os gestores de topo discutem regularmente os pontos fortes e estratégias dos concorrentes	○	○	○	○	○	○	○	○
Definimos como alvo o cliente com o qual podemos ter uma vantagem competitiva	○	○	○	○	○	○	○	○
Todas as nossas áreas funcionais (I&D, Marketing/vendas, produção, etc) estão integradas de modo a servir as necessidades dos nossos mercados alvo	○	○	○	○	○	○	○	○
Todas as nossas áreas funcionais e departamentos são reactivos às necessidades e solicitações uns dos outros	○	○	○	○	○	○	○	○
Os gestores de topo de cada área funcional visitam regularmente clientes actuais e potenciais	○	○	○	○	○	○	○	○
Comunicamos abertamente informação sobre as nossas experiências com os clientes entre todas as áreas funcionais	○	○	○	○	○	○	○	○
Os nossos gestores percebem como podem contribuir para criar valor para o cliente	○	○	○	○	○	○	○	○

Transferencia de tecnologia p/exportacao - Mercado

4.

8. Em que medida concorda com as seguintes afirmações relativas à ACTIVIDADE de EXPORTAÇÃO:

1= DISCORDO TOTALMENTE... 7= CONCORDO TOTALMENTE

	1	2	3	4	5	6	7	N/A
Tem sido muito lucrativa.	○	○	○	○	○	○	○	○
Tem gerado um elevado volume de vendas.	○	○	○	○	○	○	○	○
Tem atingido um rápido crescimento.	○	○	○	○	○	○	○	○
Tem melhorado a nossa competitividade global.	○	○	○	○	○	○	○	○
Tem melhorado a nossa posição estratégica.	○	○	○	○	○	○	○	○
Tem melhorado significativamente a nossa quota de mercado.	○	○	○	○	○	○	○	○
A sua performance tem sido muito satisfastória.	○	○	○	○	○	○	○	○
Tem tido muito sucesso.	○	○	○	○	○	○	○	○
Alcançou na totalidade as nossas expectativas.	○	○	○	○	○	○	○	○

9. No que diz respeito às ACTIVIDADES DE EXPORTAÇÃO, em que medida são utilizados os seguintes mecanismos para integrar a informação de mercado e a informação tecnológica?

1= NUNCA UTILIZADAS... 7 = LARGAMENTE UTILIZADAS

	1	2	3	4	5	6	7	N/A
Comités internos para selecção das melhores oportunidades de inovação	○	○	○	○	○	○	○	○
Reuniões formais entre as várias áreas para análise e avaliação dos projectos de inovação	○	○	○	○	○	○	○	○
Utilização de especialistas internos e/ou consultores para síntese da informação	○	○	○	○	○	○	○	○
Análise e discussão formais dos produtos novos bem sucedidos	○	○	○	○	○	○	○	○
Análise e discussão formais dos produtos novos fracassados	○	○	○	○	○	○	○	○

Transferencia de tecnologia p/exportacao - Mercado

5.

10. De que forma concorda com as seguintes afirmações relativas à actuação da empresa nos MERCADOS DE EXPORTAÇÃO?

1= DISCORDO TOTALMENTE ... 7=CONCORDO TOTALMENTE

	1	2	3	4	5	6	7	N/A
Procuramos novas ideias tecnológicas pensando "outside the box"	○	○	○	○	○	○	○	○
Baseamos o nosso sucesso na capacidade em explorar novas tecnologias	○	○	○	○	○	○	○	○
Criamos produtos ou serviços que são inovadores para a empresa	○	○	○	○	○	○	○	○
Procuramos formas creativas de satisfazer as necessidades dos clientes	○	○	○	○	○	○	○	○
Arriscamos de forma dinâmica a entrada em novos segmentos de mercado	○	○	○	○	○	○	○	○
Visamos activamente novos grupos de clientes	○	○	○	○	○	○	○	○
Comprometemo-nos a melhorar a qualidade e a baixar o custo	○	○	○	○	○	○	○	○
Melhoramos continuamente a fiabilidade dos produtos e serviços	○	○	○	○	○	○	○	○
Aumentamos o grau de automatização das operações	○	○	○	○	○	○	○	○
Verificamos constantemente a satisfação dos clientes actuais	○	○	○	○	○	○	○	○
Adaptamos a nossa oferta para manter os clientes actuais satisfeitos	○	○	○	○	○	○	○	○
Analisamos em profundidade os clientes actuais	○	○	○	○	○	○	○	○

11. Tendo em conta os MERCADOS DE EXPORTAÇÃO, qual o seu grau de concordância com as seguintes afirmações?

1= DISCORDO TOTALMENTE ... 7=CONCORDO TOTALMENTE

	1	2	3	4	5	6	7	N/A
As preferências dos clientes relacionadas com as características dos produtos têm mudado bastante ao longo do tempo	○	○	○	○	○	○	○	○
Assistimos à procura dos nossos produtos por parte de novos clientes	○	○	○	○	○	○	○	○
Os novos clientes têm necessidades de produtos diferentes das dos clientes actuais	○	○	○	○	○	○	○	○
Os nossos concorrentes estão sempre a alterar as características dos seus produtos	○	○	○	○	○	○	○	○
Os nossos concorrentes estão sempre a alterar as suas estratégias de vendas	○	○	○	○	○	○	○	○
Verifica-se a entrada de novos concorrentes no mercado	○	○	○	○	○	○	○	○

Transferencia de tecnologia p/exportacao - Mercado

6.

