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Entrepreneurial University and the Brazilian System for the Evaluation of Higher Education

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Abstract

The displacement of the university from an industrial society to a post-industrial society and its new roles, require research into new organizational forms and new proposals to restructure higher education institutions so that the university can contribute to the economic and social growth of the nation. This paper proposes a reflection on the entrepreneurial university in the context of the Brazilian system for the evaluation of higher education (SINAES) in order to analyze the application of the metamodel of the entrepreneurial university as an institutional assessment tool for the reaccreditation of institutions. This paper reviews the literature on the entrepreneurial university and on the metamodel of the entrepreneurial university, in particular. It then presents a proposal for the application of the metamodel dimensions of the entrepreneurial university in the external and internal evaluation processes of higher education institutions.The results obtained in the present reflection are innovative because linking the entrepreneurial university dimensions with the dimensions of the external evaluation tool provide support in the identification and evaluation of programs, projects and actions in the field of entrepreneurship, enabling the identification of elements of entrepreneurial universities in Brazil.

Keywords: entrepreneurial university, higher education institutions, innovation, entrepreneurship

1. Introduction

The studies on entrepreneurial university developed by Clark (1998; 2004) established the first conceptual foundations for a better understanding of the entrepreneurial university and its transformation process. Ever since the year in which Clark promoted and established the discourse of the entrepreneurial university, the literature on the entrepreneurial university in the United States and Europe has expanded, demonstrating the interest of the international scientific community to investigate the transformations in this organization model. The displacement of the university from an industrial society to a post-industrial society and its new roles, require research into new organizational forms and new proposals to restructure higher education institutions, so that the university can contribute to the economic and social growth of the nation (Etzkowitz, Ranga & Dzisah, 2012; Hatch, 1997; Hassard, 1999).

Through an analysis of the literature in academic journals of the United States and Europe between 1981 and 2005 (Rothaermel, Agung & Jiang, 2007), those issues relevant to the field of research of the entrepreneurial university were highlighted. The authors identified an exponential growth in the number of scientific articles on the entrepreneurial university in the year 2000–2005 and proposed a conceptual model that extends our understanding of the elements that are intrinsically linked to the entrepreneurial university. The analysis did not include, however, the first conceptual contributions on the entrepreneurial university by Clark, nor the analyses by Gibb et al., (2009) that outlined the concepts of the entrepreneurial university.

If in the developed countries there has been an exponential growth in the literature on the entrepreneurial university between 2000 and 2005. In the emerging country of Brazil the topic deserves even further investigation in terms of scientific production. The papers on universities in Brazil published between 2000 and 2012 investigate university-company cooperation (Costa, Porto, & Feldhaus, 2010), university-company technology transfers (Closs, Ferreira, Sampaio, & Perin, 2012), university management and the transformations and changes in universities (Conceição & Heitor, 1999; Costa & Torkomian, 2008; Marcovitch, 1979).

The various existing analytical models in the international literature provide support for the understanding of fragments of the entrepreneurial university and the combinations of these different ways to understanding produce a wealth of complex outlooks on this type of organization, using various theories of organization (Clark 1998; 2004; Etzkowitz, 1998; Etzkowitz, Webster, Gebhardt & Terra, 2000; Kirby, 2006; Rothaermel et al., 2007). The conceptual models of the entrepreneurial university identified in the literature based on theoretical-empirical observations, contribute to a theoretical deepening of the field, since each one of them mentions the elements that represent the entrepreneurial university in some way or another. However, these representation models of the entrepreneurial university in the literature provide elements both from the point of view of convergence as from non-convergence. The conceptual models could be completed by providing a better understanding of the entrepreneurial university. To develop a preliminary concept of the entrepreneurial university and its key issues, it is necessary to identify the various models that are scattered and fragmented in the literature (Aranha & Garcia, 2014).

Aranha and Garcia (2014) have identified a set of dimensions of the entrepreneurial university for a postmodern society. The integrated metamodel based on the literature of these authors, who managed to highlight other representations in the literature, since they gather and synthesize the main components that make up the entrepreneurial university, allowing an approach that is a little more faithful regarding the capacity for understanding and analyzing the underlying conceptual artifacts that involves this object. The metamodel is based on a postmodern perspective, which involves deconstruction, critical theorization of the practice and reflection.

