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### RESEARCH AGENDA FOR ENTREPRENEURIAL ORIENTATION IN UNIVERSITIES

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#### ABSTRACT

The entrepreneurial orientation (OE) in university management represents a theme for research in Administration. Thus, analyzing the international scientific production to build knowledge and trace emerging perspectives on OE in higher education institutions is the objective of this study. For this purpose, a bibliometric search of the literature was carried out in the Scopus database, from 1999 to 2014. 49 articles identified through the keywords “entrepreneurial orientation” and “university” were analyzed. The findings indicated that scientific production is under development. Jeffrey G. Covin, G. Thomas Lumpkin and Danny Miller stand out among the other authors. In the research agenda proposed to assist in filling the theoretical gaps, the following categories / themes emerged from the study: Measurement (TODOROVIC; MCNAUGHTON; GUILD, 2010), Performance (SALARAM; MARITZ, 2009), Business effectiveness (VAN LOOY et al., 2009; SALVADOR, 2011), Entrepreneurial education (LEE; LIM; PATHAK, 2011), Gender (LIM; ENVICK, 2011), Entrepreneurial intention (HASHEMI; HOSSEINI; REZVANFAR, 2012).

**KEY WORDS:** Entrepreneurial orientation. Scientific production. SCOPUS database. Universities.

#### INTRODUCTION

Globalization, competition, technological changes and society's demands for innovative products and services are some of the external contingencies that influence and impact the business environment. Therefore, this research starts from the premise that organizations are inserted in a competitive, unstable environment and that they are influenced by internal and external factors.

In this context, organizations need to become adaptable and flexible in order to grow and become sustainable, as well as to develop competitive advantage. This growing demand for sustainable and competitive differentials stimulated reflections on the development of the

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entrepreneurial process in organizations. ForCovin and Slevin (1991), entrepreneurship positively impacts business performance, being a relevant source of competitive advantage sustainable. Since the most successful organizations are those that develop their activities based on the premises of the entrepreneurial process. Entrepreneurship means innovating or creating something new (HISRIC; PETER, 2004). This finding fostered the development of research on entrepreneurship that addresses the individual, groups of people and different types of companies.

In principle, research on entrepreneurship focused on the entrepreneurial individual, the characteristics of the entrepreneur's behavior and the economic and social environment that favored the emergence of new businesses. In the 1980s, studies began to address the entrepreneurial process and, later, entrepreneurial orientation (CASTANHAR; DIAS; ESPERANÇA 2006). This new approach to the study of entrepreneurship in organizations changed the focus of the analysis of the theme from the individual level to the organizational level.

Entrepreneurial Orientation (OE) refers to the entrepreneurial process at the organizational level (MILLER, 1983). Miller (1983) was the first to define entrepreneurial orientation through three dimensions: innovativeness, proactivity and risk taking. Miller's study (1983) encouraged the development of research on entrepreneurial orientation. Studies on the topic constitute an area of study in entrepreneurship with a cumulative body of knowledge under development (COVIN; LUMPKIN, 2011; RAUCH et al. 2009; WALES; MONSEN; MCKELVIE, 2011).

For Lumpkin and Dess (1996), OE represents the decision-making processes and practices used to develop entrepreneurial actions. The entrepreneurial orientation model is represented by five dimensions: innovativeness, risk-taking, proactivity, autonomy and competitive aggressiveness. These dimensions were developed from the literature on strategic management, and a company can develop different combinations of these dimensions, or even just some of them, to constitute the entrepreneurial orientation of an organization (LUMPKIN; DESS, 1996).

The existing literature on corporate OE suggests this orientation as a benefit when organizations face dynamic and hostile environments. However, the concept of OE is the focus of empirical research related to companies in competitive markets. So far, little is known about

its nature in other organizational contexts, such as in the context of higher education institutions (TODORVIC; MCNAUGHTON; GUILD, 2011). Lizote (2013) highlights that universities contribute to the creation and renewal of knowledge, in addition to being responsible for cultural, scientific and technological development. Still for Lizote (2013), the challenges imposed by the business environment affect universities like any other company, a fact that requires changes and transformations in the management style of these organizations.

The entrepreneurial university is one that adopts an entrepreneurial stance in relation to the creation and dissemination of knowledge (TEIXEIRA, 2001). Thus, the higher education institution must transform knowledge into added value. It is noticed that these institutions still have the role of developing guided actions for innovation and proactivity. These should stimulate the creation of new companies, development of new products and services based on research carried out by their students and teachers (ETZKOWITZ, 2000). In this way, universities, public and private, seek to interact and get closer to companies, through the development of new products, the registration of patents and the creation of spin-offs (LIZOTE, 2013).

