

The role of Higher Education Institutions (HEIs) in the creation and maintenance of innovation ecosystems in cities – the case of Centro Universitário Cidade Verde (UniCV)

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ABSTRACT

This article discusses the role of higher education institutions in creating and maintaining innovation ecosystems in cities. The same is justified because innovation is key to the development of smart and sustainable cities, and the Educational Institution is responsible for training professionals able to innovate, thus contributing to the improvement of cities. The work, of a qualitative nature, being the research of the exploratory and descriptive type, was carried out through the strategy of the case study of Smart Space - Environment of Innovation of the Centro Universitário Cidade Verde (UniCV), based in the city of Maringá-PR. As a result, it was identified that the innovation environment promotes several actions to promote and train entrepreneurship and innovation, serving students at different stages of interest in entrepreneurship, such as those curious, with entrepreneurial profiles and entrepreneurs. From the above, we understand that the studied environment contributes to the training of professionals with a keen eye for innovation, who will be able to act within organizations solving problems (intrapreneurship) or opening new businesses. In both cases, these professionals will contribute to local development and also, in the search for solutions for urban development, ratifying the relevance of HEIs in the creation and maintenance of innovation ecosystems in cities.

KEYWORDS: Innovative Cities. Innovation Ecosystems. Teaching Institutions.

1 INTRODUCTION

Considering the document “Brazil 2030: smart and human cities”, the result of research, debates, and studies in different parts of the world, which culminated in the creation of the Brazilian Network of Smart and Human Cities (RBCIH) in 2014, the path to achieving quality in The development of cities and the people who inhabit them involves the creation of innovation ecosystems that unite academia, the business sector, and civil society.

As presented in the document, Smart and Human Cities are those that: As presented in the document, Smart and Human Cities are those that:

[...] have an innovation ecosystem that encompasses public authorities, organized sectors of society, the business sector, and academia, working together so that: 1) academia fosters the development of technologies, software, and applications to be used in the city, according to the needs of its population; 2) local entrepreneurs can have national and international competitiveness, developing the most diverse technological solutions applied to the city and that can be marketed globally and 3) citizens are included in the innovation process, prepared for innovative entrepreneurship and encouraged to expose problems and act as co-participants in the management and construction of a smarter, more humane and more sustainable city (RBCIH, 2016, p.10).

In this sense, the creation of an innovation ecosystem in the city involves:

- i. Join the academy; the business sector, through its representative bodies; the public authorities, and agencies that promote research, development, and innovation. It is recommended to establish partnerships formalized through a Technical Cooperation Term, signed by all and with well-defined objectives and goals. It is important to develop a joint vision of the future of the city. Where this project for the future exists, it must be revised to adapt to the concepts of smart and human cities;
- ii. Involve civil society, and various target audiences, as participants in the process of creating innovative solutions resulting from the partnerships established;
- iii. Establish practices for periodic meetings of those involved in the innovation ecosystem to ensure its perpetuity. The commitment to participate must be assumed by the top manager of each of the participating organizations, and their participation must be a privilege.

Because of the reflections and propositions learned in the reading and analysis of this document, the following questions were raised: what is the role of Higher Education Institutions (HEIs) in the creation of innovation ecosystems in cities? How do these HEIs cooperate and contribute to the unification of academia with the business sector and the involvement of civil society? What practices are relevant to maintain the innovation ecosystem and ensuring its perpetuity?

To bring to the discussion the role played by HEIs in the creation, development, and maintenance of innovation ecosystems, as well as the contribution of these ecosystems in the development of cities, passing through conceptual discussions on topics related to this context, we present in this work a study of the case, providing learning, reflections, and formation of the base that raises new investigations and future researches.

2 OBJECTIVES

To think about the role of the University in innovation ecosystems, we start from the assumption of Gobble (2014), that innovation ecosystems are dynamic communities, with relationships built and sustained by collaboration, trust, and co-creation of value, specialized in exploring and sharing complementary technologies and skills; We also rely on Moore (1993), when he emphasizes that innovation ecosystems grow within a network of inter-organizational relationships, promoting the integration of different actors, such as universities, companies, institutions, research centers, and governments; We also consider Kon's (2016) position on the creation of innovation ecosystems to have gained relevance when observing that innovation constitutes a significant source in the generation of wealth and added value in an economy. For Kon (2016) through their interrelationships, innovation ecosystems determine specific strategies with objectives focused on economic development and the basis for economic recovery in periods of less dynamism or crisis.

In the meantime, the role of higher education institutions (HEIs) has gained prominence in recent years, especially when discussing their contribution and engagement with the challenges, dilemmas, and problems of society. A study carried out by Sebrae and Endeavor in 2017, with the participation of 2,230 students, 680 professors, and more than 70 higher education institutions in Brazil, showed that there is a movement to overcome the barriers of the economy and the job market, promoting entrepreneurship as a good path for professionals who are willing to innovate. The research demonstrates the HEIs' concern to work together with the market and the community, and, at the same time, the difficulty in being active in this regard, having as one of their gaps the lack of experience of their faculty with entrepreneurship in business practice. The research also points to the insertion of Entrepreneurial Education in the curriculum and the creation of environments that encourage entrepreneurship within the institutions, as some of the actions that permeate the path created by the IES to promote entrepreneurship and innovation, face technological development, transformations in business and social changes, working together with the market and the community.