Another key point that deserves to be highlighted is the dialog on the entrepreneurial university that has taken place within the Brazilian system for the evaluation of higher education (Planalto Legislation Archives, 2004). The absence of internal and external indicators for evaluating higher education institutions in Brazil in the tool of the Brazilian system for the evaluation of higher education (SINAES) that includes elements of the entrepreneurial university is restricted to: (i) identifying and evaluating whether the higher education institution (HEI) adopts entrepreneurial programs, projects and actions; or (ii) whether it is on the trajectory to stimulate the culture of entrepreneurship or even; (iii) whether it is on a path to deploy strategies that will lead to the entrepreneurial university.

This paper proposes a reflection on the entrepreneurial university in the context of the Brazilian system for the evaluation of higher education (SINAES) in order to analyze the application of the metamodel of the entrepreneurial university as an institutional assessment tool for the reaccreditation of institutions. This paper reviews the literature on the entrepreneurial university and on the metamodel of the entrepreneurial university developed by Aranha and Garcia (2014), in particular. It then presents a proposal for the implementation and operation of the metamodel dimensions of the entrepreneurial university in the external and internal evaluation processes of higher education institutions.

2. Methods and Procedures

The reflexive methodology of Alvesson and Sköldberg (2000) guided this exploratory and qualitative study. The reflection should be seen as the researcher's own interpretation, i.e. the ability to look from his own perspective, in addition to the self-critical ability regarding his authority as an interpreter and as an author. For this research, therefore, the reflexive methodology consists of two axes: interpretation, where the empirical data is analyzed, and reflection on the interpretation made in the previous axis. In the first step of this study, the literature on the entrepreneurial university was reviewed, especially on the metamodel of the entrepreneurial university. The displacement of the university from an industrial society to a post-industrial society and its new roles requires research into its new organizational forms and new proposals to restructure higher education institutions. And while in developed countries there has been exponential growth in the literature on the entrepreneurial university, in Brazil the academic production is still just beginning. Here the categories and keywords were defined, such as the search criteria: entrepreneurial university and creation shared value. Subsequently, printed and electronic Brazilian journals on administration were consulted. At the international level, the journal database from CAPES was searched. The second step consisted in processing the elements with the necessary significance level for interpretation, which was based on content analysis (Bardin, 1997), a technique that has been adopted for the treatment of data. We identified what was being said about a certain dimension of the metamodel of the entrepreneurial university, because the content analysis refers to a set of procedures that aim to the gather content so as to enable inferences related to the conditions of information production and reception. In the third step, the application and operation of the metamodel dimensions of the university in the external evaluation tool for the reaccreditation of Brazilian higher education institutions were analyzed.

In the third step, the external evaluation tool for the reaccreditation of Brazilian Higher Education Institutions were analyzed in order to identify the points of convergence and divergence with the metamodel of the entrepreneurial university. This tool was approved by the Education National Council and by the Ministry of Education and is available on the website of the Brazilian federal government (Inep Legislation Archives, 2010). The tool is used by the *Instituto Nacional de Estudos e Pesquisas Educacionais An ísio Teixeira*, (INEP An ísio Teixeira National Institute of Educational Studies and Research), an organ of the federal government responsible for entire external institutional assessment in Brazil, in addition to being responsible for managing the external institutional evaluators.

As fourth and last step the information was consolidated in a table considering the results obtained in the previous step, with the dimensions and indicators of the external assessment tool and connections with the dimensions of the entrepreneurial university metamodel. Subsequently, by using the elements of the constructed table, the application and operation of the metamodel dimensions of the university in the external evaluation tool for the reaccreditation of Brazilian higher education institutions were analyzed.

3. Review of the Literature on the Entrepreneurial University

In his analysis of five European universities that were undergoing change, Clark (1998; 2004) identified five universities that were becoming more adaptive to the demands of the external environment by adopting the main entrepreneurial steps to promote changes in organizations. These entrepreneurial steps lead organizations towards the deployment of the entrepreneurial university. Among these steps, a committed university core and the diversification of sources of income stand out.