However, there is a gap at interaction between management and education researchers related to aspects inherent to the management of higher education institutions, under the lens of the OE. With a view to contributing to this discussion and expanding the understanding of the subject, this research seeks analyze the international scientific production to build knowledge and trace emerging perspectives on OE in higher education institutions.

## **THEORETICAL REFERENCE**

OE is configured as a relevant concept to analyze entrepreneurship at the organizational level and its impact on business performance. Several studies point out that OE positively influences organizational performance (MILLER, 1983; SHORT et al., 2009; WIKLUND; PATZELT; SHEPHERD, 2009; RHEE; PARK; LEE, 2010).

Pioneering studies on OE emerged in the 1980s. Miller (1983) presented a model for analyzing the phenomenon of entrepreneurship with a focus on the organizational level. Entrepreneurship at the organizational level is defined as entrepreneurial orientation, that is, the entrepreneurial process at the organization level (MILLER, 1983). According to Lumpkin

and Dess (1996), entrepreneurial guidance comprises the decision-making processes and practices used to act in an entrepreneurial way.

OE is a characteristic of the company and not just a member of the organization. Miller (1983) argues that OE is manifested in three dimensions: innovativeness, proactivity and taking risk. Innovativeness represents the company's capacity for innovation, that is, the ability to create new products, services and processes.

At innovations are realized in companies through the exercise of creativity and the development of new products and services (MILLER, 1983). Lumpkin and Dess (1996) emphasize that innovativeness means the company's tendency to enhance the adoption of new technologies and internal procedures and also to develop an environment favorable to the development of creativity and the generation of new business.

The risk-taking dimension is manifested in the assessment of scenarios and in the calculation of risks in relation to the organization's resources and capabilities (MILLER, 1983). It refers to the acceptance of risks and uncertainties that are involved when organizations' resources are compromised (LUMPKIN; DESS, 1996). In turn, the proactivity dimension represents the constant search for new business opportunities for the company to become a pioneer before its competitors.

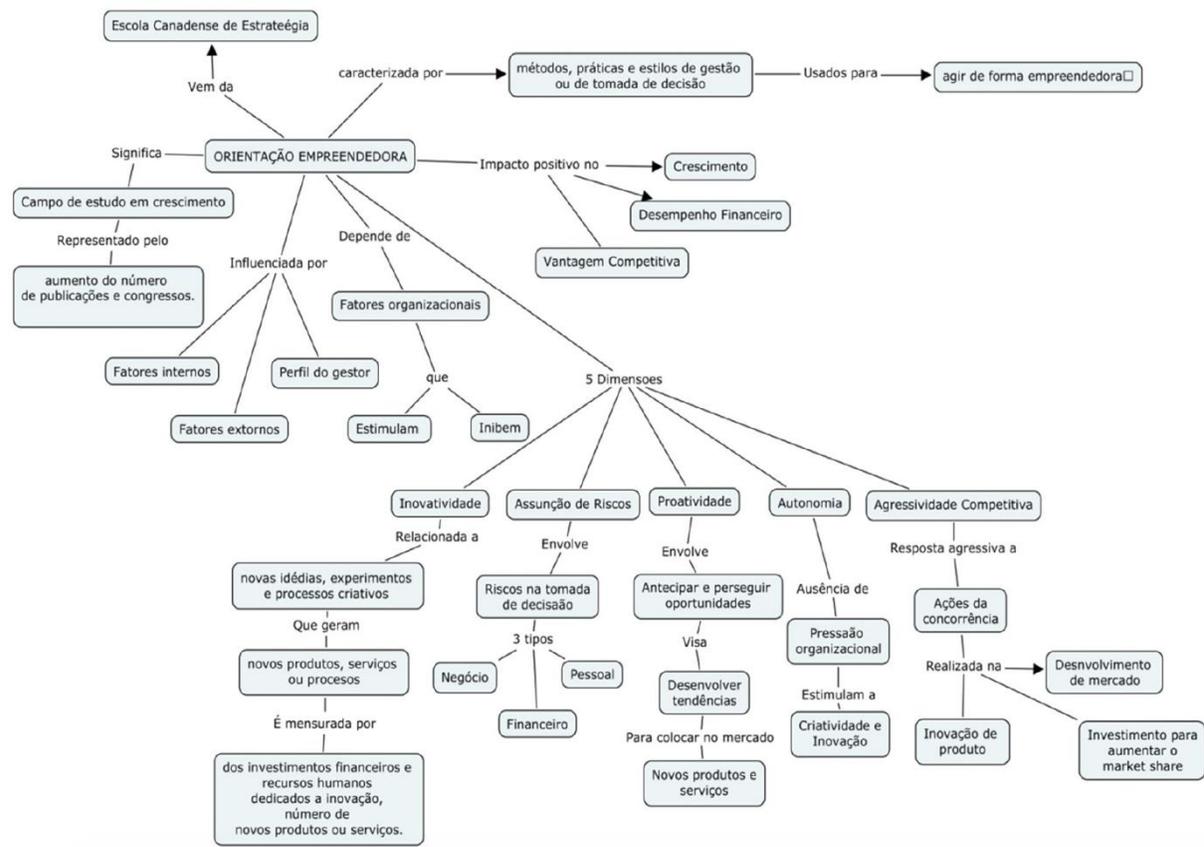
Proactivity is realized in organizational actions through the introduction of new strategies, the abandonment of mature strategies, the elimination of products or services in the phase of decline and the anticipation of market opportunities (LUMPKIN; DESS, 1996). This dimension is related to a future perspective, in which, through it, companies can anticipate trends and quickly put on the market innovative products or services that ensure a competitive advantage (MILLER, 1983).