12. Em que medida concorda com as seguintes afirmações relativas ás actividades de EXPORTAÇÃO da empresa?

1= DISCORDO TOTALMENTE ... 7=CONCORDO TOTALMENTE

	1	2	3	4	5	6	7	N/A
A estratégia e os objectivos de negócio são focados na satisfação do cliente	○	○	○	○	○	○	○	○
Os gestores de topo incentivam a organização a desenvolver um profundo conhecimento do mercado	○	○	○	○	○	○	○	○
Marketing/Vendas e I&D comunicam abertamente	○	○	○	○	○	○	○	○
Os gestores de topo encorajam o assumir riscos por parte de ambos Marketing/Vendas e I&D	○	○	○	○	○	○	○	○
Tentamos desenvolver continuamente produtos tecnologicamente superiores que nos proporcionem vantagem competitiva	○	○	○	○	○	○	○	○
Os gestores de topo incentivam a organização a desenvolver e implementar novas tecnologias	○	○	○	○	○	○	○	○
Os gestores de topo veiculam a ideia de que a empresa deve estar preparada para dar resposta às alterações de mercado	○	○	○	○	○	○	○	○
Os gestores de topo veiculam a ideia de que a empresa deve estar preparada para dar resposta às alterações tecnológicas	○	○	○	○	○	○	○	○
Usamos continuamente tecnologias sofisticadas no desenvolvimento de novos produtos	○	○	○	○	○	○	○	○
Temos reuniões regulares com os clientes para entender as suas necessidades actuais e futuras de novos produtos	○	○	○	○	○	○	○	○
Temos um entendimento insuficiente do negócio dos clientes	○	○	○	○	○	○	○	○
Os conhecimentos tecnológico e de mercado são integrados no desenvolvimento de novos produtos	○	○	○	○	○	○	○	○
Alocamos recursos em grande escala para promover a integração entre Marketing/Vendas e I&D	○	○	○	○	○	○	○	○

Page 6

Transferencia de tecnologia p/exportacao - Mercado

13. Está de acordo com as seguintes afirmações relativas à actuação da empresa no que respeita à EXPORTAÇÃO?

1= DISCORDO TOTALMENTE ... 7=CONCORDO TOTALMENTE

	1	2	3	4	5	6	7	N/A
Promovemos continuamente a criação conjunta de conhecimento entre Marketing/Vendas e I&D	○	○	○	○	○	○	○	○
Recolhemos e analisamos continuamente informação sobre os concorrentes para melhor os conhecer	○	○	○	○	○	○	○	○
Fazemos "benchmark" dos produtos e tecnologias dos concorrentes para o desenvolvimento de novos produtos	○	○	○	○	○	○	○	○
Os nossos produtos novos raramente usam tecnologias avançadas	○	○	○	○	○	○	○	○
Somos proactivos no desenvolvimento de novas tecnologias e na geração de ideias para novos produtos	○	○	○	○	○	○	○	○
Analisamos continuamente informação sobre os clientes para melhor os conhecer	○	○	○	○	○	○	○	○
A informação sobre as necessidades actuais e futuras dos clientes é integrada no desenvolvimento de novos produtos	○	○	○	○	○	○	○	○
A nossa organização aceita dificilmente a inovação tecnológica	○	○	○	○	○	○	○	○
As novas tecnologias são rapidamente integradas no desenvolvimento de novos produtos	○	○	○	○	○	○	○	○
Marketing/Vendas e I&D raramente partilham informação sobre os clientes e concorrentes	○	○	○	○	○	○	○	○
Marketing/Vendas e I&D estão bem representados nas nossas equipas de desenvolvimento de novos produtos	○	○	○	○	○	○	○	○
Compreender as necessidades dos clientes é parte da nossa missão	○	○	○	○	○	○	○	○

Page 7

Transferencia de tecnologia p/exportacao - Mercado

14. Em que medida concorda com as seguintes afirmações relativas ás actividades de EXPORTAÇÃO da empresa?

1= DISCORDO TOTALMENTE ... 7=CONCORDO TOTALMENTE

	1	2	3	4	5	6	7	N/A
Marketing/Vendas e I&D cooperam de forma regular na definição de metas e prioridades para o desenvolvimento de novos produtos	○	○	○	○	○	○	○	○
Dedicamos bastantes recursos às actividades de marketing/vendas	○	○	○	○	○	○	○	○
Primamos continuamente pelas nossas competências de marketing/vendas	○	○	○	○	○	○	○	○
Desenvolvemos continuamente o nosso conhecimento do mercado	○	○	○	○	○	○	○	○
Estamos sempre abertos a novas ideias que utilizem tecnologias avançadas	○	○	○	○	○	○	○	○
Toleramos e muitas vezes encorajamos os colaboradores com ideias originais ou com interesse em inventar algo drasticamente novo	○	○	○	○	○	○	○	○
Marketing/Vendas e I&D cooperam inteiramente na geração e selecção de ideias para novos produtos e em testar novos conceitos	○	○	○	○	○	○	○	○
Marketing/Vendas e I&D desenvolvem continuamente e em conjunto novo conhecimento para a criação de maior valor para o cliente	○	○	○	○	○	○	○	○
Alocamos bastantes recursos à I&D	○	○	○	○	○	○	○	○
Primamos continuamente pela competência técnica	○	○	○	○	○	○	○	○
Desenvolvemos continuamente o nosso conhecimento tecnológico	○	○	○	○	○	○	○	○
Durante o desenvolvimento de novos produtos o grau de integração entre Marketing /Vendas & I&D é baixo	○	○	○	○	○	○	○	○

Page 8

Transferencia de tecnologia p/exportacao - Mercado

7.

15. Como avalia o DESEMPENHO GLOBAL da EMPRESA nos últimos 3 ANOS, comparativamente ao dos seus concorrentes, no que respeita a:

1= MUITO PIOR ... 7= MUITO MELHOR

	1	2	3	4	5	6	7	N/A
Volumes de vendas	○	○	○	○	○	○	○	○
Crescimento de vendas	○	○	○	○	○	○	○	○
Vendas de novos produtos	○	○	○	○	○	○	○	○
Lucro em percentagem das vendas	○	○	○	○	○	○	○	○
Retorno do investimento	○	○	○	○	○	○	○	○
Crescimento dos lucros	○	○	○	○	○	○	○	○
Satisfação dos clientes	○	○	○	○	○	○	○	○
Lealdade dos clientes	○	○	○	○	○	○	○	○

16. Qual das seguintes afirmações melhor descreve o SECTOR da CATEGORIA de produtos à qual pertencem os Produtos Novos de maior sucesso da empresa?

○ A.Introdução - A procura por estes produtos começa a crescer. O mercado é novo, a tecnologia e a concorrência começam a surgir.

○ B.Crescimento - A procura cresce rapidamente. A tecnologia e a concorrência mudam rapidamente.