The entrepreneurial university model developed by Etzkowitz (1998; 2004) rests on the concept of the triple helix that emphasizes innovation as one of the driving vectors of the government-university-industry relations. According to Etzkowitz (1998; 2004), the postmodern university has been swept up by the whirlwind of the second academic revolution, which is based on entrepreneurship. The first academic revolution began around 1950 and incorporated research to the mission of the university. The missions of teaching and research began to shape the university of this first revolution. The second revolution, however, is marked by the incorporation of the combination of economic and social development to the new mission of the entrepreneurial university (Etzkowitz, 2001).

The new mission of the university leads to the deployment of a set of internal measures in the university community. Among these, raising the awareness and involvement of teachers, students and managers for the discovery of new opportunities to apply innovative scientific knowledge outside the university walls, stands out. Projects and actions aiming economic and social development require the participation of agents and actors in the vicinity of the university, who now will establish new relationships with the university. The concept of economic and social development is emphasized in Etzkowitz' entrepreneurial university model, which consists of five elements, namely: capitalization, interdependence, independence, hybridization and reflexivity, all articulated and integrated among themselves, inserted into the university's processes, management and trajectory (Etzkowitz, Mello & Almeida, 2005).

3.1 The Taxonomy and Adaptation of the Entrepreneurial University

Rothaermel et al. (2007) analyzed the literature in 28 academic journals of the United States and Europe between 1981 and 2005, by which they sought to make clear which issues were relevant to the field of research of the entrepreneurial university. The authors proposed a conceptual model to extend our understanding of the elements that are intrinsically linked to the entrepreneurial university, supported by four main fields of studies identified in the literature review, namely: (i) the research university, (ii) the productivity of technology transfer offices, (iii) the creation of new businesses and (iv) the environmental context, including networks of innovation. Rothaermel's analysis is interesting because it proposes a taxonomy for the literature on the entrepreneurial university in order to create connections and interfaces with the internal and external aspects of the university as a whole and a research agenda for the field. The analysis did not include, however, the first conceptual contributions on the entrepreneurial university of Clark, nor the analyses by Gibb that outlined the concepts of the entrepreneurial university. Each one of the four elements constitutes Rothaermel et al.'s model for the entrepreneurial university, i.e. the research university, the productivity of technology transfer offices, the creation of new businesses and the environmental context including innovation networks are constitutive components, aspects linked to entrepreneurial activity that must be addressed.

The proposal for the creation of an entrepreneurial university by Kirby (2006) is guided by the implementation of strategic measures to stimulate entrepreneurship. Each of the eight strategic actions, which include commitment, incorporation, implementation, communication, encouragement and support, recognition and

reward, organization and promotion, establish the activities that must be performed at the university for the creation of the entrepreneurial university. The strategic action of commitment involves the strategic management of the university regarding the implementation of a entrepreneurial organization model, while incorporation is linked to the implementation of activities that encourage entrepreneurship at all levels of the university. Implementation means drafting the action plan and monitoring it at all levels involved. Communication involves activities for the publication and spread of entrepreneurship. The university must provide material resources and supporting infrastructure (entrepreneurship laboratories, pre-incubation, incubation, science and technology parks, environments to raise angel capital investments and other mechanisms and tools to support entrepreneurship). The strategic action of recognition and reward provides for the existence of programs and projects that encourage career development, compensation and the sharing of equity. The strategic action of organization should implement interdisciplinary research activities and deploy the multidisciplinary entrepreneurship center, educational partnerships and other mechanisms. The strategic action of promotion involves entrepreneurial competitions, such as business plan and case study competitions.

3.2 The Metamodel of the Entrepreneurial University

The metamodel of the entrepreneurial university developed by Aranha and Garcia (2014) was basead on interpretations of the literature and the frameworks by Clark (1998; 2004), Etzkowitz (1998; 2004), Rothaermel et al. 2007), Kirby (2006) and Filion (1993; 1999), in particular. The dimensions of the metamodel are: (i) entrepreneurial vision, committed strategic leadership, generation of innovative knowledge, capitalization of innovative knowledge, economic and social development of the region and an integrated entrepreneurial culture.

In our metamodel for the entrepreneurial university, the entrepreneurial vision dimension is linked to notions of the projected image and mission (Fillion 1993; 1999). The concept of projecting an image in the future represents the entrepreneurial university as an organization as part of the entrepreneurship paradigm in all its functions and operations, promotes internal changes and ruptures in order to adapt to the tensions arising from the environment and looks for the flexibility and efficiency through new structures of authority and ways of allocating resources. The mission concept represents not only the teaching and research functions, but also the economic, social and cultural development as the third mission of the university.