Entrepreneurial companies invest in developing and exercising all dimensions of OE, while non-entrepreneurial companies do not innovate. Therefore, they are against taking risks and act in a follower way in the market. In this context, organizations that develop, at a certain level, the three dimensions of OE proposed by Miller, are considered entrepreneurial, characterizing the unidimensionality of the construct (MILLER, 1983).

Miller (1983) and Lumpkin and Dess (1996) argue that OE represents the decision-making processes and practices used to act in an entrepreneurial way at the organizational level. The authors postulate that five dimensions reflect OE in organizations: innovativeness,

proactivity, risk-taking, autonomy and competitive aggressiveness, the latter two being proposed by them.

While Miller (1983) proposed the unidimensionality of OE (innovativeness, risk-taking and proactivity), Lumpkin and Dess (1996) assert that OE is a multidimensional construct, which manifests itself in the organization depending on the context and the situation. For Lumpkin and Dess (1996), the five dimensions of OE can happen at different times depending on environmental contingencies. Faced with different types of opportunities and challenges, dimensions can manifest as needed. For the authors, an organization can be considered entrepreneurial when developing some dimensions and not necessarily all dimensions of entrepreneurial orientation at the same time. The conceptual map based on the theory synthesized here can be seen in Figure 1.



**Figure 1: Entrepreneurial orientation concept map**

Source: Research data, 2015.

The relationship between entrepreneurial orientation and organizational performance is the focus of the study of many empirical studies. Some of these surveys pointed out that

companies that have a greater entrepreneurial orientation also perform better (COVIN; SLEVIN, 1989; LUMPKIN; DESS, 1996; WIKLUND; SHEPHERD, 2005).

## **RESEARCH METHODOLOGY**

This research is characterized as descriptive, with quantitative and qualitative method, and aims to analyze the international scientific production to trace the construction of knowledge and the emerging perspectives of research related to entrepreneurial orientation, in higher education institutions, in the period from 1999 to 2014.

In relation to quantitative research, according to Boudon (1989, p. 24) these "can be defined as those that allow to collect, in a set of elements, information comparable between one element and another". For Vieira and Zouain (2004) studies with qualitative characteristics present a wealth of data that allows to understand a phenomenon in its entirety and also facilitates the exploration of contradictions and paradoxes.

In the first part, quantitative, the study is based on the bibliometric technique, which according to Ikpaahindi (1985) highlights that it can be classified as a series of techniques that seek to quantify the process of written communication. In general, it turns to the analysis of literature and scientific production in a specific area. The research is classified as documentary, since it consists of complete articles available online and published in scientific journals indexed in the SCOPUS database. It is noteworthy that this is an initial research that investigates the published literature and systematizes the subject of entrepreneurial guidance, at the international level, linked to higher education institutions. The database chosen was SCOPUS, presenting 21,000 indexed titles from 5,000 international publishers,

