UNIVERSIDADE DA BEIRA INTERIOR
Ciências Sociais e Humanas

Entrepreneurial Orientation, Market Orientation and Performance of Teachers and Researchers in Higher Education Institutions

Teresa Maria Monteiro Felgueira

Tese para obtenção do Grau de Doutor em
Gestão
(3º ciclo de estudos)

Orientador: Prof. Doutor Ricardo Gouveia Rodrigues

Covilhã, Maio de 2015

To *Tiago*

Acknowledgments

This final work would not have been possible without the collaboration of several individuals, to whom I would like to express my gratitude.

First, I would like to thank my supervisor Professor Ricardo Gouveia Rodrigues for having accepted this project and for all his support. I am very grateful for all the suggestions, motivation, critical feedbacks and careful readings and, finally, for his friendship and constant concern.

To Professor Ana Paula Rodrigues, Professor Arminda Paço, Professor Helena Alves, Professor Minoo Farhangmehr, Professor Felix Martin, Professor José Manuel Hernandéz and Professor Paulo Duarte for their exceptional availability and collaboration.

I would also like to thank my colleague Vera Carlos for her valuable help with the data bases and with whom I had the opportunity to share many doubts and questions. Thank you for the encouragement, cooperation and generosity.

To my friend, Teresa Paiva who encouraged me all the way.

A special thanks to my Family for the usual support and motivation. In particular, I want to thank my son Tiago for his understanding when I was absent and for the lack of time to give him due attention. I dedicate this work to him.

Resumo

O ensino superior foi foco de grande crescimento nas últimas décadas. Neste contexto, o mercado educacional passou por mudanças e a competição entre instituições de ensino superior ao nível mundial estabeleceu-se. Em particular, na Europa, houve mudanças profundas na maneira como é prestado o ensino nas Instituições de Ensino Superior (IES), de acordo com o processo de Bolonha, permitindo aos estudantes moverem-se livremente entre instituições europeias de ensino superior. Por outro lado, as tendências para uma população decrescente de estudantes e os condicionantes orçamentais crescentes fazem o ambiente destas instituições altamente turbulento. O atual contexto do ensino superior e o permanente confronto com as forças de mercado estão a exercer intensas pressões (pressões internas e externas) sobre a gestão dessas instituições. A necessidade de capacidades dinâmicas, inovadoras e a importância dos recursos e capacidades na perseguição de novas oportunidades prova ser uma tarefa extremamente vital para as IES.

Algo essencial nas IES é procurar serem empreendedoras, com recursos humanos com características empreendedoras. Os colaboradores da organização contribuem com diversas informações sobre o mercado que podem criar vantagens competitivas. Assim, a compreensão de como os colaboradores definem e veem o comportamento de orientação para o mercado é a chave de sucesso para promover uma orientação de mercado. Hoje em dia, as empresas percebem que o seu ativo mais importante são os seus recursos humanos, especialmente os trabalhadores que são responsáveis por oferecer qualidade, valor e satisfação ao cliente.

A orientação empreendedora é um conceito que tem sido desenvolvido e estudado na área do empreendedorismo, que aparece em muitos estudos relacionados com orientação para o mercado e desempenho. No entanto, a maioria dos estudos concentra-se na organização. Neste estudo pretende-se estudar estas relações mas a nível individual. Por isso, propomos o conceito de individual orientação empreendedora (IOE) e uma escala de medida, a I-ENTRE-U, e usamos o conceito de individual orientação para o mercado (IOM), medido com a escala I-MARKOR.

O principal objetivo deste estudo é analisar a relação entre a IOE, IOM e desempenho dos docentes e investigadores das IES. As dimensões propostas por Xiaowei (2006) foram as utilizadas neste estudo, no constructo desempenho, por se achar serem aquelas que melhor se poderão relacionar com as dimensões de OE e OM.

A população em análise são docentes e investigadores de universidades, institutos politécnicos, escolas especializadas ou colégios, instituições públicas ou privadas, da Europa, América do Norte (EUA) e América do Sul (Brasil). A amostra é composta por 1 773 docentes e

investigadores de IES, 1.338 de 37 países europeus (212 de Portugal) e 435 da América (206 do Brasil e 229 dos EUA), e a recolha de dados foi realizada através de questionário enviado por e-mail.

De acordo com os objectivos da investigação e com a natureza dos dados a analisar, utilizaram-se: métodos descritivos que permitem caracterizar os dados; técnicas estatísticas para testar, depurar e validar os instrumentos de medida, destacando-se a análise factorial confirmatória, a análise factorial exploratória, as correlações de Pearson, e os alfas de Cronbach; e técnicas que permitirão o teste das hipóteses de investigação, como a análise de modelos de equações estruturais.

Foi possível concluir que, no geral, os docentes e investigadores das IES têm comportamentos empreendedores e orientados para o mercado, com impacto no seu desempenho. Face aos resultados obtidos, é recomendável que os docentes e investigadores das IES adotem e investam em práticas empreendedoras, de orientação para o mercado, que realcem melhor desempenho e, consequentemente, a entrega de alta qualidade, valor e satisfação para os alunos e para os próprios docentes e investigadores das IES. No sentido de formular respostas mais eficazes, tornando-se mais competitivas e diferenciadoras, podemos dizer que o sucesso de uma IES também dependerá do desempenho dos seus recursos humanos, em particular dos seus docentes e investigadores.

Deste estudo destacamos a adaptação das escalas de medida dos constructos IOE e IOM, em particular a I-ENTRE-U, e o estudo das relações entre OE, OM e Desempenho, mas ao nível individual, algo que ainda não tinha sido feito, pois a maioria dos estudos realizados até à data concentram-se na organização.

Palavras-Chave

Ensino Superior, Desempenho, Individual Orientação Empreendedora, Individual Orientação para o Mercado, Orientação Empreendedora, Orientação para o Mercado.

Resumo Alargado

Com a globalização dos mercados, praticamente não há sector onde a concorrência não tenha crescido significativamente incluindo-se também o ensino superior.

O ensino superior foi foco de grande crescimento nas últimas décadas. Neste contexto, o mercado educacional passou por mudanças e a competição entre instituições de ensino superior ao nível mundial estabeleceu-se. Os estudantes passaram a ter mais opções de escolha no momento de realizar a sua formação profissional; Registou-se um acréscimo de concorrência com a abertura de novas IES e novos cursos; Criaram-se universidades virtuais, e universidades corporativas originadas em grandes organizações privadas que começaram a ter mais espaço no mercado.

Em particular, na Europa, houve mudanças profundas na maneira como é prestado o ensino nas IES, de acordo com o processo de Bolonha, permitindo aos estudantes moverem-se livremente entre instituições europeias de ensino superior. Por outro lado, as tendências para uma população decrescente de estudantes e os condicionantes orçamentais crescentes fazem o ambiente destas instituições altamente competitivo e turbulento.

Neste enquadramento, a necessidade de capacidades dinâmicas, inovadoras e a importância dos recursos e capacidades na perseguição de novas oportunidades prova ser uma tarefa extremamente vital para as IES, para se diferenciar e despertar o interesse dos alunos, docentes e de outras organizações, quer a nível nacional quer internacional.

Assim, pensamos ser pertinente utilizar o conceito de orientação empreendedora e orientação para o mercado para caracterizar não as empresas como um todo, mas os indivíduos que adoptam este tipo de comportamento, em particular nas IES, face à atual realidade.

O estudo justifica-se pela existência de poucas e fragmentadas pesquisas a respeito do tema. Desta forma, a contribuição deste trabalho centra-se na fusão de duas abordagens teóricas de estratégias empresariais: a Orientação Empreendedora e a Orientação para o Mercado, aplicadas aos docentes e investigadores de IES.

Pretende-se com o presente estudo analisar a relação entre a Individual Orientação Empreendedora (IOE), a Individual Orientação para o Mercado (IOM) e o desempenho dos docentes e investigadores das IES da Europa, América do Norte (EUA) e América do Sul (Brasil). Neste sentido é desenvolvido um modelo de investigação que relaciona estas variáveis – Capítulo 2.

Pretendemos avaliar a orientação empreendedora dos docentes e investigadores das IES. Para tal adaptamos e validamos um instrumento que mede a IOE, a I-ENTRE-U – Capítulo 3, e usamos o conceito de IOM, medido com a escala I-MARKOR, que foi também adaptada e validada no contexto das IES – Capítulo 4.

Estes instrumentos esclarecem responsabilidades individuais e especificam rotinas mensuráveis que agreguem valor competitivo. Estas escalas fornecem um método para avaliar as diferenças entre indivíduos dentro de uma instituição de ensino superior, permitindo a pesquisa empírica sobre as diferenças entre os tipos de instituições, departamentos, funções, formação e outras características que podem influenciar o grau em que um indivíduo executa comportamentos empreendedores e orientados para o mercado.

No capítulo 5 é testado o modelo de investigação que relaciona as variáveis IOE, IOM e desempenho. Todas as hipóteses foram suportadas permitindo-nos concluir: (1) quanto maior for o grau de orientação empreendedora dos seus docentes e investigadores, maior o seu grau de orientação para o mercado; (2) a orientação para o mercado dos docentes e investigadores das IES tem um impacto positivo sobre o desempenho; e (3) quanto maior for o seu grau de orientação empreendedora, melhor será o desempenho.

A população inclui docentes e investigadores de universidades, institutos politécnicos, escolas especializadas ou colégios, instituições públicas ou privadas, da Europa, América do Norte (EUA) e América do Sul (Brasil). A amostra é composta por 1 773 docentes e/ou investigadores de IES, 1.338 de 37 países europeus (212 de Portugal) e 435 da América (206 do Brasil e 229 dos EUA), e a recolha de dados foi realizada através de questionário enviado por e-mail.

Para avaliação da validade dos constructos, estimação dos modelos estruturais e avaliação das respetivas hipóteses, foi utilizado o software IBM SPSS AMOS versão 22.0 (IBM Corporation, New York, USA), com estimação através do método da máxima verosimilhança.

Para cada construto utilizou-se a análise fatorial confirmatória e respetivos índices de qualidade de ajustamento: Goodness of Fit Index (GFI); Partimony Goodness of Fit Index (PGFI); Root Mean Square Error of Approximation (RMSEA); e o Root Mean Square Residual (RMR). A validade e fiabilidade dos constructos foi avaliada através da fiabilidade compósita (FC), da validade factorial, da validade convergente, através da variância extraída média (VEM), e da validade discriminante, em que a raiz quadrada da VEM de dois constructos deve ser superior à correlação entre esse dois fatores (Barroso, Carrión & Roldán, 2010; Hair et al., 2010; Hulland, 1999).

A análise dos dados permitiu-nos concluir que: o constructo IEO é composto pelos subconstructos mobilização para a pesquisa, não convencionalidade, colaboração com a indústria e políticas universitárias, e o constructo IOM, é um constructo multidimensional,

composto pelos subconstrutos geração de informação, disseminação da informação e resposta, apresentando estes elevada fiabilidade e validades fatoriais, convergentes e discriminantes. Constatou-se que o construto Performance é composto pelos subconstructos capacidade para ligar as redes organizacionais, capacidade para transmitir memória organizacional, confiança flexível e traços de inovação, apresentando estes validades fatoriais e discriminantes, mas baixa fiabilidade e inexistência de validade convergente. Estes constructos, utilizados na estrutura definida, permitiu-nos concluir que nas IES, pelo menos as da população estudada, que quanto maior for o grau de orientação empreendedora dos seus docentes e investigadores, maior o seu grau de orientação para o mercado; a orientação para o mercado dos docentes e investigadores das IES tem um impacto positivo sobre o desempenho; e quanto maior for o seu grau de orientação empreendedora, melhor será o desempenho. Recomendamos que os docentes e investigadores das IES adotam e investam em práticas empreendedoras, de orientação para o mercado, que realçam melhor desempenho e, consequentemente, a entrega de alta qualidade, valor e satisfação para o cliente. Assim, podemos dizer que o sucesso de uma IES também depende do desempenho dos seus recursos humanos, em particular dos seus docentes e investigadores.

Deste estudo destacamos a adaptação das escalas de medida dos constructos IOE e IOM, em particular a I-ENTRE-U, e o estudo das relações entre OE, OM e Desempenho mas ao nível individual, algo que até à data ainda não tinha sido feito.

Em suma, este estudo fornece dois instrumentos válidos e confiáveis para avaliar docentes e investigadores com orientação empreendedora e orientação para o mercado em IES.

Uma limitação da nossa pesquisa é a amostra, uma vez que foram obtidas 435 respostas dos EUA e do Brasil, e 1338 da Europa. Os países europeus são distintos no que diz respeito às suas características, e apenas dois países representam o continente americano. Assim, seria importante desenvolver a mesma pesquisa com uma amostra maior, para obter resultados com maior validade.

Em nossa opinião, seria importante comparar as regiões da Europa, utilizando uma amostra maior, mais equitativa. Sabe-se que existem diferenças entre os sistemas de ensino superior dependendo da região ou país. Assim, seria importante estudar esses aspectos no contexto europeu.

No futuro, usando uma amostra maior, deveríamos testar o modelo proposto em IES portuguesas, e também seria relevante testar, nas IES públicas e privadas, separadamente, uma vez que as IES privadas têm, normalmente, mais recursos financeiros e diferentes sistemas de ensino, sendo expectável que tenham docentes e investigadores com maior OE e OM.

Além disso, apesar dos resultados de confiabilidade e validade convergente não terem sido os desejáveis, o constructo desempenho, constituído pelas dimensões propostas por Xiaowei (2006), foi utilizado na estrutura previamente definida, porque, no início deste estudo, acreditávamos que seria o melhor para se relacionar com as dimensões de IOE e IOM. Em estudos futuros, é conveniente usar uma outra escala para medir o desempenho ou desenvolver uma nova, adaptada ao contexto do ensino superior.

Abstract

Higher Education has been the focus of significant growth in the last decades. In this context, the educational market has undergone some changes and competition among Institutions of Higher Education worldwide was established. Particularly, in Europe, there have been profound changes in the way education has been provided for by Higher Education Institutions (HEIs), according to Bologna process, allowing students to move freely between European Institutions of higher education. Also, the decreasing trends of the students' population and the increasing budgetary constraints, made the environment of these institutions highly turbulent. The changing context of higher education and its confrontation with market forces are exerting intense pressures (internal and external pressures) on the management of these institutions. The need for dynamic and innovative skills and the importance of resources and individuals in pursuit of new opportunities proves to be extremely vital for HEIs.

Something essential in HEIs, is seeking to be entrepreneurial, with human resources with entrepreneurial characteristics. The employees of the organisation contribute to various information about the market that can create competitive advantages. Thus, the understanding of how employees define and see the behaviour of market orientation is the successful key to promote a market orientation. Nowadays, the companies realize that their most important asset is the employee, particularly employees who are responsible for standards of quality, value and customer satisfaction.

The entrepreneurial orientation is a concept that has been developed and studied in the entrepreneurship research field, where many studies relate it to market orientation and performance. However, most studies focus on the organisation. In this study we intend to study the relationships at the individual level. Therefore we propose the concept of individual entrepreneurial orientation (IEO) and a measurement scale, and we use the individual market orientation concept (IMO), measured with I-MARKOR.

The major objective of this study is to analyse the relationship between IEO, IMO and the Performance of Teachers and Researchers of HEIs. The dimensions proposed by Xiaowei (2006), were used in this study, in the performance construct, because we find them to be the best to relate to the dimensions of EO and MO.

Our study population are Teachers and Researchers from Universities, Polytechnics, Specialized Schools or Colleges, public or private institutions, from Europe, North America (USA) and South America (Brazil). The sample is composed of 1 773 individuals (teachers and researchers from HEIs), 1338 from 37 European countries (212 from Portugal) and 435 from

America (206 from Brazil and 229 from USA), and data collection was conducted through a questionnaire sent by e-mail.

According to the research objectives and the nature of the test data, were used: descriptive statistics that characterize the data; statistical techniques to test, debug and validate measuring instruments, emphasizing the confirmatory factor analysis (CFA), Pearson's correlations and Cronbach's alphas, among other measures; and techniques that will allow testing of research hypotheses, as the structural equation models analysis (SEMA).

We conclude that in HEIs, at least in the studied population, the higher the degree of individual entrepreneurial orientation, the greater the degree of individual market orientation of Teachers and Researchers; the IMO has a positive impact on performance; and the higher the degree of individual entrepreneurial orientation, the greater the performance of Teachers and Researchers. We recommend that Teachers and Researchers adopt and invest in entrepreneurial and market orientation practices, that enhance better performances and, consequently, higher quality, value and customer satisfaction. Finally, we can say that the success of an HEI also depends on the performance of its human resources, in particular of its Teachers and Researchers.

Of this study we highlight the adaptation of the measurement scales of the constructs IOE and IOM, in particular the I-ENTRE-U, and the study of relations between OE, OM and Performance, but at the individual level, something that had still not been done, because most studies, so far, are concentrated in the organisation.

Keywords

Entrepreneurial Orientation, Higher Education, Individual Entrepreneurial Orientation, Individual Market Orientation, Market Orientation, Performance.

Contents

List of Figures

List of Tables

List of Appendices

List of Acronyms

AMOS	Analysis of Moment Structures
AVE	Average Variance Extracted
CFA	Confirmatory Factorial Analysis
CR	Composite Reliability
EC	Elastic confidence
EO	Entrepreneurial Orientation
EUA	Estados Unidos da América
GFI	Goodness-of-Fit Index
HE	Higher Education
HEI	Higher Education Institution
HEIs	Higher Education Institutions
IA	Information Acquisition
IC	Industry Collaboration
ID	Information Dissemination
IEO	Individual Entrepreneurial Orientation
IES	Instituições de Ensino Superior
IMO	Individual Market Orientation
IOE	Individual Orientação Empreendedora
IOM	Individual Orientação para o Mercado
IT	Innovation Trait
LON	Linking Organisational Networks
ML	Maximum Likelihood Estimation
MO	Market Orientation
OE	Orientação Empreendedora
OM	Orientação para o Mercado
PGFI	Parsimony Adjusted Normed Fixed Index
P	Performance
PCI	Performance Chain Influence
RM	Research Mobilization
RMR	Root Mean Square Residual
RMSEA	Root Mean Square Error of Approximation
SD	Standard Deviation
SEM	Structural Equations Modelling
SEMA	Structural Equation Models Analysis
SPSS	Statistical Package for Social Sciences
SR	Co-ordination of strategic response

TS	Team Synergy
TOM	Transmitting Organisational Memory
UC	Unconventionality
US	Uneasily Substitutable
USA	United States of America
UP	University Policies

Entrepreneurial Orientation, Market Orientation and Performance of Teachers and Researchers in Higher Education Institutions

1

1. Introduction

1.1. Problem Statement

With the globalization of markets, there is virtually no sector where competition has not grown significantly (Campbell- Hunt, 2000), also including Higher Education.

Higher Education has been the focus of significant growth in the last decades. In this context, the educational market has been through some changes and competition between Higher Education Institutions was worldwide established (Kirp, 2003; Maringe & Gibbs, 2009).

According to Mintzberg and Rose (2003) students have now more options to choose from, when making their professional training; There was an increased competition with the opening of new HEIs and new programes. Virtual Universities and Corporate Universities originated in large private organisations, began to have more space in the market.

In Europe, particularly, there were profound changes in the way education is provided by HEIs, according to Bologna process, allowing students to move freely between European Institutions of higher education. On the other hand, the decreasing trends of the students' population and the increasing budgetary constraints made the environment of these institutions highly turbulent.

The adaptation of the organization to a changing environment will necessarily have an impact on its structure. Frequently, the structures became unsuitable to the nature of the management decisions, necessary for the organization to remain competitive. This may result in the stagnation of the stage of evolution in which the organization lies. Traditionally, the purpose was to create the organisational structure and auxiliary system of hierarchy, authority, power and control, which caused a definition of roles and demarcations much more standardized and formal. In this perspective decision-making is done at the higher levels of hierarchy, which restricts the individual and functional creativity and flexibility, and conditions any rapid response to changes in the environment of the organization.

In the current context, the need for dynamic and innovative skills and the importance of resources and capabilities in pursuit of new opportunities, proves to be extremely vital for HEIs.

A company must possess dynamic capabilities as well as reconfigure and constantly renew their resources and capabilities to better capture and exploit opportunities (Teece, Pisano & Shuen, 1997 cited by Liao, Kickul & Ma, 2009).

The central concern of strategy and management of a company is to maintain a dynamic correspondence between what the company has to offer and what the market dictates (Miles & Snow, 1978; Learned et al., 1965 cited by Liao, Kickul & Ma, 2009).

Increasingly, the innovation in the design of products/services and the execution of key-processes are determinant factors of competitive advantages and its sustainability (D'Aveni, 1994; Rumelt, 1987, 1984, cited by Liao, Kickul & Ma, 2009). It Involves analysing the external environment and recognize business opportunities, including the potential and the limitations of its resources, as well as align and combine resources with the lines of opportunities. This definition accords with the concept of dynamic capabilities presented by Teece, Pisano, and Shuen (1997) e Teece (2007).

According to Barney (1991), the recognition of features of strategic resources, aims to define the resources that may be sources of competitive advantage. The resources are fundamental to gaining competitive advantage, however, not all features can provide high levels of economic gains or they may not be sustainable and defensible against the competition, meaning, they are not all strategic. To ensure that resources are relevant they should be: valuable, rare, imperfectly imitable and non- substitutable.

Nowadays, the companies realize that their most important asset is the worker, particularly those who are responsible for quality, value and customer satisfaction. Something essential in HEIs, is to be entrepreneurial relying on human resources with entrepreneurial characteristics. The success of a HEI will depend on the performance of its human resources. It is based on its own resources and core competences that a company can transform the conditions of the environment and build their own paths that can be innovative (Prahalad & Hamel, 1994).

Say (1840) described the entrepreneurial as an individual who promotes changes in economic resources in order to achieve greater productivity and income, being the entrepreneurial described as an agent of change. Schumpeter also reinforced the importance of the entrepreneur as an agent who introduces innovation and associates the concept of innovation to the concept of "creative destruction", where old methods and processes are replaced by new ones (Ripsas, 1998; Hornsby, Kuratko & Zahra, 2002; Rutherford, 2007).

According to Kreiser, Marino and Weaver (2002), the fundamental theoretical basis of entrepreneurial orientation lies in the assumption that companies with that kind of orientation are different from the others, such as the pioneer authors of the theme advocate.

On one hand, Miller and Friesen (1982) argue that the entrepreneurial companies are characterised by the desire to innovate in a regular and bold way, assuming considerable risks in their products and market strategies. Also (Miller & Friesen, 1978), along with other authors (Mintzberg, 1973; Khandwalla, 1977) defend that entrepreneurial companies tend to take more risks than the others and seek for new business opportunities in a proactive way.

On the other hand, an entrepreneur is usually identified as an individual who knows how to identify opportunities and define contexts for an innovative work. According to Ferreira (2003) and Rodrigues (2004), this approach involves aspects such as personal characteristics, risk propensity, need for achievement, self-control, self-confidence and optimism, motivation for profit and personal values.

The entrepreneurship, subject where the concept of entrepreneurial orientation arose (EO), has been assumed in recent decades as an area of growing importance in the research community, in the field of business sciences.

The entrepreneurial orientation is a concept that has been developed and studied in the field of entrepreneurship research, making its way in many studies related to market orientation (MO) and performance. However, in most studies, the focus of this literature in terms of theory and unity of empirical observation, is organization.

Of the various approaches to market orientation, there is the approach of Narver and Slater (1990), and of Kohli and Jaworski (1990a, 1990b, 1993). Narver and Slater (1990) conclude that market orientation consists of three behavioural components – orientation for the client; orientation for the competition; and inter- functional coordination, and by two decision criteria: long term focus and profitability; for Kohli and Jaworski (1990a, 1990b), the market orientation of the company is based on three dimensions: information generation, dissemination of information and response to the market.

Again, the focus of this literature, in terms of the unity of theory and empirical observation, is the organization as a whole, not the individual within the organization (e.g.: Farrel, 2000; Han et al., 1998; Kohli & Jaworski, 1993; Narver & Slater, 1990). The focus at the company level, ignores the underlying routines performed by individuals who developed shape orientation (Nelson & Winter, 1982).

The organization employees contribute with various information about the market, which can create competitive advantages. Therefore, understanding how employees view and define the behaviours of market orientation, is the key for the success in promoting market orientation (Schlosser & MacNaughton, 2009).

In Baker and Sinkula (2009) research, the EO and the MO, have direct effects on the company's profitability. However, when these constructs are modelled simultaneously, the direct effect of the EO disappears. This has led some scholars to postulate that equal opportunities are an antecedent of MO. The results of Baker and Sinkula (2009) study contradict that assumption, and suggest that EO and MO complement one another, at least in small business, to increase profitability. Therefore it can be concluded that the EO and OM are correlated but distinct constructs.

In literature, there is also a general consensus that entrepreneurial orientation influences the performance of organisations (Miller, 1983; Covin & Slevin, 1988, 1989; Zahra & Covin, 1995; Barret & Weinstein, 1998; Lyon et al., 2000; Ferreira, 2003; Rodrigues, 2004), and entrepreneurial businesses will have better performances and higher levels of innovative products.

We think that it is appropriate to use the concept of entrepreneurial orientation and market orientation to characterize not the companies as a whole, but individuals who adopt this type of behaviour, particularly in HEIs, given the current reality.

Therefore, the contribution of this work focuses on the fusion of two theoretical approaches to businesses strategies: the Entrepreneurial Orientation and the Market Orientation, applied to teachers and researchers from HEIs. From these approaches we come up with a conceptual model that seeks to explain the relationship between Entrepreneurial Orientation and Market Orientation, affecting the Performance of Teachers and Researchers of HEIs.

The study is justified by the existence of few and fragmented research on the subject, and its originality is the analyses of the relation between EO and OM, not at the organisational level but at the individual level.

1.2. Research Purpose and Question

Given the previously stated, the main objective of this research is to study the relationship between entrepreneurial orientation, market orientation and performance from the point of view of the individual - teachers and researchers in higher education:

- Review and introduce the concept of entrepreneurial orientation and the concept of market orientation, including its origins and recent developments;
- To adapt and evaluate the measurement instrument of entrepreneurial orientation at the individual level (Todorovic, McNaughton, & Guild, 2011), to measure the degree of entrepreneurial orientation of teachers and researchers in higher education institutions;
- To adapt and evaluate the measurement instrument of market orientation at the individual level (Schlosser & McNaughton, 2009), to measure the degree of market orientation of teachers and researchers in higher education institutions;
- Propose and test a structural equation model that represents the system of relationships between entrepreneurial orientation, market orientation and performance of teachers and researchers in higher education institutions.

Given the objectives of the research, the main question that arises is the following:

What is the relationship between entrepreneurial orientation, market orientation and performance of teachers and researchers in higher education?

1.3. Theoretical Foundation

a) Entrepreneurial Orientation

Entrepreneurship, the subject where the concept of entrepreneurial orientation might have arisen, has been an area of increasing research interest by the scientific community of the area of business science.

The origin of the term entrepreneur can be found in the work of Cantillon (1959) who described entrepreneurship as a special economic function where the farmer is a businessman who agrees to pay the owner, for his farm or land, a fixed amount of money, with no guarantee of profit obtained from such activity. In this description it seems to be central to the entrepreneur that he is not the owner of the resource and that profit is uncertain and of residual nature, to the extent that the costs are fixed and the income is not. Later, Say (1840) described the entrepreneur as an individual who promotes changes in economic resources in order to achieve higher productivity and greater profit, and described the entrepreneur as an agent of change. Schumpeter stressed the importance of the entrepreneur as an agent that introduces the concept of innovation linked to the concept of "creative destruction" where the old methods and processes are replaced by new (Ripsas, 1998; Hornsby et al., 2002, 2002; Rutherford, 2007).

One form of entrepreneurship is the corporate entrepreneurship, also know as intrapreneurship, and it consists in the creation of new economic activities within existing organisations (Hornsby et al., 2002; Rutherford, 2007). Corporate entrepreneurship is an integration of organisational efforts that require organisational support and resources in order to promote innovation activities in product, process and organisational level (Hornsby et al., 2002). The corporate entrepreneurship thus promotes the expansion of existing business organisations.

Miller and Friesen (1982) argue that entrepreneurial companies are characterized by the desire to innovate on a regular and bold basis, taking significant risks in their competitive strategies and product market. Some studies also show that entrepreneurial firms tend to take more risks than others, and seek new business opportunities in a proactive manner (Miller & Friesen, 1978; Mintzberg, 1973; Khandwalla, 1977). In this perspective, and according to Miller (1983), the organisation's entrepreneurial orientation can be seen as a combination of three different dimensions: tendency to innovation, pro-activity and risk taking. Lumpkin and Dess (1996) add the following dimensions: autonomy and competitive aggressiveness.

According to Covin and Miles (1999) there is no entrepreneurship without innovation, arguing that the tendency for innovation – in isolation – is the dimension that best defines corporate entrepreneurship. The authors defined innovation as the company's tendency to support new

ideas, experiences and creative processes, earlier than competitors. The authors defined innovation as the company's trend to support new ideas, experiences and creative processes, earlier than the competing companies. Innovation is considered one of the most important factors of economic competitiveness (Pohlmann, 2005). According to Lumpkin and Dess (1996) the tendency for innovation can take many forms and can manifest with varying intensity over time, from the simple desire to try projecting new products to their commitment to master the latest technologies.

The company's innovation, or practice and innovation performance are defined as the ability of a company to create new value proposals as offer new products and services, adopt new operational, technological, and organisational practices, or market orientation, or create new skills and competences (e.g.: Miles and Snow, 1978; Schumpeter, 1938).

For Schumpeter (1934), one of the first researchers to emphasize the importance of innovation in the entrepreneurial process, innovation was seen as an economic activity, and a specific function of entrepreneurs. Thus, according to the author, the central agent of innovation is the entrepreneur, and the true entrepreneur is one who modifies market conditions (he is the innovative entrepreneur), other than routine businessman, who is seen as a mere administrator.

Schumpeter (1939) chose innovation as one of the driving forces of economic growth, for without it there is no growth and development, both at company level and at the level of societies. Innovation is therefore considered a great and ongoing challenge for companies.

Innovation is then defined as the process of creating and introducing something new in the organization itself or the market. Accordingly, the innovation is not just a single or episodic act, it is rather an overall process extending over time. Innovation is not limited to the creation of new ideas, as it requires the invention of something new and its implementation in the organization itself or in the market (Jorge, 2009).