Committed strategic leadership, as represented by the dean's office, works as a sort of organizing, radiating and strategic element of the transforming projects and actions that are at the heart of the other elements of the model. Committed strategic leadership triggers commitment at all levels of the organization to achieve organizational innovation based on entrepreneurship, seeking to position the university so it can be able to respond with more agility and high performance to the demands of its external environment, creating, capturing and sustaining shared value between the various actors in its vicinity.

The entrepreneurial university should place emphasis on basic and applied research with the ability to generate intensive, and not just incremental, innovative knowledge, but also on ruptures, proposing to introduce incentive policies and strategies for intensive, continuous and permanent research and development. The innovative knowledge generation dimension includes the notion that the knowledge generated must necessarily be used inside and outside the university. Inside, the knowledge should be used to improve programs, projects and actions of the university, such as the restructuring of undergraduate and graduate programs, entrepreneurial skill trainings, new teaching-learning strategies, reformulation of the curriculum and other educational measures. Outside the university, innovative knowledge can be used to promote economic, social and cultural development, generating benefits for the region through the creation of new companies, technology parks and favoring the implementation of an innovative ecosystem. The entrepreneurial university will only become an agent of economic and social change in the region if it's able to generate and apply innovative knowledge that requires major investments in research and development.

The fourth dimension is capitalization of innovative knowledge. It represents the transfer of the knowledge generated at the university to organizations and companies, such as product, process, service and technology innovation, contributing on the one hand to the expansion of sources of revenue for the university and, on the other, to the economic and social development of the region.

The inclusion of the economic and social development of the region in the proposed model explains and demonstrates the new role that the university must take, that is, the challenge that it faces on at least two fronts, namely: (a) on the level of awareness and incentive to the various academic units regarding the new mission of the economic and social development of the region; (b) at the level of design and formulation of the economic and social development project for the region, involving the participation of various agents, industry and the government. The university should establish the connections and interfaces so that the generation and application

of knowledge can induce the transformation of the regional economy into a knowledge economy. The economic and social development project to be designed rests on the notion of creating shared value and opens up a new perspective between the various agents in the region in the sense that it establishes the driving vectors of the process of creating, capturing and sustaining collaborative and shared value.

The several attributes that outline the entrepreneur highlighted by Dougherty (1999), Gibb (2002), Filion (1993; 1999) and Schumpeter (1934; 1942) make clear that there is set of skills that distinguishes entrepreneurs from non-entrepreneurs. *Weltanschauung*, one of the elements that is included in the entrepreneurial metamodel by Filion, is a German word linked to the concept of world view. *Weltanschauung* is closely linked with the framework of beliefs, ideas, values, emotions and morals that shape an individual through his cognitive perceptions in relation to the objects of the world and how he fits and is related to these objects. This concept enables a distinction between entrepreneurial and non-entrepreneurial individuals. An individual can have a receptive or resistant *weltanschauung* towards entrepreneurship. In the entrepreneurial university, the dissemination of entrepreneurship at all levels of the university, not only in academic departments, but also in the sectors supporting the end-activities (teaching, research and extension), should be a permanent and continuous, mainly in the sense of raising the awareness of individuals in order to change their *weltanschauung* and establish connections with the academic and administrative practices.

Brazilian universities have been disseminating entrepreneurship in undergraduate, graduate, research and outreach programs. Most entrepreneurship measures are associated with the opening of new ventures and leave aside the perspective of entrepreneurial education, which consists in the development of entrepreneurial skills that can also be employed in existing companies. The inclusion of entrepreneurship in the training programs for the staff working in the administrative and supporting units is still in its infancy in Brazil.