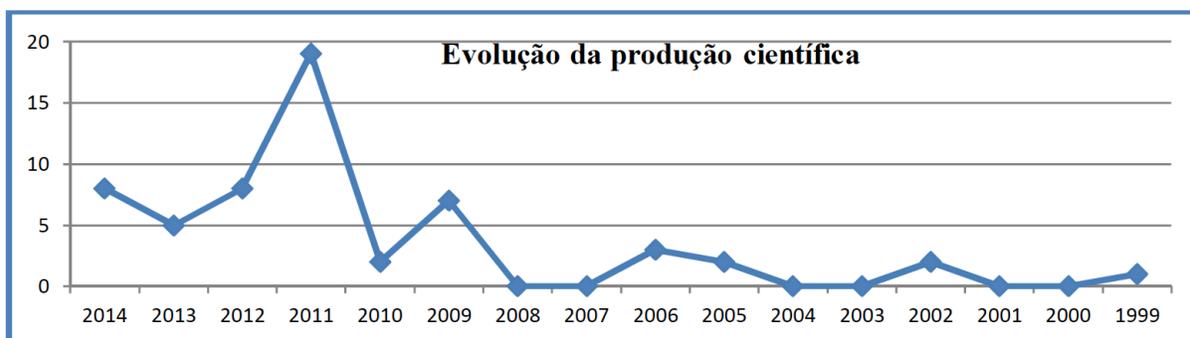
Data collection occurred at SCOPUS database, on December 10 and 11, 2014, with scientific documents published from 1999 to 2014. The following criteria were adopted to delimit the universe researched: 1) search for the term "entrepreneurial orientation", carried out in the titles, abstracts and keywords of publications indexed in SCOPUS, which resulted in 528 scientific articles; 2) search for the term "university", in the titles, abstracts and keywords of the publications available in the SCOPUS database, which resulted in 988,245 articles; 3) simultaneous search for the terms "entrepreneurial orientation" and "university" in the title, abstract and keywords, which resulted in 76 publications; 4) application of a new selection filter among the 76 scientific documents that presented the two terminologies. It was decided

to analyze only scientific articles, excluding books, editorials and event articles, which resulted in a new sample of 63 scientific articles; 5) search for articles in the Business and Management and Accounting subarea, on entrepreneurial orientation and university, which included the exclusion of fourteen scientific articles and the final sample consisting of 49 articles. Then, the titles and abstracts of the 49 selected articles were read to verify those that dealt specifically with OE in Universities. It is worth mentioning that eight articles proved to be the most specific.

To deepen the understanding of the theme, the model adopted in the research carried out by Cortês (2014) was used, seeking support to assist in the elaboration of bibliometric indicators, such as: 1) evolution of scientific production over time; 2) keywords; 3) more prolific authors; 4) country of origin of the scientific production analyzed; 5) name of the scientific journals in which the article was published; 6) area of knowledge in which the journal is linked; 7) impact factor of the journal; 8) most cited works; 9) purpose of the selected articles; 10) methodology used by the analyzed articles; 11) suggestions for future research; and 12) main results found in the empirical studies analyzed.

## ANALYSIS OF RESULTS

This section contains the results of the analysis of the selected articles. Figure 2 shows the evolution of scientific production on entrepreneurial orientation and university, from 1999 to 2014.



**Figure 2 - Evolution of scientific production in the period from 1999 to 2014**

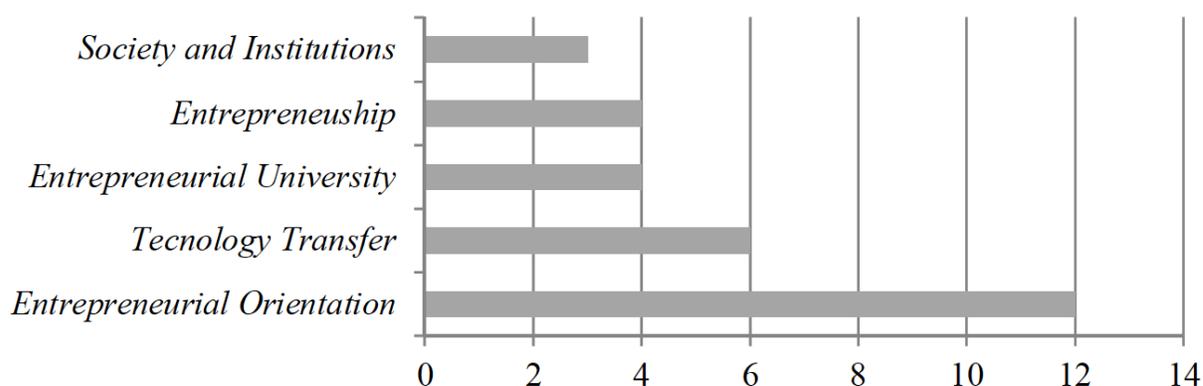
Source: Research data.