According to Venkatraman (1989) pro-activity is an important component of entrepreneurship. The author defined this dimension as a proactive approach where we seek new opportunities, which may or may not be related to current activities undertaken by the company. The author suggested that companies can be considered proactive when they introduce new products and brands sooner than the competition, eliminate operations that are in a mature or declining product life cycle, participate in emerging markets and anticipate the demand for new opportunities.

Proactivity is the opposite of passivity, indifference or inability to seize opportunities and lead the market (Lumpkin & Dess, 1996). Rather, proactiveness implies an active and constant search for new business opportunities, favorable to the organisation (Stevenson & Jarillo,

1990), imposing an aggressive interaction between the organisation and the business environment (Lumpkin & Dess, 2001).

The intensity of the company's efforts to overcome the competitors and be ahead regarding every opportunity is defined as competitive aggressiveness. It is characterized by a strong offensive attitude, which aims to overcome the competitors (Lumpkin & Dess, 1996).

Venkatraman (1989) suggested that competitive aggressiveness is accomplished by establishing ambitious goals regarding market shares and bold measures to achieve them, such as lower prices and sacrifice profits. According to Lumpkin and Dess (1996) pro-activity and competitive aggressiveness are distinct concepts. The pro-activity is a response to opportunities and competitive aggressiveness is a response to threats.

The concept of entrepreneurship is directly related to risk-taking. Coulthard (2007), citing Miller and Friesen, defines risk as the degree to which managers are willing to make large financial and risky commitments. The author also cites a study by Sarasvathy, Simon and Lave, which suggests that entrepreneurs are more likely to accept the risk as something that characterizes their everyday activity. Therefore, entrepreneurs assess opportunities differently from non-entrepreneurs (Palich & Bagby, 1995; Norton & Moore, 2002). Risk-taking behaviours, such as high indebtedness or commitment of a large part of its resources in the prospect of high profits from the exploitation of market opportunities are characteristic of entrepreneurial firms (Lumpkin & Dess, 1996).

Autonomy can be defined as the freedom granted to teams and individuals by encouraging them to exercise their creativity to bring forth an idea and be able to follow it to reach a certain conclusion (Lumpkin & Dess, 1996).

Stevenson and Jarillo (1990), understanding entrepreneurship as an organisational process, consider that this process is based on three key factors: opportunities detection, the willingness to seize them and the trust in the possibilities of success. It is integrated in this approach to the study of entrepreneurship that the concept of entrepreneurial orientation arises.

The entrepreneurial orientation appears well conceptualized in five different dimensions, but usually associated with only three: the trend towards innovation, proactivity and risk taking (Miller, 1983; Covin & Slevin, 1989; Zahra & Covin, 1995; Becherer & Maurer, 1997; Dickson & Weaver, 1997; Barrett & Weistein, 1998; Zahra & Neubaum, 1998; Slater & Narver, 2000; Kreiser, Marino & Weaver 2002, Baker & Sinkula, 2009).

There is a general consensus that entrepreneurial orientation influences the performance of organisations (Miller, 1983; Covin & Slevin, 1988, 1989; Zahra & Covin, 1995; Barrett &

Weinstein, 1998; Lyon et al., 2000; Ferreira, 2003; Rodrigues, 2004), and entrepreneurial companies will have better performance and higher levels of product innovation (Miller & Friesen, 1982).

Zahra and Covin (1995) and Barrett and Weinstein (1998) conclude that the relationship between entrepreneurial orientation and performance is direct and positive. And there is some evidence that this effect is more pronounced in turbulent markets (Covin & Slevin, McKee, Varadarajan & Pride, cited by Baker & Sinkula, 2009).

In this work, we intend to use the concept of entrepreneurial orientation to characterize not the organisations as a whole, but rather the individuals who adopt this kind of behaviour. The EO has been widely studied in organisations, but not from the point of view of the individual, therefore, we find it necessary to develop and validate a measuring scale.

b) Market Orientation

Over the years there has been a dynamic evolution from the concept of marketing to the concept of market orientation (Rodrigues, 2004).

In the mid 50s, Drucker (1954) first formulated the concept of marketing. According to Rodrigues (2004, p.7), "Drucker argued that marketing puts the whole company in the effort to produce satisfaction for customers".

Levitt (1960), in his article "Marketing Myopia", focuses the company's activity on consumers. The author defines marketing as the full effort to discover, inspire and satisfy consumers' needs. The company should be seen as a means of meeting the needs of customers.

These authors led to the displacement of the focus of the company from its interior to its exterior. Citing Rodrigues, "this manifestation of the company's focus is the nature of the marketing concept and also reflects the essence of market orientation" (Rodrigues, 2004, p.8).

According to Kotler (1998, p.27) marketing is defined as "a social process and management by which individuals and groups obtain what they need and want through creating, offering and exchanging products of value with others". This definition is based on the following core concepts: needs, wants and demand, products (e.g. goods, services or ideas) value, cost and satisfaction, exchange and transactions, relationships and networks, markets, companies and potential consumers.

Thus, over time, there have been several approaches to the market orientation, such as the approach of Narver and Slater, and Kohli and Jaworski.

Based on several studies that examined the relationship between competitive advantage and market orientation (Aaker, 1988; Anderson, 1982; Day, 1984; Kotler, 1977; Levitt, 1960, 1980; Ohmae, 1982; Porter, 1980, 1985), Narver and Slater (1990) conclude that market orientation consists of three behavioural components: customer orientation, competition orientation, and inter functional coordination, and two decision criteria: long-term focus and profitability.

For the above cited authors, customer orientation and competition orientation include all activities involved in acquiring information about buyers and competitors in the target market and its dissemination throughout the company. Inter functional coordination, the third behavioural component, is based on information about customers and competitors and includes the coordinated efforts of the entire company to create value for customers. In short, the three behavioural components of market orientation activities include the acquisition and dissemination of market information and coordination of efforts to create value for customers.

The companies that are market-oriented "sought to understand the latent and expressed needs by customers, and develop superior solutions to those needs" (Slater & Narver, 1999, p.1165).

For Kohli and Jaworski (1990), the concept of "market orientation" refers to the implementation of the marketing concept, since an organisation that develops market-oriented actions does this in consistence with the concept of marketing, in which the fundamental pillars of marketing - customer focus, coordinated marketing and profit - are present.

For Kohli and Jaworski (1990), the company's market orientation is based on three dimensions: information generation, dissemination of information and response to the market because: there are one or more departments of the company that are dedicated to develop actions that identify the current and future customer needs and the factors that affect them; there is the sharing of information by departments; and the various departments develop activities to meet customer needs.

Kohli and Jaworski (1990, p.6) define market orientation as "the generation of market information in what concerns the current and future customer needs, the disseminating of this information across departments and the response of all organisation to that information". The definition proposed by the authors meets the concerns of Barksdale and Darden (1971) with regard to the operationalization of the marketing concept, since it focuses on specific activities rather than philosophical notions.

For Kohli and Jaworski (1990) the generation of information is the starting point of market orientation. The market information is not limited to the needs and preferences of

customers, it also includes the analysis of exogenous factors that influence those needs and preferences. We should take into account legislation and its evolution, as well as technological development or other factors that may influence the needs and preferences of customers. We should predict for present as well future needs. The company must anticipate them so that they can take timely action towards their satisfaction. Another aspect that should not be overlooked is monitoring the actions of competitors.

The authors stress the difficulty that one can feel when trying to define the company's customers, for the buyer is not always in consumption situations the consumer or user of the good or service, meaning that the market focus includes final consumers, distributors, and other external factors that influence the needs and preferences of customers. Therefore, market information should be at disposal involving all these actors.

Tools for generating information do not reduce to customer surveys. These instruments can be formal or informal and include meetings or conversations with customers or partners, analyzing sales reports, analyzing data base of potential customers or formal market studies.

Kohli and Jaworski (1990) argue that the generation of information is not unique to the marketing department or the people who frequently and directly contact with customers. This is the responsibility of the entire company, of all individuals who are part of it. Since there are a lot of sources of information collection, the company should be provided with mechanisms to disseminate information generated throughout the organisation.

This implies that one should make dissemination of information so that the entire company can adapt to market needs. This should be done through formal channels (intra and inter-departmental meetings, memos, newsletters, e-mails, etc.), but should not exclude informal ways, like the "hallway conversation" as this can allow all employees to be aware of customer needs. Although this channel is not controlled by top management of the organisation, it is nevertheless not to be excluded.

After information has been generated and disseminated the company should be able to respond to the market. This response may consist in the selection of the target audience, development and conceptualization of a product that will meet the current and future needs of customers, in promotion and distribution, or in any other action which allows to give a favorable response to customer needs and preferences.

In a market-oriented company, all departments and not just the marketers are involved in responding to market trends.

According to Kohli and Jaworski (1993), the consequences of market orientation affect performance, employees and clients in the organisation.

To the authors, market orientation is a unifying element of efforts and projects of individuals and departments, leading to a higher performance. Thus, the greater the degree of orientation to the company's market the greater the performance. Associated with this is the fact that employees feel they are making a good contribution, and feel a commitment to the organisation and satisfaction with what they do (*esprit de corps*). Thus the authors argue that market orientation results in psychological and social benefits for employees. For the authors the greater the degree of market orientation, the greater the *esprit de corps*, greater job satisfaction and increased employee commitment to the organisation. For customers, market orientation increases their satisfaction because it allows the organisation to better respond to the needs and preferences of customers, which leads to a repeated act of purchasing. Therefore the greater the degree of market orientation, the greater customer satisfaction and more repeat times of these purchases.

In 1993 Kohli, Jaworski and Kumar in response to the orientation scale of Narver and Slater, present another scale proposal – the MARKOR scale, based on the three components of market orientation proposed in the previous study of Kholi and Jaworski (1990), including information generation, information dissemination and response. It is noteworthy that the MARKOR scale mostly used in studies is the reduced version with 20 items, six being for information generation, five for dissemination and nine for response.

However, the focus of this literature, in terms of the unity of theory and empirical observation, is the organisation as a whole, and not the individual within the organisation (e.g.: Farrell, 2000; Han et al., 1998; Kohli & Jaworski, 1993; Narver & Slater, 1990). The focus on the company ignores the underlying routines carried out by individuals who develop and shape the direction (Nelson & Winter, 1982).

The employees of the organisation contribute to various information about the market that can create competitive advantages. Thus, the understanding of how employees define and see the behaviour of market orientation is the key of sucess to promote a market orientation (Schlosser & McNaughton, 2009).

The people in an organisation contribute to the level of organisation of market orientation through actions such as: fostering internal and external relationships (Helfert et al., 2002), using models of behaviour and social influence (Fulk, 1993; Wood & Bandura, 1989), and communicating tacit knowledge (Darroch & McNaughton, 2003).

In various studies we can find different perspectives on how organisations promote the market orientation. For example, Narver and Slater (1990) refer the internalization of core customer-oriented values by individual employees; Jaworski and Kohli (1993) suggest that market orientation is built through downward influence from employer to employee, and

Farrell (2000) argues that market orientation is the result of both planned and emergent change strategies. All are likely useful mechanisms.

However, in previous studies the individual contribution to the market orientation of a company is measured incorrectly. In the service sector, it is fundamental to understand and meet the long-term needs of customers through employee-customer interaction (Schlosser & McNaughton, 2009).

In summary, the literature on market orientation currently offers little understanding of market-oriented perspectives and behaviours of individuals within service organisations (Schlosser & McNaughton, 2009). An impediment to empirical research had been the lack of a scale to measure the market orientation of individuals. Hence, the authors developed the scale I-MARKOR. The I-MARKOR scale measures how employees acquire, share and respond to market information.

This scale fits the definitions of Kohli and Jaworski (1990a, 1990b) of organisational orientation to the market that reflect the characteristics of individual employees. Thus, the market orientation of individuals reflects the attitudes and behaviours of employees while gaining, sharing, and responding to the market.

Previous researches indicate that attitudes and behaviours of the individual employee relate to the market orientation of an organisation (e.g.: Celuch et al., 2000; Harris & Ogbonna, 2001; Langerak, 2001). While individual actions and attitudes help shape and develop a total orientation to the market, organisations must clearly understand the influence of individual factors and inter-personal factors.

Langerak (2003) concluded that the nature of the link between market orientation and organisational performance is not yet adequately explained. This suggests that other considerations may shape the success of a strategy of market orientation.

Schlosser's and McNaughton's (2009) research described and tested how and why individual employees can perform market-orientated routines underpinning the market orientation of the organisation.

Most studies that take into account the individual in creating a customer orientation are only tested with employees in sales and marketing (e.g.: Pettijohn & Pettijohn, 2002). It will be important in this type of study to consider various types of employees throughout the organisation to test a market orientation - not a marketing orientation.

c) Performance
For sustainable growth in the highly competitive world market, the evaluation of the performance has become an essential component of the development strategies of

organizations. A system of effective performance measurement plays an important role in supporting the management of organisations.

Performance measurement can be defined as the process of quantifying the efficiency and effectiveness of production systems (Singh and Garg, 2008). Thus, performance may relate to the individual, group, organisation, the organisational segment, function, activity, the market segment, etc. In literature one can find various methodologies to measure performance, including qualitative and quantitative measures.

Three types of performance measures are regularly used in the strategic literature: objective financial performance (according to the work of Combs and Ketchen; Knott, Maijoor Witteloostuijn and Van Makadok; Miller and Shamsie; and Robins and Wiersema, Russian and Fout, cited by Newbert, 2008); subjective financial performance - sales and profitability (according the work of Powell, and Powell and Dent-Micallef, referred by Newbert, 2008); subjective non financial performance - the case of marketing and market share (regarding the work of Combs and Ketchen, Henderson and Cockburn, Markman et al., Powell and Dent-Micallef, and Yeoh and Roth, cited by Newbert, 2008).

However, in order to understand organisational performance it is necessary to understand Individual Performance, since we must consider not only organisational factors, but also factors that are inherent to the workers or that affect them, individually. Individual performance is highly important for an organisation as a whole, as well as for the individuals working in it (Sonnentag & Frese, 2002).

To Xiaowei (2006) the fundamental workers for the organisation are those who have influence on other workers, who have knowledge and whose performance is characterized by the following traits: Ability to connect organisational networks; Capacity to transmit organisational memory; Flexible Trust; Ability to use synergies and act as a team; Influence of the chain/network performance; Difficult to be replaced; Traits of innovation. We find this dimensions the best Performance dimensions to relate with the EO and MO dimensions, in HE context.

1.4.   Research Design

The research design is a kind of thread of the research project and is based on the definition of the research problem, the concept model, the questions and objectives of the research and all the information inherent to it (see figure 1.1.).
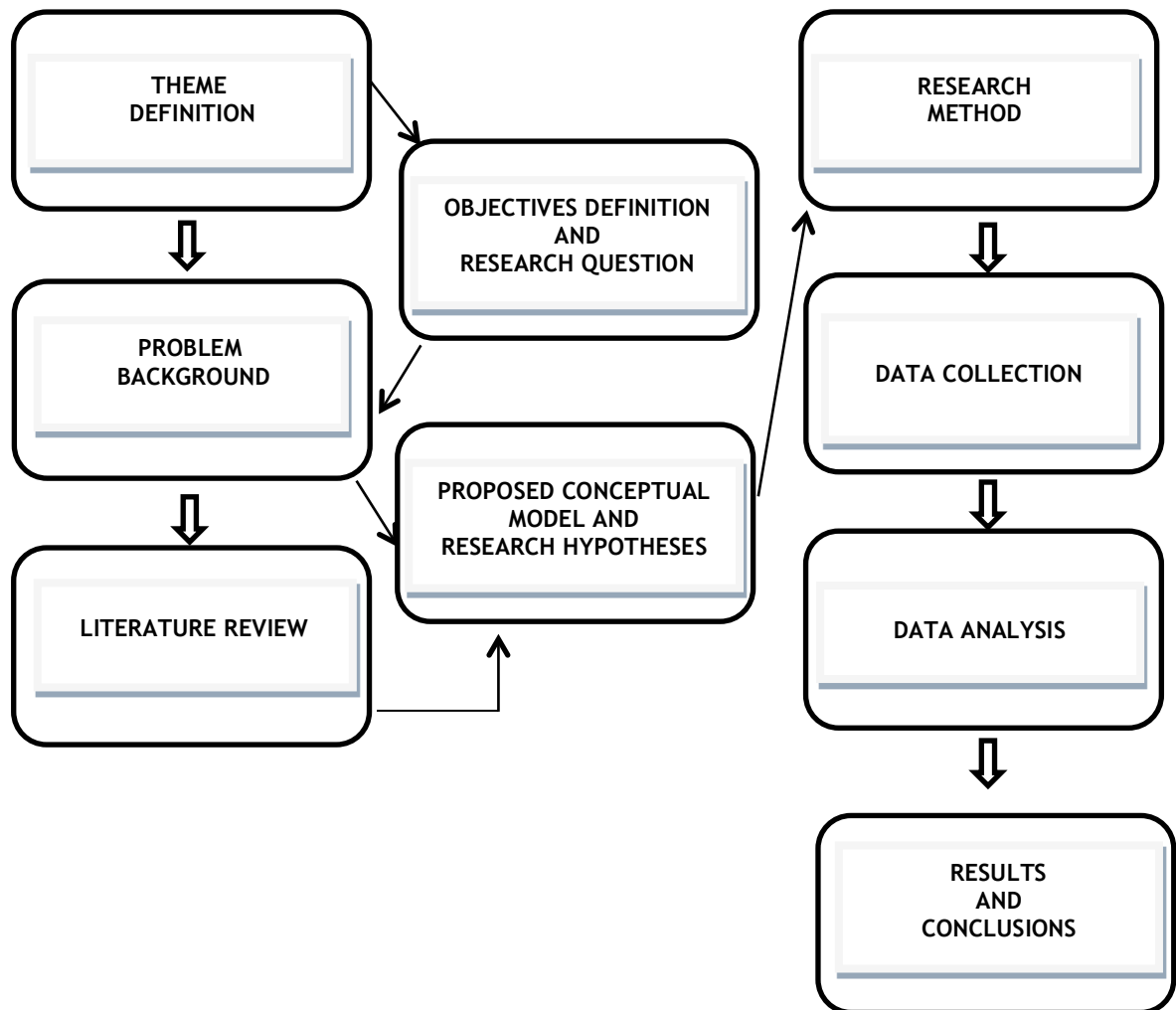
Source: Own

Figure 1.1 - Research Design

1.5. Structure of the Thesis

This thesis is divided into six chapters:

1. Introduction – we start with the problem statement, research purpose and question, and we present some theoretical foundation and the research design;

2. Conceptual Model – in this chapter we proposed the conceptual model and the research hypotheses, and the methodology that we intend to follow;

3. An Entrepreneurial Orientation Scale for Teachers and Researchers in Higher Education Institutions – we proposed and validate the I-ENTRE-U scale as a good instrument to measure IEO;

4. An Adaptation of the I-MARKOR Scale to Identify Market Oriented Teachers and Researchers in Higher Education Institutions – in this chapter we adapted and validate the I-MARKOR scale to measure IMO, Teachers and Researchers in Higher Education Institutions;

5. Relating Entrepreneurial Orientation, Market Orientation and Performance of Teachers and Researchers in Higher Education Institutions – Finally, we test the hypotheses presented in chapter 2, relating IEO, IMO and Performance;

6. Conclusions – We end this work describing the main conclusions of the research, point out the principal limitations and propose some perspectives for a future research.

2. Conceptual Model

Based on Felgueira, T. & Rodrigues, R. G. (2012). Entrepreneurial orientation, market orientation and performance of teachers and researchers in public higher education institutions. *Public Policy and Administration,* 11(4), pp. 703-718.

Abstract

In this study we intend to propose the concept of individual entrepreneurial orientation (IEO) and a measurement scale, and the concept of individual market orientation (IMO), is measure with I-MARKOR adaped to the HE context. The main objective is to analyse the relationship between IEO, IMO and Performance of teachers and researchers of Higher Education Institutions (HEIs). A conceptual model is proposed representing the relationship among these variables. The results of this research can be of high utility in understanding how the analysed variables interact and their impact on the HEIs.

Keywords: Entrepreneurial Orientation, Higher Education, Individual Entrepreneurial Orientation, Individual Market Orientation, Market Orientation, Performance.

2.1. Introduction

With the globalization of markets, there is virtually no sector where competition has not grown significantly (Campbell-Hunt, 2000), also including higher education. Higher education has been the focus of significant growth in recent decades (Kirp, 2003; Maringe & Gibbs, 2009). In this context, the educational market has undergone changes and competition among institutions of higher education worldwide was established (Kirp, 2003; Maringe & Gibbs, 2009).

The contribution of this work focuses on the fusion of two theoretical approaches to business strategies: Entrepreneurial Orientation and Market Orientation, applied to teachers and researchers from Higher Education Institutions.

The main objective of this study is propose a conceptual model to analyse the relationship between IEO, IMO and performance of teachers and researchers of the HEIs. It is expected that the results of this research can be of high utility in understanding how the analysed variables interact and their impact on the HEIs.

2.2. Literature Review

2.2.1. Entrepreneurial Orientation

Research in the area of entrepreneurial orientation continues to represent a fruitful area of study (Rauch et al., 2009).

Miller and Friesen (1982) argue that entrepreneurial companies are characterized by the desire to innovate on a regular and bold basis, taking significant risks in their competitive strategies and product market. Some studies also show that entrepreneurial firms tend to take more risks than others, and seek new business opportunities in a proactive manner (Miller & Friesen, 1978; Mintzberg, 1973; Khandwalla, 1977). In this perspective, and according to Miller (1983), the organisation's entrepreneurial orientation can be seen as a combination of three different dimensions: tendency to innovation, pro-activity and risk taking. Lumpkin and Dess (1996) add the following dimensions: autonomy and competitive aggressiveness.

According to Covin and Miles (1999) there is no innovation without entrepreneurship, arguing that the tendency for innovation – in isolation – is the dimension that best defines entrepreneurial business. The authors defined innovation as the company's tendency to support new ideas, experiences and creative processes, earlier than competitors.

According to Venkatraman (1989) pro-activity is an important component of entrepreneurship. The author defined this dimension as a proactive approach where we seek new opportunities, which may or may not be related to current activities undertaken by the company. The author suggested that companies can be considered proactive when they introduce new products and brands sooner than the competition, eliminate operations that are in a mature or declining product life cycle, participate in emerging markets and anticipate the demand for new opportunities.

The concept of entrepreneurship is directly related to risk taking. Coulthard (2007), citing Miller and Friesen, defines risk as the degree to which managers are willing to make large financial and risky commitments. The author also cites a study by Sarasvathy, Simon and Lave, which suggests that entrepreneurs are more likely to accept the risk as something that characterizes their everyday activity. Therefore, entrepreneurs assess opportunities differently from non-entrepreneurs (Palich & Bagby, 1995; Norton & Moore, 2002).

Autonomy can be defined as the freedom granted to teams and individuals by encouraging them to exercise their creativity to bring forth an idea and be able to follow it to reach a certain conclusion (Lumpkin & Dess, 1996).

The entrepreneurial orientation appears well conceptualized in five different dimensions, but usually associated with only three: the trend towards innovation, proactivity and risk taking

(Miller, 1983; Covin & Slevin, 1989; Zahra & Covin, 1995; Becherer & Maurer, 1997; Dickson & Weaver, 1997; Barrett & Weistein, 1998; Zahra & Neubaum, 1998; Slater & Narver, 2000; Kreiser, Marino & Weaver 2002, Baker & Sinkula, 2009).

There is a general consensus that entrepreneurial orientation influences the performance of organisations (Miller, 1983; Covin & Slevin, 1988, 1989; Zahra & Covin, 1995; Barrett & Weinstein, 1998; Lyon et al., 2000; Ferreira, 2003; Rodrigues, 2004), and entrepreneurial companies will have better performance and higher levels of product innovation (Miller & Friesen, 1982).

Zahra and Covin (1995) and Barrett and Weinstein (1998) conclude that the relationship between entrepreneurial orientation and performance is direct and positive. And there is some evidence that this effect is more pronounced in turbulent markets (Covin & Slevin, McKee, Varadarajan & Pride, cited by Baker & Sinkula, 2009).

Universities are encouraged to become more "entrepreneurial" (Mowery & Shane, 2002) but little is known about the entrepreneurial orientation of academic departments and how such an orientation might foster the commercialization activity (Todorovic, McNaughton & Guild, 2011). Much of the empirical literature uses ENTRESCALE to measure the EO of private sector firms (Covin & Slevin, 1989; Knight, 1997). However, many authors point out that ENTRESCALE has limited applicability in the public or non-profit sectors, and what it means to be entrepreneurially oriented within public or non-profit sectors is just beginning to be explored (Box, 1999; Caruana et al., 2002; Mentoor & Friedrich, 2007; Morris & Jones, 1999; O'Shea et al., 2005, 2007). Then, in response to this problem, Todorovic, McNaughton, and Guild (2011) have developed an ENTRE-U scale to measure the EO of university departments.

In this work, we intend to use the concept of entrepreneurial orientation to characterize not the organisations as a whole, but rather the individuals who adopt this kind of behaviour. The EO has been widely studied in organisations, but not from the point of view of the individual. In this study we propose the use of the I-ENTRE-U scale to identify entrepreneurial oriented individuals (teachers and researchers) in HEIs.

2.2.2. Market Orientation

Over the years there has been a dynamic evolution from the concept of marketing to the concept of market orientation (Rodrigues, 2004).

Thus, over time, there have been several approaches to the market orientation, such as the approach of Narver and Slater (1990), and Kohli and Jaworski (1990a, 1990b, 1993).

Based on several studies that examined the relationship between competitive advantage and market orientation (Aaker, 1988; Anderson, 1982; Day, 1984; Kotler, 1977; Levitt, 1960, 1980, Ohmae, 1982; Porter, 1980, 1985), Narver and Slater (1990) conclude that market orientation consists of three behavioural components: customer orientation, competition orientation, and inter functional coordination, and two decision criteria: long-term focus and profitability.

For the above cited authors, customer orientation and competition orientation include all activities involved in acquiring information about buyers and competitors in the target market and its dissemination throughout the company. Inter functional coordination, the third behavioural component, is based on information about customers and competitors and includes the coordinated efforts of the entire company to create value for customers. In short, the three behavioural components of market orientation activities include the acquisition and dissemination of market information and coordination of efforts to create value for customers.

For Kohli and Jaworski (1990), the concept of "market orientation" refers to the implementation of the marketing concept, since an organisation that develops market-oriented actions does this in consistence with the concept of marketing, in which the fundamental pillars of marketing - customer focus, coordinated marketing and profit - are present.

For Kohli and Jaworski (1990), the company's market orientation is based on three dimensions: information generation, dissemination of information and response to the market because there are one or more departments of the company that are dedicated to develop actions that identify the current and future customer needs and the factors that affect them; there is also the sharing of information by departments so that the various departments develop activities to meet customer needs.

In a market-oriented company, all departments and not just the marketers are involved in responding to market trends.

According to Kohli and Jaworski (1993), the consequences of market orientation affect performance, employees and clients in the organisation. To the authors, market orientation is a unifying element of efforts and projects of individuals and departments, leading to a higher performance. Thus, the greater the degree of orientation to the company's market the greater the performance. Associated with this is the fact that employees feel they are making a good contribution, and feel a commitment to the organisation and satisfaction with what they do. Thus the authors argue that market orientation results in psychological and social benefits for employees. For the authors the greater the degree of market orientation, the greater the *esprit de corps*, greater job satisfaction and increased employee commitment to the organisation. For customers, market orientation increases their satisfaction because it

allows the organisation to better respond to the needs and preferences of customers, which leads to a repeated act of purchasing. Therefore the greater the degree of market orientation, the greater customer satisfaction and more repeat times of these purchases.

However, the focus of this literature, in terms of the unity of theory and empirical observation, is the organisation as a whole, and not the individual within the organisation (e.g.: Farrell, 2000; Han et al., 1998; Kohli & Jaworski, 1993; Narver & Slater, 1990). The focus on the company ignores the underlying routines carried out by individuals who develop and shape the direction (Nelson & Winter, 1982).

The employees of the organisation contribute to various information about the market that can create competitive advantages. Thus, the understanding of how employees define and see the behaviour of market orientation is the key of success to promote a market orientation (Schlosser & McNaughton, 2009).

The people in an organisation contribute to the level of organisation of market orientation through actions such as: fostering internal and external relationships (Helfert et al., 2002), using models of behaviour and social influence (Fulk, 1993; Wood & Bandura, 1989), and communicating tacit knowledge (Darroch & McNaughton, 2003).

However, in previous studies the individual contribution to the market orientation of a company is measured incorrectly. In the service sector, it is fundamental to understand and meet the long-term needs of customers through employee-customer interaction (Schlosser & McNaughton, 2009). Almost all scales measure market orientation at an organisational or SBU level of analysis and do not recognize the personal responsibility and willingness of employees to act in market-oriented ways.

In summary, the literature on market orientation currently offers little understanding of market-oriented perspectives and behaviours of individuals within service organisations (Schlosser & McNaughton, 2009). An impediment to empirical research is the lack of a scale to measure the market orientation of individuals. Hence, the authors developed the scale I-MARKOR. The I-MARKOR scale measures how employees acquire, share and respond to market information.

This scale fits the definitions of Kohli and Jaworski (1990a, 1990b) of organisational orientation to the market that reflect the characteristics of individual employees. Thus, the market orientation of individuals reflects the attitudes and behaviours of employees while gaining, sharing, and responding to the market.

Previous researchers indicate that attitudes and behaviours of the individual employee relate to the market orientation of an organisation (e.g.: Celuch et al., 2000; Harris & Ogbonna,

2001; Langerak, 2001). While individual actions and attitudes help shape and develop a total orientation to the market, organisations must clearly understand the influence of individual factors and interpersonal factors.

Langerak (2003) concluded that the nature of the link between market orientation and organisational performance is not yet adequately explained. This suggests that other considerations may shape the success of a strategy of market orientation.

Schlosser's and McNaughton's (2009) research described and tested how and why individual employees can perform market-orientated routines underpinning the market orientation of the organisation.

Most studies that take into account the individual in creating a customer orientation are only tested with employees in sales and marketing (e.g.: Pettijohn & Pettijohn, 2002). It will be important in this type of study to consider various types of employees throughout the organisation to test a market orientation - not a marketing orientation.

2.2.3. Performance

With the globalization of markets, there is virtually no sector where competition has not grown significantly (Campbell-Hunt, 2000), and that made organisations realize that intellectual capital (Daud et al., 2010) and knowledge are fundamental in order to enable them to obtain and maintain competitiveness (Almashari et al., 2002; Daud et al., 2010). The focus is the optimization of Performance (Heavey et al., 2011).