4. Application of the Metamodel Dimensions of the Entrepreneurial University to the External Evaluation

Brazilian legislation (Planalto Legislation Archives, 2004) establishes that the evaluation of higher education institutions (HEI) has two modalities. First, a self-assessment is carried out internally by an institutional evaluation commission called internal institutional evaluation commission (IEC). And second, an external evaluation is performed by committees appointed by the *Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira*, (INEP Anísio Teixeira National Institute of Educational Studies and Research). The external institutional assessment is realized for accreditation and reaccreditation. This section is dedicated to examining the metamodel dimensions of the entrepreneurial university as a tool for the external institutional evaluation process for the reaccreditation of the institution. The external evaluation tool used in our analysis is the one utilized by INEP until January 2014. After this date the Ministry of Education of the Brazil (MEC) approved a new tool. When a HEI is accredited by the Ministry of Education, whether this is a Faculty, University Center or University, a maximum time limit is established for its institutional functioning. The reaccreditation process is started with the HEI reaccreditation protocol of the MEC and with the designation by the INEP of an external institutional evaluation committee made up of professors with strong experience in academic management and institutional assessment. The external committee visits the HEI and drafts a report in accordance with the dimensions and existing indicators of the external evaluation tool. Tables 1, 2, 3 and 4 show the dimensions and indicators that are assessed by the external committee with the score of 1 to 5. The entrepreneurial university dimensions were associated with the dimensions of the external evaluation tool for reaccreditation.

Table 1. External evaluation (dimensions 1, 2) and dimensions of the entrepreneurial university

External Institutional Evaluation Tool		Dimensions of the Entrepreneurial University
Dimensions	Indicators	
1. Mission and Institutional Development Plan (IDP)	1.1 Implementation of the IDP considering the projected targets and institutional actions, the structure and the administrative procedures. 1.2 Articulation between the IDP and the institutional evaluation processes (self-evaluation and external evaluations)	Entrepreneurial Vision Generation of innovative knowledge Capitalization of innovative knowledge Economic, Social and Cultural Development of the Region Integrated Entrepreneurial Culture

2. The teaching, research, graduate's and extension program policies and the rules for their operationalizati on, including procedures to provide incentives for academic production, research scholarships, tutoring and other modalities	2.1 Consistency of the teaching, research and extension programs with the official documents 2.2 Institutional policies for undergraduate courses (bachelors and technology courses) and sequential courses (when applicable) in the face-to-face modalities and their forms of operationalization. 2.3Institutional policies for undergraduate courses (bachelors and technology courses) and sequential courses (when applicable) in the distance learning modalities and their forms of operationalization. (Exclusive indicator for HEIs accredited in the distance learning modality). 2.4 Institutional policies for graduate courses in the face-to-face modality and the way they are operationalized (equally for faculties, universities and university centers). 2.5 Institutional policies for graduate courses in the distance learning modality and the way they are operationalized (exclusive indicator for HEIs accredited for the distance learning modality). Institutional scientific and undergraduate research policies and the ways they are operationalized. Institutional extension policies and the ways they are operationalized, with emphasis on initial and continued education and social relevance.	Entrepreneurial Vision Generation of innovative knowledge Capitalization of innovative knowledge Economic, Social and Cultural Development of the Region Integrated Entrepreneurial Culture

Developed by the authors from Inep Legislation Archives (2010).

Table 2. External evaluation (dimensions 3, 4, 5) and dimensions of the entrepreneurial university

External Institutional Evaluation Tool		Dimensions of the Entrepreneurial University
Dimensions	Indicators	
3. Social responsibility of the institution, considered especially in relation to its contribution to social inclusion, economic and social development, protection of the environment, cultural history, artistic production and cultural heritage	3.1. Consistency of social responsibility actions with the policies of the official documents. 3.2. Relations of the HEI with society; the public sector, the private sector and the labor market. 3.3. Relations of HEI with society: social inclusion. 3.4. Relations of the HEI with society: protection of the environment, cultural history, artistic production and cultural heritage.	Generation of innovative knowledge Capitalization of innovative knowledge Economic, Social and Cultural Development of the Region Spread of the entrepreneurial culture
4. Communication with society	4.1. Consistency of communications with society with the policies of the official documents. 4.2. Internal and external communications. 4.3. Ombudsman	Capitalization of innovative knowledge Economic, Social and Cultural Development of the Region Integrated Entrepreneurial Culture
5. Personnel and career policies of the teaching, administrative and technical staff, their improvement, professional development and working conditions	5.1. Consistency of the personnel and career policies of the teaching, administrative and technical staff. their improvement, professional development and working conditions with the policies established in official documents. 5.2. Training of the teaching staff. 5.3. Institutional conditions for the teachers. 5.4. Institutional Conditions for the technical-administrative staff. 5.5. Training of the face-to-face tutors and their institutional conditions (exclusive indicator for HEIs accredited for the distance learning modality - DLM). 5.6. Training of the distance learning tutors and their institutional conditions (exclusive indicator for HEIs accredited for the distance learning modality - DLM).	Generation of innovative knowledge Capitalization of innovative knowledge Economic, Social and Cultural Development of the Region Integrated Entrepreneurial Culture

Developed by the authors from Inep Legislation Archives (2010).