From the search conducted in the SCOPUS database, it was found that the first scientific article was published in 1999, in the years 2000, 2001, 2003, 2004, 2007 and 2008 there were no publications on this topic. However, the number of publications has changed over the 15

years analyzed, since the peak of publications occurred during 2011 with more than 18 articles published.

In later years, there was a reduction in the number of publications on the subject, but it is noted that in 2012 and 2014 the number of eight publications remained constant. In general, it is clear that the theme in the last 5 years has been gaining space in the literature, which enhances the possibility of future publications in view of its relevance in the university context.

Among the 49 published articles that deal with entrepreneurial orientation and universities, another relevant aspect corresponds to the keywords that appear in these empirical researches, as shown in Figure 3.



**Figure 3: Keywords found in the analyzed articles**

Source: research data.

According to Figure 4, among the keywords that appear in the analyzed scientific articles, the ones that presented the highest frequency are entrepreneurial orientation, with 12 incidences, tecnologia transfer, with six incidences, entrepreneurial orientatios, with four incidences, entrepreneurship, also with four incidences, and society and institutions, with three incidences.

Regarding the most prolific authors found among the scientific researches analyzed, Table 1 shows the ten authors that stand out, in the period between 1999 and 2014.

**Table 1: Most prolific authors found in the analyzed articles**

Authors	Number of articles	Authors	Number of articles
Covin, JG	4	Monsen, E.	2
Lumpkin, GT	3	Wiklund, J.	2
Miller, D.	3	Lim, S.	2
Kreiser, PM	2	Marino, L.	2
Kiekman, DM	2	Wales, W.	2

Source: Research data.

It can be seen in Table 1, that the authors that stood out in relation to the number of publications on entrepreneurial orientation and university were Jeffrey G. Covin with four publications. This researcher is a professor of entrepreneurship and strategic management at the Kelley School of Business, Indiana University, Bloomington, United States. Following, with three publications, appears G. Thomas Lumpkin, professor at the Whtiman School of Business, at Syracuse University, in New York, in the United States, and president of Chris J. Witting in Entrepreneurship. Danny Miller, who is a senior researcher and director of the Family Business Research Center at the Faculty of Montréal, Québec, Canada. Then, with two publications, researchers Kreiser, PM, Kirkman, DM, Monsen, E., Wiklund, J., Lim, S.,

Table 2 presents a ranking of the countries of origin of scientific productions that deal with entrepreneurial guidance and universities, from 1999 to 2014, indexed in SCOPUS.

**Table 2 - Ranking of countries of origin of scientific production**

Country of origin	Number of articles	Country of origin	Number of articles
1 - United States	28	5 - Iran	3
2 - Canada	6	6 - Finland	2
3 - Germany	5	6 - Netherlands	2
3 - Italy	5	6 - Sweden	2
4 - China	4	6 - England	2

Source: research data.

In Table 2, in relation to publications on OE and universities, there is a popularization of empirical research on the subject in the United States, since 28 publications are of North American origin. Canada ranks second, with six publications, and Germany and Italy, third, with five publications. It should be noted that no publication originated in Brazil, which configures it as a propitious field for the development of scientific research in this area of knowledge, with the proposition of a research agenda.

Therefore, another relevant aspect to understand the scientific production related to OE and universities are the vehicles used by researchers in the area to disseminate their findings, as shown in Table 3.

**Table 3 - Scientific journals that most published on OE and Universities from 1999 to 2014**

Title of journals	Number of articles
<i>Entrepreneurship: Theory &amp; Practice</i>	25
<i>Education and Training</i>	2
<i>International Entrepreneurship and Management Journal</i>	2
<i>Journal of Business Economics</i>	2
<i>Technovation</i>	2
<i>Australian Journal of Basic</i>	1

<i>Computer and Composition</i>	1
<i>Economic Geography</i>	1
<i>European Journal of Economic</i>	1
<i>High Education</i>	1

Source: research data.

Table 3 shows that the journal with the highest number of publications on OE and universities was Entrepreneurship: Theory & Practice, with 25 articles published among the 49 scientific articles analyzed. This journal stands out among the others in the area and is considered to be of excellence. In second place are Education and Training, International Entrepreneurship and Management Journal, Journal of Business Economics and Technovation with two publications respectively. And finally, in third place, with a publication, appear the Australian Journal of Basic, Computer and Composition, Computer and Composition, Economic Geography, European Journal of Economic and High Education.