Some studies showed that the performance of individual groups is better than if they worked in isolation, except in cases of problem solving and judgments (Zajonc, 1974). Other studies have shown that the processes of social interaction developed by group members negatively affect how the group performs a certain task (Ferreira, Neves & Caetano, 2001). In order to understand organisational performance it's also important to understand Individual Performance, since we must consider not only organisational factors, but also factors that are inherent to the workers or that affect them, individually.

Viswesvaran (2001) defines performance as individual behaviours that can be evaluated but points out that the difference between behaviours and outcomes is unclear, as the performance consists of several behavioural manifestations, which are identifiable only through operational measures. For Salgado, Moscoso and Lado (2003) dimensions of performance are: knowledge, efficiency, problem solving, adaptability, leadership, leadership relations, aspirations, and attitudes. According to Gibbons et al. (2006), the constituent dimensions of performance are leadership, consciencialization, problem solving, teamwork,

relational or interpersonal skills, planning and organisation, motivation, readiness for development, conflict resolution, the demand for information, justice, persuasion, the ability to listen, creativity, adaptability, oral communication, stress management, written communication and cultural adaptability.

The behavioural dimensions to Cheng, Li and Fox (2007) are identified as honesty, personal care, punctuality, cooperation, attitude, and equity. For management, the authors present five dimensions: relationships with guests, leadership, communication skills, interpersonal relations and planning. Finally, as regards the self, there are five dimensions: gender, age, interest, creativity and reliability. The authors note that personality traits and motivational factors can influence performance on the job.

Individual performance is highly important for an organisation as a whole, as well as for the individuals working in it (Sonnentag & Frese, 2002).

To Porter, Lawler and Hackman (1975), there are six different but related phases, that describe individual performance: (1) Perception and evaluation of organisational requirements; (2) Reset task - after perceiving and understanding the organisational requirements, the individual may choose to reset them before accepting them as a task you want to accomplish, and this process is influenced by their needs, values and personal goals; (3) Development of a behavioral plan that includes performance and effort strategies to execute the task that the individual intends to accomplish; (4) Behaviour in itself, which is dependent on the skills, abilities to act (energy) and psychological arousal level of the individual; (5) Obtaining results, whether performance outcomes (such as quality and quantity of work) or personal outcomes (such as satisfaction), which are determined by the behavior of the individual, the task being performed and the organisational contingencies relevant to the situation of performance; (6) Feedback, since behaviour results reflect on both the organisation and the individual, and influence the future requirements of the organisation in relation to the individual.

The dimensions proposed by Xiaowei (2006), *linking organisational networks, transmitting organisational memory, elastic confidence, team synergy, performance chain influence, uneasily substitutable, innovation trait*, will be used in this study, in the performance construct, because we find them to be the best to relate to the dimensions of EO and MO.

2.3. Conceptual Model and Hypotheses

2.3.1. Proposed Conceptual Model

The literature review led to the proposal of the research model (Figure 2.1), which includes the research hypotheses.

The model proposed in Figure 2.1 was created as a way to respond to the research question, linking entrepreneurial orientation, market orientation and performance.

The thesis is that the entrepreneurial and market orientations have a positive effect on individual performance and that the combined effect of two orientations is greater than the sum of individual effects. Furthermore, the entrepreneurial orientation functions as a positive history of the market orientation.
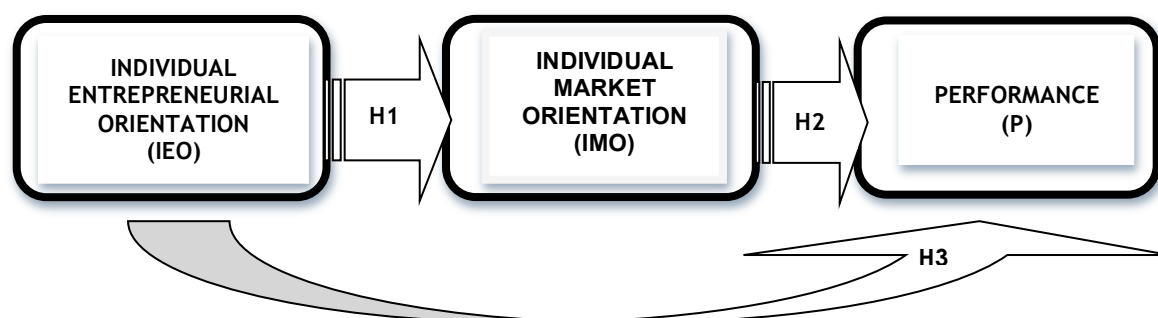
Source: Own

Figure 2.1 - Proposed Conceptual Model

2.3.2. Research Hypotheses

To Hills and LaForge (1992), the behaviour of marketing and entrepreneurial behaviour are similar in nature - both expand the boundaries, involve extensive interaction with the environment, require the assumption of risk and uncertainty, and inevitably link the complexities of human behaviour with commercial efforts and other efforts. However, both market orientation (MO) and entrepreneurial orientation (EO) constructs are correlated but distinct. Market orientation reflects the degree of strategic planning of companies' market driven by the customer and competition. The entrepreneurial orientation reflects the degree as the growth objectives of companies are driven by identifying and exploiting unexplored market opportunities.

According to Davies (2001), the introduction of quality systems that recognise customer orientation and marketing orientation is an important step towards sustaining entrepreneurial endeavour in higher education.

In the research of Baker and Sinkula (2009), when modelled separately, these constructs revealed direct effects of both constructs on profitability. However, when modelled simultaneously, the direct effect of EO disappeared. This has led some scholars to postulate that equal opportunity precedes MO. The results of Baker and Sinkula (2009) contradict this assumption and suggest that EO and MO complement each other, at least in small companies, to increase profitability. The main difference between this and previous studies was the inclusion of another construct, a successful innovation that captures an indirect effect of EO on profitability. At least in small firms, the results suggest that the EO complements the MO instilling an opportunistic culture that impacts the quality and quantity of innovation of companies.

When Clark (1998) characterises entrepreneurial universities as being "consumer/market-driven", is establishing a link between entrepreneurship and market orientation.

According to Covin and Slevin (1989), the entrepreneurial orientation construct is constituted by three subconstructs (the trend towards innovation, proactivity and risk taking) to form a unidimensional strategic orientation. Testing of the unidimensionality is deemed necessary for this construct in higher education institutions, at the individual level, since there are no previous studies on the behaviour of this construct in this reality.

The market orientation construct comprises subdimensions or subconstructs. The conceptualisation of market orientation at the individual level divides the construct into sub dimensions of information generation, information dissemination and market responsiveness (Schlosser & McNaughton, 2009).

The relationship between entrepreneurial orientation and market orientation leads us to hypothesize the relationship between the two orientations, expressed in H1.

H1: *The higher the degree of individual entrepreneurial orientation, the greater the degree of individual market orientation.*

Langerak (2003) finds that the nature of the link between market orientation and organisational performance is not yet adequately explained. This suggests that other considerations may shape the success of a strategy of market orientation.

Haug (2001, 2002) recognises the market orientation's role in the strategic process of HEIs, and its impact on these institutions' performance. For Kohli and Jaworski (1993), the consequences of market orientation affect performance, employees and clients in the

organisation. Employees who accept a market-oriented strategy will translate it into their own market-oriented attitudes and actions (Schlosser & McNaughton, 2009). Thus, it is expected that the MO, at the individual level (IMO), will have a positive impact on performance traits.

H2: *The individual market orientation has a positive impact on performance.*

Although after the work of Covin and Slevin (1988) several other works have already appeared, at the company level, which conclude that there is a positive impact of EO on performance, there have been others, which conclude that there was no direct relationship between EO and performance, as is the case in Matsuno et al. (2002).

The view of EO as an individual level variable has only recently begun to gain traction (Davis, J. L. et al., 2010). The EO construct has commonly been utilized when studying organisations, but many researchers have argued that application at the individual level could provide valuable insight into the functioning of managers and their respective organisations (Carland, H. & Carland, Gartner, Stewart, cited by Davis, J. L. et al., 2010). At the individual level, Penrose (1959) was the first to point out the importance of the entrepreneur's vision and imagination to the performance of firms.

However, the theoretical foundations of this relationship are rather solid, so it is expected that the EO will have a positive impact on performance traits, also at the individual level.

H3: *The higher the degree of individual entrepreneurial orientation, the greater the performance.*

2.4. Methodology

2.4.1. Research Method

According to Brannen (2005), the quantitative method is associated with an objective approach, while the method of qualitative investigation is associated with a subjective approach.

In the first method the researcher starts from an existing theoretical knowledge, hypotheses are listed on the theory and operationalized and measured with instruments and empirical data collection and default data.

In the second method, the theory appears as the data is analysed and the choice of cases is made on a theoretical basis, which similarly arises during the investigation. In accordance with Polit (1995), the trend is the integration of quantitative and qualitative data in a single study. The dichotomy between these two analyses is the key distinction in epistemological and methodological framework of social and behavioural sciences. It is therefore a mixed method, also designated by triangulation.

To evaluate the proposed model and test the research hypotheses, quantitative methodology is understood to be more appropriate, which is given an exploratory and causal focus, since there are few empirical results for some of the relationships proposed.

The data needed to test the hypotheses, mostly representing very specific scales, are not published, so there is a need for primary data through fieldwork. Following that is the objective approach and the deductive method, based on models constructed from the accumulated results of previous investigations, through quantitative indicators.

The unit of analysis in this study is the individual: teachers and researchers of higher education institutions.

2.4.2. Variables and Scales

For the constructs in the model the measurement scales available are proposed, as mentioned. Nunnally and Bernstein (1994) advocate the advantage of using scales, which have been developed and tested. This decision will facilitate the comparison of some study results with other results already published.

Thus, the EO will be measured by ENTRE-U developed by Todorovic, McNaughton, and Guild in 2011(Table 2.1) and adapted to the individual level (I-ENTRE-U). This scale is composed of four dimensions:

    (1) Research Mobilization (6 items);

(2) Unconventionality (8 items);

(3) Industry Collaboration (5 items);

(4) University Policies (4 items).

Table 2.1 - ENTRE-U – Entrepreneurial orientation scale for Universities

Research Mobilization (RM)

1. We encourage our graduate students to engage in research with significant implications for industry or society
2. We encourage students to seek practical applications for their research
3. Faculty members in our department emphasize applied research
4. Compared to other similar departments in our province, our department has a reputation for its contribution to industry or society
5. Many of our faculty members conduct research in partnership with non-academic professionals
6. Our faculty members are expected to make substantial contributions to industry or society

Unconventionality (UC)

1. Cooperation with organizations outside the university significantly improves our research activities
2. Our faculty members often seek research opportunities outside the traditional university environment
3. We seek significant funding from sources other than the Tri-councils (only in Canadian context)
4. Compared to other similar departments in our province, our faculty members are known as very efficient and productive researchers
5. We try to generate off-campus benefits from research projects
6. Compared to other similar departments in this province, we are good at identifying new opportunities
7. We support our faculty members collaborating with non-academic professionals
8. When we come up on a unconventional new idea, we usually let someone else try it and see what happens (reverse coded)

Industry Collaboration (IC)

1. We encourage industry involvement in the research activities of our faculty members
2. Our department is highly regarded by industry
3. We are recognized by industry or society for our flexibility and innovativeness
4. We believe that our department should build relationships with private or public sector organizations
5. Our graduate students often secure high quality industry positions

University Policies (UP)

1. We feel that university-wide policies at this university contribute substantially to wards our department achieving its goals and objectives
2. Our university policies are best described as developed ''bottom-up'' using feedback from all levels of the university
3. Compared to most other universities, our university is very responsive to new ideas and innovative approaches
4. Our department is given significant latitude when evaluating faculty members performance

Source: Adapted from Todorovic, McNaughton & Guild, 2011, p.135

The IMO scale that assesses the individual level was developed by Schlosser and McNaughton (2009), from the work of Kohli and Jaworski (1990), and consists of 20 items, ordered in three dimensions of market orientation, at the individual level (Table 2.2):

(1) Information acquisition, which includes eight items;

(2) Information dissemination, organized into seven items;

(3) Co-ordination of strategic response, organized into five items.

Table 2.2 – I-MARKOR scale to identify market-oriented individuals

Information acquisition (IA)

1. I ask distributors to assess the quality of our products and services

2. I interact with agencies to find out what products or services customers will need in the future

3. In my communication with distributors, I periodically review the likely effect of changes in our business environment (e.g. company mergers and acquisitions) on customers

4. I take responsibility to detect fundamental shifts in our industry (e.g. competition, technology, regulation) in my communication with distributors

5. I talk to or survey those who can influence our customers' purchases (e.g. distributors)

6. I review our product development efforts with distributors to ensure that they are in line with what customers want

7. I participate in informal "hall talk" that concerns our competitors' tactics or strategies

8. I collect industry information through informal means (e.g. lunch with industry friends, talks with trade partners)

Information dissemination (ID)

1. I participate in interdepartmental meetings to discuss market trends and developments

2. I let appropriate departments know when I find out that something important has happened to a major distributor or market

3. I coordinate my activities with the activities of coworkers or departments in this organization

4. I pass on information that could help company decision-makers to review changes taking place in our business environment

5. I communicate market developments to departments other than marketing

6. I communicate with our marketing department concerning market developments

7. I try to circulate documents (e.g. e-mails, reports, newsletters) that provide information on my distributor contacts and their customers to appropriate departments

Co-ordination of strategic response (SR)

1. I try to bring a customer with a problem together with a product or person that helps the customer to solve that problem

2. I try to help distributors achieve their goals

3. I respond quickly if a distributor has any problems with our offerings

4. I take action when I find out that customers are unhappy with the quality of our service

5. I jointly develop solutions for customers with members of our customer/adviser relationship team

Source: Adapted from Schlosser and McNaughton, 2009, p. 239.

The performance will be measured by Xiaowei (2006) measure of self-assessment of performance traits, which, as a whole, consists of 18 items, from reviewing the work of other authors and considers seven dimensions of this assessment (Table 2.3):

(1) Linking organisational networks (3 items);

(2) Transmitting organisational memory (2 items);

(3) Elastic confidence (4 items);

(4) Team synergy (2 items);

(5) Performance chain influence (2 items);

(6) Uneasily substitutable (2 items);

(7) Innovation trait (3 items).

Table 2.3 - Scale for the core employees' performance traits

Dimensions and Items	Source
Linking Organisational Network (LON)	
1. I have established good relationship with many VIPs both in and out of our unit and when crossing upon stubborn problems it's mainly me who can invite the VIPs for timely solution	Ritter (2002)
2. I usually concern very much about the matters (e.g. academic meetings, training, and professional visiting) related to our unit development in order to link the valuable potential co-operative partners.	
3. I'm sensible in possible collision with others, and easily take the opposite position to make constructive solution.	
Transmitting Organisational Memory (TOM)	
1. I often predominate or participate important decision and planning of our unit, but if I'm absent, other people can't make the plan work well as planned before.(reversed score)	Dess (2001)
2. The knowledge, experience and effective ways of doing things transmitted from me can be usually innovatively applied to our business by others.	
Elastic Confidence (EC)	
1. If I get the idea fixed by myself of how to complete the tasks, I won't allow others to make their influence on these things	Mayer (1995)
2. I'm often authorized by my unit leaders, colleagues or co-workers with full power and commitment to fulfil the tasks (reverse coded).	
3. I hope very much that there is the most effective monitoring ways to other's actions when they are doing the things without direct reward. (reversed score)	
4. Even in no way to monitoring my unit member's business, I'm inclined to deliver the key tasks to them.	
Team Synergy (TS)	
1. I'm more inclined to work in the unit where I can undertake multi-roles, and enjoy decision-making with others full of co-operation relationship instead of intensified hierarchic atomistic organization.	Hayes (1997)
2. The profession I major in is so independent that there is usually no need for me to co-operate with others. (reversed score)	
Performance Chain Influence (PCI)	
1. More than 60% of my achievements require other's contributions.	Dess (2001)
2. The reward from my job in my unit is no relation to what others do. (reversed score)	
Uneasily Substitutable (US)	
1. If I want to have turnover from my unit, it will be hard for me to get it down because fewer people can take my place in the unit.	Dess (2001)
2. Most of my co-workers can often solve the problems I feel stubborn. (reversed score)	
Innovation Trait (IT)	
1. I'm inclined to make the working plan and its performance as I did. (reversed score)	Hayes (1997)
2. I'm inclined to argue on the ideas of different viewpoints with my supervisor, co-workers or partners, even which may put me in quandary.	
3. I'm inclined to pay more of my time, energy and ask for more organisational supports on the new things valuable.	

Source: Adapted from Xiaowei, 2006, p.42

All variables are measured by *Likert* scales, on a scale of 1 to 7, where 1 means "strongly disagree", 2 meaning "disagree," 3 means "slightly disagree", 4 means "neither agree nor disagree", 5 means "slightly agree", 6 means" agree "and 7 means" strongly agree".

2.4.3. Data Collection and Analysis Methods

In order to ensure clarity of the issues, understand them and their objectivity, a pre-test questionnaire will be given to some teachers/researchers of higher education.

In accordance with Lakatos and Marconi (1996), research using a survey technique has the disadvantage of the number of questionnaires. To alleviate this problem and to increase the response rate, multiple contacts will be made (Schaefer and Dillman, 1998) which consist in the repetition of sending a questionnaire more often to non-respondents in a given time interval.

In preparing the questionnaire, we intend to follow the main lines of research with regard to measuring instruments. However it may be necessary to adapt the content and scale, since the target audience and the research objectives also differ from the original. According to the research objectives and the nature of the test data, we will use:

1 - Descriptive statistics that characterize the data (central tendency, dispersion and relative position);

2 - Statistical techniques to test, debug and validate measuring instruments, emphasizing the confirmatory factor analysis (CFA), Pearson's correlations and Cronbach's alphas, among other measures;

3 - Techniques that will allow testing of research hypotheses, as the structural equation models analysis (SEMA);

4 - Other statistics and statistical tests as a supplement to other statistics used.

The Structural Equation Modelling (SEM) includes a set of models known by various names, among them the path analysis, analysis of covariance structure, the analysis of latent variables and confirmatory factor analysis (CFA). It is a set of data processing techniques that has received great attention from researchers and is understood by many authors from the field (Klem, 2002; Thompson, 2002; Ullman, 2007, cited by Pilati & Laros, 2007) as a mixture of factorial analysis and regression analysis which allows researchers to test factorial structures of psychometric measurement instruments.

According to Pilati and Laros (2007), SEM tries to replicate a set of observed data (variables) through the imposition of parameters in the matrices, which are the theoretical relationships defined by the researcher. This characteristic is the main difference between the SEM and other multivariate analysis techniques, since the imposition of the parameters in the matrix of relationships between variables is of a confirmatory nature, since it requires of the researcher a predefined type of relationship between variables of the model tested which are operational restrictions in terms of the matrices. For this reason, the SEM requires that: the measures used by the researcher are of good psychometric quality and are solid and theoretical models based on previous research that allow the researcher to establish these charges (pre-defined relations) with the property. Because of this last feature the SEM is

understood as a confirmatory technique, since the theoretical modelling of what is under investigation should have occurred before the data analysis.

The SEM simultaneously estimates the parameters of the measurement model and the structural model (regression) (Hair et al., 2006). That is, the first step (measurement model - CFA) tests the validity and the reliability of the measures first and only then proceeds to test the analysis model (Structural model), where the relationships (paths) are tested.

The structural model defines the relationship between the exogenous and endogenous latent variables. Consequently, this model specifies latent variables (exogenous) directly or indirectly influencing changes in the values of other latent variable (endogenous or dependent).

The SEM analysis will be the method of data analysis to be followed in this research. The statistical data will be made with the use of the AMOS program, thus requiring the use of SPSS for some of the analysis.

We can see the methodological aspects that make this analysis in Table 2.4 below.

Table 2.4 - Summary of the methodological aspects of quantitative analysis

Sector	Higher Education
Institution Type	Universities, Polytechnics, Specialized Schools or Colleges, public or private Institutions
Teachers/Researchers-HEIs	From 37 European Countries, Brazil and USA
Unit of analysis	Teachers and Researchers at Higher Education Institutions
Study Object	Relationship between EO, MO and P of teachers and researchers of higher education institutes
Data Collection Instrument	Survey with questionnaire
Data Collection	End of July, August and September 2013
Data Analysis	Univariate, Multivariate

Source: Own

2.5. Chapter Concluding Remarks

The field studies conclude that the relationship between entrepreneurial orientation and performance is direct and positive (Zahra & Covin, 1995; Barrett & Weinstein, 1998), and there is some evidence that this effect is more pronounced in turbulent markets (Covin & Slevin, McKee, Varadarajan & Pride, cited by Baker & Sinkula, 2009).

Universities are encouraged to become more "entrepreneurial" (Mowery & Shane, 2002) but little is known about the entrepreneurial orientation of academic departments.

With this study we intend to use the concept of entrepreneurial orientation to characterize not the organisations as a whole, but rather the individuals who adopt this kind of behaviour. In our research we intend to use the I-ENTRE-U scale to identify entrepreneurial oriented individuals (teachers and researchers) in HEIs.

Also, according to Kohli and Jaworski (1993), the consequences of market orientation affect performance, employees and clients in the organisation. To the authors, market orientation is an unifying element of efforts and projects of individuals and departments, leading to a higher performance. Thus, the greater the degree of orientation to the company's market the greater the performance. Once again, the focus of this field literature, in terms of the unity of theory and empirical observation, is the organisation as a whole, and not the individual within the organisation (e.g.: Farrell, 2000; Han et al., 1998; Kohli & Jaworski, 1993; Narver & Slater, 1990).

In summary, the field literature on market orientation currently offers little understanding of market-oriented perspectives and behaviours of individuals within service organisations (Schlosser & McNaughton, 2009).

In our research we intend to use the I-MARKOR scale to identify market oriented individuals (teachers and researchers) in HEIs.

We intend to understand the relationship between entrepreneurial orientation, market orientation and performance of teachers and researchers from higher education institutions.

The conceptual model proposed will be corroborated by empirical support in order to test the hypotheses (see chapter 5., p.79).

Thus, the data will allow testing the proposed conceptual model and could be of valuable use to present new paths for improving the performance of teachers and researchers from higher education institutions.

3. An Entrepreneurial Orientation Scale for Teachers and Researchers in Higher Education Institutions

Abstract

Nowadays, something essential in Higher Education Institutions (HEIs) is seeking to be entrepreneurial, with human resources with entrepreneurial characteristics. The success of higher education institutions will depend on the performance of its human resources. The main objective of this chapter is to propose the concept of individual entrepreneurial orientation (IEO) and a measurement scale with a set of items, which are likely to measure the IEO of Teachers and Researchers in HEIs. This chapter is based on an extensive literature review on Entrepreneurial Orientation (EO), and the existing attempts to extend the concept to higher education institutions. The EO will be measured by the ENTRE-U scale developed by Todorovic, McNaughton, and Guild in 2011 and adapted in this study to the individual level (I-ENTRE-U). A set of items is reviewed from the ENTRE-U and the proposal scale adaptation was validated by academic experts. To test, debug and validate this measuring instrument, we used the confirmatory factor analysis (CFA), Pearson's correlations and Cronbach's alphas, among other measures. The EO strategy has been widely studied in commercial and industrial sectors and focus on the organisation. In this chapter we intend to study the concept at the individual level, particularly of Teachers and Researchers in HEI.s This paper conceptualizes the EO strategy, taking into account higher education peculiarities and discusses the principle dimensions of the IEO concept in HEIs.

Keywords: Entrepreneurial Orientation, Higher Education, Individual Entrepreneurial Orientation, I-ENTRE-U scale.

3.1. Introduction

There have been profound changes in how education is delivered in Higher Education Institutions (HEIs), particularly in Europe according to Bologna process, allowing students to move freely between European HEIs. Also, the tendencies for the decrease of students' population and the growing budgetary constraints, made the environment of these institutions highly turbulent. In this context, the educational market has undergone changes and competition among institutions of higher education worldwide was established (Kirp, 2003; Maringe & Gibbs, 2009; Bugandwa MAD, 2009).

The success of higher education institutions will depend on the performance of its human resources, but little is known about the entrepreneurial orientation of academic departments and its human resources, and how such an orientation might foster commercialization activity (Todorovic, McNaughton & Guild, 2011).

Much of the empirical literature uses ENTRESCALE to measure the EO of private sector firms (Covin & Slevin, 1989; Knight, 1997). For that, many authors point out that ENTRESCALE has limited applicability in the public or non-profit sectors (Box, 1999; Caruana et al., 2002; Mentoor & Friedrich, 2007; Morris & Jones, 1999; O'Shea et al., 2005, 2007). Then, in response to this, Todorovic, McNaughton and Guild (2011) have developed an ENTRE-U scale to measure the EO of university departments.

The main contribution of this study, through an extensive literature review, is to propose the concept of individual entrepreneurial orientation (IEO) and adapt the ENTRE-U to the individual level (I-ENTRE-U), to identify entrepreneurial oriented individuals (teachers and researchers) in HEIs.

This chapter conceptualizes the EO strategy, taking into account higher education peculiarities and discusses the principle dimensions of the IEO concept in HEIs.

3.2. Literature Review

3.2.1. The Context of Higher Education

With the globalization of markets, there is virtually no sector where competition has not grown significantly (Campbell-Hunt, 2000), also including higher education. Higher education has been the focus of significant growth in recent decades, requiring changes in their culture, governance, and administration (Rip, 2002; Todorovic, McNaughton & Guild, 2005). In this context, the educational market has undergone changes and competition among institutions of higher education worldwide was established (Kirp, 2003; Maringe & Gibbs, 2009; Bugandwa MAD, 2009).

The changing context of higher education and its confrontation with market forces are exerting intense pressures (internal and external pressures) on the management of these institutions, as summarized in figure 3.1 (Bugandwa MAD, 2009).
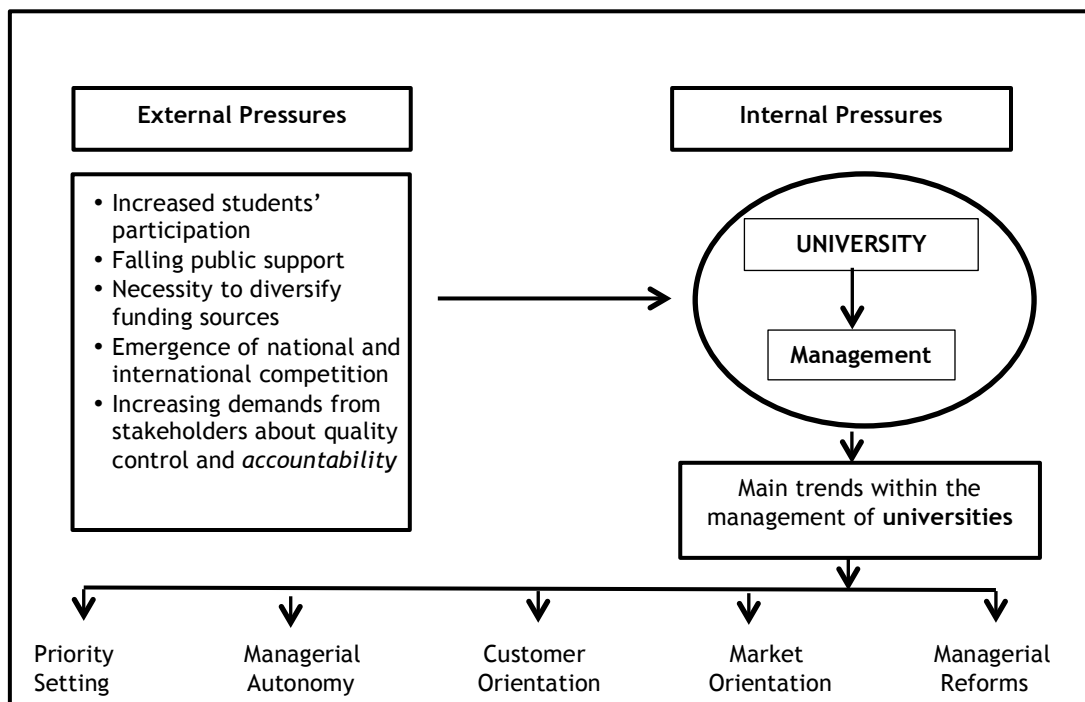
Source: Adapted from Bugandwa MAD (2009)

Figure 3.1 - Environmental Pressures and Higher Education Management

Universities are encouraged to become more "entrepreneurial" (Mowery & Shane, 2002), but little is known about the entrepreneurial orientation of academic departments and its human resources, and how such an orientation might foster business activity (Todorovic, McNaughton & Guild, 2011).

3.2.2. Entrepreneurial Orientation

Entrepreneurship, the subject where the concept of entrepreneurial orientation might have arisen, has been an area of growing interest of research by the scientific community of the area of business, economics, sociology, psychology, and others sciences. The origin of the word entrepreneur can be found in the work of Cantillon (1959) who described entrepreneurship as a Special Economic Function where the farmer is an entrepreneur who undertakes to pay the owner, for his farm or land, a fixed amount of money, with no guarantee of profit obtained from such activity. In this description it seems to be central to the entrepreneur that he is not the owner of the resources and that the profit is uncertain and of residual nature, to the extent that the costs are fixed and the income is not. Later, Say (1840) described the entrepreneur as an individual who promotes changes in economic resources in order to achieve higher productivity and greater profit, being the entrepreneur described as an agent of change. Schumpeter emphasized the importance of the entrepreneur as the agent who introduces the concept of innovation linked to the concept of "creative destruction," where the old methods and processes are replaced by new (Ripsa, 1998; Hornsby et al., 2002; Rutherford, 2007).

One form of entrepreneurship is corporate entrepreneurship and it consists in the creation of new economic activities within existing organisations (Hornsby et al., 2002; Rutherford, 2007). Corporate entrepreneurship is an integration of organisational efforts that require organisational support and resources in order to promote innovation activities in the product, process and organisational level (Hornsby et al., 2002). The corporate entrepreneurship thus promotes the expansion of existing businesses of organisations. This work uses the concept of entrepreneurial orientation to characterize companies that adopt this type of behaviour.

Stevenson and Jarillo (1990), understanding entrepreneurship as an organisational process, consider that this process is based on three key factors: opportunities detection, the willingness to seize them and the trust in the possibilities of success. It is integrated in this approach to the study of entrepreneurship that the concept of entrepreneurial orientation arises.