○ C.Maturidade - Os produtos nesta categoria são familiares à maioria dos clientes. A tecnologia e a concorrência são estáveis.

○ D.Declínio - Os produtos nesta categoria são vistos como "commodities" por uma larga maioria de clientes. Os concorrentes mais fracos começam a desaparecer do mercado e a tecnologia está a ser ultrapassada.

17. Qual o cargo que ocupa na empresa?

○ Director Geral

○ Gerente

○ Responsável Comercial

○ Responsável de Exportação

○ Responsável de Marketing

Outro (qual?)

Page 9

Transferencia de tecnologia p/exportacao - Mercado

18. Como avalia o seu grau de conhecimento relativo aos assuntos deste questionário?

- ○ Muito limitado
- ○ Limitado
- ○ Nem limitado nem substancial
- ○ Substancial
- ○ Muito Substancial

19. Use este espaço para fazer qualquer comentário que ache pertinente.

Page 10

Transferencia de tecnologia p/exportacao - Mercado

8.

Obrigada pela sua participação!

Dentro de dias, receberá do Nova Forum o código de desconto relativo ao Programa para Executivos "Go-to-Market: Transferência de Tecnologia e Serviços para o Mercado".

Até breve então!

APPENDIX 2

Questionnaire – "the technology perspective" version

Note: for clarity purposes we present the complete administered questionnaire, despite the fact that only some of the questions were used in this thesis.

Transferencia de Tecnologia p/ exportacao - Tecnologia

1.

Antes de começar note que:

- não há respostas certas ou erradas, apenas a sua opinião é importante.

- no caso de perguntas que não se apliquem à realidade da empresa deve seleccionar N/A.

- muitas vezes as perguntas parecem repetir-se, não se preocupe, faz parte do método de estudo.

Transferencia de Tecnologia p/ exportacao - Tecnologia

2.

1. Qual o seu grau de concordância com as seguintes afirmações relativas às actividades da empresa para os MERCADOS de EXPORTAÇÃO?

1= DISCORDO TOTALMENTE ... 7=CONCORDO TOTALMENTE

	1	2	3	4	5	6	7	N/A
Usamos tecnologias sofisticadas no desenvolvimento de novos produtos	○	○	○	○	○	○	○	○
Os nossos produtos novos usam sempre tecnologia de ponta	○	○	○	○	○	○	○	○
A inovação tecnológica baseada em resultados de pesquisa é prontamente aceite na nossa organização	○	○	○	○	○	○	○	○
A inovação tecnológica é prontamente aceite na nossa gestão de projectos	○	○	○	○	○	○	○	○
Na nossa indústria, temos uma longa tradição e reputação de tentarmos ser os primeiros a testar novos métodos e equipamentos	○	○	○	○	○	○	○	○
Gastamos menos em desenvolvimento de novos produtos que a maioria das empresas na nossa indústria	○	○	○	○	○	○	○	○
Estamos activamente envolvidos em contratar o melhor pessoal técnico qualificado em engenharia e produção	○	○	○	○	○	○	○	○
Estamos activamente envolvidos em contratar o melhor pessoal de marketing	○	○	○	○	○	○	○	○
Estamos fortemente empenhados na previsão de tendências tecnológicas	○	○	○	○	○	○	○	○

2. De que forma concorda com as seguintes afirmações relativas à actuação dos gestores de topo em relação às ACTIVIDADES DE EXPORTAÇÃO?

1= DISCORDO TOTALMENTE ... 7=CONCORDO TOTALMENTE

	1	2	3	4	5	6	7	N/A
Os objectivos individuais anuais dos gestores de topo incluem explicitamente medidas de desempenho dos novos produtos	○	○	○	○	○	○	○	○
Os gestores de topo têm um papel central nas decisões avançar/não avançar relativas a novos produtos.	○	○	○	○	○	○	○	○
Os gestores de topo são os visionários ou impulsionadores dos novos negócios.	○	○	○	○	○	○	○	○
Os gestores de topo estão envolvidos pessoalmente no desenvolvimento de novos produtos para melhorar a reputação da empresa	○	○	○	○	○	○	○	○
Os gestores de topo estão envolvidos pessoalmente no desenvolvimento de novos produtos para encorajarem os clientes estratégicos a adoptá-los.	○	○	○	○	○	○	○	○
Os gestores de topo não têm um papel activo nas actividades do dia-a-dia dos novos negócios	○	○	○	○	○	○	○	○
Os gestores de topo têm uma forte inclinação para projectos de alto risco	○	○	○	○	○	○	○	○
Os gestores de topo acham que são necessárias acções mais radicais para se atingirem os objectivos da empresa	○	○	○	○	○	○	○	○

Transferencia de Tecnologia p/ exportacao - Tecnologia

3.

3. Em que medida concorda com as seguintes afirmações relativas ao desempenho da EXPORTAÇÃO:

1= DISCORDO TOTALMENTE... 7= CONCORDO TOTALMENTE

	1	2	3	4	5	6	7	N/A
Tem sido muito lucrativa.	○	○	○	○	○	○	○	○
Tem gerado um elevado volume de vendas.	○	○	○	○	○	○	○	○
Tem atingido um rápido crescimento.	○	○	○	○	○	○	○	○
Tem melhorado a nossa competitividade global.	○	○	○	○	○	○	○	○
Tem melhorado a nossa posição estratégica.	○	○	○	○	○	○	○	○
Tem melhorado significativamente a nossa quota de mercado.	○	○	○	○	○	○	○	○
A sua performance tem sido muito satisfastória.	○	○	○	○	○	○	○	○
Tem tido muito sucesso.	○	○	○	○	○	○	○	○
Alcançou na totalidade as nossas expectativas.	○	○	○	○	○	○	○	○

4. Tendo em conta os MERCADOS DE EXPORTAÇÃO, qual o seu grau de concordância com as seguintes afirmações?

1= DISCORDO TOTALMENTE ... 7=CONCORDO TOTALMENTE

	1	2	3	4	5	6	7	N/A
A tecnologia nesta indústria está a mudar rapidamente	○	○	○	○	○	○	○	○
É pouco provável que os standards tecnológicos de hoje sejam os mesmos dentro de cinco anos	○	○	○	○	○	○	○	○
Na nossa indústria as tecnologias avançadas contribuem para o desenvolvimento de ideais para novos produtos	○	○	○	○	○	○	○	○