Deepening the aspect of the journals that publish on the subject of this research, Table 4 shows the impact factor of these scientific journals indexed in the SCOPUS database, and most used by researchers to disseminate their scientific findings in OE and universities.

**Table 4 - Impact factor of the scientific journals that most published on OE and Universities from 1999 to 2014**

<b>Title of journals</b>	<b>Impact factor</b>
Entrepreneurship: Theory & Practice	3.144
Education and Training	0.390
International Entrepreneurship and Management Journal	2,814
Journal of Business Economics	0.511
Technovation	2,027

Source: research data.

It is worth mentioning that Entrepreneurship: Theory & Practice (ET&P) is a leading academic journal in the field of studies focused on entrepreneurship, and is also the official journal of the Unides States Association for Small Business and Entrepreneurs (USASBE). This journal aims to publish research that significantly advances in the field of entrepreneurship. (ENTREPENEURSHIP THEORY & PRACTICE, 2015).

As for the International Entrepreneurship and Management Journal (IEMJ), it seeks to publish high-quality research that addresses entrepreneurship in its broadest sense, focused on the management of business organizations. Editors encourage the dissemination of research that is international in scope or national issues with global relevance. And yet, research that includes entrepreneurship and its relationship with strategic management, interfaces between

entrepreneurship and technological innovation, in addition to the impact of public policies on business initiatives (INTERNATIONAL ENTREPRENEURSHIP AND MANAGEMENT JOURNAL, 2015).

In this bibliometric study, the eight scientific articles that stood out, more specifically, with the objective of this research stood out. These articles were revised in their entirety, as per the literature review, below. In this part, the qualitative method, and the inductive reasoning, were adopted.

In order to understand the implications of entrepreneurial guidance in higher education institutions, Van Looy et al. (2009) carried out a study with 105 universities from 14 European countries in order to analyze the antecedents of business effectiveness in the context of educational institutions and also, examine the trade-offs on the level of transfer mechanisms (research contracts, activity patenting and spin-off creation), as well as the relationship with scientific activities. The results reveal a positive relationship between the scientific production of universities and their business effectiveness. A university with a stronger scientific productivity favors an advantageous position in the development of entrepreneurial activities.

Still in the same work, there was a significant relationship between scientific productivity and the creation of spin-offs. The authors suggested for future research the analysis of additional antecedents at different levels, such as at the university level, a more detailed analysis of differences in strategic orientation, incentive arrangements and support structures that would allow a quantitative impact assessment of the implemented business practices. in universities.

Research efforts could be directed towards assessing the impact (national or regional of the characteristics of the innovation system) in which universities are incorporated. As future research confirms the crucial role of the characteristics of the national innovation system in the entrepreneurial performance of universities, one can envision considerable opportunities for the growth of research in the European context. In addition, to propose a model that produces the best results without jeopardizing scientific and educational excellence to increase the levels of entrepreneurial activities.

In another work, Salaram and Maritz (2009), seeking to understand the role of OE, social capital and academic performance, analyzed the abstract interrelationships between these constructs in an environment based on knowledge. The research was carried out with 271 full-

time professors at the University of Melbourne, Australia, being from various academic positions (162 men and 106 women).

The study adopted a quantitative approach with the application of a questionnaire with multiple regression and correlation analysis. The results confirm the relationship between the components of social capital and the dimensions of entrepreneurial orientation, and indicated the relationship between the structural dimension of social capital and performance. The regression analysis found some variables that can predict performance and entrepreneurial orientation in higher education institutions.

According to the authors, the findings confirm that the productivity of teachers has a positive and moderately strong relationship with entrepreneurial orientation. In the academic context, it was found that those who have higher productivity scores have more entrepreneurial orientation. As suggestions for future research it was mentioned that in the literature on entrepreneurship in organizations it indicates that it is in the childhood phase that the factors must be examined to encourage business activities. And social capital is seen as an emerging concept that has been gaining ground in organizational studies. In this context, research must be carried out on this bias in order to help alleviate the financial problems of universities and also reduce the dependence of these institutions on government agencies.

As OE applicability is envisioned in the context of higher education institutions, Todorovic, McNaughton and Guild (2010) proposed a scale to measure OE in universities, at the departmental level. The methodological approach consisted of interviews with the application of the focus group technique with members of the faculty from the departments of computer science, health sciences and engineering at Canadian universities.

Then, the questionnaire elaborated from the interviews was applied, applied via the web with 187 individuals who worked in the health sciences, computer sciences and engineering departments. These data were analyzed using structural equation modeling.