Miller and Friesen (1982) argue that entrepreneurial firms are characterized by the desire to innovate on a regular and bold basis, taking significant risks in their competitive strategies and product market. Some studies also showed that entrepreneurial firms tend to take more risks than others, and seek new businesses opportunities in a proactive manner (Miller & Friesen, 1978; Mintzberg, 1973; Khandwalla, 1977). In this perspective and according to Miller (1983), the organisation's entrepreneurial orientation can be seen as a combination of three different dimensions: tendency to innovation, pro-activity and risk taking. Lumpkin and Dess (1996) add the following dimensions: autonomy and competitive aggressiveness.

According to Covin and Miles (1999) there is no entrepreneurship without innovation arguing that the tendency for innovation is the dimension that, when considered in isolation, best defines corporate entrepreneurship. The authors defined innovation as the company's trend to support new ideas, experiences and creative processes, earlier than competitord. Innovation is considered one of the most important factors of economic competitiveness (Pohlmann, 2005). According to Lumpkin and Dess (1996) the tendency for innovation can take many forms and can manifest with varying intensity over time, from the simple desire to try projecting new products to their commitment to master the latest technologies.

The company's innovation, or practice and innovation performance are defined as the ability of a company to create new value proposals as to offer new products and services, adopt new operational, technological, and organisational practices, or market orientation, or create new skills and competences (e.g.: Miles & Snow, 1978; Schumpeter, 1938).

For Schumpeter (1934), one of the first researchers to emphasize the importance of innovation in the entrepreneurial process, innovation was seen as an economic activity, and a specific function of entrepreneurs. Thus, according to the author, the central agent of innovation is the entrepreneur, and the true entrepreneur is one who modifies market conditions (it is the innovative entrepreneur), other than routine businessman, who is seen as a mere administrator.

Schumpeter (1939) chose innovation as one of the driving forces of economic growth, for without it there is no growth and development, both at company level and at the level of societies. Innovation is therefore considered a great and ongoing challenge for companies.

Innovation is then defined as the process of creating and introducing something new in the organisation itself or the market. Accordingly, the innovation is not just a single or episodic act, it is rather an overall process extending over time. Innovation is not limited to creation of new ideas, as it requires the invention of something new and its implementation in the organisation itself or in the market (Jorge, 2009).

According to Venkatraman (1989) pro-activity is an important component of entrepreneurship. The author defined this dimension as a proactive approach where new opportunities are looked for, opportunities that may be related to the current activities of the company. The author suggested that companies can be considered proactive when they introduce new products and brands earlier than the competition, eliminate operations that are at a level of maturity or decline of the life cycle of the product, participate in emerging markets and anticipate on the lookout for new opportunities.

Proactivity is the opposite of passivity, indifference or inability to seize opportunities and lead the market (Lumpkin & Dess, 1996). Rather, proactiveness implies an active and constant

search for new business opportunities, favorable to the organisation (Stevenson & Jarillo, 1990), imposing an aggressive interaction between the organisation and the business environment (Lumpkin & Dess, 2001).

The intensity of the efforts of the company to overcome competitors and be ahead in terms of every opportunity is defined as competitive aggressiveness. It is characterized by a strong offensive posture aimed at overcoming competitors (Lumpkin & Dess, 1996). Venkatraman (1989) suggested that competitive aggressiveness is performed through the establishment of ambitious targets for market share and bold measures to attain them, like price reductions and sacrifice of profitability. According to Lumpkin and Dess (1996) pro-competitive activity and aggressiveness are distinct concepts. Pro-activity is a response to opportunities and competitive aggressiveness is a response to threats.

The concept of entrepreneurship is directly related to risk taking. Coulthard (2007), citing Miller and Friesen, defines risk as the degree to which managers are willing to make large financial and risky commitments. The author also cites a study by Sarasvathy, Simon and Lave suggesting that entrepreneurs are more likely to accept risk as something that characterizes their everyday activity. Therefore, entrepreneurs assess opportunities differently from non-entrepreneurs (Palich & Bagby, 1995; Norton & Moore, 2002). Risk-taking behaviours, such as high indebtedness or commitment of a large part of its resources in the prospect of high profits from the exploitation of market opportunities are characteristic of entrepreneurial firms (Lumpkin & Dess, 1996).

Autonomy can be defined as the freedom granted to teams and individuals by encouraging them to exercise their creativity to bring forth an idea and be able to follow it toreach a certain conclusion (Lumpkin & Dess, 1996). The entrepreneurial orientation appears well conceptualized in five different dimensions, but usually associated with only three: the trend towards innovation; proactivity and risk taking (Miller 1983; Covin & Slevin, 1989; Zahra & Covin, 1995; Becherer & Maurer, 1997, Dickson & Weaver, 1997; Barrett & Weistein, 1998; Zahra & Neubaum, 1998, Slater & Narver, 2000; Kreiser, Marino & Weaver, 2002; Baker & Sinkula, 2009).

There is a general consensus that entrepreneurial orientation influences the performance of organisations (Miller, 1983; Covin & Slevin, 1988, 1989, Zahra & Covin, 1995; Barrett & Weinstein, 1998; Lyon et al., 2000; Ferreira, 2003; Rodrigues, 2004), and entrepreneurial companies will have better performance and higher levels of product innovation (Miller & Friesen, 1982).

Zahra and Covin (1995) and Barrett and Weinstein (1998) conclude that the relationship between entrepreneurial orientation and performance is direct and positive. And there is

some evidence that this effect is more pronounced in turbulent markets (Covin & Slevin, McKee, Varadarajan & Pride, cited by Baker & Sinkula, 2009).

Much of the empirical literature uses ENTRESCALE to measure the EO of private sector firms (Covin & Slevin, 1989; Knight, 1997). For that, many authors point out that ENTRESCALE has limited applicability in the public or non-profit sectors, and what it means to be entrepreneurially oriented within public or non-profit sectors is just beginning to be explored (Box, 1999; Caruana et al., 2002; Mentoor & Friedrich, 2007; Morris & Jones, 1999; O'Shea et al., 2005, 2007).

3.2.3.   Entrepreneurial Orientation in Higher Education Institutions

Although there is considerable agreement on the fundamental dimensions of an entrepreneurial orientation in the context of large commercial organisations, application of the concept in other organisational contexts remains an underexplored area. The objectives that guide strategy formulation, characteristics of organisation structure and governance, and external market conditions all vary significantly between organisational types. Then, in response to this problem, Todorovic, McNaughton, and Guild (2011) have developed an ENTRE-U scale to measure the EO of university departments. This scale has potential to support university administration efforts to evaluate the culture of university departments, and develop conditions more conducive to commercialization outcomes such as spinouts, patenting, and licensing. ENTRE-U exhibits acceptable psychometric properties and shows promise for use in future research as it correlates strongly with the commercialization activities of university departments (Todorovic, McNaughton & Guild, 2011).

The ENTRE-U developed by Todorovic, McNaughton, and Guild in 2011, is composed of four dimensions: Research Mobilization (6 items), Unconventionality (8 items), Industry Collaboration (5 items) and University Policies (4 items). The first dimension, Research Mobilization, fits within the broader concept of "knowledge mobilization". It implies a shift from systems that support knowledge creation and innovation at the level of the individual, to groups, organisations or communities. The second dimension, Unconventionality, focuses on research, especially looking for new opportunities and making sure that research is useful and benefits stakeholders. The items also suggest doing things that are unconventional, and/or innovative but do not directly refer to sources of risk (or what is at risk, for example, reputation, resources, or career advancement). For that the authors chose to call this factor ''Unconventionality'', rather than retaining the ''risk-taking'' label used in ENTRESCALE. The third dimension, Industrial Collaboration, refers to   the department, faculty and student engagement with the related industry. The fourth factor, department perception of University Policies also appears to have a role in encouraging university entrepreneurial orientation. The key items relate to the general culture of the university, especially being

"responsive to new ideas and innovative approaches", having a "bottom-up" approach to policy development, and good fit between university policies and department objectives. The study findings suggest that entrepreneurially oriented departments are distinguished from those that are less, by the extent of their research mobilization activities, unconventionality, industry collaboration, and perception of university policies. Todorovic, McNaughton, and Guild (2011) conclude that being able to measure the EO of university departments enables research to improve understanding of university organisational culture and the antecedents to commercialization outcomes. By understanding our institutions of higher learning, society will be able to better appreciate, support, and benefit from the resources they bring to the knowledge economy.

Again, EO was studied in organisations (Universities), but not at the individual level. In this work, we intend to use the concept of entrepreneurial orientation to characterize not the organisations as a whole, but rather the individuals who adopt this kind of behaviour.

3.3. Developing the I-ENTRE-U Scale for Higher Education Institutions

3.3.1. Methodology

The EO will be measured by ENTRE-U developed by Todorovic, McNaughton, and Guild in 2011 and adapted to the individual level (I-ENTRE-U). This scale is composed of 23 items divided into 4 dimensions: Research Mobilization (6 items); Unconventionality (8 items); Industry Collaboration (5 items); University Policies (4 items).

All variables are measured by Likert-type, franging from 1 to 7, where 1 means "strongly disagree", 2 meaning "disagree," 3 means "slightly disagree", 4 means "neither agree nor disagree", 5 means "slightly agree", 6 means" agree "and 7 means" strongly agree".

In Table 3.1 we adapted the ENTRE-U to the individual level (I-ENTRE-U), to identify entrepreneurial oriented individuals (teachers and researchers) in HEIs. In order to make the instrument more suitable, we changed some terms, in particular the plural of the sentences to the individual level, and the term University was replaced by Higher Education Institution, and the proposal scale adaptation was validated by 10 academic experts, as recommended by Hardesty and Bearden (2004). We asked by e-mail for their advice on content validity, open-ended feedback on the appropriateness of that proposal. Expert's comments all agreed with our proposal. One item is written in the negative form, so their score was reversed later for statistical analysis purposes.

Table 3.1 – (ENTRE-U: I-ENTRE-U) Comparison of organisational with individual level measures

ENTRE-U: entrepreneurial orientation scale for universities *Z. Todorovic, Rod B. McNaughton, P. Guild (2011)*	I-ENTRE-U: entrepreneurial orientation scale for Teachers&Researchers in HEIs *Teresa Felgueira, Ricardo G. Rodrigues (2013)*
Research Mobilization (RM)	**Research Mobilization (RM)**
1. We encourage our graduate students to engage in research with significant implications for industry or society	1. I encourage our graduate students to engage in research with significant implications for industry or society
2. WE encourage students to seek practical applications for their research	2. I encourage students to seek practical applications for their research
3. Faculty members in our department emphasize applied research	3. I emphasize applied research
4. Compared to other similar departments in our province, our department has a reputation for its contribution to industry or society	4. Compared to other researchers, I tend to make a contribution to industry or society
5. Many of our faculty members conduct research in partnership with non-academic professionals	5. I conduct research in partnership with non-academic professionals
6. Our faculty members are expected to make substantial contributions to industry or society	6. I expected to make substantial contributions to industry or society
Unconventionality (UC)	**Unconventionality (UC)**
1. Cooperation with organizations outside the university significantly improves our research activities	1. Cooperation with organizations outside my Institution significantly improves my research activities
2. Our faculty members often seek research opportunities out side the traditional university environment	2. I often seek research opportunities out side the traditional higher education environment
3. We seek significant funding from sources other than the Tri-councils (only in Canadian context)	3. I seek significant funding from sources other than the Government Agency (financial policy to support research and scholarships in Higher Educations Institutions), in my country
4. Compared to other similar departments in our province, our faculty members are known as very efficient and productive researchers	4. Compared to other similar researchers in our province, I am known as very efficient and productive researcher
5. We try to generate off-campus benefits from research projects	5. I try to generate off-campus benefits from research projects
6. Compared to other similar departments in this province,we are good at identifying new opportunities	6. Compared to other similar researchers in this province, I am good at identifying new opportunities
7. We support our faculty members collaborating with non-academic professionals	7. I support our faculty members collaborating with non-academic professionals
8. When we come up on a unconventional new idea, we usually let some one else try it and see what happens (reverse coded)	8. When I come up on a unconventional new idea, I usually let some one else try it and see what happens (reverse coded)
Industry Collaboration (IC)	**Industry Collaboration (IC)**
1. We encourage industry involvement in the research activities of our faculty members	1. I encourage industry involvement in my research activities
2. Our department is highly regarded by industry	2. My research is highly regarded by industry
3. We are recognized by industry or society for our flexibility and innovativeness	3. I am recognized by industry or society for my flexibility and innovativeness
4. We believe that our department should build relationships with private or public sector organizations	4. I believe that our department should build relationships with private or public sector organizations
5. Our graduate students often secure high quality industry positions	5. My graduate students often secure high quality industry positions

University Policies (UP)	University Policies (UP)
1. We feel that university-wide policies at this university contribute substantially to wards our department achieving its goals and objectives	1. I feel that Institutional-wide policies at my Institution contribute substantially to wards my department achieving its goals and objectives
2. Our university policies are best described as developed ''bottom-up'' using feedback from all levels of the university	2. My institucional policies are best described as developed ''bottom-up'' using feedback from all levels of the Institution
3. Compared to most other universities, our university is very responsive to new ideas and innovative approaches	3. Compared to most other Higher Education Institutions, mine is very responsive to new ideas and innovative approaches
4. Our department is given significant latitude when evaluating faculty members performance	4. My department is given significant latitude when evaluating faculty members performance

Source: Own

3.3.2. Sample and Data Collection

The contacts of European HEIs were collected online, based on a list created by Bonaccorsi et al. (2010). First, the general e-mails (information, communication, international relations or rectory contacts) were gathered. In the case of countries with more than 110 HEIs, 90 HEIs were chosen randomly. In the case of European countries that don't belong to the European Union, only 20 HEIs were chosen randomly, since searching for the contacts of all the HEIs would create some problems in terms of time constraints. Then, in a second phase, the program Atomic E-mail Hunter, version 3.5[1], was used to gather the e-mails contained in the Web sites of the HEIs.

In what concerns the non-European countries, initially, we intended to get e-mails from more North and South American countries. However, due to time constraints, we only gathered contacts of HEIs in Brazil and in the USA. Those contacts were based on Scimago Institutions Rankings - *SIR world report 2012: Global Ranking*, so we used the program to get e-mails from the HEIs listed in the ranking. In many cases, the data collection was not possible, and whenever the program collected e-mails from a Web site, some e-mails that clearly did not belong to Lecturing staff were deleted.

The final questionnaire (see Appendix A), was made available online. Since academics conduct much of their academic work and publications in English, we hope they were familiar with the language, so there was no need to translate the questionnaire into different languages. Anonymity and confidentiality were assured and the participation was voluntary.

By e-mail (see Appendix B) 1 589 European HEIs, 186 American HEIs and 62 Brazilian HEIs were requested to invite the Lecturing staff to participate in this study. Then, a total of 166 223

---

[1] Atomic E-mail Hunter 3.5 (2006). Alexandria: AtomPark Software. Retrieved from http://www.massmailsoftware.com/extractweb/download/

(137 467 to Europe, 18 466 to USA and 10 290 to Brazil) individual e-mails were sent (see Appendix C) inviting Lecturing staff to collaborate in the research. However, for Portugal and Brazil, after some claims, the e-mail inviting the Lecturing staff to participate in this study was written in Portuguese. Some HEIs refused to spread the request to Lecturing staff, based on reasons such as the institution policy, the vacation period or not wanting to overload their workers. Of the 166 223 individual requests sent to 429 HEIs, 12 723 were returned (undelivered, vacation, leave, retired, or because some people were not part of the Lecturing staff) and 172 people refused to collaborate. 1 775 responses were collected, but 2 of them were deleted because after data validation they were identified as unusual cases. The sample is composed of 1 773 individuals (teachers and researchers from HEIs), 1338 from 37 European countries (212 from Portugal) and 435 from America (206 from Brazil and 229 from USA).

3.3.3. Data Analysis Methods

To assess the validity of the I-ENTRE-U scale, the AMOS SPSS version 22.0 (IBM Corporation, New York, USA) was used, estimated by the method of maximum likelihood.

We used the Confirmatory Factor Analysis and Adjustment Quality Scores: (1) Goodness of Fit Index (GFI) > 0.9; (2) Partimony Goodness of Fit Index (PGFI) > 0.6; (3) Root Mean Square Error of Approximation (RMSEA) < 0.10; and (4) the Root mean square residual (RMR) < 0.40 (Hair et al., 2010).

The validity and reliability of the construct IEO was evaluated by: (1) composite reliability (CR), it is not influenced by the number of existing items in the construct, since it uses loads of the collected items of the estimated model, unlike Cronbach's Alpha (CR > 0.70); (2) factorial validity (ideally above factor loadings greater than 0.7 to 0.5); (3) convergent validity through varience extracted estimate (AVE) by the factor (AVE > 0.50); and (4) discriminant validity, where the AVE square root of two constructs should be higher than the correlation between these two factors (Barroso, Carrión, & Roldán, 2010; Hair et al., 2010; Hulland, 1999).

3.4. Results

3.4.1. Sample Profile

The study sample consists of 1773 individuals (Table 3.2), 83.0% of public institutions, 84.8% belonging to the university, 75.5% of European countries for a total of 37 countries (Portugal - 12.0%, Sweden - 6.9%; UK - 6.6%; Ireland - 4.9%, Italy - 4.8%; Spain - 3.9%), 12.9% of the USA and 11.6% of Brazil, 75.4% had a Ph.D. Degree. In 12.6% the main lecturing area was Business and Management and in 10.8% it was Engineering, these being also the most frequent areas of research. The average of academic career is 18.7 (SD=10.5) years, the average age of teachers is 49.3 (SD=10.7) years and 60.3% are male gender.

Table 3.2 – Sample Characterization

TYPE OF INSTITUTION	%	COUNTRY/REGION	%
Public	83.0%	Europe	75.5%
Private	15.6%	USA	12.9%
Other	1.4%	Brazil	11.6%

TYPE OF EDUCATION	%	QUALIFICATIONS	%
University	84.8%	Ph.D Degree	75.4%
Polytechnic	10.4%	Master Degree	17.7%
College	2.7%	Graduation Degree	1.7%
Specialized School	1.4%	Bacherol Degree	1.4%
Other	0.7%	Foundation Degree	0.2%
		Other	3.7%

MAIN TEACHING AREA	%	MAIN RESEARCHING AREA	%
Business and management	12.6%	Business and management	11.9%
Engineering	10.8%	Engineering	9.1%
Medical sciences	7.2%	Educational sciences	7.8%
Educational sciences	6.5%	Medical sciences	6.8%
Biological sciences	6.1%	Biological sciences	5.9%
Economics	5.0%	Economics	5.0%
Computer science	3.8%	Psychological sciences	4.0%
Psychological sciences	3.8%	Computer science	3.6%
Chemistry	3.1%	Chemistry	2.9%
Mathematics	2.8%	Environmental science	2.9%
Language sciences	2.7%	Sociology	2.5%
Sociology	2.5%	Juridical sciences	2.1%
Juridical sciences	2.3%	Technology	2.1%
Environmental science	2.1%	Mathematics	2.0%
Health Sciences	2.0%	Language sciences	1.9%
Physics	1.9%	Communication sciences	1.8%

Agricultural sciences	1.8%		Agricultural sciences	1.7%
Communication sciences	1.8%		Arts	1.7%
Arts	1.7%		Political sciences	1.7%
Geography	1.5%		Health Sciences	1.6%
Political sciences	1.5%		History	1.6%
History	1.4%		Physics	1.6%
Information science	1.2%		Information science	1.4%
Technology	1.2%		Literature	1.4%
Architecture	1.2%		Neurosciences	1.2%
Literature	1.2%		Geography	1.1%
Pharmacological sciences	0.8%		Architecture	1.0%
Philosophy	0.8%		Philosophy	1.0%
Cultural studies	0.7%		Cultural studies	0.8%
Neurosciences	0.5%		Pharmacological sciences	0.7%
Anthropology	0.2%		Anthropology	0.4%
Religious Sciences	0.2%		Criminology	0.3%
Astronomy	0.2%		Astronomy	0.2%
Criminology	0.2%		Religious Sciences	0.2%
Demography	0.1%		Demography	0.1%
Other	6.3%		Other	7.7%

Lenght of Academic Career (number of years)	Mean (SD)	18.7 (10.5)
Age (years)	Mean (SD)	49.3 (10.7)
Gender	Female	39.6%
	Male	60.3%

Source:Own

3.4.2. Variables and Scales

This section assesses the validity of the I-ENTRU-U through indexes of adjustment, composite reliability, factorial validity, convergent validity and discriminant validity.

The Individual Entrepreneurial Orientation construct is represented in four dimensions and 23 items, Research Mobilization (RM) (6 items), Unconventionality (UC) (8 items), Industry collaboration (IC) (5 items) and University Policies (UP) (4 items). Confirmatory factor analysis of the structure of the IEO (Figure 3.2), indicates that the original model has an adjustment from reasonable (GFI = 0.851) to good (PGFI = 0.691, RMSEA = 0.084, and RMR = 0.169) to the sample under study, suggesting that the model can be improved. The low factor weights of some items are indicators of low validity and individual reliability.
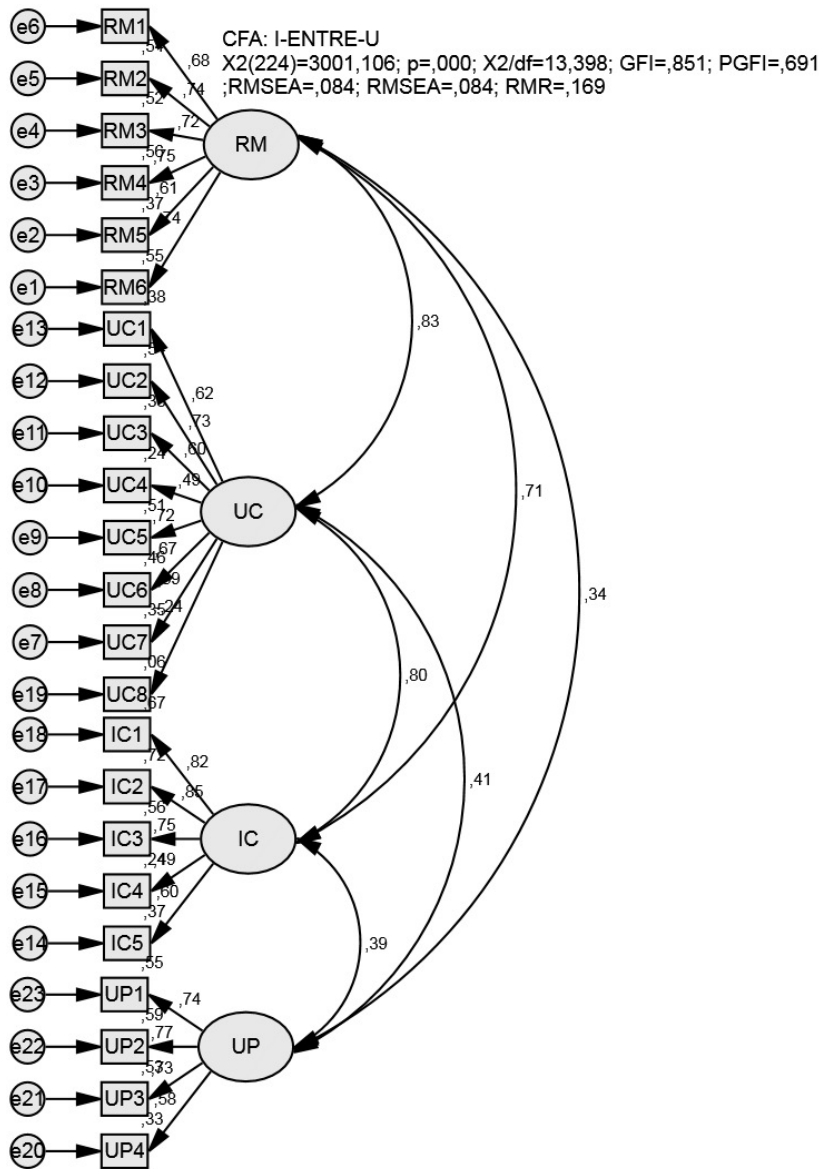
Note: RM - Research Mobilization; UC – Unconventionality; IC - Industry Collaboration; UP - University Policies
Source:Own

Figue 3.2 - Factor weights, individual reliabilities of each item in each factor and correlations between factors of IEO scale

The improvement of the model was made by removing the UC4, UC8 and IC4 items, and from the modification indexes the measurement errors of RM1 and RM2 items were correlated, as well as errors of measurement of items RM2 and RM3. The new model (Figure 3.3) presents values of quality indexes that reflect a good adjustment of the new model to the data (GFI = 0.920; PGFI = 0.710, RMSEA = 0.067, and RMR = 0.139).
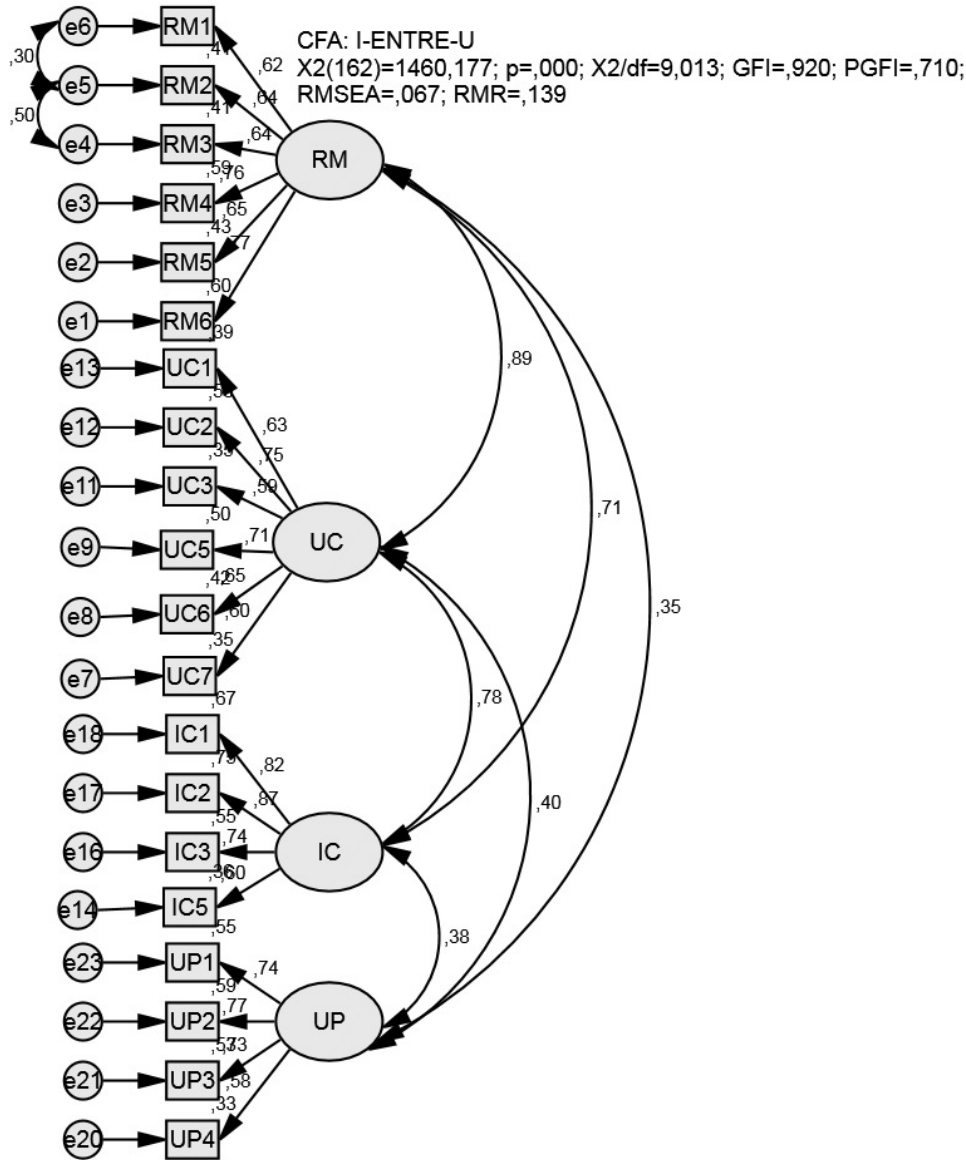
Note: RM - Research Mobilization; UC – Unconventionality; IC - Industry Collaboration; UP - University Policies
Source: Own

Figure 3.3 - Factor weights, individual reliabilities of each item in each factor and correlations between
factors of scale IEO - modified

On table 3.3 Statistics of reliability and validity of the IEO subconstructs are presented. In each of the analyzed factors, it appears that all items had factor loadings above 0.5 confirming the existence of factorial validity. The composite reliability was 0.840 for Research Mobilization, 0.818 in subconstruct Unconventionality, 0.847 in Industry Collaboration factor and 0.800 in University Policies factor, thus evidencing the existence of reliability. The AVE showed the value of 0.469 Research Mobilization, 0.481 in subconstruct Unconventionality, 0.585 in Industry Collaboration factor and 0.503 in University Policies factor. Despite the fact that the subconstructs of Research Mobilization and Unconventionality have a slightly lower AVE than the established limit, we consider the existence of convergent validity.

Table 3.3 – Statistical reliability and validity of the subconstucts depicting to IEO

Factor/item	Estimated Standardized Coefficient	Average Variance Extracted (AVE)	Composite Reliability (CR)	Cronbach's Alfa
Research Mobilization (RM)				
RM1	0.620			
RM2	0.644			
RM3	0.637	0.469	0.840	0.845
RM4	0.765			
RM5	0.653			
RM6	0.773			
Unconventionality (UC)				
UC1	0.627			
UC2	0.749			
UC3	0.591	0.481	0.818	0.813
UC5	0.708			
UC6	0.652			
UC7	0.596			
Industry Collaboration (IC)				
IC1	0.818			
IC2	0.869	0.585	0.847	0.840
IC3	0.743			
IC5	0.604			
University Policies (UP)				
UP1	0.741			
UP2	0.771	0.503	0.800	0.797
UP3	0.731			
UP4	0.578			

Nota: AVE – Average Variance Extracted; CR – Composite Reliability

Source: Own

Table 3.4 displays the Pearson correlation matrix of the IEO subconstructs and the square roots of AVE. It is noted that the correlation between the Research Mobilization and the subconstructs of Unconventionality and Industry Collaboration, as well as between Unconventionality and Industry Collaboration is not less than the square root of the AVE. Yet the x^2 difference test between models with fixed correlation in 1 between RM and UC factors, RM and IC and between IC and UC (x^2_r) and the unrestricted model (x^2_u), proved significant $x^2_{dif}(1)= 186.527$, p<0.000, $x^2_{dif}(1)= 759.119$, p<0.000, $x^2_{dif}(1)= 515.693$, p<0.000, for these relations. Thus, assuming a significance level of 0.001, we can affirm the existence of discriminant validity between these factors.