Page 3

Transferencia de Tecnologia p/ exportacao - Tecnologia

5. No que diz respeito às ACTIVIDADES DE EXPORTAÇÃO, em que medida as áreas de Marketing/Vendas e I&D/Técnica:

1= RARAMENTE... 7 = FREQUENTEMENTE

	1	2	3	4	5	6	7	N/A
Comunicam para o desenvolvimento de novos produtos	○	○	○	○	○	○	○	○
Partilham informação sobre os clientes	○	○	○	○	○	○	○	○
Partilham informação sobre os produtos e estratégias dos concorrentes	○	○	○	○	○	○	○	○
Cooperam no estabelecimento de objectivos e prioridades para o desenvolvimento de novos produtos	○	○	○	○	○	○	○	○
Cooperam na geração de ideais para novos produtos e no teste dos conceitos	○	○	○	○	○	○	○	○
Cooperam na avaliação e refinamento de novo software	○	○	○	○	○	○	○	○
Se fazem representar nas equipas de desenvolvimento de novos produtos	○	○	○	○	○	○	○	○
Integram os conhecimentos tecnológico e de mercado no desenvolvimento de novos produtos	○	○	○	○	○	○	○	○

Page 4

Transferencia de Tecnologia p/ exportacao - Tecnologia

4.

6. Em que medida concorda com as seguintes afirmações relativas ás actividades de EXPORTAÇÃO da empresa?

1= DISCORDO TOTALMENTE ... 7=CONCORDO TOTALMENTE

	1	2	3	4	5	6	7	N/A
A estratégia e os objectivos de negócio são focados na satisfação do cliente	○	○	○	○	○	○	○	○
Os gestores de topo incentivam a organização a desenvolver um profundo conhecimento do mercado	○	○	○	○	○	○	○	○
Marketing/Vendas e I&D comunicam abertamente	○	○	○	○	○	○	○	○
Os gestores de topo encorajam o assumir riscos por parte de ambos Marketing/Vendas e I&D	○	○	○	○	○	○	○	○
Tentamos desenvolver continuamente produtos tecnologicamente superiores que nos proporcionem vantagem competitiva	○	○	○	○	○	○	○	○
Os gestores de topo incentivam a organização a desenvolver e implementar novas tecnologias	○	○	○	○	○	○	○	○
Os gestores de topo veiculam a ideia de que a empresa deve estar preparada para dar resposta às alterações de mercado	○	○	○	○	○	○	○	○
Os gestores de topo veiculam a ideia de que a empresa deve estar preparada para dar resposta às alterações tecnológicas	○	○	○	○	○	○	○	○
Usamos continuamente tecnologias sofisticadas no desenvolvimento de novos produtos	○	○	○	○	○	○	○	○
Temos reuniões regulares com os clientes para entender as suas necessidades actuais e futuras de novos produtos	○	○	○	○	○	○	○	○
Temos um entendimento insuficiente do negócio dos clientes	○	○	○	○	○	○	○	○
Os conhecimentos tecnológico e de mercado são integrados no desenvolvimento de novos produtos	○	○	○	○	○	○	○	○
Alocamos recursos em grande escala para promover a integração entre Marketing/Vendas e I&D	○	○	○	○	○	○	○	○

Page 5

Transferencia de Tecnologia p/ exportacao - Tecnologia

7. Está de acordo com as seguintes afirmações relativas à actuação da empresa no que respeita à EXPORTAÇÃO?

1= DISCORDO TOTALMENTE ... 7=CONCORDO TOTALMENTE

	1	2	3	4	5	6	7	N/A
Promovemos continuamente a criação conjunta de conhecimento entre Marketing/Vendas e I&D	○	○	○	○	○	○	○	○
Recolhemos e analisamos continuamente informação sobre os concorrentes para melhor os conhecer	○	○	○	○	○	○	○	○
Fazemos "benchmark" dos produtos e tecnologias dos concorrentes para o desenvolvimento de novos produtos	○	○	○	○	○	○	○	○
Os nossos produtos novos raramente usam tecnologias avançadas	○	○	○	○	○	○	○	○
Somos proactivos no desenvolvimento de novas tecnologias e na geração de ideias para novos produtos	○	○	○	○	○	○	○	○
Analisamos continuamente informação sobre os clientes para melhor os conhecer	○	○	○	○	○	○	○	○
A informação sobre as necessidades actuais e futuras dos clientes é integrada no desenvolvimento de novos produtos	○	○	○	○	○	○	○	○
A nossa organização aceita dificilmente a inovação tecnológica	○	○	○	○	○	○	○	○
As novas tecnologias são rapidamente integradas no desenvolvimento de novos produtos	○	○	○	○	○	○	○	○
Marketing/Vendas e I&D raramente partilham informação sobre os clientes e concorrentes	○	○	○	○	○	○	○	○
Marketing/Vendas e I&D estão bem representados nas nossas equipas de desenvolvimento de novos produtos	○	○	○	○	○	○	○	○
Compreender as necessidades dos clientes é parte da nossa missão	○	○	○	○	○	○	○	○

Page 6

Transferencia de Tecnologia p/ exportacao - Tecnologia

8. Em que medida concorda com as seguintes afirmações relativas ás actividades de EXPORTAÇÃO da empresa?

1= DISCORDO TOTALMENTE ... 7=CONCORDO TOTALMENTE

	1	2	3	4	5	6	7	N/A
Marketing/Vendas e I&D cooperam de forma regular na definição de metas e prioridades para o desenvolvimento de novos produtos	○	○	○	○	○	○	○	○
Dedicamos bastantes recursos às actividades de marketing/vendas	○	○	○	○	○	○	○	○
Primamos continuamente pelas nossas competências de marketing/vendas	○	○	○	○	○	○	○	○
Desenvolvemos continuamente o nosso conhecimento do mercado	○	○	○	○	○	○	○	○
Estamos sempre abertos a novas ideias que utilizem tecnologias avançadas	○	○	○	○	○	○	○	○
Toleramos e muitas vezes encorajamos os colaboradores com ideias originais ou com interesse em inventar algo drasticamente novo	○	○	○	○	○	○	○	○
Marketing/Vendas e I&D cooperam inteiramente na geração e selecção de ideias para novos produtos e em testar novos conceitos	○	○	○	○	○	○	○	○
Marketing/Vendas e I&D desenvolvem continuamente e em conjunto novo conhecimento para a criação de maior valor para o cliente	○	○	○	○	○	○	○	○
Alocamos bastantes recursos à I&D	○	○	○	○	○	○	○	○
Primamos continuamente pela competência técnica	○	○	○	○	○	○	○	○
Desenvolvemos continuamente o nosso conhecimento tecnológico	○	○	○	○	○	○	○	○
Durante o desenvolvimento de novos produtos o grau de integração entre Marketing /Vendas & I&D é baixo	○	○	○	○	○	○	○	○

Page 7

Transferencia de Tecnologia p/ exportacao - Tecnologia

5.