The findings present a measurement scale that allows demonstrating that universities are adjusting to recent economic changes and expectations regarding their contribution to innovation and economic development. In view of the fact that government financing is becoming more scarce, they are obliged to diversify their sources of revenue and to become more efficient in the transfer of resources for a greater commercialization of knowledge. In response, universities are encouraged to become more “entrepreneurial”.

This research provides a definition of what it means to be an “entrepreneur” in the context of a university department and a scale for measuring entrepreneurial orientation. In this line of thought, the authors suggest the replication of studies with this scale in universities in other countries, especially in the United States and with different sources and levels of government funding.

Lee, Lim and Pathak (2011) sought to investigate the role of culture through the differences between the selected countries in terms of the dimensions of the Entrepreneurial Orientation proposed by Lumpkin and Dess (1996). The empirical research was carried out on a database collected with university students from the United States, Korea, Fiji, India and Malaysia to analyze nations with significant cultural differences. The sample of university students from the United States (96 students), Korea (114 students), Fiji (80 students), India (94 students) and Malaysia (99 students) representing different cultural contexts. To analyze the questionnaire applied to university students, a multivariate quantitative approach was used by means of regression with the calculation of ANOVA.

The findings of this study suggest that different cultural contexts have a strong impact on the dimensions of EO analyzed among university students. It is noteworthy that the high level of entrepreneurship does not necessarily mean a high level of entrepreneurial orientation and that the development of highly personalized curricula focused on entrepreneurship must consider the dimensions of entrepreneurial orientation in each country to encourage the emergence of leaders in the countries analyzed .

The authors suggest that conducting an empirical survey of a larger portion of the population in several countries in order to deepen the findings and also mention the realization of a longitudinal study to observe the impact of entrepreneurship education on university students in terms entrepreneurial orientation, as well as assessing the impact of fluctuating economic conditions in each country, resulting from the current global financial crisis.

Lim and Envick (2011) investigate the role of gender and culture in the entrepreneurial orientation (OE) proposed by Lumpkin and Dess (1996) among university students in selected nations. The survey was carried out with 389 university students, 96 students from the United States, 114 students from Korea, 80 students from Fiji and 90 students from Malaysia. The methodological approach is quantitative, using ANOVA.

The results showed significant differences in the dimensions of OE between the genders and the nations analyzed. It was also found that male students scored more on the four dimensions of OE than female students. The authors mention that although gender does not seem to affect the performance of new ventures, there are important differences in the way male and female people engage in entrepreneurial activities. In general terms, the authors suggest, personalized approaches based on gender and cultural context are necessary for the development of OE among university students in a unique environment.

The research carried out by Salvador (2011) aimed to analyze the context of a university spin-off company, focusing on the relationship with technological incubator parks and its importance as a brand name. The research was carried out through a case study at the University of Turin in Italy.

The findings reveal that the most common solution adopted is aid from the incubator to learn by doing. Hospitality within the scope of an incubator or technology park is critical and this is proven by many responses to sections of the research questionnaire. Thus, the presence of a tutorial service available for incubated companies is most often a useful solution for the missing business skills. One of the main problems revealed in the study refers to the lack of understanding on the part of spin-offs regarding the opportunities available for obtaining financing. It is understood that the role of “brands” from technology parks should be reinforced in order to improve the performance of incubated companies and to safeguard the research potential of spin-off companies.

Hashemi, Hosseini and Rezvanfar (2012) sought to explain the entrepreneurial intention among agricultural students with a history of entrepreneurial self-efficacy and the university's OE. The authors conducted a research with a quantitative approach aided by Exploratory Factor Analysis (AFE) and confirmatory (AFC).

The results show the indissoluble link between the innovative learning environment and beliefs in the six components of entrepreneurial self-efficacy, which must be reinforced through ingredients of regular educational and administrative policies that promote self-efficacy and the entrepreneurial spirit among the analyzed university students.

In line with previous research, Mavi (2014) sought to define global criteria for the evaluation of entrepreneurial universities. The study was conducted with twelve specialized academic managers who participated in the research by weighing judgment criteria for decision

making. In the analysis of the collected information, fuzzy logic was used to establish multiple criteria for decision making in ill-defined problems and the Distorted Hierarchical Analysis method to select entrepreneurial universities, through rankings of various alternatives in which several subjective criteria were used. certain weights to define the institutions.