Table 3.4 - Pearson correlation matrix of the IEO subconstructs and the diagonal elements (values in bold) are the square root of AVE

	RM	UC	IC	UP
RM	**0.685**			
UC	0.887	**0.694**		
IC	0.713	0.779	**0.765**	
UP	0.347	0.398	0.378	**0.709**

Note: RM - Research Mobilization; UC – Unconventionality; IC - Industry Collaboration; UP - University Policies
Source: Own

Source: Own

Thus, it appears that the construct IEO is composed of the subconstructs RM, UC, IC and UP, these being of high reliability and factorial, convergent and discriminant validity.

3.5. Chapter Concluding Remarks

The changing context of HE and its confrontation with market forces are exerting intense pressures on the management of these institutions. Universities are encouraged to become more "entrepreneurial", depending on human resources with entrepreneurial characteristics.

Nowadays, something essential in HEIs is seeking to be entrepreneurial (Mowery & Shane, 2002), with human resources with entrepreneurial characteristics. The success of higher education institutions will depend on the performance of its human resources. It is from its own resources and core competences that a company can transform the conditions of the environment and build their own innovative paths (Prahalad & Hamel, 1994).

This chapter conceptualizes the entrepreneurial orientation strategy, taking into account higher education peculiarities and discusses the principle dimensions of the Individual Entrepreneurial Orientation concept in Higher Education Institutions.

This study provides a instrument for assess Individual Entrepreneurial Orientation – the I-ENTRE-U. This study is justified by the inexistence of any research on the subject, and its originality is her application to the individual level.

The I-ENTRE-U (Appendix D) measures entrepreneurial oriented behaviours of Teachers and Researchers in a HE context and the construct of Individual Entrepreneurial Orientation (IEO) is represented in four dimensions and 20 items: Research Mobilization (RM) (6 items), Unconventionality (UC) (6 items), Industry collaboration (IC) (4 items) and University Policies (UP) (4 items). Confirmatory factor analysis of the structure of the IEO presents values of quality indexes that reflect a good adjustment to the data (GFI = 0.920; PGFI = 0.710, RMSEA = 0.067, and RMR = 0.139). The construct IEO is composed of the subconstructs RM, UC, IC and UP, these being of high reliability and factorial, convergent and discriminant validity.

Such an instrument clarifies individual accountabilities and specifies measurable routines that add competitive value. This scale provides a method to assess differences between individuals within a HEI, enabling empirical research on differences between types of institutions, departments, roles, training and other characteristics that may influence the extent to which an individual performs entrepreneurial oriented behaviours. In sum, this study provides a reliable and valid instrument to evaluate Teachers and Researchers with entrepreneurial orientation in HEIs.

One main limitation of our research is our sample, since we collected 435 responses from USA and Brazil, and 1338 from Europe. European countries are more numerous and diverse in what concerns their characteristics, and the American Continent is represented only by two countries. So, in order to make continental comparisons, it would be important to replicate the research using a larger sample, in order to obtain results with better external validity.

4. An Adaptation of the I-MARKOR Scale to Identify Market Oriented Teachers and Researches in Higher Education Institutions

Based on "Felgueira, T. & Rodrigues, R. G. (2013). An Adaptation of the I-MARKOR Scale to Identify Market Oriented Teachers and Researches in Higher Education Institutions. *2013 EGPA Annual Conference, PSG XVI: Public Sector and Nonprofit Marketing,* Edinburgh"; and "Felgueira, T. & Rodrigues, R. G. (2014). Market Orientation of Teachers and Researchers in Higher Education Institutions: a new approach. *Inte-2014 Internacional Conference on New Horizons in Education,* Paris"; and "Felgueira, T. & Rodrigues, R. G. (2015). Market Orientation of Teachers and Researchers in Higher Education Institutions: a new approach. *Procedia – Social and Behavioral Sciences*, 174, pp. 3017-3024".

Abstract

The main objective of this chapter is related to the concept of individual market orientation (IMO) and adapt the I-MARKOR scale to measure the IMO of Teachers and Researchers in Higher Education Institutions. This chapter, a research paper, is based on an extensive literature review on Market Orientation and IMO, and the existing attempts to extend the concept to Higher Education Institutions. The IMO scale that assesses the individual level was developed by Schlosser and McNaughton (2009), from the work of Kohli and Jaworski (1990), and adapted by us to the higher education context, reviewing some terms or expressions that did not fit the context, for future content validation. The proposal scale adaptation was validated by academic experts. To test, debug and validate this measuring instrument, we used the confirmatory factor analysis (CFA), Pearson's correlations and Cronbach's alphas, among other measures. This chapter conceptualizes the market orientation strategy, taking into account higher education peculiarities and discusses the principle dimensions of the Individual Market Orientation concept in Higher Education Institutions.

Keywords: Higher Education, Market Orientation, Individual Market Orientation, I-MARKOR scale.

4.1. Introduction

The changing context of higher education and its confrontation with market forces are exerting intense pressures (internal and external pressures) on the management of these institutions (Rip, 2002; Kirp, 2003; Todorovic, McNaughton & Guild, 2005; Maringe & Gibbs, 2009; Bugandwa MAD, 2009). The employees of the organisation contributes to various information about the market that can create competitive advantages. Thus, the understanding of how employees define and see the behaviour of market orientation is a key success to promote a market orientation (Schlosser & McNaughton, 2007, 2009).

Most studies that take into account the individual in creating a customer orientation are only tested with employees in sales and marketing. It will be important in this type of study to consider various types of employees throughout the organisation to test a market orientation - not a marketing orientation. To resolve the lack of a scale to measure the market orientation of individuals, Schlosser and McNaughton (2009) developed the Individual Market Orientation scale – I-MARKOR. This scale fits the definitions of Kohli and Jaworski (1990a, 1990b, 1993) of organisational orientation to the market to reflect the characteristics of

individual employees. Thus, the market orientation of individuals reflects the attitudes and behaviours of employees while gaining, share, and responding to the market.

The main contribution of this study, through an extensive literature review, is to develop the concept of individual market orientation (IMO) to adapt the I-MARKOR scale to the HE environment, to identify market oriented teachers and researchers in HEIs.

This paper conceptualizes the market orientation strategy, taking into account higher education peculiarities and discusses the principle dimensions of the Individual Market Orientation concept in Higher Education Institutions.

4.2. Literature Review

4.2.1. Market Orientation

Although studied since the 1980s, the market orientation strategy is still a fashionable topic in marketing research (Bugandwa MAD, 2009). Over the years there has been a dynamic evolution from the concept of marketing to the concept of market orientation (Rodrigues, 2004). Thus, over time, there have been several approaches to the market orientation, such as the approach of Narver and Slater (1990), and Kohli and Jaworski (1990a, 1990b, 1993).

Based on several studies that examined the relationship between competitive advantage and market orientation (Aaker, 1988; Anderson, 1982; Day, 1984; Kotler, 1977; Levitt, 1960; Ohmae, 1982; Porter, 1980, 1985), Narver and Slater (1990) conclude that market orientation consists of three behavioural components: customer orientation, competition orientation, and inter functional coordination, and two decision criteria: long-term focus and profitability. For the authors, customer orientation and competition orientation include all activities involved in acquiring information about buyers and competitors in the target market and its dissemination throughout the company. Inter functional coordination, the third behavioural component, is based on information about customers and competitors and includes the coordinated efforts of the entire company to create value for customers. In short, the three behavioural components of market orientation activities include the acquisition and dissemination of market information and coordination of efforts to create value for customers.

For Kohli and Jaworski (1990a, 1990b), the concept of "market orientation" refers to the implementation of the marketing concept, since an organisation that develops market-oriented actions does this in consistence with the concept of marketing, in which the fundamental pillars of marketing - customer focus, coordinated marketing and profit - are present.

For Kohli and Jaworski (1990a, 1990b), the company's market orientation is based on three dimensions: information generation, dissemination of information and response to the market because: there are one or more departments of the company to develop actions that allow it to know the current and future customer needs and the factors that affect them; there is the sharing of information by departments; and the various departments develop activities to meet customer needs.

In a market-oriented company, all departments and not just the marketers are involved in responding to market trends.

According to Kohli and Jaworski (1993), the consequences of market orientation affect performance, employees and clients in the organisation.

To the authors, market orientation is a unifying element of efforts and projects of individuals and departments, leading to a higher performance. Thus, the greater the degree of orientation to the company's market the greater the performance. Associated with this is the fact that employees feel they are making a good contribution, and feel a commitment to the organisation and satisfaction with what they do (*esprit de corps*). Thus the authors argue that market orientation results in psychological and social benefits for employees. For the authors the greater the degree of market orientation, the greater the *esprit de corps*, greater job satisfaction and increased employee commitment to the organisation. For customers, market orientation increases their satisfaction because it allows the organisation to better respond to the needs and preferences of customers, which leads to a repeat act of purchasing. Therefore the greater the degree of market orientation, the greater customer satisfaction and more repeat times of these purchases.

However, the focus of this literature, in terms of the unity of theory and empirical observation, is the organisation as a whole, and not the individual within the organisation (e.g.: Narver & Slater, 1990; Kohli & Jaworski, 1993; Han *et al.*, 1998; Farrell, 2000). The focus on the company ignores the underlying routines carried out by individuals who develop and shape the direction (Nelson & Winter, 1982).

4.2.2. The Context of Higher Education

Higher education has been the focus of significant growth in recent decades, requiring changes in their culture, governance, and administration (Rip, 2002; Todorovic, McNaughton and Guild, 2005). In this context, the educational market has undergone changes and competition among institutions of higher education worldwide was established (Kirp, 2003; Maringe and Gibbs, 2009; Bugandwa MAD, 2009).

The changing context of higher education and its confrontation with market forces are exerting intense pressures (internal and external pressures) on the management of these institutions (Bugandwa MAD, 2009, 2013). Universities are supposed to become more market oriented to face successfully their changing environment (Braun & Merrien, 1999; Davies, 2001; Jonghe & Vloeberghs, 2001; Haug, 2001), but this does not always happen in the optimal way (Jonghe & Vloeberghs, 2001).

Discussing the ways higher education institutions might react to adapt to these changes, a number of authors have suggest the market orientation strategy as the best orientation (Caruana et al., 1998a, 1998b; Keneley & Hellier, 2002;Wasmer and Bruner, 1999; Hammon et al., 2006; Flavian & Lozano, 2006; Hemsley-Brown & Oplatka, 2010). According to the growing body of this researchs, market orientation is likely to help higher educational institutions in

their endeavour to overcome the challenges and pressures of their changing environment (Bugandwa MAD, 2009, 2013).

Higher education institutions are definitely different from commercial organisations that have been the underlying context for the conceptualisation of market orientation.

4.2.3. Individual Market Orientation in Higher Education Institutions

The employees of the organisation contribute to various information about the market that can create competitive advantages. Thus, the understanding of how employees define and see the behaviour of market orientation is the key of sucess to promote a market orientation (Schlosser & McNaughton, 2009).

The people in an organisation contribute to the level of organisation of market orientation through actions such as: fostering internal and external relationships (Helfert et al., 2002), using models of behaviour and social influence (Fulk, 1993; Wood & Bandura, 1989), and communicating tacit knowledge (Darroch & McNaughton, 2003). Although often assessed at an organisational level, a market-oriented culture is supported by the attitudes and actions of the organisation's employees (Schlosser & McNaughton, 2007).

However, in previous studies the individual contribution to the market orientation of a company is measured incorrectly. In the service sector, it is fundamental to understand and meet the long-term needs of customers through employee-customer interaction (Schlosser & McNaughton, 2009). The Kohli and Jaworski's or Narver and Slater's models of market orientation have been tested in empirical studies on higher education (e.g.: Caruana et al., 1998a, 1998b; Flavian & Lozano, 2006; Webster et al., 2006; Bugandwa MAD, 2009), but not at the individual level.

In summary, the literature on market orientation currently offers little understanding of market-oriented perspectives and behaviours of individuals within service organisations (Schlosser & McNaughton, 2009). An impediment to empirical research is the lack of a scale to measure the market orientation of individuals. Hence, the authors developed the scale I-MARKOR. The I-MARKOR scale measures how employees acquire, share and respond to market information.

This scale fits the definitions of Kohli and Jaworski (1990a, 1990b) of organisational orientation to the market that reflect the characteristics of individual employees. Thus, the market orientation of individuals reflects the attitudes and behaviours of employees while gaining, sharing, and responding to the market.

Previous researchers indicate that attitudes and behaviours of the individual employee relate to the market orientation of an organisation (e.g.: Celuch et al., 2000; Harris & Ogbonna, 2001; Langerak, 2001a, 2001b). While individual actions and attitudes help shape and develop a total orientation to the market, organisations must clearly understand the influence of individual factors and interpersonal factors.

Langerak (2003) concluded that the nature of the link between market orientation and organisational performance is not yet adequately explained. This suggests that other considerations may shape the success of a strategy of market orientation.

Schlosser's and McNaughton's (2009) research described and tested how and why individual employees can perform market-orientated routines underpinning the market orientation of the organisation.

Most studies that take into account the individual in creating a customer orientation are only tested with employees in sales and marketing (e.g.: Pettijohn, & Pettijohn, 2002). It will be important in this type of study to consider various types of employees throughout the organisation to test a market orientation - not a marketing orientation.

The Individual Market Orientation scale that assesses the individual level was developed by Schlosser and McNaughton in 2009, from the work of Kohli et al. (1993) and consists of 20 items, ordered in three dimensions of market orientation, at the individual level: (1) Generation of information, which includes eight items; (2) Dissemination of information, organized into seven items; (3) Response to market information, organized into five items. The three-factor I-MARKOR solution was similar to the conceptualized three factors Markor solution at the organisational level (Kohli et al., 1993).

4.3. I-MARKOR Scale Adaptation for Higher Education Institutions

4.3.1. Methodology

The original list of scale items was reviewed to understand what terms or expressions don't fit in HE context, for future content validation.

The adaptation proposal was validated by 8 responses, 80% of 10 contacted academic experts (published market orientation researchers and also teachers and researchers in HEIs), as recommended by Hardesty and Bearden (2004). These researchers were asked by e-mail for their advice on content validity on 10 terms/expressions. An adaptation proposal was sent to the experts based on these expressions and they were asked to provide open-ended feedback on the appropriateness's of that proposal. Feedback from the researchers was used to decide what terms/expressions we could use. Expert's comments or recommendations (Table 4.1) weren't divergent and helped us to achieve final adaption of I-MARKOR (Table 4.2).

Table 4.1 - Content Validation

Corporate context	HE context	Results: Comments/Recommendations
Distributors	Students and Academic Professionals	Sometimes *Students* is considered as the right adaptation, other times we have to use *Colleagues*
Products	Services	Right adaptation
Customers	Employers	*Students* was considered the right adaptation
Business environment	University environment	Right adaptation
Industry (e.g. competition, technology, regulation)	Activity sector (e.g. competition, technology, regulation)	Maintain *Industry* – HE Industry
Customers' purchases (e.g.distributors)	Students' and Academic Professionals' decisions/options	*Students' choices* was considered the right adaptation
Coworkers	Colleagues	Right adaptation
Company decision-makers	University decision-makers	*Organisation decision-makers* was considered the right adaptation, because in HE industry we don't have only Universities
Marketing department	Organic or academic units	Maintain *Marketing department (or equivalent)*
Customer/adviser relationship team	Society/adviser relationship team	*My pairs (colleagues)* was considered the right adaptation

Source: Own

In Table 4.2 we adapted the I-MARKOR to the higher education institutions environment, to identify market oriented teachers and researchers.

Table 4. 2 - MARKOR adapted to HE environment

I-MARKOR *F. K. Schlosser & R. B. McNaughton (2009)*	I-MARKOR for Teachers&Researchers in HEIs *Teresa Felgueira, Ricardo Gouveia Rodrigues (2013)*
Information acquisition (IA)	*Information acquisition (IA)*
1. I ask distributors to assess the quality of our products and services	1. I ask students to assess the quality of our services
2. I interact with agencies to find out what products or services customers will need in the future	2. I interact with agencies to find out what services students and organizations will need in the future
3. In my communication with distributors, I periodically review the likely effect of changes in our business environment (e.g. company mergers and acquisitions) on customers	3. In my communication with my colleagues, I periodically review the likely effect of changes in our education environment on students
4. I take responsibility to detect fundamental shifts in our industry (e.g. competition, technology, regulation) in my communication with distributors	4. I take responsibility to detect fundamental shifts in our industry (e.g. competition, technology, regulation) in my communication with colleagues
5. I talk to or survey those who can influence our customers' purchases (e.g. distributors)	5. I talk to or survey those who can influence our students' choices
6. I review our product development efforts with distributors to ensure that they are in line with what customers want	6. I review our service development efforts with colleagues to ensure that they are in line with what students want
7. I participate in informal "hall talk" that concerns our competitors' tactics or strategies	7. I participate in informal "hall talk" that concerns our competitors' tactics or strategies
8. I collect industry information through informal means (e.g. lunch with industry friends, talks with trade partners)	8. I collect industry information through informal means (e.g. lunch with industry friends, talks with trade partners)
Information dissemination (ID)	*Information dissemination (ID)*
1. I participate in interdepartmental meetings to discuss market trends and developments	1. I participate in interdepartmental meetings to discuss market trends and developments
2. I let appropriate departments know when I find out that something important has happened to a major distributor or market	2. I let appropriate departments know when I find out that something important has happened in the market
3. I coordinate my activities with the activities of coworkers or departments in this organization	3. I coordinate my activities with the activities of colleagues or departments in this organisation
4. I pass on information that could help company decision-makers to review changes taking place in our business environment	4. I pass on information that could help organisation decision-makers to review changes taking place in our environment
5. I communicate market developments to departments other than marketing	5. I communicate market developments to departments other than marketing (or equivalent)
6. I communicate with our marketing department concerning market developments	6. I communicate with our marketing department (or equivalent - e.g. organic units) concerning market developments
7. I try to circulate documents (e.g. e-mails, reports, newsletters) that provide information on my distributor contacts and their customers to appropriate departments	7. I try to circulate documents (e.g. e-mails, reports, newsletters) that provide information on students to appropriate departments
Co-ordination of strategic response (SR)	*Co-ordination of strategic response (SR)*
1. I try to bring a customer with a problem together with a product or person that helps the customer to solve that problema	1. I try to bring a student with a problem together with a service or person that helps the student to solve that problema
2. I try to help distributors achieve their goals	2. I try to help students achieve their goals
3. I respond quickly if a distributor has any problems with our offerings	3. I respond quickly if a students has any problems with our offerings

4. I take action when I find out that customers are unhappy with the quality of our servisse	4. I take action when I find out that students are unhappy with the quality of our servisse
5. I jointly develop solutions for customers with members of our customer/adviser relationship team	5. I jointly develop solutions for students with my colleagues

Source: Own

4.3.2. Sample and Data Collection

As already refered in chapter 3, the contacts of European HEIs were collected online, based on a list created by Bonaccorsi et al. (2010). First, the general e-mails from HEIs were gathered. In the case of countries with more than 110 HEIs, 90 HEIs were chosen randomly. Due to time constraints, in the case of European countries that don't belong to the European Union, only 20 HEIs were chosen randomly, and we only gathered contacts of HEIs in Brazil and in the USA listed in the Scimago Institutions Rankings - *SIR world report 2012: Global Ranking*. Then, in a second phase, the program Atomic E-mail Hunter, version 3.5[2], was used to gather the e-mails contained in the Web sites of the HEIs.

The final questionnaire (see Appendix A), was made available online and in English. Anonymity and confidentiality were assured and the participation was voluntary.

1 589 European HEIs, 186 American HEIs and 62 Brazilian HEIs, by e-mail (see Appendix B), were requested to invite the Lecturing staff to participate in this study. Then, a total of 166 223 (137 467 to Europe, 18 466 to USA and 10 290 to Brazil) individual e-mails were sent (see Appendix C) inviting Lecturing staff to collaborate in the research.

After some claims, and few responses from Portugal and Brazil, the e-mail inviting the Lecturing staff to participate in this study was translated to Portuguese.

Some HEIs refused to spread the request to Lecturing staff, based on reasons such as the institution policy, the vacation period or not wanting to overload their workers. Of the 166 223 individual requests sent to 429 HEIs, 12 723 were returned (undelivered, vacation, leave, retired, or because some people were not part of the Lecturing staff) and 172 people refused to collaborate.

 1 775 responses were collected, but 2 of them were deleted because after data validation they were identified as unusual cases. Our sample is composed of 1 773 teachers and researchers from HEIs, 1338 from 37 European countries (212 from Portugal) and 435 from America (206 from Brazil and 229 from USA).

---

[2] Atomic E-mail Hunter 3.5 (2006). Alexandria: AtomPark Software. Retrieved from http://www.massmailsoftware.com/extractweb/download/

4.3.3. Data Analysis Methods

To assess the validity of the adapted I-MARKOR scale, the AMOS SPSS version 22.0 (IBM Corporation, New York, USA) was used, estimated by the method of maximum likelihood.

We used the Confirmatory Factor Analysis and Adjustment Quality Scores: (1) Goodness of Fit Index (GFI) > 0.9; (2) Partimony Goodness of Fit Index (PGFI) > 0.6; (3) Root Mean Square Error of Approximation (RMSEA) < 0.10; and (4) the Root mean square residual (RMR) < 0.40 (Hair et al., 2010).

The validity and reliability of the construct IMO was evaluated by: (1) composite reliability (CR), it is not influenced by the number of existing items in the construct, since it uses loads of the collected items of the estimated model, unlike Cronbach's Alpha (CR > 0.70); (2) factorial validity (ideally above factor loadings greater than 0.7 to 0.5); (3) convergent validity through varience extracted estimate (AVE) by the factor (AVE > 0.50); and (4) discriminant validity, where the AVE square root of two constructs should be higher than the correlation between these two factors (Barroso, Carrión, & Roldán, 2010; Hair et al., 2010; Hulland, 1999).

4.4. Results

4.4.1. Sample Profile

The study sample consists of 1773 individuals (Table 3.2, p.53), 83.0% of public institutions, 84.8% belonging to the university, 75.5% of European countries for a total of 37 countries (Portugal - 12.0%, Sweden - 6.9%; UK - 6.6%; Ireland - 4.9%, Italy - 4.8%; Spain - 3.9%), 12.9% of the USA and 11.6% of Brazil, 75.4% had a Ph.D. Degree. In 12.6% the main lecturing area was Business and Management and in 10.8% it was Engineering, these being also the most frequent areas of research. The average of academic career is 18.7 (SD=10.5) years, the average age of teachers is 49.3 (SD=10.7) years and 60.3% are male gender.

4.4.2. Variables and Scales

This section assesses the validity of the adapted I-MARKOR through indexes of adjustment, composite reliability, factorial validity, convergent validity and discriminant validity.

The construct of Market Orientation Scale for Teachers and Researchers in HEIs(IMO) is represented in three dimensions and 20 items, Information Acquisition(IA) (8 itens), Information Dissemination(ID) (7 itens) and Coordination of Strategic Response(SR) (5 itens). Confirmatory factor analysis of the structure of the IMO (Figure 4.1), indicates that the original model has an adjustment from reasonable (GFI=0.865) to good (PGFI=0.688; RMSEA=0.086; e RMR=0.168) to the sample under study, suggesting that the model can be improved. The low factor weights of some items are indicators of low validity and individual reliability.
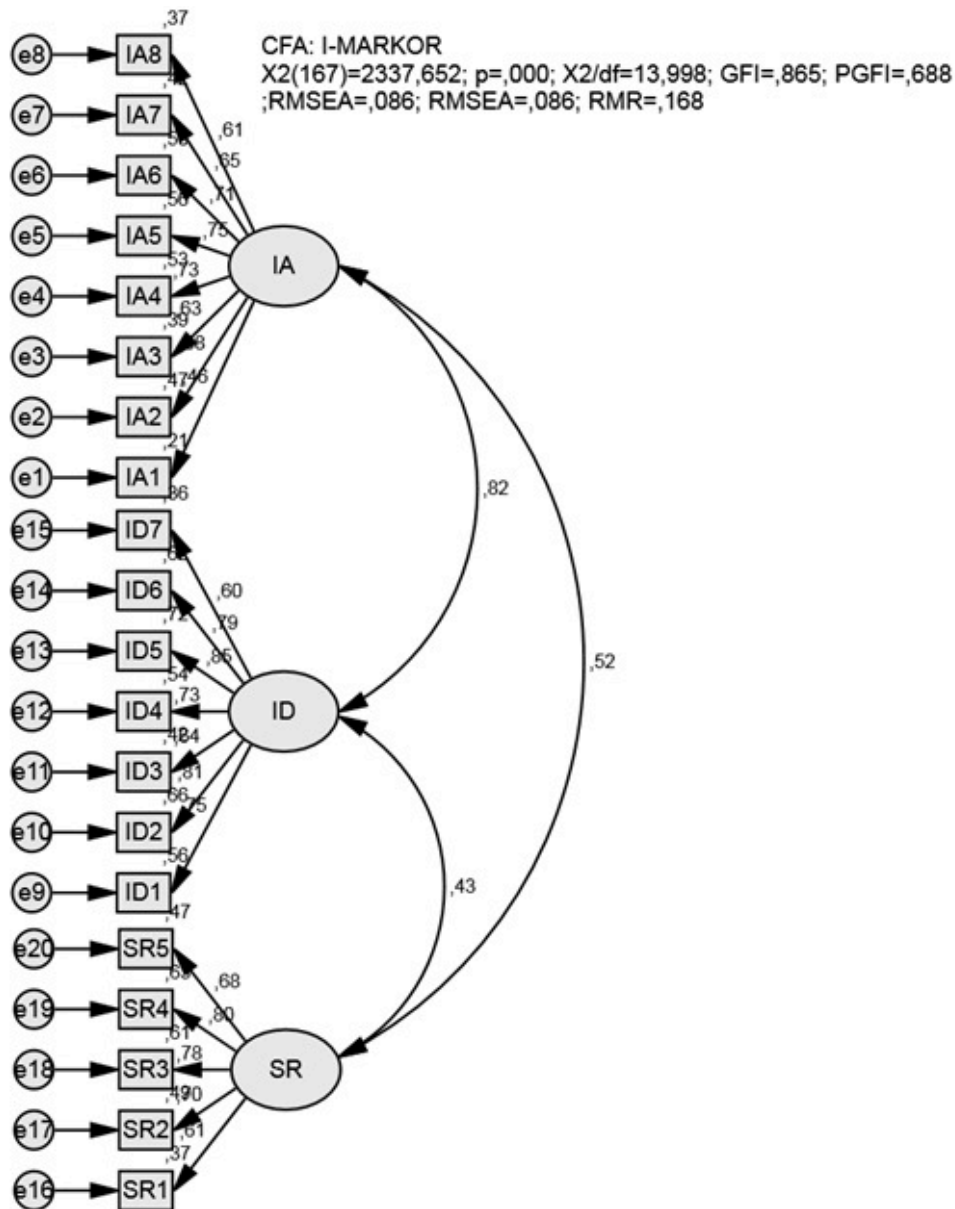
Note: ID - Information Dissemination;IA - Information Acquisition; SR - Co-ordination of Strategic Response
Source: Own

Figure 4.1 - Factor weights, individual reliabilities of each item in each factor and correlations between factors of IMO scale

The improvement of the model was made by removing the item IA1, and from the modification indexes the measurement errors of IA3, IA8, ID5 e ID6, ID3 and ID4 were correlated. The new model (Figure 4.2) presents values of quality indexes that reflect a good adjustment of the new model to the data (GFI=0.905; PGFI=0.696; RMSEA=0.075; e RMR=0.152).

CFA: I-MARKOR
X2(146)=1602,562; p=,000; GFI=,905; PGFI=,696
;RMSEA=,075; RMR=,152
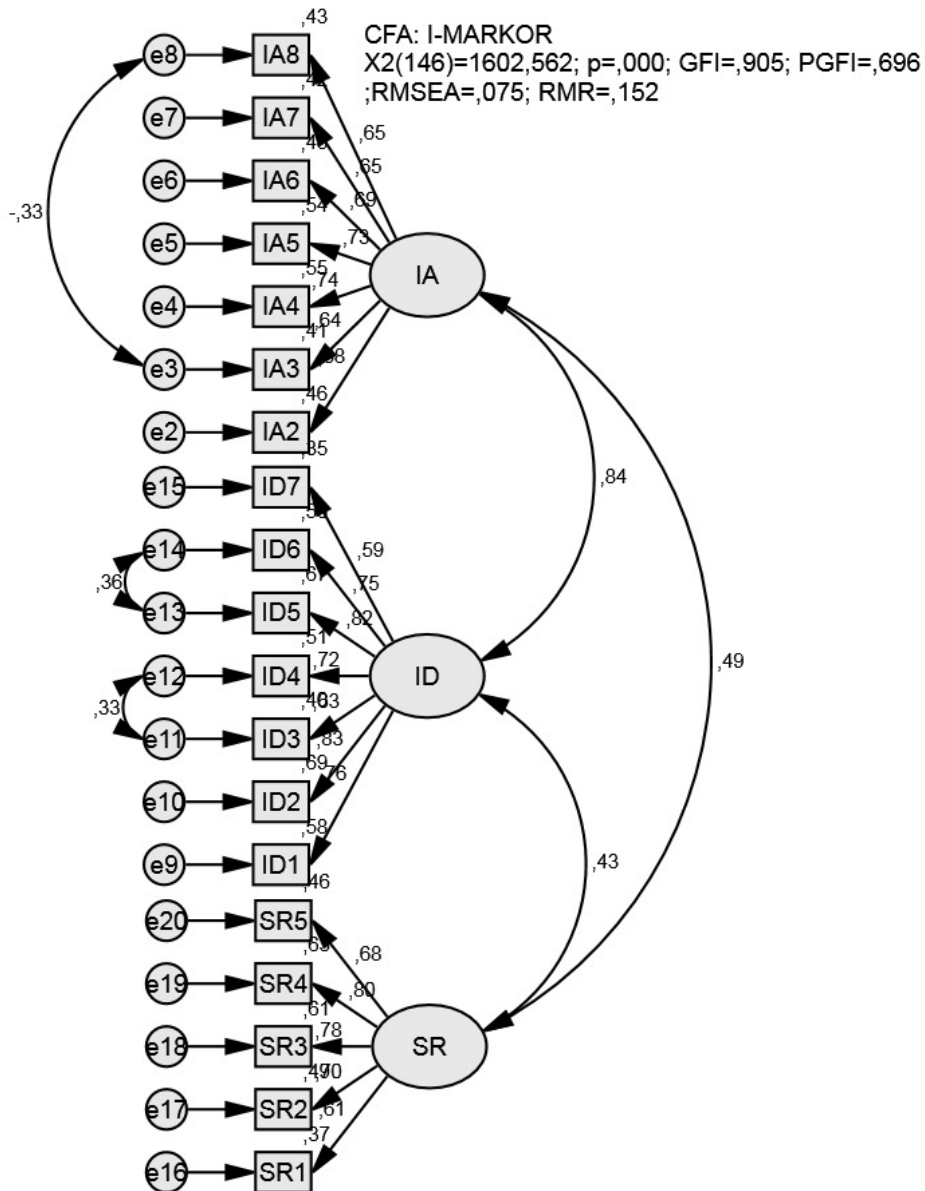
Note: ID - Information Dissemination;IA - Information Acquisition; SR - Co-ordination of Strategic Response
Source: Own

Figure 4.2 - Factor weights, individual reliabilities of each item in each factor and correlations between
factors of IMO scale - modified

Table 4.3 presents the statistics of reliability and validity of the subconstructs related to IMO. In each of the factors analyzed, it appears that all items had factor loadings above 0.5 confirming the existence of factorial validity. The composite reliability was 0.861 for Information Acquisition, 0.890 in subconstruct Information Dissemination and 0.909 in Co-ordination of Strategic Response, thus evidencing the existence of reliability. The AVE showed the value of 0.470 in the subconstruct Information Acquisition, 0.539 in Information Dissemination and 0.514 in the Co-ordination of Strategic Response, thus considering the existence of convergent validity.