9. Em que medida está de acordo em que os PRODUTOS NOVOS EXPORTADOS pela empresa têm tido muito sucesso em termos de:

1= DISCORDO TOTALMENTE... 7= CONCORDO TOTALMENTE

	1	2	3	4	5	6	7	N/A
Vendas face aos produtos concorrentes	○	○	○	○	○	○	○	○
Quota de mercado face aos produtos concorrentes	○	○	○	○	○	○	○	○
Lucro face aos produtos concorrentes	○	○	○	○	○	○	○	○
Satisfação dos clientes face aos objectivos iniciais	○	○	○	○	○	○	○	○
Avanço tecnológico face aos objectivos iniciais	○	○	○	○	○	○	○	○
Desempenho global face aos objectivos iniciais	○	○	○	○	○	○	○	○

10. Em que medida as seguintes afirmações descrevem o desenvolvimento dos PRODUTOS NOVOS EXPORTADOS pela empresa?

1= DE MODO NENHUM... 7= EM GRANDE MEDIDA

	1	2	3	4	5	6	7	N/A
Lançam-se produtos que são novos para a empresa e para a indústria	○	○	○	○	○	○	○	○
As necessidades dos clientes servidas pelos produtos que se lançam são novas para a empresa	○	○	○	○	○	○	○	○
Os utilizadores dos produtos novos que se lançam são novos para a empresa	○	○	○	○	○	○	○	○
Os produtos novos que se lançam baseiam-se em revoluções tecnológicas	○	○	○	○	○	○	○	○

11. Como avalia o desempenho atingido pelos PRODUTOS NOVOS EXPORTADOS pela empresa, em termos de:

1= FRACO... 7= ELEVADO

	1	2	3	4	5	6	7	N/A
Quota de mercado face aos objectivos definidos	○	○	○	○	○	○	○	○
Vendas face aos objectivos definidos	○	○	○	○	○	○	○	○
Retorno dos activos face aos objectivos definidos	○	○	○	○	○	○	○	○
Retorno do investimento face aos objectivos definidos	○	○	○	○	○	○	○	○
Lucro face aos objectivos definidos	○	○	○	○	○	○	○	○

Transferencia de Tecnologia p/ exportacao - Tecnologia

12. Em que medida os PRODUTOS NOVOS EXPORTADOS desenvolvidos pela empresa são produtos realmente novos ou produtos novos incrementais, tendo em conta que:

- ○ Produto realmente novo - cria um mercado novo, tem por base uma tecnologia nova e requer a aprendizagem do cliente.
- ○ Produto novo incremental - é desenvolvido para satisfazer uma necessidade de mercado existente e usa tecnologia existente ou uma melhoria desta.

Utilize este espaço se tiver algum comentário a fazer sobre esta pergunta.

13. Qual o cargo que ocupa na empresa?

- ○ Export Manager
- ○ Director Geral
- ○ Gerente
- ○ Responsável de I&D
- ○ Responsável técnico

Outro (qual?)

14. Como avalia o seu grau de conhecimento relativo aos assuntos deste questionário?

- ○ Muito limitado
- ○ Limitado
- ○ Nem limitado nem substancial
- ○ Substancial
- ○ Muito Substancial

15. Use este espaço para fazer qualquer comentário que ache pertinente.

Page 9

Transferencia de Tecnologia p/ exportacao - Tecnologia

6.

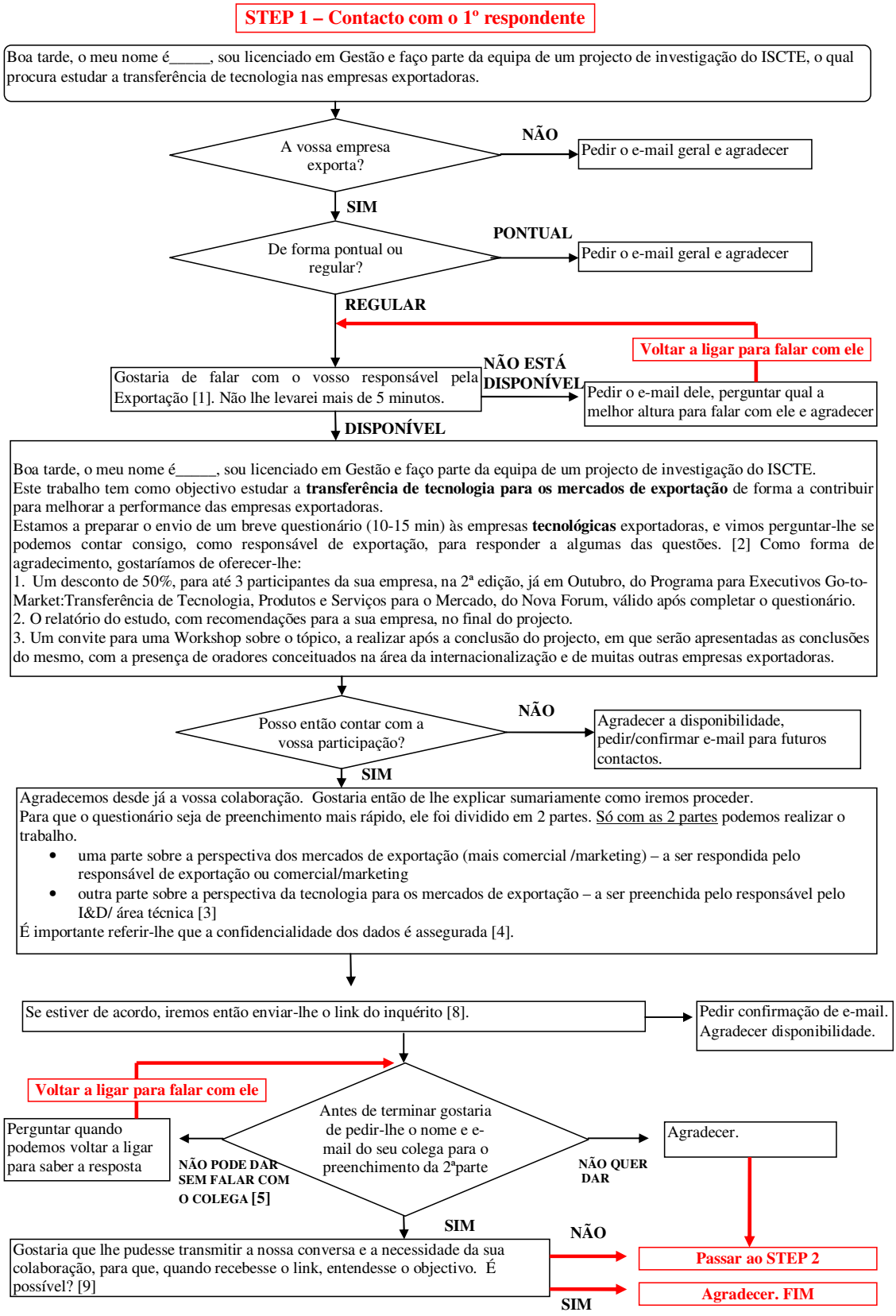
Obrigada pela sua participação!