The results reveal that private Iranian universities are more entrepreneurial than the other two public universities. The state university scores better on some measures such as job discretion, autonomy, reward models and systems, human capital and physical resources, status and networking because of government support. In general, all public universities in Iran are gaining financial support from the government, so most have more resources than state and private universities. As a result of the strategic vision of the management of private universities, they focus their research on real industrial issues. Therefore, the collaboration between private universities and industry is typically greater than in the other universities analyzed. And quasi-state universities demonstrate a weakness in hiring experienced faculty, have less cooperation in research projects and less financial assistance from the government, and in turn, do not have a good position in relation to entrepreneurship. It is suggested for future research that researchers can focus on the dependence between the criteria analyzed with the fuzzy methods.

Based on the study carried out, it appears that the new directions for research in OE and universities based on new ideas and research perspectives emerge as a research agenda, as shown in Chart 1.

**Table 1- Agenda for future research on entrepreneurial guidance at universities**

<b>Categories / Themes</b>	<b>Description and / or objective</b>	<b>Reference works</b>
Measurement	Scale of measurement of OE in university at Departmental level.	Todorovic, McNaughton and Guild (2010)
	Scale for measuring the entrepreneurial capacity of universities, academics and teachers.	Mavi (2014)
Performance	Understand the role of entrepreneurial orientation, social capital and performance in a knowledge-based environment.	Salaram and Maritz (2009)
Business effectiveness	Examine trade-offs on the level of transfer mechanisms (research contracts, patenting activity and creation of spin-offs), as well as the relationship with scientific activities.	Van Looy et al. (2009)
	Creation of university spin-offs, focusing on the relationship with technological incubator parks.	Salvador (2011)
Entrepreneurial educat	Impact of entrepreneurship education on university students in terms of entrepreneurial orientation.	Lee, Lim and Pathak (2011)

Genre	Analyze the role of gender and culture in the dimensions of OE.	Lim and Envick (2011)
Entrepreneurial intention	Explain the entrepreneurial intention among agricultural students with a history of entrepreneurial self-efficacy.	Hashemi, Hosseini and Rezvanfar (2012)

Source: research data.

## FINAL CONSIDERATIONS

The objective of this research was to analyze the international scientific production to trace the construction of knowledge and the emerging perspectives of research related to entrepreneurial orientation and universities, from 1999 to 2014. For this purpose, the sample comprised 49 scientific articles published in the database. SCOPUS data, between the years 1999 and 2014, which contained the terms “entrepreneurial orientation” and “university” in the title, abstract or keywords. In the methodology, the descriptive research adopted the quantitative methods, which was carried out through a bibliometric study, and a qualitative one, which was shown through a literature review of the most specific articles on the research subject.

The findings demonstrate that the number of publications related to OE and universities has remained constant in recent years (2012 and 2014), with the peak of publications occurring in 2011, the first article being published in 1999. As for the incidence of keywords key, those that had the greatest representativeness were entrepreneurial orientation, technology transfer, entrepreneurial orientatios, entrepreneurship and society and institutions, respectively.

The results allow us to affirm that the field of research on OE in universities is under development, as there are several authors who publish few articles, that is, the theme receives contributions from several scholars, over time. The authors Jeffrey G. Covin, G. Thomas Lumpkin and Danny Miller were the most productive.

Regarding the origin of the articles, it was found that the United States leads the ranking of publications, followed by Canada, Germany and Italy. Among the vehicles used to disseminate knowledge, the Entrepreneurship: Theory & Practice stands out, with a greater number of publications on the subject, and a greater impact factor. It is also noteworthy that there are no studies that address this topic in the Brazilian academic literature. This is relevant information, as it shows that there are opportunities for the development of Brazilian research in this area of knowledge, and it is opportune to propose a research agenda.

The findings made it possible to propose a research agenda, since it was possible to know and evaluate the evolution of research on entrepreneurial guidance at universities in order to envision new research that can help to fill the theoretical gaps, with the categories / themes: measurement of OE (TODOROVIC ; MCNAUGHTON; GUILD, 2010), performance (SALARAM; MARITZ, 2009), Business effectiveness (VAN LOOY et al., 2009; SALVADOR, 2011), entrepreneurial education (LEE; LIM; PATHAK, 2011), Gender (LIM; ENVICK , 2011), Entrepreneurial intention (HASHEMI; HOSSEINI; REZVANFAR, 2012).

Finally, this research has its contribution by pointing out possible directions of research related to entrepreneurial orientation for researchers in the area, and of university management and education. They will be able to analyze aspects inherent to the management of higher education institutions, with a view to making universities more competitive and entrepreneurial, to face dynamic and hostile environments, considering the current world social and economic directions.

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