Table 4.3 – Statistical reliability and validity of the subconstucts depicting to IMO

Factor/item	Estimated Standardized Coefficient	Average Variance Extracted (AVE)	Composite Reliability (CR)	Cronbach's Alfa
Information Acquisition (IA)				
IA2	0.678			
IA3	0.642			
IA4	0.744			
IA5	0.735	0.470	0.861	0.853
IA6	0.691			
IA7	0.649			
IA8	0.655			
Information Dissemination (ID)				
ID1	0.762			
ID2	0.829			
ID3	0.631			
ID4	0.718	0.539	0.890	0.894
ID5	0.821			
ID6	0.751			
ID7	0.592			
Co-ordination of Strategic Response (SR)				
SR1	0.610			
SR2	0.701			
SR3	0.783	0.514	0.909	0.825
SR4	0.795			
SR5	0.681			

Source: Own

The square root of the AVE Information acquisition was higher than the correlation between the Information acquisition dimension and the subconstruct Co-ordination of Strategic Response (Table 4.4). The square root of AVE of the Co-ordination of Strategic Response was higher than the correlation between the Co-ordination of Strategic Response and subconstructs Information Dissemination and Information Acquisition. The correlation between the Information Dissemination and Information Acquisition was superior to the AVE of Information Dissemination and Information Acquisition, however, the difference test of x^2 between the model with correlation factors between IA and ID set in 1 (x^2_r) and not restricted (x^2_u) model, proved significant $x^2_{dif}(1)= 48.986$, p<0.001. Thus, assuming a significance level of 0.001, we can affirm the existence of discriminant validity between these factors.

Table 4.4 - Pearson correlation matrix of the IMO subconstructs and the diagonal elements (values in bold) are the square root of AVE

	ID	IA	SR
ID	**0.686**		
IA	0.836	**0.734**	
SR	0.434	0.494	**0.717**

Note: ID - Information Dissemination;IA - Information Acquisition; SR - Co-ordination of Strategic Response
Source: Own

Based on the above results it appears that the IMO construct is a multidimensional construct consisting of the subconstructs ID, IA and SR, presenting high reliability and factorial, convergent and discriminant validity.

4.5. Chapter Concluding Remarks

Universities are supposed to become more market oriented to face their changing environment successfully. This paper conceptualizes the market orientation strategy, taking into account higher education peculiarities and discusses the principle dimensions of the individual market orientation concept in Higher Education Institutions.

The adaptation proposal was validated by 8 academic experts. Their feedback was used to decide what terms/expressions we could use. Expert's comments or recommendations weren't divergent and helped us to achieve final adaption of I-MARKOR.

The I-MARKOR adapted to HE context (Appendix E) measures how Teachers and Researchers from HEIs acquire, share and respond to the market information. Factor analysis confirmed these three dimensions. The construct of Individual Market Orientation (IMO) is represented in three dimensions and 19 items: Information Acquisition (IA) (7 itens), Information Dissemination (ID) (7 itens) and Coordination of Strategic Response (SR) (5 itens). Confirmatory factor analysis of the structure of the IMO presents values of quality indexes that reflect a good adjustment to the data (GFI=0.905; PGFI=0.696; RMSEA=0.075; e RMR=0.152). The IMO construct is a multidimensional construct consisting of the subconstructs ID, IA and SR, presenting high reliability and factorial, convergent and discriminant validity.

In sum, this study provides a reliable and valid instrument to evaluate Teachers and Researchers market orientation in HEIs.

Finally, this research contributes as one of a few recent studies to use confirmatory analysis to test individual market orientation as a latent construct.

One main limitation of our research is our sample, since we collected 435 responses from USA and Brazil, and 1338 from Europe. European countries are diverse in what concerns their characteristics, and only two countries represent the American Continent. So, it would be important to replicate the research using a larger sample, in other to obtain results with higher validity.

In a future research we intend to understand the relationship between entrepreneurial orientation, market orientation and performance of teachers and researchers from Higher Education Institutions, and contribute to present new paths for improving the performance of teachers and researchers from Higher Education Institutions.

5. Relating Entrepreneurial Orientation, Market Orientation and Performance of Teachers and Researchers from Higher Education Institutions

Abstract

This study aims to understand the relationship between entrepreneurial orientation, market orientation and performance of teachers and researchers from higher education institutions (HEIs). Based on a sample size of European, US and Brazilian Teachers and Researchers from HEIs, a structural model was tested. The instrument used clarifies individual accountabilities and specifies measurable routines that add competitive value and provides a method to assess differences between individuals within a HEI that may influence the extent to which an individual performs entrepreneurial and market-oriented behaviours. The results allow us to conclude that all hypotheses were supported: (1) the higher the degree of individual entrepreneurial orientation, the greater the degree of individual market orientation; (2) the IMO has a positive impact on performance; and (3) the higher the degree of individual entrepreneurial orientation, the greater the performance. Research findings can be of high use in understanding how the analysed variables interact and their impact on the HEIs.

Keywords: Higher Education, Individual Entrepreneurial Orientation, Individual Market Orientation, Performance.

5.1. Introduction

The contribution of this work focuses on the fusion of two theoretical approaches to business strategies: Entrepreneurial Orientation and Market Orientation, applied to European, US and Brazilian Teachers and Researchers from Higher Education Institutions.

We intend to use the concept of entrepreneurial orientation to characterize not the organisations as a whole, but rather the individuals who adopt this kind of behaviour. For that we used the I-ENTRE-U scale to identify entrepreneurial oriented teachers and researchers in HEIs. Also, the literature on market orientation currently offers little understanding of market-oriented perspectives and behaviours of individuals within service organisations (Schlosser & McNaughton, 2009). For that we used the I-MARKOR scale to identify market oriented teachers and researchers in HEIs.

The main objective of this study is to analyse the relationship between Individual Entrepreneurial Orientation (IEO), Individual Market Orientation (IMO) and Performance of teachers and researchers of the HEIs. A conceptual model is proposed and tested representing the relationship among these variables. It is expected that the results of this research can be of high use in understanding how the analysed variables interact and their impact on the HEIs.

5.2. Conceptual Model and Hypotheses

The literature review, theoretical models and empirical results presented in the preceding chapters, as well as reflections based upon them, led to the drafting of the proposed research model (Figure 5.1), which will be tested through the research hypotheses.

The model proposed was created as a way to respond to the research question (*What is the relationship between entrepreneurial orientation, market orientation and performance of teachers and researchers in higher education?*), linking entrepreneurial orientation, market orientation and performance.
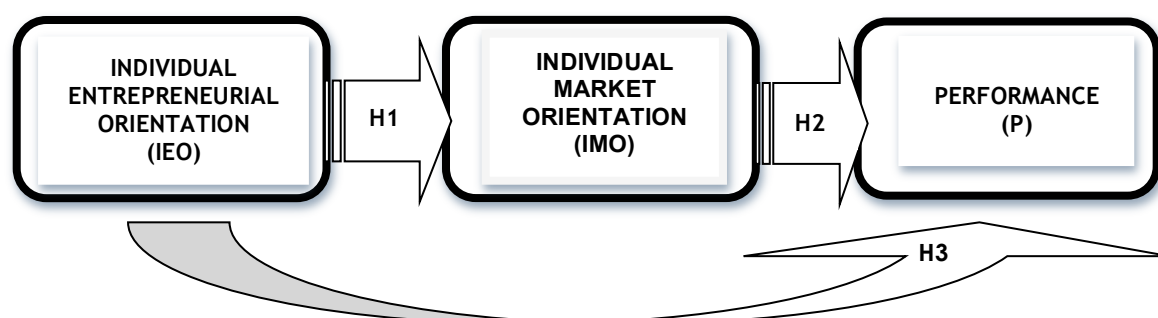
Source: Own

Figure 5.1 - Conceptual Model

Both market orientation (MO) and entrepreneurial orientation (EO) constructs are related but distinct. Market orientation reflects the degree of strategic planning of companies' market driven by the customer and competition. The entrepreneurial orientation reflects the degree as the growth objectives of companies are driven by identifying and exploiting unexplored market opportunities.

In the research of Baker and Sinkula (2009), when modelled separately, these constructs revealed direct effects of both constructs on profitability. However, when modelled simultaneously, the direct effect of EO disappeared. This has led some scholars to postulate that equal opportunity preceds MO. The results of Baker and Sinkula (2009) contradict this assumption and suggest that EO and MO complement each other, at least in small companies, to increase profitability.

The entrepreneurial orientation construct is composed of four dimensions: research mobilization, unconventionality, industry collaboration, and university policies (Todorovic, McNaughton, & Guild, 2011).

The conceptualisation of market orientation at the individual level divides the construct into subdimensions of information generation, information dissemination and market responsiveness (Schlosser & McNaughton, 2009).

To Xiaowei (2006) the performance can be measured by self-assessment of performance traits: linking organisational networks, transmitting organisational memory, elastic confidence, team synergy, performance chain influence, uneasily substitutable, innovation trait.

From the literature review, presented in Chapter 2, resulted the following hypotheses:

H1: *The higher the degree of individual entrepreneurial orientation, the greater the degree of individual market orientation;*

H2: *The individual market orientation has a positive impact on performance;*

H3: *The higher the degree of individual entrepreneurial orientation, the greater the performance.*

5.3. Methodology

To assess the validity of the constructs, estimation of structural models and evaluation of the respective hypotheses, the software of IBM SPSS AMOS version 22.0 (IBM Corporation, New York, USA) was used with estimation through the maximum likelihood method.

For each construct the Confirmatory Factor Analysis and the respective quality indexes of adjustments were used: (1) Goodness of Fit Index (GFI) > 0.9; (2) Partimony Goodness of Fit Index (PGFI) > 0.6; (3) Root Mean Square Error of Approximation (RMSEA) < 0.10; and (4) the Root Mean Square Residual (RMR) < 0.40 (Hair et al., 2010).

The validity and reliability of the construct IEO was evaluated by: (1) composite reliability (CR), as it is not influenced by the number of existing items in the construct, since it uses loads of the extracted items of the estimated model, unlike Cronbach's Alpha (CR > 0.70); (2) factorial validity (factor loadings greater than 0.5 ideally above 0.7); (3) convergent validity through varience extracted estimate (AVE) by the factor (AVE > 0.50); and (4) discriminant validity, where the AVE square root of two constructs should be higher than the correlation between these two factors (Barroso, Carrión, & Roldán, 2010; Hair et al., 2010; Hulland, 1999).

The population in study was teachers and researchers from universities, polytechnics, colleges or specialized schools, public or private institutions in Europe, North America (USA) and South America (Brazil).

The study sample consisted of 1773 teachers and researchers from HEIs, 1338 from 37 European countries (212 in Portugal) and 435 of America (206 in Brazil and 229 of the USA), and data collection was carried out through a questionnaire sent by e-mail, between July and September 2013.

The sample is composed of 83.0% of public institutions, 84.8% belonging to universities, 75.5% of European countries for a total of 37 countries (Portugal - 12.0%, Sweden - 6.9%; UK - 6.6%; Ireland - 4.9%, Italy - 4.8%; Spain - 3.9%), 12.9% of the USA and 11.6% from Brazil, 75.4% had a Ph.D. Degree and in 12.6% the main teaching area was Business and management while 10.8% taught Engineering, these being also the most frequent areas of research, the average time of academic careers was 18.7 (SD=10.5) years, the average age of teachers was 49.3 (SD=10.7) years and 60.3% were male (Table 3.2, p.53).

5.4. Variables and Scales

In this section we evaluate the construct validity through the indexes of adjustment, composite reliability, factorial validity, convergent validity and discriminant validity.

5.4.1. Individual Entrepreneurial Orientation

The Individual Entrepreneurial Orientation construct is represented in four dimensions and 20 items (Appendix D), Research Mobilization (RM) (6 items), Unconventionality (UC) (6 items), Industry Collaboration (IC) (4 items) and University Policies (UP) (4 items).

Confirmatory factor analysis of the structure of the IEO, indicates that the original model (with 23 items, Figure 3.2, p.55) provides an adjustment from reasonable (GFI = 0.851) to good (PGFI = 0.691; RMSEA = 0.084; and RMR = 0.169) of the sample under study, suggesting that the model can be improved. The low factor weights of some items are indicators of low validity and individual reliability.

The improvement of the model was made by removing the UC4, UC8 and IC4 items, and from the modification indexes the measurement errors of RM1 and RM2 items were correlated, as well as errors of measurement of items RM2 and RM3. The new model (Figure 3.3, p.56) presents values of quality indexes that reflect a good adjustment of the new model to the data (GFI = 0.920; PGFI = 0.710; RMSEA = 0.067; and RMR = 0.139).

In each of the analyzed factors, it appears that all items had factor loadings above 0.5 confirming the existence of factorial validity. The composite reliability was 0.840 for Research Mobilization, 0.818 in subconstruct Unconventionality, 0.847 in Industry Collaboration factor and 0.800 in University Policies factor, thus evidencing the existence of reliability. The AVE showed the value of 0.469 in Research Mobilization, 0.481 in subconstruct Unconventionality, 0.585 in Industry Collaboration factor and 0.503 in University Policies factor. Despite the fact that the subconstructs of Research Mobilization and Unconventionality having an AVE slightly lower than the established limit, we consider the existence of convergent validity.

It is noted that the correlation between Research Mobilization and the subconstructs of Unconventionality and Industry Collaboration, as well as between Unconventionality and Industry Collaboration is not less than the square root of AVE. Yet the χ^2 difference test between the models with fixed correlation in 1 between UC and RM factors, between RM and IC and between IC and UC (χ^2_r) and the unrestricted model (χ^2_u), proved significant $\chi^2_{dif}(1)=$ 186.527, p<0.000, $\chi^2_{dif}(1)=$ 759.119, p<0.000, $\chi^2_{dif}(1)=$ 515.693, p<0.000, for these relations. Thus, assuming a significance level of 0.001, we can affirm the existence of discriminant validity between these factors.

Thus, it appears that the construct IEO is composed of the subconstructs RM, UC, IC and UP, these being of high reliability and factorial, convergent and discriminant validity.

5.4.2. Individual Market Orientation

The construct of Market Orientation Scale for Teachers and Researchers in HEIs(IMO) is represented in three dimensions and 19 items (Appendix E), Information Acquisition(IA) (7 itens), Information Dissemination(ID) (7 itens) and Coordination of Strategic Response(SR) (5 itens).

Confirmatory factor analysis of the structure of the IMO, indicates that the original model (with 20 items, Figure 4.1, p.74) has an adjustment from reasonable (GFI=0.865) to good (PGFI=0.688; RMSEA=0.086; e RMR=0.168) to the sample under study, suggesting that the model can be improved. The low factor weights of some items are indicators of low validity and individual reliability.

The improvement of the model was made by removing the item IA1, and from the modification indexes the measurement errors of IA3, IA8, ID5 e ID6, ID3 and ID4 were correlated. The new model (Figure 4.2, p.75) presents values of quality indexes that reflect a good adjustment of the new model to the data (GFI=0.905; PGFI=0.696; RMSEA=0.075; e RMR=0.152).

In each of the factors analyzed, it appears that all items had factor loadings above 0.5 confirming the existence of factorial validity. The composite reliability was 0.861 for Information Acquisition, 0.890 in subconstruct Information Dissemination and 0.909 in Co-ordination of Strategic Response, thus evidencing the existence of reliability. The AVE showed the value of 0.470 in the subconstruct Information Acquisition, 0.539 in Information Dissemination and 0.514 in the Co-ordination of Strategic Response, thus considering the existence of convergent validity.

The square root of the AVE Information Acquisition was higher than the correlation between the Information Acquisition dimension and the subconstruct Co-ordination of Strategic Response. The square root of AVE of the Co-ordination of Strategic Response was higher than the correlation between the Co-ordination of Strategic Response and subconstructs Information Dissemination and Information Acquisition. The correlation between the Information Dissemination and Information Acquisition was superior to the AVE of Information Dissemination and Information Acquisition, however, the difference test of x^2 between the model with correlation factors between IA and ID set in 1 (x^2_r) and not restricted (x^2_u) model,

proved significant $x^2_{dif}(1)= 48.986$, p<0.001. Thus, assuming a significance level of 0.001, we can affirm the existence of discriminant validity between these factors.

Based on the above results it appears that the IMO construct is a multidimensional construct consisting of the subconstructs ID, IA and SR, presenting high reliability and factorial, convergent and discriminant validity.

5.4.3. Performance

The construct that refers to Performance is represented by seven dimensions and 18 items, Linking Organisational Network (LON) (3 items), Transmitting Organisational Memory (TOM) (2 items), Elastic Confidence (EC) (4 items), Team Synergy (TS) (2 items), Performance Chain Influence (CI) (2 items), Uneasily Substitutable (US) (2 items) Innovation Trait (IT) (3 items).

Confirmatory factor analysis of the structure of Performance (Figure 5.2) indicates that the original model provides a reasonable fit (GFI = 0.948; PGFI = 0.638; RMSEA = 0.059; and RMR = 0.269) to the sample under study. However the covariance matrix is not positively defined invalidating the results, as well as low factorial weights of some items are indicators of low validity and individual reliability.
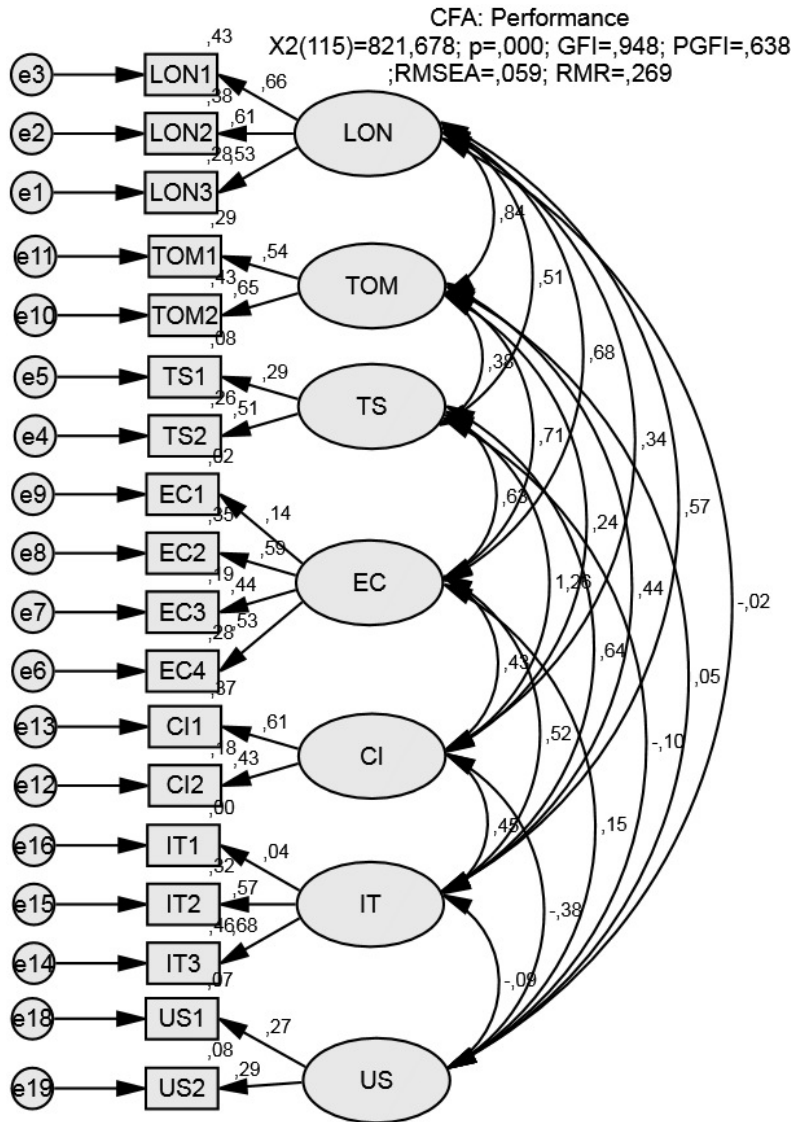
Note: Linking Organisational Network (LON); Transmitting Organisational Memory (TOM); Team Synergy (TS); Elastic Confidence (EC); Performance Chain Influence (CI); Innovation Trait (IT); Uneasily Substitutable (US).
Source: Own

Figure 5.2 - Factor weights, individual reliabilities of each item in each factor and correlations between factors of the Performance scale

The improved model was made by removing the EC1 and EC3 items, the IT1 item, the items US1 and US2 and hence the subconstruct Uneasily Substitutable (US), the subconstructs Synergy Team (TS) Performance Chain Influence (CI), and the respective items were also removed as these were causing the non-positive definition of the covariance matrix (TS1, TS2, CI1 and CI2). The new model (Figure 5.3) presents indexes of quality adjustment that reflect a good fit of the new model to the data (GFI = 0.982; PGFI = 0.458; RMSEA = 0.067; and RMR = 0.074).
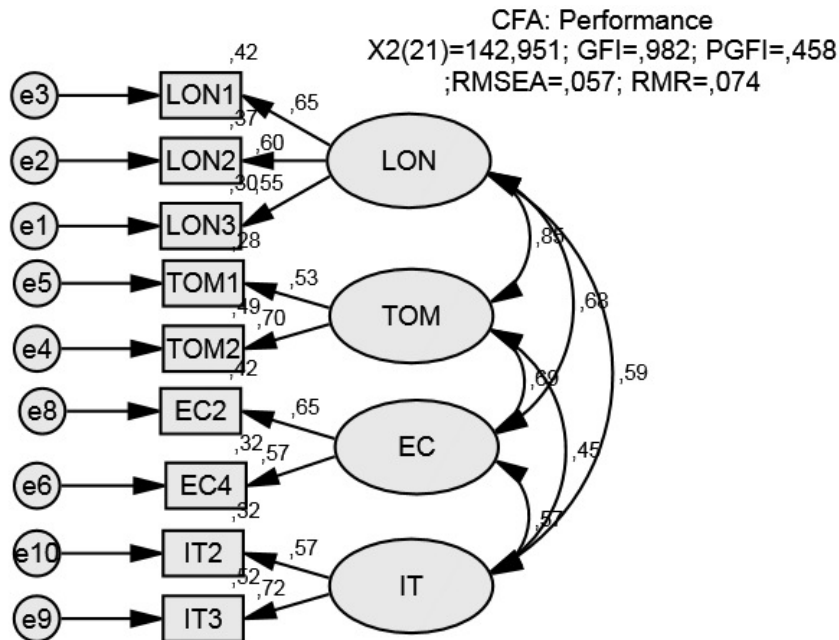
Note: Linking Organisational Network (LON); Transmitting Organisational Memory (TOM); Elastic Confidence (EC); Innovation Trait (IT).
Source: Own

Figure 5.3 - Factor weights, individual reliabilities of each item in each factor and correlations between factors of the Performance scale - modified

Table 5.1 presents the statistical reliability and validity of Performance subconstructs. In each of the analyzed factors, it appears that all items had factor loadings above 0.5 confirming the existence of factorial validity. The composite reliability was 0.627 for subconstruct Linking Organisational Networks, 0.552 for subconstruct Transmitting Organisational Memory, 0.542 for the factor Elastic Confidence and 0.589 for the factor Innovation Trait, indicating a low reliability. AVE showed the value of 0.360 for the subconstruct Linking Organisational Networks, 0.386 in Subconstruct Transmitting Organisational Memory, 0.372 in Elastic Confidence factor and 0.421 in Innovation Trait factor, thus not being possible to validate the existence of convergent validity.

Table 5.1 – Statistical reliability and validity of the subconstucts depicting to Performance

Factor/item	Estimated Standardized Coefficient	Average Variance Extracted (AVE)	Composite Reliability (CR)	Cronbach's Alfa
Linking Organisational Network (LON)				
LON1	0.646			
LON2	0.604	0.360	0.627	0.623
LON3	0.545			
Trasmitting Organisational Memory (TOM)				
TOM1	0.527	0.386	0.552	0.528
TOM2	0.703			
Elastic Confidence (EC)				
EC2	0.648	0.372	0.542	0.550
EC4	0.570			
Innovation Trait (IT)				
IT2	0.570	0.421	0.589	0.581
IT3	0.719			

Source: Own

Table 5.2 presents the Pearson correlation matrix of Performance subconstructs and the square roots of AVE. It appears that the correlation of Linking Organisational Network with the subconstructs Transmitting Organisational Memory and Elastic Confidence, as well as between Trasmitting Organisational Memory and Elastic Confidence is not less than the square root of AVE. Yet the χ^2 difference test between models with fixed correlation in 1 between factors LON and TOM, between LON and EC and between EC and TOM (χ^2_r) and the unrestricted model (χ^2_u), proved significant $\chi^2_{dif}(1)= 85.335$, p<0.000, $\chi^2_{dif}(1)= 177.422$, p<0.000, $\chi^2_{dif}(1)= 122.912$, p<0.000, for these relations. Thus, assuming a significance level of 0.001, we can affirm the existence of discriminant validity between these factors.

Table 5.2 - Pearson correlation matrix of the Performance subconstructs and the diagonal elements (values in bold) are the square root of AVE

	LON	TOM	EC	IT
LON	**0.600**			
TOM	0.846	**0.621**		
EC	0.679	0.690	**0.610**	
IT	0.588	0.450	0.575	**0.649**

Note: Linking Organisational Network (LON); Transmitting Organisational Memory (TOM); Elastic Confidence (EC); Innovation Trait (IT).
Source: Own

Thus, we state that Performance construct is composed of the LON, TOM, CE and IT subconstructs, these presenting factorial and discriminant validity.

The results of composite reliability and convergent validity could be better, but the results of other indices of adjustment, factorial and discriminant validity, allowed us to use this construct in the structure previously defined.

5.5. Estimation of Structural Equation Model

5.5.1. Descriptive Statistics

The descriptive statistics of the subconstructs are presented in Table 5.3. The constructs with lower average scores are UC (2.89 / SD=0.85) and IC (3.05 / SD=1.01) and those with higher average scores are SR (5.39 / SD=0.77) and the RM (4.89 / SD=1.14).

Table 5.3 – Descriptive statistics of the subconstructs

	N	Mean	Minimum	Maximum	Standard Deviation
UP	1773	2.89	0.70	4.85	0.85
IC	1773	3.05	0.75	5.11	1.01
UC	1773	3.81	0.81	5.54	0.90
RM	1773	4.89	0.99	6.87	1.14
SR	1773	5.39	0.91	6.35	0.77
ID	1773	4.52	1.08	7.35	1.38
IA	1773	4.50	1.07	6.87	1.13
IT	1773	4.19	0.84	5.87	0.82
EC	1773	3.45	0.73	5.08	0.69
TOM	1773	3.73	0.81	5.66	0.78
LON	1773	3.30	0.70	4.88	0.65

Note: UP - University Policies; IC - Industry Collaboration; UC – Unconventionality; RM - Research Mobilization; SR - Co-ordination of Strategic Response; ID - Information Dissemination; IA - Information Acquisition; IT - Innovation Trait; EC - Elastic Confidence; TOM - Transmitting Organisational Memory; LON - Linking Organisational Network.
Source: Own

5.5.2. Measurement Model

In the measurement model the connections between measurable variables (observed) underlying latent variables are specified. The formal specification of the measurement model is the result of the evaluation of the research instrument made in section 5.4, using the scores of each subconstruct defined in that assessment.