Dentro de dias, receberá do Nova Forum o código de desconto relativo ao Programa para Executivos "Go-to-Market: Transferência de Tecnologia e Serviços para o Mercado".

Até breve então!

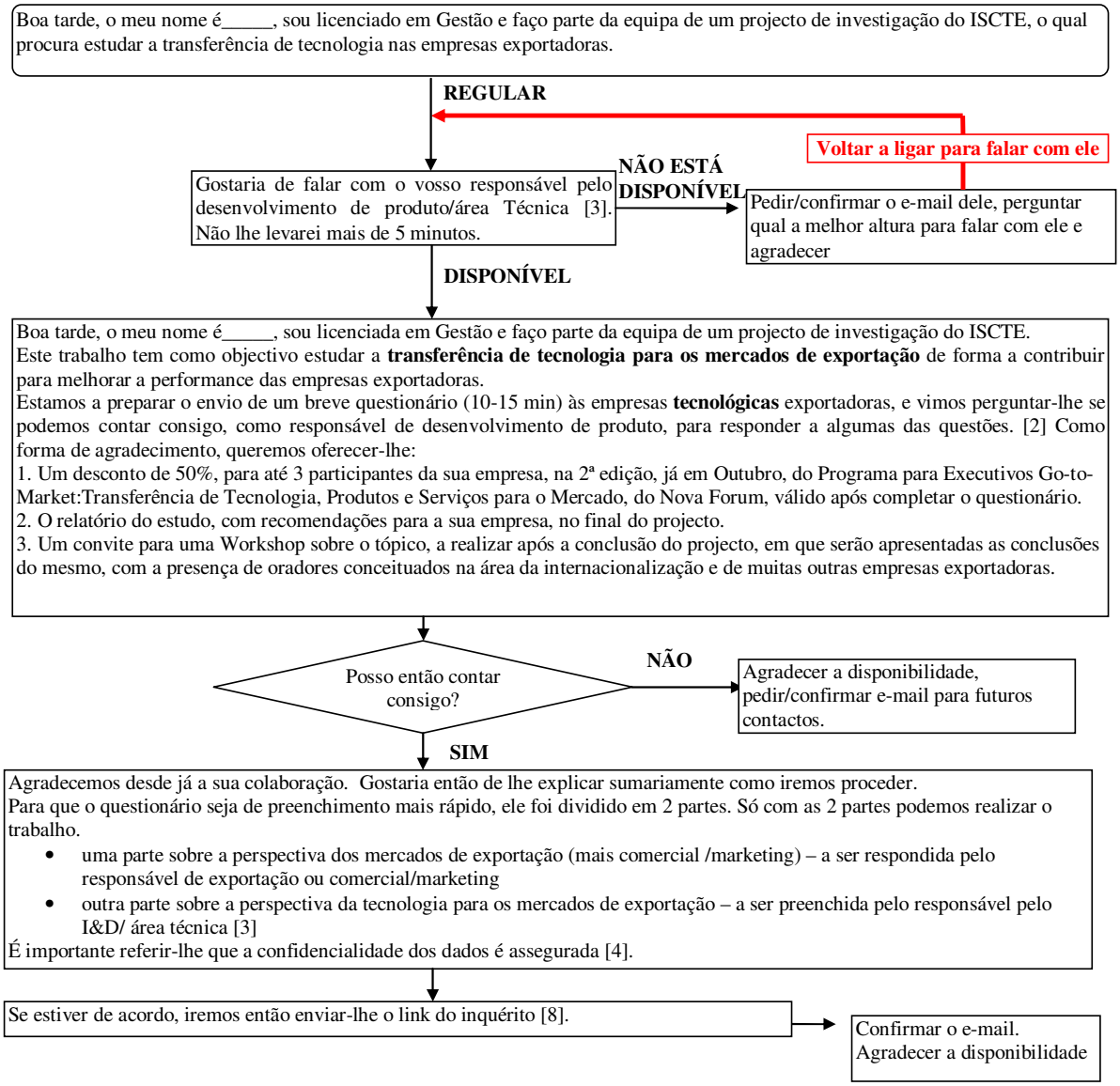
APPENDIX 3

Flowchart for the telephone contacts with companies


STEP 1 – Contacto com o 1º respondente
Boa tarde, o meu nome é_____, sou licenciado em Gestão e faço parte da equipa de um projecto de investigação do ISCTE, o qual procura estudar a transferência de tecnologia nas empresas exportadoras.
A vossa empresa exporta?
NÃO
Pedir o e-mail geral e agradecer
SIM
De forma pontual ou regular?
PONTUAL
Pedir o e-mail geral e agradecer
REGULAR
Voltar a ligar para falar com ele
Gostaria de falar com o vosso responsável pela Exportação [1]. Não lhe levarei mais de 5 minutos.
NÃO ESTÁ DISPONÍVEL
Pedir o e-mail dele, perguntar qual a melhor altura para falar com ele e agradecer
DISPONÍVEL
Boa tarde, o meu nome é_____, sou licenciado em Gestão e faço parte da equipa de um projecto de investigação do ISCTE.
Este trabalho tem como objectivo estudar a transferência de tecnologia para os mercados de exportação de forma a contribuir para melhorar a performance das empresas exportadoras.
Estamos a preparar o envio de um breve questionário (10-15 min) às empresas tecnológicas exportadoras, e vimos perguntar-lhe se podemos contar consigo, como responsável de exportação, para responder a algumas das questões. [2] Como forma de agradecimento, gostaríamos de oferecer-lhe:
1. Um desconto de 50%, para até 3 participantes da sua empresa, na 2ª edição, já em Outubro, do Programa para Executivos Go-to-Market:Transferência de Tecnologia, Produtos e Serviços para o Mercado, do Nova Forum, válido após completar o questionário.
2. O relatório do estudo, com recomendações para a sua empresa, no final do projecto.
3. Um convite para uma Workshop sobre o tópico, a realizar após a conclusão do projecto, em que serão apresentadas as conclusões do mesmo, com a presença de oradores conceituados na área da internacionalização e de muitas outras empresas exportadoras.
Posso então contar com a vossa participação?
NÃO
Agradecer a disponibilidade, pedir/confirmar e-mail para futuros contactos.
SIM
Agradecemos desde já a vossa colaboração. Gostaria então de lhe explicar sumariamente como iremos proceder.
Para que o questionário seja de preenchimento mais rápido, ele foi dividido em 2 partes. Só com as 2 partes podemos realizar o trabalho.
• uma parte sobre a perspectiva dos mercados de exportação (mais comercial /marketing) – a ser respondida pelo responsável de exportação ou comercial/marketing
• outra parte sobre a perspectiva da tecnologia para os mercados de exportação – a ser preenchida pelo responsável pelo I&D/ área técnica [3]
É importante referir-lhe que a confidencialidade dos dados é assegurada [4].
Se estiver de acordo, iremos então enviar-lhe o link do inquérito [8].
Pedir confirmação de e-mail. Agradecer disponibilidade.
Voltar a ligar para falar com ele
Antes de terminar gostaria de pedir-lhe o nome e e-mail do seu colega para o preenchimento da 2ªparte
Perguntar quando podemos voltar a ligar para saber a resposta