Table 3. External evaluation (dimensions 6, 7) and dimensions of the entrepreneurial university

External Institutional Evaluation Tool		Dimensions of the Entrepreneurial University
Dimensions	Indicators	
6. Organization and management of the institution, especially the operation and representativity of its collegiate, its independence and autonomy in relation to the maintainer, and participation of university community segments in decision-making processes	6.1. Consistency of the institution's organization and management with the policies established in official documents. 6.2. Institutional management (considering the particularities of distance learning courses, if applicable). 6.3. Operation, representation and autonomy of the Superior Councils. 6.4. Operation, representation and autonomy of the course collegiates.	Strategic Leadership Integrated Entrepreneurial Culture
7. Physical infrastructure, especially regarding education and research, the library, IT and communication resources	7.1. Consistency of the physical infrastructure, especially regarding education and research, the library, IT and communication resources with the established standards in official documents. 7.2. General Facilities 7.3. General facilities at the distance education centers (exclusive indicator of HEIs accredited for the distance learning modality - DLM). 7.4. Library: collection, services and physical space. 7.5. Libraries of the distance education centers: collection, services and physical space (exclusive indicator for HEIs accredited for the distance learning modality - DLM).	Generation of innovative knowledge Capitalization of innovative knowledge Economic, Social and Cultural Development of the Region Integrated Entrepreneurial Culture

Table 4. External evaluation (dimensions 8, 9, 10) and dimensions of the entrepreneurial university

External Institutional Evaluation Tool		Dimensions of the Entrepreneurial University
Dimensions	Indicators	
8. Planning and evaluation, particularly regarding processes, results and the effectiveness of the institutional self-evaluation	8.1. Consistency of the planning and evaluation, particularly in relation to the processes, results and efficiency of the institutional self-evaluation with the established standards in official documents. 8.2. Institutional Self-evaluation 8.3. Academic-administrative planning and actions based on the results of the evaluations.	Entrepreneurial Vision Committed Strategic Leadership Generation of innovative knowledge Capitalization of innovative knowledge Economic, Social and Cultural Development of the Region Integrated Entrepreneurial Culture
9. Policies for service provision to students	9.1. Consistency of the service provision policies to students with the standards established in official documents. 9.2. Academic support and development programs for students regarding the realization of events 9.3. Institutional conditions for the service provision to students. 9.4. Follow-up on graduates and creation of opportunities for continuing education.	Entrepreneurial Vision Generation of innovative knowledge Capitalization of innovative knowledge Integrated Entrepreneurial Culture
10. Financial Sustainability, focusing on the social significance of the continuity of commitments regarding the provision of higher education	10.1. Consistency of financial sustainability presented by the HEI with the established standards in official documents. 10.2 Financial sustainability of the institution and fund raising and allocation policies. 10.3 Policies focused on allocating resources to teaching, research and extension programs.	Entrepreneurial Vision Generation of innovative knowledge Capitalization of innovative knowledge Integrated Entrepreneurial Culture

Developed by the authors from Inep Legislation Archives (2010).

The dimensions of the entrepreneurial university model, such as entrepreneurial vision, committed strategic leadership, generation of innovative knowledge, capitalization of innovative knowledge, economic and social development of the region and an integrated entrepreneurial culture, are closely linked to the dimensions to assess the plan and mission, teaching, research and extension policies, social responsibility, personnel policies, organization and management of the institution, physical infrastructure, especially regarding education and research, and the financial sustainability.

5. Innovation and Implication of the Results

The results obtained in the reflection are innovative because linking the entrepreneurial university dimensions with the dimensions of the external evaluation tool provide assistance in the identification and evaluation of programs, projects and actions in the field of entrepreneurship, enabling the identification of elements of entrepreneurial universities in Brazil.