Figure 5.4 shows the estimates obtained by the method of ML estimation of the measurement model. It is shown that the measurement model provides a reasonable fit (GFI = 0.892, PGFI = 0.554, RMSEA = 0.138 and RMR = 0.058) to the sample under study. The modification indexes suggest that the model can be improved.
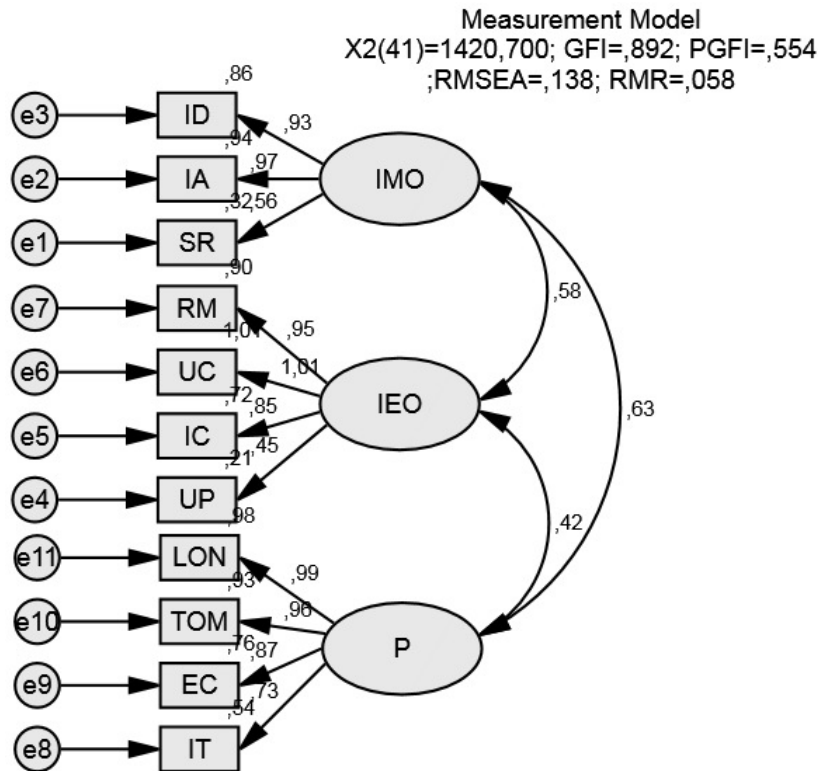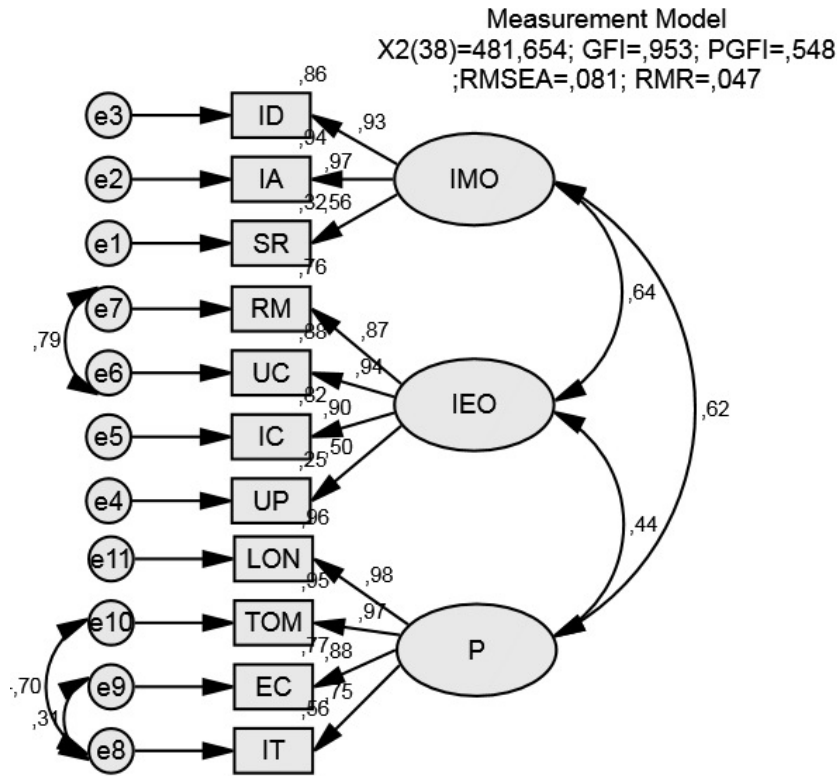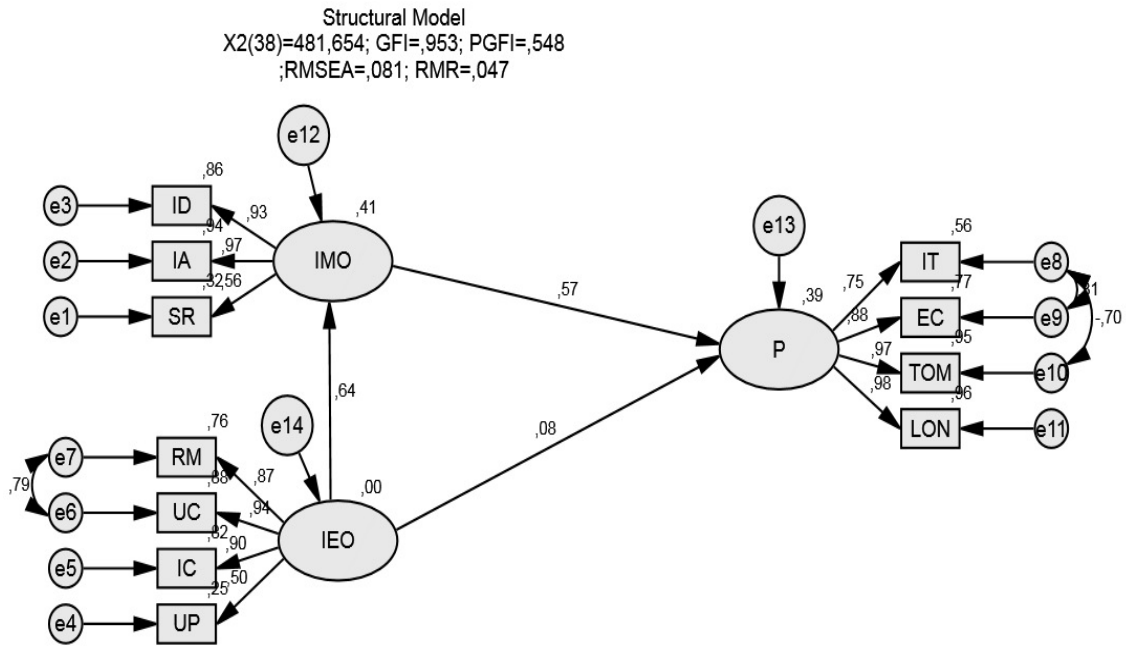
Note: ID - Information Dissemination; IA - Information Acquisition; SR - Co-ordination of Strategic Response; RM - Research Mobilization; UC – Unconventionality; IC - Industry Collaboration; UP - University Policie; LON - Linking Organisational Network; TOM - Transmitting Organisational Memory; EC - Elastic Confidence; IT - Innovation Trait; IMO – Individual Market Orientation; IEO – individual Entrepreneurial Orientation; P –Performance.
Source: Own

Figure 5.4 - Factor weights, individual reliabilities of each subconstruct in each construct and correlations between the measure model constructs

The improvement of the adjustment of the measurement model was performed by correlating the measurement errors of subconstructs IT and EC, IT and TOM and UC and MR. The new measurement model (Figure 5.5) presents indexes of quality adjustment that reflect a good fit of the new model to the data (GFI = 0.953; PGFI = 0.548, RMSEA = 0.081, and RMR = 0.047).

Note: ID - Information Dissemination; IA - Information Acquisition; SR - Co-ordination of Strategic Response; RM - Research Mobilization; UC – Unconventionality; IC - Industry Collaboration; UP - University Policie; LON - Linking Organisational Network; TOM - Transmitting Organisational Memory; EC - Elastic Confidence; IT - Innovation Trait; IMO – Individual Market Orientation; IEO – individual Entrepreneurial Orientation; P –Performance.
Source: Own

Figure 5.5 - Factor weights, individual reliabilities of each subconstruct in each construct and correlations between the measure model constructs - modified

5.5.3. Structural Model

The structural model defines the correlations among the variables based on the proposed theoretical model.

The Figure 5.6 shows the standardized estimates of the structural equations obtained by the maximum likelihood estimation method (ML method). The structural model shows a good fit: GFI = 0.953, PGFI = 0.548, RMSEA = 0.081 and RMR = 0.048.

Note: ID - Information Dissemination; IA - Information Acquisition; SR - Co-ordination of Strategic Response; RM - Research Mobilization; UC – Unconventionality; IC - Industry Collaboration; UP - University Policie; LON - Linking Organisational Network; TOM - Transmitting Organisational Memory; EC - Elastic Confidence; IT - Innovation Trait; IMO – Individual Market Orientation; IEO – individual Entrepreneurial Orientation; P –Performance.
Source: Own

Figure 5.6 – Factor weights, individual reliabilities of each subconstruct in each construct and correlations between structural model constructs

The Table 5.4 presents the results depicting the hypotheses as well as direct and indirect effects associated with endogenous variables. The scores of the construct Individual Entrepreneurial Orientation (0.639) significantly and positively influence the scores of the construct Individual Market Orientation, and thus supporting H1. The Individual Market Orientation construct (0.570) significantly and positively influences Performance, supporting H2. The construct Individual Entrepreneurial Orientation (0.079) positively and with statistical significance influences Performance, thus supporting H3.

Table 5.4 – Path significance and effects for structural model

	Path		Path significance	DIRECT EFFECTS	INDIRECT EFFECTS	TOTAL EFFECTS
IEO	→	IMO	<0.001	0.639		0.639
IMO	→	P	<0.001	0.570		0.570
IEO	→	P	0.003	0.079	0.365	0.444

Note: IMO – Individual Market Orientation; IEO – individual Entrepreneurial Orientation; P –Performance.
Source: Own

5.5.4. Summary of Results

Table 5.5 presents a summary of results concerning the hypotheses. It is observed that all the hypotheses were supported, meaning the higher the degree of individual entrepreneurial orientation, the greater the degree of individual market orientation; the IMO has a positive impact on performance; and the higher the degree of individual entrepreneurial orientation, the greater the performance.

Table 5.5 – Validation results of the hypotheses

Hypotheses	Caracterization	Results
H1	The higher the degree of individual entrepreneurial orientation, the greater the degree of individual market orientation.	Supported
H2	The IMO has a positive impact on performance.	Supported
H3	The higher the degree of individual entrepreneurial orientation, the greater the performance.	Supported

Source: Own

5.6. Chapter Concluding Remarks

This study conclude that the relationship between individual entrepreneurial orientation and individual performance is direct and positive (Zahra & Covin, 1995; Barrett & Weinstein, 1998), and there is some evidence that this effect is more pronounced in turbulent markets (Covin & Slevin, McKee, Varadarajan & Pride, cited by Baker & Sinkula, 2009).

The changing context of HE and its confrontation with market forces are exerting intense pressures on the management of these institutions. Universities are encouraged to become more "entrepreneurial", depending on human resources with entrepreneurial characteristics. We used the concept of entrepreneurial orientation to characterize not the organisations as a whole, but rather the individuals who adopt this kind of behaviour using the I-ENTRE-U scale to identify entrepreneurial oriented teachers and researchers in HEIs.

The scores of the Individual Entrepreneurial Orientation construct significantly and positively influence the scores of the Individual Market Orientation construct, and thus supported the *H1*. The Individual Market Orientation construct significantly and positively influences Performance, supporting up to *H2*. The construct Individual Entrepreneurial Orientation positively and with statistical significance influences the Performance, supporting *H3*. The results allow us to conclude that all hypotheses were supported: (1) *the higher the degree of individual entrepreneurial orientation, the greater the degree of individual market orientation*; (2) *the IMO has a positive impact on performance*; and (3) *the higher the degree of individual entrepreneurial orientation, the greater the performance*.

It would be important to replicate the research using a larger sample, although we collected 435 responses from USA and Brazil, and 1338 from European countries. This can be one limitation of our research, since countries and regions are diverse in what concerns their characteristics, and only two countries represent the American Continent.

Also, it is observed that the Performance construct is composed of the subconstructs LON, TOM, EC and IT, these presenting factorial and discriminant validity. The results of composite reliability and convergent validity could be better, but the results of other indices of adjustment, factorial and discriminant validity, allowed us to use this construct in the structure previously defined. In the beginning of this study, we found the performance dimensions proposed by Xiaowei (2006) to be the best for relate to the dimensions of EO and MO. In future studies it is convenient to use another scale to measure performance or develop a new one adapted to the context of higher education.

Conclusions

In this study we use the concept of entrepreneurial orientation to characterize not the organisations as a whole, but rather the individuals who adopt this kind of behaviour. Also, the field literature on market orientation currently offers little understanding of market-oriented perspectives and behaviours of individuals within service organisations (Schlosser & McNaughton, 2009).

One of our goals was to develop an instrument to measure Individual Entrepreneurial Orientation (IEO) and we adopted I-MARKOR to measure Individual Market Orientation (IMO) in HE context.

IEO may be measured using four dimensions: Research Mobilization, Unconventionality, Industry collaboration and University Policies. The psychometric properties of the instrument are good, so it may be used for research on IEO concept, in particular in higher education (HE) context. Such an instrument clarifies individual accountabilities and specifies measurable routines that add competitive value. This scale provides a method to assess differences between individuals within a HEI, enabling empirical research on differences between types of institutions, departments, roles, training and other characteristics that may influence the extent to which an individual performs entrepreneurial oriented behaviours. In sum, this study provides a reliable and valid instrument to evaluate Teachers and Researchers entrepreneurial orientation in European HEIs, and also in the American HEIs, although the size of the sample for the American continent.

IMO may be measured using three dimensions: Information Acquisition, Information Dissemination and Coordination of Strategic Response. The psychometric properties of the instrument are good, and can be used for research on IMO concept, in particular in higher education (HE) context. The instrument is validated for the European HEIs, and also for the American HEIs, although the sample used for the American continent.

Finally, this research contributes can be seen as one of a few recent studies to use confirmatory analysis to test IEO and IMO as a latent construct.

We also intend to verify whether teachers and researchers at HEIs are EO and MO, or not, and determine the impact in performance.

In what concerns the comparisons between European and American countries (only EUA and Brazil), we conclude, according with our sample, that there are no significant differences in IEO or IMO, depending on the Continent, type of HEI, qualifications, and teaching or research area. So we can deduce that IEO and IMO are not devalued in HE context, at least in the studied population.

Another objective of our study was to evaluate the relationships between IEO, IMO and performance.

We identified a positive relationship between individual entrepreneurial orientation and individual market orientation, in the HE context. Other studies had identified this relationship, suggesting that EO and MO complement one another, at least in small companies, to increase profitability. However, once again the analysis unit was the organisation (Baker & Sinkula, 2009).

Our research also supported the hypotheses that IMO has a positive impact on performance, in HE context. These results are in agreement to other previous studies. According to Kohli and Jaworski (1993), the consequences of market orientation affect performance, employees and clients in the organisation. To the authors, market orientation is a unifying element of efforts and projects of individuals and departments, leading to a higher performance. Thus, the greater the degree of orientation to the company's market the greater the performance. But, it's important to refer, once again, that the focus of this field literature, in terms of the unity of theory and empirical observation, is the organisation as a whole, and not the individual within the organisation (e.g.: Farrell, 2000; Han et al., 1998; Kohli & Jaworski, 1993; Narver & Slater, 1990).

Finally, we supported the hypotheses that IEO has a positive impact on performance, in HE context. These results are in agreement to previous studies we found, which mention the fact that the relationship between individual entrepreneurial orientation and individual performance is direct and positive (Zahra & Covin, 1995; Barrett & Weinstein, 1998).

One limitation of our study is related to the fact that the scales have not been applied universally, in different kinds of cultural contexts, and are validated only for HE context. It would be important to replicate the research using a larger sample, although we collected 435 responses from USA and Brazil, and 1338 from European countries. This can be one limitation of our research, since countries and regions are diverse in what concerns their characteristics, and only two countries represent the American Continent.

One other limitation is the low number of answers obtained from some European countries, and particularly from countries outside the European Union. In our opinion it would be important to compare European regions using a larger, and more equitable sample. Is known that there are differences in the higher education systems depending on region or country. So, it would be important to study these aspects in the European context.

In the future, using a larger sample, we should test the proposed model in Portuguese HEIs, and consider it to be also relevant to test it in Public and Private HEIs, separately, since

Private HEIs have sometimes more financial resources and different systems of education, they are expected to have more EO and MO teachers and researchers.

Furthermore, it is observed that the performance may be measured using four dimensions: linking organisational networks, transmitting organisational memory, elastic confidence, and innovation trait. Although the psychometric properties of the instrument not being the most appropriate, the results of some indices of adjustment, factorial and discriminant validity, allowed us to use this construct in the structure previously defined. In the beginning of this study, we found the performance dimensions proposed by Xiaowei (2006) to be the best to relate to the dimensions of EO and MO. In future studies it is convenient to use another scale to measure performance or develop a new one adapted to the context of HE.

To end we would like to emphasize the small amount of previous studies regarding IMO and the lack of studies regarding IEO, and the relation between both, which highlights the originality of this study, particularly in the HE context.

References

Aaker, D. A. (1988). *Strategic Market Management*. 2nd Ed., New York, NY, US: John Wiley &
Sons.

Almashari, M., Zairi, M., & Alathari, A. (2002). An empirical study of the impact of Knowledge
management on organizational Performance. *Journal of Computer Information
Systems*, 42(5), 74–82.

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

Baker, W. E., & Sinkula, J. M. (2009). Complementary Effects of Market Orientation and
Entrepreneurial Orientation on Profitability in Small Businesses. *Journal of Small
Business Management*, 47 (4), pp. 443-464.

Barksdale, H. C., & Darden, B. (1971). Marketers Attitudes Toward the Marketing Concept.
Journal of Marketing, 35(October), pp. 29-36.

Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of
Management*, 17 (1), pp. 99-120.

Barroso, C., Carrión, G. C., & Roldán, J. L. (2010). Applying Maximum Likelihood and PLS on
Different Sample Sizes: Studies on SERVQUAL Model and Employee Behavior Model. In
Handbook of Partial Least Squares, Springer Handbooks of Computational Statistics (pp.
427–447). London, United Kingdom: Springer-Verlag.

Barrett, H., & Weinstein, A. (1998). The Effect of Market Orientation and Organizational
flexibility on Corporate Entrepreneurship. *Entrepreneurship Theory & Practice*,
23(1,fall), pp. 57-70.

Basi, R. K. (1999). World Wide Web Response Rates to Socio-demographic Items. *Journal of
the Market Research Society*, 41 (4), pp. 397-401.

Becherer, R. C., & Maurer, J. C. (1997). The Moderating Effect of Environmental Variables on
the Entrepreneurial and Market Orientation of Entrepreneur-Led Firms.
Entrepreneurship Theory and Practice, 22 (1), pp.47-58.

Bonaccorsi, A., Brandt, T., Filippo, D. D., Lepori, B., Molinari, F., Schmoch, A. N. U.,
Schubert, T., *et al.* (2010). *Feasibility Study for Creating a European University Data
Collection*. European Commission, Research Directorate-General Directorate C -
European Research Area.

Boyer, K. K., Olson, J. R., Calantone, R. R., & Jackson, E. C. (2002). Print versus Electronic
Surveys: A Comparison of Two Data Collection Methodologies. *Journal of Operations
Management*, 20, pp. 357-373.

Box, R. C. (1999). Running government like a business: implications for public administration
theory and practice. *American Review of Public Administration*, 29 (1), pp.19-43.

Brannen, J. (2005). Mixing Methods: The Entry of Qualitative and Quantitative Approaches
into the Research Process. *International Journal Social Research Methodology*, 8 (3),
pp.173-184.

Braun, D., & Merrien, F. X. (1999). *Towards a new model of Governance for Universities. A
comparative view*. Higher Education Policies Series, Book 53, Jessica Kingsley
Publishers, London, United Kingdom.

Bugandwa MAD (2009). Is Market Orientation a Relevant Strategy for Higher Education Institutions? Context analysis and research agenda. *International Journal of Quality Service and Sciences*, 1 (3), pp. 311-333.

Bugandwa MAD (2013). Beyond market orientation: An operationalization of stakeholder orientation in higher education. *African Journal os Marketing Management*, 5 (3), pp. 68-81.

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin,* 56, pp. 81-105.

Campbell-Hunt, C. (2000). What have we learned about generic competitive strategy? a meta-analysis. *Strategic Management Journal*, 21 (2), pp. 127-154.

Cantillon, R. (1959). *Essai sur la Nature du Commerce en General*. Edited by Henry Higgs, C.B. Reissued for The Royal Economic Society by Frank Cass and Co., LTD., London.

Caruana, A., Ramaseshan, B., & Ewing, M. T. (1998a). Do Universities that are more market oriented perform better?. *The International Journal of Public Sector Management*, 1 (1), pp. 55-70.

Caruana, A., Ramaseshan, B., & Ewing, M. T. (1998b). The market oriented – performance link: some evidence from the Public Sector and Universities. *Journal of Nonprofit and Public Sector Marketing*, 6 (1), pp. 31-45.

Caruana A., Ewing, M. T., & Ramaseshan, B. (2002). Effects of some environmental challenges and centralization on the entrepreneurial orientation and performance of public sector entities. *Service Industries Journal*, 22 (2), pp.43–58.

Celuch, K. G., Kasouf, C. J., & Strieter, J. C. (2000). The influence of organizational market orientation onindividual-level market-oriented cognitions. *Psychology and Marketing*, 17 (11), pp. 935-954.

Cheng, E., Li, H., & Fox, P. (2007). Job performance dimensions for improving final project outcomes. *Journal of Construction Engineering & Management*, 133 (8), pp. 592-599.

Churchill, G. A. Jr. (1979). A Paradigm for Developing Better Measures of Marketing Constructs. *Journal of Marketing Research*, 16(february), pp. 64-73.

Clark, B. (1998). Creating Entrepreneurial Universities. Organizational Pathways of Transformation, Pergamon, Oxford.

Coulthard, M. (2007). The Role of Entrepreneurship Orientation on Firm Performance and the Potential Influence of Relational Dynamism. *Journal of Global Business and Technology*, 3 (1), pp. 29-39.

Covin, J. G., & Miles, M. P. (1999). Corporate entrepreneurship and the pursuit of competitive advantage. *Entrepreneurship Theory & Practice*, 23(3), pp. 47-63.

Covin, J. G., & Slevin, D. P. (1988). The influence of organization structure on the utility of an entrepreneurial top management style. *Journal of Management Studies*, 25(3), pp. 217-234.

Covin, J. G., & Slevin, D. P. (1989). Strategic Management of Small Firms in Hostile and Benign Environments. *Strategic Management Journal*, 10(January), pp. 75-87.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16, pp. 297-334.

Day, G. S. (1984). *Strategic Market Planning: the pursuit of competitive advantage*. New York, NY, US: West Publishing Company.

Darroch, J., & McNaughton, R. B. (2003). Beyond market orientation: knowledge management and the innovativeness of New Zealand firms. *European Journal of Marketing,* 3/4 (37), pp. 572-593.

Daud, S., Fadzilah, W., & Yusoff, W. (2010). SME's: the role of Social capital. *Asian Academy of Managment Journal*, 15(2), 135–155.

Davies, J. (2001). L'émergence des cultures d'entreprise dans les universities européennes. *Gestion de l'Enseignement Supérieur*, 3 (2), pp. 27-47.

Davis, J., Bell, R. G., Payne, G. T., & Kreiser, P. M. (2010). Entrepreneurial Orientation and Firm Performance: The Moderanting Role of Managerial Power. *American Journal of Business*, 25 (2), pp. 41-54.

Deng, S., & Dart, J. (1994). Measuring Market Orientation: a multi-factor, multi-item approach. *Journal of Marketing Management*, 10(8), pp. 725-742.

Dess, G., & Shaw, J. (2001). Voluntary turnover, social capital and organizational performance. *Academy of Management Review*, 26 (3), pp. 446-456.

Dickson, P. H., & Weaver, K. M. (1997). Environmental Determinants and Individual-Level Moderators of Alliance Use. *Academy of Management Journal*, 40 (2), pp. 404-425.

Dommeyer, C. J., & Moriarty, E. (1999). Comparing Two Forms of an E-mail Survey: Embedded vs. Attached. *International Journal ok Marketing Research*, 42 (1), pp. 39-50.

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

Farrell, M. A. (2000). Developing a Market-Oriented Learning Organisation. *Australian Journal of Management*; 25(2; September), pp. 201-222.

Ferreira, J., Neves, J., & Caetano, A. (2001). *Manual de Psicossociologia das Organizações*. Lisboa, PT: McGraw-Hill.

Ferreira, J. J. M. (2003). *Estudo do crescimento e desempenho da pequena empresa: A influência da orientação estratégia empreendedora*. Tese de Doutoramento, Covilhã, PT: Universidade da Beira Interior.

Flavian, C., & Lozano, J. (2006). Organizational antecedents of Market Orientation in the public university system. *International Journal of Public Sector Management*, 19 (5), pp. 447-467.

Foddy, W. (1996). *Como Perguntar – Teoria e Prática da Construção de Perguntas em Entrevistas e Questionários*. Oeiras, PT: Celta.

Fulk, J. (1993). Social construction of communication technology. *Academy of Management Journal*, 36, pp. 921-950.

Gerbing, D. W., & Anderson, J. C. (1988). An Updated Paradigm for Scale Development Incorporating Unidimensionality and its Assessment. *Journal of Marketing Research,* 25(may), pp. 186-192.

Gibbons, A., Rupp, D., Myungjoon, K., & Sang E. (2006). Perceptions of Managerial Performance Dimensions in Korea. *Psychologist-Manager Journal*, 9 (2), pp. 125-143.

Ghiglione, R., & Matalon, B. (1997). *O Inquérito: Teoria e prática*. Oeiras, PT: Celta.

Hair, J. F., Black, B., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate Data Analysis*. (6th Ed.) New Jersey, NJ, US: Pearson Education, Inc.

Hair, J. F., Black, B., Babin, B.J., Anderson, R. E., & Tatham, R. L. (2010). *Multivariate Data Analysis* (7th Ed.). London, United Kingdom: Pearson Prentice Hall.

Hammon, K., Webster, R., & Hamon, H. (2006). Market Orientation, top management emphasis, and performance within university school of business: implications for universities. *Journal of Marketing Theory Practice*, 14(1).

Han, J. K., Kim, N., & Srivastava, R. K. (1998). Market Orientation and Organizational Performance: Is Innovation a Missing Link?. *Journal of Marketing*, 62(October), pp. 30-45.

Hardesty, D. M., & Bearden, W. O. (2004). The use of expert judges in scale development: implications for improving face validity of measures of un observable constructs. *Journal of Business Research*, 57, pp. 98-107.

Harris, L.C., & Ogbonna, E. (2001). Leadership style and market orientation: an empirical study. *European Journal of Marketing,* 35 (5/6), pp.744-764.

Haug, G. (2001/2002). *L'employabilité en Europe, dimension-clé du processus de convergence vers un espace universitaire européen*. Université et professionnalisation, Politiques d'Education et de formation: analyses et comparaisons internationals, De Boeck Université, Bruxelles, 2001.

Heavey, C., Halliday, S. V., Gilbert, D., & Murphy, E. (2011). Enhancing Performance: bringing Trust, Commitment and Motivation together in organisations. *Journal of General Management*, 36(3), 1–18.

Helfert, G., Ritter, T., & Walter, A. (2002). Redefining market orientation from a relationship perspective: theoretical considerations and empirical results. *European Journal of Marketing,* 36 (9), pp. 1119-39.

Hemsley-Brown J., & Oplatka, I. (2010). Market orientation in universities: A comparative study of two national higher education systems. *International Journal Education Management*, 23(3).

Hills, G. E., & LaForge, R. W. (1992). Research at the Marketing Interface to Advance Entrepreneurship Theory. *Entrepreneurship Theory & Practice* (Spring), pp. 33-59.

Hornsby, J. S., Kuratko, D. F., & Zahra, S. A. (2002). Middle manager`s perception of the internal for corporate entrepreneurship: assessing a measurement scale. *Journal of Business Venturing*, 171, pp. 253-273.

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.

Jaworski, B. J., & Kohli, A. K. (1993). Market Orientation: Antecedents and Consequences. *Journal of Marketing*, 57(Jul), pp. 53-70.

Jonghe, A. M., & Vloeberghs, D. (2001). *Towards a more Holistic Approach of Quality Management in Universities in the E.U.*, in Strategic Analysis of Universities: Microeconomic and Management prespectives, ed. By Dewatripont, M., Thys-Clement, F. and Wilkin, L., ed. De L'Université de Bruxelles.

Jorge, F. F. G. (2009). *Inovação, Tecnologia e Competitividade na Indústria Alimentar em Portugal*. Tese Mestrado, Lisboa, PT: Universidade Técnica de Lisboa.

Kent, R., & Lee, M. (1999). Using the Internet for Market Research: A Study of Private Trading on the Internet. *Journal of the Market Research Society*, 41(4), pp. 377-385.

Khandwalla, P. (1977). *The Design of Organizations*. New York, NY, US: Harcourt Brace Javanovich.

Kirp, D. (2003). *Shakespeare, Einstein and the Buttom Line: The Marketing of Higher Education*. Cambridge, MA: Harvard University Press.

Knight, G. A. (1997). Cross-cultural reliability and validity of a scale to measure firm entrepreneurial orientation. *Journal of Business Venturing*, 12 (3), pp. 213–225.

Kohli, A. K., & Jaworski, B. J. (1990a). Market Orientation: The Construct, Research Propositions, and Managerial Implications. *Journal of Marketing*, 54(2, Apr), pp. 1-18.

Kohli, A. K., & Jaworski, B. J. (1990b). *Market Orientation: The Construct, Research Propositions, and Managerial Implications*. Cambridge, MA: Marketing Science Institute (Working paper 90-113).

Kohli, A. K., & Jaworski, B. J. (1993). Market Orientation: Antecedents and Consequences. *Journal of Marketing*, 57 (3, Jul), pp. 53-70.

Kohli, A. K., Jaworski, B. J., & Kumar, Ajith (1993). MARKOR: A measure of Market Orientation. *Journal of Marketing Research*, 30(4, Nov), pp. 467-477.

Kotler, P. (1977). From Sales Obsession to Marketing Effectiveness. *Harvard Business Review*, 55(Nov-Dec), pp. 67-75.

Kotler, P. (1998). *Administração de Marketing: análise, planejamento, implementação e controle*. (5ª ed.), São Paulo, Br: Atlas.

Kreiser, P. M., Marino, L. D., & Weaver, K. M. (2002). Assessing the psychometric properties of the entrepreneurial orientation scale: A multi-country analysis. *Entrepreneurship Theory & Practice*, 26 (4, Summer), pp. 71-94.

Lakatos, E. M., & Marconi, M. A. (1996). *Fundamentos de Metodologia Científica*. 3.ª Edição, S. Paulo, Br: Atlas.

Langerak, F. (2001a). The relationship between customer and supplier perceptions of the manufacturer's market orientation and its business performance. *International Journal of Market Research*, 43(Quarter 1), pp. 43-62.

Langerak, F. (2001b). Effects of market orientation on the behaviours of salespersons and purchasers, channel relationships, and performance of manufacturer. *International Journal of Research in Marketing*, 18(3), pp. 221-234.

Langerak, F. (2003). An appraisal of research on the predictive power of market orientation. *European Management Journal,* 21 (49), pp. 447-64.

Levitt, T. (1960). Marketing Myopia. *Harvard Business Review*, 38 (4), pp. 45-56.

Levitt, T. (1980). Marketing Success Through Differentiation of Anything. *Harvard Business Review*, 58(Jan-Fev), pp. 83-91.