NÃO PODE DAR SEM FALAR COM O COLEGA [5]
NÃO QUER DAR
Agradecer.
SIM
Gostaria que lhe pudesse transmitir a nossa conversa e a necessidade da sua colaboração, para que, quando recebesse o link, entendesse o objectivo. É possível? [9]
NÃO
Passar ao STEP 2
SIM
Agradecer. FIM

STEP 2 – Contacto com o 2º respondente
(apenas se não for conseguido o contacto via 1º respondente)

Este STEP tem por objectivo dar ao 2º respondente o mesmo nível de informação que ao 1º. Se existir já um contacto com o 2º respondente por parte do 1º respondente, este passo é dispensável..



Notas

[Gerais]
- Usar sempre o título de Dr ou Eng, caso o mesmo exista, após confirmação com a telefonista
- Apontar resultados de cada telefonema no ficheiro Excel, bem como todas as notas pertinentes

[1] Pode ter o título de director, responsável ou gestor. A responsabilidade da exportação pode ser de um director geral, de exportação, comercial, ou outro. O que é importante é que seja um gestor com conhecimento de todas as actividades de exportação da empresa e que possa tomar decisões sobre as mesmas.

[2] É importante não deixar interromper enquanto não se explicar a forma como compensamos a pessoa pelo tempo dispendido.

[3] Pode ser também o responsável das áreas de Investigação e Desenvolvimento, Laboratório, Técnica, Inovação, etc – desde que se relacione com o desenvolvimento de produtos (novos ou melhorias)

[4] Os dados serão utilizados apenas para fins académicos e sempre apresentados de forma agregada.

[5] Pode acontecer por um dos motivos: ou tem que falar mesmo com o colega e pedir-lhe autorização para dar o nome/mail; ou tem que falar com alguém superior para pedir instruções. Em qualquer dos casos, é sempre melhor que seja a própria empresa a dar o contacto, há mais probabilidades de nos abrir caminho.

[6] Utilizar o nome correcto da função, caso já o saiba. Ter em atenção o ponto [3].

[7] Informação adicional
- O desconto de 50% é válido para até 3 participantes da empresa do respondente.
- Só após a resposta ao questionário, o respondente receberá o cupão com o código de desconto da Nova Forum.
- Para além disso, a Nova Forum dará um desconto de 10% na participação em outros programas para Executivos da Nova Forum.

[8] Se o respondente não se sentir bem com o envio de link, oferecer , em alternativa, o envio de ficheiro, ou mesmo de papel.

[9] Em alternativa pedir para passar a chamada ao colega.

Explicação do tópico

(caso haja perguntas)

"Transferência de tecnologia para os mercados de exportação" refere-se à introdução, com sucesso, nos mercados de exportação, de produtos tecnológicos novos (ou apenas com melhorias).
Pretende-se com este projecto, estudar quais os factores que influenciam o bom desempenham dos produtos novos, radicais ou incrementais, nos mercados de exportação.

APPENDIX 4

E-mail sent to companies that have accepted to participate in the research

Exmo(a) Sr(a)

Na sequência dos contactos anteriores com a vossa empresa, queremos agradecer, desde já, a vossa aceitação em participar neste projecto do ISCTE, sobre os factores que determinam um melhor desempenho dos exportadores Portugueses.