The results obtained in this paper have the following implications: (a) they offer a foundation to broaden the discussion and reflections on the entrepreneurial university linked with the national higher education system; (b) they reveal that the entrepreneurial university can be guided by a set of dimensions and their respective indicators; (c) they open up avenues for studies and research on new models and formats of university organizations based on the entrepreneurship paradigm.

6. Concluding Remarks

One can therefore infer that based on this metamodel for the entrepreneurial university, the entrepreneurial vision dimension is linked to notions of the projected image and mission. The concept of the image projected into the future, represents the entrepreneurial university as an organization that is part of the entrepreneurship paradigm, performing all the functions and operations. The entrepreneurial university promotes internal changes and ruptures in order to adapt to the tensions arising from the environment and looks for flexibility and efficiency through new structures of authority and ways of allocating resources. The mission concept represents not only the teaching and research function, but also the economic, social and cultural development as the third mission of the university.

In all cases where the mission of the university is described and analyzed, all converge on the dimension of the ability to generate intensive, and not just incremental, innovative knowledge, but also on ruptures, proposing to introduce incentive policies and strategies for intensive, continuous and permanent research and development. The innovative knowledge generation dimension includes the notion that the knowledge generated must necessarily be used inside and outside the university. Inside, the knowledge should be used to improve programs, projects and actions of the university, such as the restructuring of undergraduate and graduate programs, entrepreneurial skill trainings, new teaching-learning strategies, reformulation of the curriculum and other educational measures. Outside the university, innovative knowledge can be used to promote economic, social and cultural development, generating benefits for the region through the creation of new companies, technology parks and favoring the implementation of an innovative ecosystem. The entrepreneurial university will only become an agent of economic and social change in the region if it's able to generate and apply innovative knowledge that requires major investments in research and development.

The economic and social development project to be designed rests on the notion of creating shared value and opens up a new perspective between the various agents in the region in the sense that it establishes the driving vectors of the process of creating, capturing and sustaining collaborative and shared value. The relationships between institutional management and an integrated entrepreneurial culture are integrating aspects that need to be analyzed in the light of strategic actions. The creation of the entrepreneurial university proposed by Kirby is guided by the implementation of strategic actions that seek to stimulate entrepreneurship. Each of the eight strategic actions, which include commitment, incorporation, implementation, communication, encouragement and support, recognition and reward, organization and promotion, establish the activities that must be performed at the university to enable the transformation into an entrepreneurial university.

Some measures in the field of entrepreneurship carried out by Brazilian universities and by actors engaged in the Brazilian educational system indicate that the entrepreneurial university subject needs to be explored in Brazil. The first such indication is the initiative to set up a standing committee on entrepreneurship in 2010 by the *Associação Nacional dos Dirigentes das Instituições Federais de Educação Superior* (ANDIFES, National Association of Higher Education Institution Rectors) in order to spread the culture of entrepreneurship and to formulate policies, programs and institutional actions based on the principles of entrepreneurship in public federal Brazilian universities. The second example is the seminar on the Entrepreneurial University held in 2010 by the *Fórum de Pró-Reitores de Extensão das Universidades Públicas Brasileiras* (FORPROEX, Dean's Forum

for Extensions at Public Brazilian University) that aimed to stimulate the reflection on entrepreneurship in public universities and to formulate a set of systemic actions within the framework of public universities. The third example refers to the set of practices related to entrepreneurship that have been in progress in some Brazilian universities for the last 10 years, at least. These examples indicate a set of practices that are in progress within the Brazilian universities that could serve as analytical tools and mechanisms to flesh out the field of research linked to the theme of the entrepreneurial university in Brazil.

By establishing the link between the metamodel of the entrepreneurial university and the external evaluation tool of Brazilian higher education institutions, this paper has tried to point out the applications of the dimensions of the entrepreneurial university metamodel in the external evaluation system. This makes it worth highlighting that the proposal of an entrepreneurial university focusing on innovative entrepreneurial training, should place emphasis on basic and applied research with the ability to generate intensive, and not just incremental, innovative knowledge, but also on ruptures, proposing to introduce incentive policies and strategies for intensive, continuous and permanent research and development. Which means that the innovative knowledge generation dimension includes the notion that the knowledge generated must necessarily be used inside and outside the university.

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