Liao, J. J., Kickul, J., & Ma, H. (2009). Organizational Dynamic Capability and Innovation: An Empirical Examination of Internet Firms. *Journal of Small Business Management,* 47 (3, Jul), pp. 263-286.

Lumpkin, G. T., & Dess, G. G. (1996). Enriching the entrepreneurial orientation construct - a reply to "Entrepreneurial Orientation or Pioneer Advantage. *Academy of Management Review*, 21(3, july), pp. 605-607.

Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the Entrepreneurial Orientation Construct and linking it to Performance. *Academy of Management Review*, 21 (1), pp. 135-172.

Lumpkin, G. T., & Dess, G. G. (2001). Linking two dimensions of entrepreneurial orientation to firm performance: The moderating role of environment and industry life cycle. *Journal of Business Venturing*, 16, pp. 429-451.

Lyon, D., Lumpkin, G., & Dess, G. (2000). Enhancing entrepreneurial orientation research: operationalizing and measuring a key strategic decision making process. *Journal of Management*, 26, pp. 1055-1085.

Maringe, F., & Gibbs, P. (2009). *Marketing Higher Education: Theory and Practice*. England, UK: Open University Press, McGraw-Hill Education.

Marôco, J. (2010). *Análise de Equações Estruturais: Fundamentos teóricos, Software & Aplicações*. Portugal, PT: ReportNumber, Lda.

Marôco, J. (2010). *Análise Estatística – com utilização do SPSS*. 3ªEd., Portugal, PT: Edições Sílabo, Lda.

Matsuno, K., Mentzer, J. T., & Özsomer, A. (2002). The Effects of Entrepreneurial Proclivity and Market Orientation on Business Performance. *Journal of Marketing*, 66(3, July), pp. 18-32.

Mehta, R., & Sivadas, E. (1995). Comparing response rates and response content in mail versus electronic mail surveys. *Journal of the Market Research Society*, 37 (4), pp. 429-439.

Mentoor, E. R., & Friedrich, C. (2007). Is entrepreneurial education at South African universities successful? An empirical example. *Industry & Higher Education*, 21 (3), pp. 221–232.

Miles, R. E., & Snow, C. C. (1978). *Organizational strategy, structure and process*. New York, NY, US: McGraw Hill.

Miller, D., & Friesen, P. H. (1978). Archetypes of strategy formulation. *Management Science,* 24(9), pp. 921-933.

Miller, D., & Friesen, P. H. (1982). Innovation in conservative and entrepreneurial firms: Two models of strategic momentum. *Strategic Management Journal*, 3(January-March), pp. 1-25.

Miller, D. (1983). The Correlates of entrepreneurship in Three types of Firms. *Management Science*, 29 (7, July), pp.770-791.

Mintzberg, H. (1973). Strategy-making in three modes. *California Management Review*, 16(2), pp. 44-53.

Mintzberg, H., & Rose, J. (2003). Strategic management upside down: tracking strategies at McGill University from 1829 to 1980. *Canadian Journal of Administrative Sciences*, 20 (4), pp. 27-290.

Morris, M. H., & Jones, F. F. (1999). Entrepreneurship in established organizations: the case of the public sector. *Entrepreneurship Theory and Practice*, 24 (1), pp. 71–91.

Mowery, D. C., & Shane, S. (2002). Introduction to the special issue on university entrepreneurship and technology transfer. *Management Science*, 48 (1), pp. 5-9.

Narver, J. C., & Slater, S. F. (1990). The effect of a Market Orientation on Business Profitability. *Journal of Marketing*, 54(Oct), pp. 20-35.

Nelson, R., & Winter, S. (1982). *An evolutionary theory of economic theory and capabilities*. Cambridge, MA: Harvard University Press.

Newbert, S. L. (2008). Value, Rareness, Competitive Advantage, and Performance: A Conceptual-Level Emprirical Investigation of the Resource-Based View of the Firm. *Strategic Management Journal*, 29, pp. 745-768.

Norton, W. I. Jr., & Moore, W. T. (2002). Entrepreneurial Risk: Have We Been Asking the Wrong Question?. *Small Business Economics*, 18, pp. 281-287.

Nunnaly, J.C., & Bernstein, I. H. (1994). *Psychometric Theory*. 3rd. Ed., New York, NY, US: McGraw Hill.

Ohmae, K. (1982). *The Mind of the Strategist*. New York, NY, US: McGraw Hill.

O'Shea, R. P. *et al*. (2005). Entrepreneurial orientation, technology transfer and spinoff performance of U.S. Universities. *Research Policy*, 34 (7), pp. 994–1009.

O'Shea, R. P. *et al*. (2007). Delineating the anatomy of an entrepreneurial university: the Massachusetts institute of technology experience. *R&D Management*, 37 (1), pp. 1–17.

Palich, L., & Bagby, D. (1995). Using cognitive theory to explain entrepreneurial risk-taking: Challenging conventional wisdom. *Journal of Business Venturing*, 10, pp. 425-438.

Pilati, R., & Laros, J. (2007). Modelos de equações estruturais em psicologia: conceitos e aplicações. *Revista Psicologia: Teoria e Pesquisa*, 23 (2), pp. 205-216.

Pettijohn, C. E., & Pettijohn, L. S. (2002). The influence of salesperson skill, motivation, and training on the practice of customer-oriented selling. *Psychology and Marketing*, 19 (9), pp. 743-57.

Pohlmann, M. (2005). The Evolution of Innovation: Cultural Backgrounds and the Use of Innovation Models. *Technology Analysis and Strategic Management*, 17 (1), pp. 9-19.

Polit, D., & Hungler, B. (1995). *Fundamentos de Pesquisa de Enfermagem*. Porto Alegre: Artes Médicas, Portugal.

Porter, E., Lawler, E., & Hackman, R. (1975). *Behavior in Organizations*. Tokio: McGraw-Hill.

Porter, M. E. (1980). *Competitive Strategy*. New York, NY, US: The Free Press.

Porter, M. E. (1985). *Competitive Advantage*. New York, NY, US: The Free Press.

Prahalad, C. K., & Hamel, G. (1994). *Competindo pelo Futuro*. Harvard Business School Press – *Editora Campus*.

Quivy, R., Campenhoudt, & LucVan (1998). *Manual de Investigação em Ciências Sociais*. 2.ª Edição, PT: Gradiva.

Rip, A. (2002). Regional innovation systems and the advent of strategic science. *Journal of Technology Transfer*, 27 (1), pp. 123-131.

Ripsas, S. (1998). Towards an Interdisciplinary Theory of Entrepreneurship. *Small Business Economics*, 10, pp. 103–115.

Rodrigues, R. G. (2004). *Orientação Para o Mercado, Orientação Empreendedora e Desempenho nas PME Industriais Portuguesas: Exploração da Relação entre Marketing e Empreendedorismo*. Tese de Doutoramento, Covilhã, PT: Universidade da Beira Interior.

Rutherford, M. W. (2007). Corporate entrepreneurship: An empirical look at the innovativeness dimension and its antecedents. *Journal of Organizational Change Management*, 20 (*3*), pp. 429-446.

Salgado, J., Moscoso, S., & Lado, M. (2003). Test–retest reliability of ratings of job performance dimensions in managers. *International Journal of Selection & Assessment*, 11 (1), pp. 98-101.

Said, H., Badru, B. B., & Shahid. M. (2011). Confirmatory Factor Analysis (Cfa) for Testing Validity and Reliability Instrument in the Study of Education. *Australian Journal of Basic and Applied Sciences*, 5 (12), pp. 1098-1103.

Say, Jean-Baptiste (1840). *Cours complet d'economie politique pratique*; in "Textes Choisis. P. L. Reynaud, Librairie Dalloz, 1953.

Schaefer, D. R., & Dillman, D. A. (1998). Development of a Standard E-mail Methodology: Results of an Experiment. *Public Opinion Quarterly*, 62, pp. 378-397.

Shih, Tse-Hua, & Fan, X. (2009). Comparing Response Rates in E-mail Survey and Paper Surveys: A Meta-analysis. *Educational Research Review*, 4, pp. 26-40.

Schlosser, F., & McNaughton, R. (2007). Individual-level antecedents to market-oriented actions. *Journal of Business Research*, 60, pp. 438-446.

Schlosser, F., & McNaughton, R. (2009). Using the I-MARKOR scale to identify market-oriented individuals in the financial services sector. *Journal of Services Marketing*, 23/4, pp. 236–248.

Scimago Research Group (2012). *Scimago Institutions Rankings – World Report 2012: Global Ranking*. Data Source: SCOPUS.

Shumpeter, E. B. (1938). English Prices and Public Finances, 1660-1822. *Review of Economics and Statistics,* 20 (1), pp. 21-37.

Schumpeter, J. A. (1934). *Theory of Economic Development: Na inquiry into profits, capital, interest and business cycle*. Cambridge, MA: Harvard University Press.

Schumpeter, J. A. (1939). *Business Cycles*. New York, NY, US: McGraw-Hill.

Singh, R. K., & Garg, S. K. (2008). Strategy development by SMEs for competitiveness: a review. *Benchmarking: An International Journal*, 15(5), pp. 525- 547.

Slater, S. F., & Narver, J. C. (1999). Market-oriented is more than being customer-led. *Strategic Management Journal*, 20 (12), pp. 1165-1168.

Slater, S. F., & Narver, J. C. (2000). The Positive Effect of a Market Orientation on Business Profitability: A Balanced Replication. *Journal of Business Research*, 48 (1, Ab), pp. 69-73.

Sonnentag, S., & Frese, M. (2002). *Performance concepts*. In S. Sonnentag (Ed.), Psychological Management of Individual Performance: A Handbook in the Psychology of Management in Organizations (pp. 3–25). West Sussex: John Wiley & Sons.

Stevenson, H. H., & Jarillo, J. C. (1990). A Paradigm of Entrepreneurship: Entrepreneurial Management. *Strategic Management Journal*, 11(Summer Special Issue), pp. 17-27.

Teece, D. (2007). Explicating Dynamic Capabilities: The Nature and Micro-Foundations of (Sustainable) Enterprise Performance. *Strategic Management Journal,* 28, pp. 1319-1350.

Teece, D., Pisano, & Shuen (1997). Dynamics Capabilities and Strategic Management. *Strategic Management Journal*, 18 (7), pp. 509-533.

Todorovic, Z. W., McNaughton, R. B., & Guild, P. (2005). Making university departments more entrepreneurial: the perspective from within. *International Journal of Entrepreneurship&Innovation*, 6 (2), pp. 115-122.

Todorovic, Z. W., McNaughton, R. B., & Guild, P. (2011). ENTRE-U: An entrepreneurial orientation scale for universities. *Technovation*, 31, pp. 128-137.

Tse, A. C. B. *et al.* (1995). Comparing two methods of sending out questionnaires; E-mail versus mail. *Journal of Market Research Society*, 37 (4), pp. 441-446.

Venkatraman, N. (1989). Strategic Orientation of Business Enterprises: the Construct, Dimensionality and Measurement. *Management Science*, 35(8), pp. 942-962.

Viswesvaran, C. (2001). Assessment of individual job performance: a review of the past century and a look ahead, in N. Anderson, D. Ones, H. Sinangil e C. Viswesvaran (Eds.). *Handbook of Industrial, Work and Organizational Psychology* (Vol. 1, Cap. 6, pp.110-126). London, UK: SAGE Publications.

Wasmer, D. J., & Bruner, G. C. (1999). The antecedents of the Marketing orientation in Higher Education. *Journal of Marketing for Higher Education*.

Webster, R. L., Hammond, K. L., & Harmon, H. A. (2006). A study of Market Orientation in American Business Schools. *Academy of Marketing Studies Journal*, 10 (2), pp. 9.

Wood, R., & Bandura, A. (1989). Social cognitive theory of organizational management. Academy of Management Review, 14 (3), pp. 361-384.

Xiaowei, L. (2006). A test on the systematic fuzzy measures of the key degree for the core employees & performance traits. *Canadian Social Science*, 2 (5), pp. 38-43.

Zahra, S. A., & Covin, J. G. (1995). Contextual influences on the corporate entrepreneurship-performance relationship: A longitudinal analysis. *Journal of Business Venturing*, 10, pp.43-58.

Zahra, S. A., & Neubaum, D. O. (1998). Environemental Adversity and the Entrepreneurial Activities of the New Ventures. *Journal of Developmental Entrepreneurship*, 3 (2), pp. 23-140.

Zajonc, R. (1974). *Psicologia Social do ponto de vista experimental*. São Paulo, BR: Editora Pedagógica e Universitária.

Appendices

APPENDIX A - QUESTIONNAIRE

ORIENTATION OF TEACHERS AND RESEARCHERS IN HIGHER EDUCATION INSTITUTIONS

The following questionnaire was developed with the purpose of studying the Orientation of Teachers and Researchers in Higher Education Institutions.

When completing the questionnaire, you should take into account that:
1. Most questions were designed to be answered through an intensity scale that characterizes the perception/opinion about a certain matter and will only take 10-15 minutes of your time;
2. The person answering the questionnaire must be a teacher or a researcher in a Higher Education Institution;
3. It is very important to answer all questions, so that the questionnaire can be valid for statistical treatment;
4. There are no correct or incorrect answers. The goal is to know your opinion;
5. The answers are completely confidential and anonymous.

*Obrigatório

Page 1 of 5

Below, are some statements regarding how you feel/are entrepreneurial in your work.

Please indicate the best answer for each of the following statements, given that 1 means "strongly disagree", 2 means "disagree", 3 means "slightly disagree", 4 means "neither agree nor disagree", 5 means "slightly agree", 6 means "agree" and 7 means "strongly agree."

1. I encourage our graduate students to engage in research with significant implications for industry or society. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

2. I encourage students to seek practical applications for their research. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

3. I emphasize applied research. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

4. Compared to other researchers, I tend to make a contribution to industry or society.
*

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

5. I conduct research in partnership with non-academic professionals. *
Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

6. I expected to make substantial contributions to industry or society. *
Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

7. Cooperation with organizations outside my Institution significantly improves my research activities. *
Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

8. I often seek research opportunities out side the traditional higher education environment. *
Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

9. I seek significant funding from sources other than the Government Agency (financial policy to support research and scholarships in Higher Educations Institutions), in my country. *
Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

10. Compared to other similar researchers in our province, I am known as very efficient and productive researcher. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	⬭	⬭	⬭	⬭	⬭	⬭	⬭	Strongly agree

11. I try to generate off-campus benefits from research projects. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	⬭	⬭	⬭	⬭	⬭	⬭	⬭	Strongly agree

12. Compared to other similar researchers in this province, I am good at identifying new opportunities. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	⬭	⬭	⬭	⬭	⬭	⬭	⬭	Strongly agree

13. I support our faculty members collaborating with non-academic professionals. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	⬭	⬭	⬭	⬭	⬭	⬭	⬭	Strongly agree

14.When I come up on a unconventional new idea, I usually let some one else try it and see what happens. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	⬭	⬭	⬭	⬭	⬭	⬭	⬭	Strongly agree

15. I encourage industry involvement in my research activities. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	⬭	⬭	⬭	⬭	⬭	⬭	⬭	Strongly agree

16. My research is highly regarded by industry. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

17. I am recognized by industry or society for my flexibility and innovativeness. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

18. I believe that our department should build relationships with private or public sector organizations. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

19. My graduate students often secure high quality industry positions. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

20. I feel that Institutional-wide policies at my Institution contribute substantially to wards my department achieving its goals and objectives. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

21. My institucional policies are best described as developed ''bottom-up'' using feedback from all levels of the Institution. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

22. Compared to most other Higher Education Institutions mine is very responsive to new ideas and innovative approaches. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

23. My department is given significant latitude when evaluating faculty members performance. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

Page 2 of 5

Below, are some statements regarding how you feel/are market oriented in your work.

Please indicate the best answer for each of the following statements, given that 1 means "strongly disagree", 2 means "disagree", 3 means "slightly disagree", 4 means "neither agree nor disagree", 5 means "slightly agree", 6 means "agree" and 7 means "strongly agree."

1. I ask students to assess the quality of our services. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

2. I interact with agencies to find out what services students and organizations will need in the future. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

3. In my communication with my colleagues   I periodically review the likely effect of changes in our education environment on students . *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

4. I take responsibility to detect fundamental shifts in our industry (e.g. competition, technology, regulation) in my communication with colleagues. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

5. I talk to or survey those who can influence our students' choices. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

6. I review our service development efforts with colleagues to ensure that they are in line with what students want. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

7. I participate in informal "hall talk" that concerns our competitors' tactics or strategies. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

8. I collect industry information through informal means (e.g. lunch with industry friends, talks with trade partners). *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

9. I participate in interdepartmental meetings to discuss market trends and developments. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

10. I let appropriate departments know when I find out that something important has happened in the market. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

11. I coordinate my activities with the activities of colleagues or departments in this organisation. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

12. I pass on information that could help organisation decision-makers to review changes taking place in our environment. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

13. I communicate market developments to departments other than marketing (or equivalent). *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

14. I communicate with our marketing department (or equivalent - e.g. organic units) concerning market developments. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

15. I try to circulate documents (e.g. e-mails, reports, newsletters) that provide information on students to appropriate departments. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	( )	( )	( )	( )	( )	( )	( )	Strongly agree

16. I try to bring a student with a problem together with a service or person that helps the student to solve that problem. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	( )	( )	( )	( )	( )	( )	( )	Strongly agree

17. I try to help students achieve their goals. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	( )	( )	( )	( )	( )	( )	( )	Strongly agree

18. I respond quickly if a students has any problems with our offerings. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	( )	( )	( )	( )	( )	( )	( )	Strongly agree

19. I take action when I find out that students are unhappy with the quality of our service. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	( )	( )	( )	( )	( )	( )	( )	Strongly agree

20. I jointly develop solutions for students with my colleagues. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	( )	( )	( )	( )	( )	( )	( )	Strongly agree

Page 3 of 5

Below, are some statements regarding how you plays normally your work. Consider 'working group' group of people with which meets more frequently to perform tasks such as, for example, the coordination of activities.

Please indicate the best answer for each of the following statements, given that 1 means "strongly disagree", 2 means "disagree", 3 means "slightly disagree", 4 means "neither agree nor disagree", 5 means "slightly agree", 6 means "agree" and 7 means "strongly agree."

1. I have been establishing good relationships with many important people in and out of my work unit and when there are persistent problems, I'm the one who frequently turns to those people and ask for help to solve them. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

2. Usually, I'm extremely worried about issues (like training) related to the development of our work unit in order to link the co-workers who have potential value. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

3. I am sensible when there are conflicts with others and I easily adopt an opposite position to make constructive solutions. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

4. I frequently communicate the important decisions and the planning of our unit but, if I'm absent, the others cannot make it work as it was previously planned. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

5. When communicated by me, knowledge, experience and the effective ways of doing things can be, usually applied in an innovative way by others. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

6. If I have an idea of how to do certain tasks, I will not allow others to influence them. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

7. Frequently, I'm authorized by the organisation leaders and colleagues to complete tasks with power and commitment. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

8. I sincerely hope that there are effective ways of monitoring what the others do when they are doing something without a direct reward. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

9. I am inclined to deliver key tasks to my unit members even when I can't monitor them. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

10. I prefer working with my work unit, where I can adopt several roles and appreciate the decision making, when there is a total co-operative relationship and not an intensive organizational hierarchy. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

11. My work is so independent that there usually is no need for me to co-operate with others. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

12. More than 60% of my achievements require other people's contribution. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

13. The reward for my work has no connection to what the others do (if I want to have some turnover). *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

14. It will be very difficult to find someone to substitute me since few people are qualified enough to occupy my place in my unit. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

15. Most of my colleagues can solve problems that I can't. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

16. I feel prone to planning the work and doing it the same way I usually did. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	○	○	○	○	○	○	○	Strongly agree

17. I feel inclined to discussing ideas of different points of view with my supervisor and co-workers, even with those that may make me uncertain. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

18. I'm willing to spend more time and energy and to ask the organization for more support on the new things valuable. *

Marcar apenas uma oval.

	1	2	3	4	5	6	7	
Strongly disagree	◯	◯	◯	◯	◯	◯	◯	Strongly agree

PERSONAL DATA (page 5 of 5)

Type of Institution *
Marcar apenas uma oval.

( ) Public

( ) Private

( ) Other

If you chose "other", please specify

....

Type of Education *
Marcar apenas uma oval.

( ) University

( ) Polytechnic

( ) Specialized School

( ) College

( ) Other

If you chose "other", please specify

....

Country *

....

Qualifications *
Marcar apenas uma oval.

( ) Bacharol Degree

( ) Foundation Degree

( ) Graduation Degree

( ) Master Degree

( ) Ph.D Degree

( ) Other

If you chose "other", please specify

....

Main teaching area *

Marcar apenas uma oval.

◯ Agricultural sciences

◯ Anthropology

◯ Architecture

◯ Arts

◯ Astronomy

◯ Biological sciences

◯ Business and management

◯ Chemistry

◯ Communication sciences

◯ Computer science

◯ Criminology

◯ Cultural studies

◯ Demography

◯ Economics

◯ Educational sciences

◯ Engineering

◯ Environmental science

◯ Geography

◯ History

◯ Information science

◯ Juridical sciences

◯ Language sciences

◯ Literature

◯ Mathematics

◯ Medical sciences

◯ Neurosciences

◯ Pharmacological sciences

◯ Philosophy

◯ Physics

◯ Political sciences

◯ Psychological sciences

◯ Religious Sciences

◯ Sociology

◯ Technology

◯ Other

If you chose "other", please specify

Main researching area *

Marcar apenas uma oval.

○ Agricultural sciences

○ Anthropology

○ Architecture

○ Arts

○ Astronomy

○ Biological sciences

○ Business and management

○ Chemistry

○ Communication sciences

○ Computer science

○ Criminology

○ Cultural studies

○ Demography

○ Economics

○ Educational sciences

○ Engineering

○ Environmental science

○ Geography

○ History

○ Information science

○ Juridical sciences

○ Language sciences

○ Literature

○ Mathematics

○ Medical sciences

○ Neurosciences

○ Pharmacological sciences

○ Philosophy

○ Physics

○ Political sciences

○ Psychological sciences

○ Religious Sciences

○ Sociology

○ Technology

○ Other

If you chose "other", please specify

....

Length of academic career (number of years) *

....

Age

....

Gender

Marcar apenas uma oval.

◯ Female

◯ Male

THANK YOU VERY MUCH FOR YOUR COLLABORATION!

If you would like to receive a summary of the results obtained in this investigation, please indicate your e-mail.

....

APPENDIX B – REQUEST SENT TO HEIs

Dear Sir/Madam,

I would appreciate the divulgation of the following message to all the Lecturers in the institution. Thank you for your consideration.
Yours faithfully,
Teresa Felgueira

Dear Professor,

I'm a Ph.D. student in Management, at the University of Beira Interior, in Portugal.
I'm developing my thesis, studying Orientation of Teachers and Researchers in the context of Higher Education.
I'm asking all Lecturers to participate in my investigation, regardless of their field of training/research.
The data gathered is completely anonymous and confidential and will only take 10-15 minutes of your time.
To fill out the questionnaire, you must access the link below.

https://docs.google.com/forms/d/1OG-10m3IF9ZhAGXoDH3rHkY8LTJQzs75XHvpzcCTSAk/viewform

Your collaboration would be of the most importance to my investigation.

Thank you for all your consideration.
Yours faithfully,

Teresa Felgueira
Assistant Professor - UTC Business and Economics

School of Technology and Management
Polytechnic Institute of Guarda
Av.ª Dr. Francisco Sá Carneiro, n.º 50
6300-559 Guarda
PORTUGAL
Tel. +351271 220 120 Ext:1229 Fax +351271 220 150
email: tfelgueira@ipg.pt
url: www.estg.ipg.pt

Ph.D. Advisor: Professor Ricardo Gouveia Rodrigues

Contact: rgrodrigues@ubi.pt Webpage: https://www.ubi.pt/SSL/Pagina_Pessoal.aspx?id=rjagr

University Webpage: https://www.ubi.pt/Index.aspx

APPENDIX C – INDIVIDUAL REQUEST SENT TO THE LECTURING STAFF

Dear Professor,

I'm a Ph.D. student in Management, at the University of Beira Interior, in Portugal.

I'm developing my thesis, studying Orientation of Teachers and Researchers in the context of Higher Education.

I'm asking all Lecturing staff to participate in my investigation, regardless of their field of training/research.

The data gathered is completely anonymous and confidential and will take only 10-15 minutes of your time.

To fill out the questionnaire, you must access the link below.

https://docs.google.com/forms/d/1OG-10m3IF9ZhAGXoDH3rHkY8LTJQzs75XHvpzcCTSAk/viewform

NOTE: If you are not a teacher ou researcher, please ignore this message. However, if possible, you could spread it to people that are in the lecturing area. Thank you for your consideration.

Your collaboration would be of the most importance to my investigation.

Thank you for all your consideration.

Yours faithfully,

Teresa Felgueira
Assistant Professor - UTC Business and Economics

School of Technology and Management
Polytechnic Institute of Guarda
Av.ª Dr. Francisco Sá Carneiro, n.º 50
6300-559 Guarda
PORTUGAL
Tel. +351271 220 120 Ext:1229 Fax +351271 220 150
email: tfelgueira@ipg.pt
url: www.estg.ipg.pt

Ph.D. Advisor: Professor Ricardo Gouveia Rodrigues

Contact: rgrodrigues@ubi.pt Webpage: https://www.ubi.pt/SSL/Pagina_Pessoal.aspx?id=rjagr

University Webpage: https://www.ubi.pt/Index.aspx

APPENDIX D - I-ENTRE-U: Entrepreneurial Orientation Scale

for Teachers&Researchers in HEIs

Research Mobilization (RM)

1. I encourage our graduate students to engage in research with significant implications for industry or society

2. I encourage students to seek practical applications for their research

3. I emphasize applied research

4. Compared to other researchers, I tend to make a contribution to industry or society

5. I conduct research in partnership with non-academic professionals

6. I expected to make substantial contributions to industry or society

Unconventionality (UC)

1. Cooperation with organizations outside my Institution significantly improves my research activities

2. I often seek research opportunities out side the traditional higher education environment

3. I seek significant funding from sources other than the Government Agency (financial policy to support research and scholarships in Higher Educations Institutions), in my country

4. I try to generate off-campus benefits from research projects

5. Compared to other similar researchers in this province, I am good at identifying new opportunities

6. I support our faculty members collaborating with non-academic professionals

Industry Collaboration (IC)

1. I encourage industry involvement in my research activities

2. My research is highly regarded by industry

3. I am recognized by industry or society for my flexibility and innovativeness

4. My graduate students often secure high quality industry positions

University Policies (UP)

1. I feel that Institutional-wide policies at my Institution contribute substantially to wards my department achieving its goals and objectives

2. My institicional policies are best described as developed ''bottom-up'' using feedback from all levels of the Institution

3. Compared to most other Higher Education Institutions, mine is very responsive to new ideas and innovative approaches

4. My department is given significant latitude when evaluating faculty members performance

APPENDIX E - I-MARKOR: Market Orientation Scale for Teachers&Researchers in HEIs

Information acquisition (IA)

1. I interact with agencies to find out what services students and organizations will need in the future

2. In my communication with my colleagues , I periodically review the likely effect of changes in our education environment on students

3. I take responsibility to detect fundamental shifts in our industry (e.g. competition, technology, regulation) in my communication with colleagues

4. I talk to or survey those who can influence our students' choices

5. I review our service development efforts with colleagues to ensure that they are in line with what students want

6. I participate in informal "hall talk" that concerns our competitors' tactics or strategies

7. I collect industry information through informal means (e.g. lunch with industry friends, talks with trade partners)

Information dissemination (ID)

1. I participate in interdepartmental meetings to discuss market trends and developments

2. I let appropriate departments know when I find out that something important has happened in the market

3. I coordinate my activities with the activities of colleagues or departments in this organisation

4. I pass on information that could help organisation decision-makers to review changes taking place in our environment

5. I communicate market developments to departments other than marketing (or equivalent)

6. I communicate with our marketing department (or equivalent - e.g. organic units) concerning market developments

7. I try to circulate documents (e.g. e-mails, reports, newsletters) that provide information on students to appropriate departments

Co-ordination of strategic response (SR)

1. I try to bring a student with a problem together with a service or person that helps the student to solve that problema

2. I try to help students achieve their goals

3. I respond quickly if a students has any problems with our offerings

4. I take action when I find out that students are unhappy with the quality of our servisse

5. I jointly develop solutions for students with my colleagues

Publications

Conference Proceedings

Felgueira, T., Vital F., & Silva, M. J. (2010). Actividades de I&D: Principais Determinantes da Capacidade Inovadora de Marketing. *Proceeding of the IASK International Conference - Global Management 2010*, Oviedo, pp. 628-637.

Felgueira, T. & Rodrigues, R. G. (2012). Entrepreneurial orientation, market orientation and performance of teachers and researchers in public higher education institutions. *Abstract Book of the 11th International Congress on Public and Non-Profit Marketing: Ethics, Sustainable Consumption and Other Current Challenges for Public and Non-Profit Marketing*, Vilnius, p. 36.

Felgueira, T. & Rodrigues, R. G. (2013). An Entrepreneurial Orientation Scale for Teachers and Researchers in Higher Education Institutions. *Proceedings Book for the Conference on Enabling Teachers for Entrepreneurship Education (ENTENP2013)*, Guarda, pp. 163-172.

Felgueira, T. & Rodrigues, R. G. (2013). An Adaptation of the I-MARKOR Scale to Identify Market Oriented Teachers and Researches in Higher Education Institutions. *2013 EGPA Annual Conference, PSG XVI: Public Sector and Nonprofit Marketing,* Edinburgh.

Felgueira, T. & Rodrigues, R. G. (2014). Market Orientation of Teachers and Researchers in Higher Education Institutions: a new approach. *Inte-2014 Internacional Conference on New Horizons in Education*, Paris.

Fernandes, A., Felgueira, T. & Lourenço, L. (2010). Quality, Entrepreneurial Orientation and Performance: an exploratory study. *Proceedings of the 13th Toulon-Verona Conference "Excellence in Services"*, Coimbra, pp. 527-539.

Journal Articles

Felgueira, T. & Rodrigues, R. G. (2012). Entrepreneurial orientation, market orientation and performance of teachers and researchers in public higher education institutions. *Public Policy and Administration,* 11(4), pp. 703-718.

Felgueira, T. & Rodrigues, R. G. (2015). Market Orientation of Teachers and Researchers in Higher Education Institutions: a new approach. *Procedia – Social and Behavioral Sciences*, 174, pp. 3017-3024.