A vossa participação será feita através do preenchimento de um breve questionário, o qual foi dividido em 2 partes, sendo ambas essenciais para podermos finalizar o trabalho:

- uma parte sobre a perspectiva do MERCADO de exportação – a ser respondida pelo responsável de exportação ou comercial, através do link abaixo

http://www.surveymonkey.com/s.aspx?sm=QZO96NdwuHLYULB6oW_2fVVw_3d_3d&c=?? ??? ??_MERCADO

- outra parte sobre a perspectiva da TECNOLOGIA para os mercados de exportação – a ser preenchida pelo responsável da área de desenvolvimento de produtos/ área técnica, através do link abaixo

http://www.surveymonkey.com/s.aspx?sm=dspONbAzNRcKBtCW5tHthg_3d_3d&c=?? ???? TECNOLOGIA

Estimamos que precisarão de pouco mais de 10 minutos para preencher o inquérito de cada parte. O preenchimento através dos links é fácil, pois poderão entrar e sair quando quiserem, bastando para tal seleccionar "Gravar e Sair" para que os dados já preenchidos fiquem gravados.

Reafirmamos o facto de que a informação destes questionários será mantida CONFIDENCIAL, utilizada unicamente para fins estatísticos e sempre apresentada de forma agregada.

Relembramos que, como forma de agradecimento, gostaríamos de oferecer-lhes:

1. Um desconto de 50%, para até 3 participantes da vossa empresa, na 2ª edição, já em Outubro, do Programa para Executivos "Go-to-Market:Transferência de Tecnologia, Produtos e Serviços para o Mercado", do Nova Forum.

2. O relatório do estudo, com recomendações para a vossa empresa.

3. Um convite para uma Workshop sobre o tópico, a realizar após a conclusão do projecto, em que serão apresentadas as conclusões do mesmo, com a presença de oradores conceituados na área da internacionalização e de muitas outras empresas exportadoras.

Aguardamos, na expectativa, pelos vossos inquéritos preenchidos.

Melhores cumprimentos

Engª Paula Hortinha
Investigadora Responsável do Projecto
e-mail: ***phortinha***@gmail.com
Telemóvel : 910730809

APPENDIX 5

Data cleaning and preliminary data analysis

Data cleaning

We have followed the steps from Hair *et al.* (2006) for the data cleaning process. We have ignored missing values under 10% for an individual case, after checking if those values occurred randomly (that is, if they were not concentrated in a specific set of questions or a location in the questionnaire). The cases where the percent of missing values were higher than 10% were deleted. With respect to individual variables, all of them showed less than 20% of missing values, which is the recommended level in the literature, from which a deeper analysis is needed (Pestana and Gageiro, 2000).

Outliers

To more easily detect outliers, we have requested from SPSS the box-plots for all the variables. Moderate outliers are identified in the plots by a circle while severe outlines are flagged with an asterisk. We found very few outliers of both the moderate and the severe types. The majority of the outliers were found to be moderate. Each outlier was subjected to a deeper analysis. First we have checked for procedural errors. Then we verified if outliers for one variable were repeated for other variables, which didn't happen. Therefore, we decided to maintain those cases in the sample. However, we also have followed the procedure of some researchers (e.g. Cano, Carrillat and Jaramillo, 2004) and compared the models with and without those outliers. No differences were found as to the results of the hypothesis testing.

Data replacement

The missing values were replaced by the mean, one of the most used methods for missing. For each variable it was calculated the mean and this value was introduced in the empty cells of that variable column of the database.

Next table presents the descriptives and the outliers for all the variables in our model.

Variables [a]	Mean	Standard deviation	Moderate Outliers	Serious Outliers
Export performance				
It has been very profitable.	4.911	1.345	0	0
It has generated a high volume of sales.	5.065	1.333	0	0
It has achieved rapid growth.	4.695	1.388	0	0
Customer Orientation				
Our business objectives are driven primarily by customer satisfaction.	5.886	1.204	0	0
We constantly monitor our level of commitment and orientation to serving customers' needs.	5.888	1.133	0	0
Our strategy for competitive advantage is based on our understanding of customers' needs.	6.083	1.106	6	3
Our business strategies are driven by our beliefs about how we can create greater value for customers.	5.958	1.017	0	0
We measure customer satisfaction systematically and frequently.	5.428	1.411	0	0
We give close attention to after-sales service.	5.790	1.207	1	0
Technological Orientation				
We use sophisticated technologies in our new product development.	4.691	1.516	0	0
Our new products always use state-of-the-art technology.	4.409	1.557	0	0
Technological innovation based on research results is readily accepted in our organization.	4.890	1.510	0	0
Technological innovation is readily accepted in our project management.	5.050	1.495	0	0
Exploratory Innovation				
We look for novel technological ideas by thinking "ouside the box".	5.188	1.270	7	1
We base our success on our ability to explore new technologies.	4.866	1.415	0	0
We create products or services that are innovative to the firm.	5.075	1.290	0	0
We look for creative ways to satisfy our customer's needs.	5.458	1.308	7	2
We dynamicaly risk entering new market segments.	4.975	1.427	0	0
We actively target new customer groups.	5.066	1.484	0	0
Exploitative Innovation				
We commit to improve quality and lower cost	5.590	1.301	2	0
We countinuously improve the reliability of our products and services	5.845	1.146	1	0
We increase the level of automation in our operations	5.452	1.303	6	1
We constantly survey existing customers's satisfaction	5.619	1.249	0	0
We fine-tune what we offer to keep our current customers satisfied	5.921	1.093	7	1
We penetrates more deeply into existing customer base	5.355	1.296		
Customer turbulence				
Customers' preferences for product features have changed quite a bit over time.	4.855	1.532	0	0
We are witnessing demand for our products from customers who never bought them before.	5.369	1.330	7	1
New customers tend to have product-related needs that are different from those of our existing customers.	4.500	1.663	0	0
Technological turbulence				
The technology in our industry is changing rapidly.	4.283	1.483	0	0
It is unlikely that today's technological standard will still be dominant five years from now.	4.762	1.602	0	0
Technological breakthroughs contribute to the development of new product ideas in our industry.	4.919	1.488	0	0

[a] Scale format 1="completely disagree and 7="completely agree"