Thus, there is a concern to integrate academia, the business sector, and society, which is in line with the discussion proposed in the document "Brazil 2030: intelligent and human

cities” (2016) about the creation of innovation ecosystems in cities. Bagnato (2012), when discussing the role of the University and Research Institutes, highlights the fact that these institutions need to take the place of promoters of entrepreneurial behavior and skills for the development of innovation, while at the same time strengthening relationships with companies, establishing partnerships that contribute to the development of the market and society.

The university needs to be seen as a priority because without the training of adequate professionals and the generation of scientific-technological knowledge, companies are left without the most important source of basic scientific knowledge since it is in the university environment that the ideas that are generated are generated. Can be converted into riches, due to their usefulness in the lives of people and organizations. [...] there needs to be a partnership between the university, which trains human resources, which provides innovators, and the companies, which absorb these professionals to develop their technology and create innovations for the market (BAGNATO, 2012, p. 22).

Thus, the leading role of the university in the process of economic and social development of cities is noted, promoting engagement and the flow of resources in the innovation ecosystem amid concrete interactions - interpersonal and inter-organizational - with a great capacity to transform themselves into centers of innovation. Considering the role of universities in innovation ecosystems and the development of cities, the following questions arose: how to unite society, the business sector, and academia? How to promote articulated work between these actors in an innovation ecosystem? How to establish formalized partnerships and develop a joint and future vision for cities? How to involve civil society in the process of creating innovative solutions and generating commitment about its role in the development of cities?

Because of the questions presented and assuming, in Heaton, Siegel, and Teece (2019, p. 922) that “a university can serve as an ecosystem orchestrator, applying its intellectual, reputational and financial capital strategically to establish and maintain a strong ecosystem”, there was an opportunity to broaden this discussion and shed light on the role of universities in creating and strengthening innovation ecosystems in cities. This feat represents an opportunity to illustrate how universities can actively stimulate the development and renewal of their local innovation ecosystems, occupying a place of “central actor” for the growth of these ecosystems, in articulation with governments, companies, and society, enabling transformations through teaching, research and extension activities.

Thus, the objective of this work is to discuss the role of Higher Education Institutions (HEIs) in the creation and maintenance of innovation ecosystems in cities, based on a case study.

3 METHODOLOGY / ANALYSIS METHOD

Concerning methodology, this research is qualitative. An approach that allows working with a universe of meanings, raising the deepening of the investigation of questions related to the phenomenon studied and its relationships, through direct contact with the specific situation related to the theme that it proposes to explore (MINAYO, 2014; GIL, 2008).

The research is characterized as exploratory and descriptive, based on the precepts presented by Gil (2008) and Triviños (2012). The exploratory phase was carried out through a

bibliographic survey carried out in theses, dissertations, books, articles, and in guiding and regulatory documents, with related topics: smart cities, innovation ecosystems, higher education, and urban development. It is also characterized as a descriptive type of research, as it resides in the desire to know a community, its characteristic features, its people, its problems, its challenges, its values, etc., that is, the essence of a phenomenon is sought. According to Gil (2008, p. 42), “descriptive research has as its main objective the description of the characteristics of a certain population or phenomenon or, then, the establishment of relationships between variables”.

As a research method, a single case study was used. According to Yin (2001, p. 33), “a case study is an empirical investigation that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and the context are not clearly defined”. The case study proved to be a fruitful strategy for allowing knowledge and deepening of a specific reality of the phenomenon studied, allowing to correlate its elements, leading to new conceptions, paths, reflections, and possibilities about the role of HEIs in the creation and development of innovation ecosystems in cities.

4 RESULTS

4.1 Creation of innovation ecosystems in cities and the role of HEIs

According to Audy (p.75, 2017) “innovation, while derived from scientific knowledge, is the result of a continuum that has its origin and driving force in research and the generation of new knowledge”, and therefore, the institution of teaching plays a fundamental role in the process of raising awareness and fostering innovation. At this point, it is important to emphasize that innovation is understood to be the result of a joint effort by different actors and practices, as already discussed by Favero (2020), with educational institutions being an actor in this network.

Already understanding the role of the protagonism of educational institutions presented by Bagnato (2012), we understand the role of this intermediary in fostering and promoting innovation in cities through the construction of professionals able to innovate. After all, the higher education institution is responsible for the training of qualified labor by the regional context in which it is inserted and also with market trends.

In this sense, it is understood that the institution has several ways to build these skills in its graduates. For example, it could work on innovative content within the curriculum and encourage classes with active methodologies and problem-solving; or even, it could encourage the participation of students in external events related to this theme. Ultimately, there are many possibilities. In this article, we present the case of Centro Universitário Cidade Verde (UniCV) - with its main campus located in the city of Maringá-Pr and distance education centers in different parts of the national territory - which understood how fundamental this content is for all training and decided to dedicate extra efforts to the development of these skills. Therefore, it invested in an environment of institutional innovation: the Smart Space.

4.2 The case of the Centro Universitário Cidade Verde (UniCV)

As pointed out by Audy (2017), the relationship between academia and innovation is not linear, but interactive, simultaneous, and complex. Based on this concept, a discussion began on the role of the Educational Institution in the innovation ecosystem, initially at the regional level, and then nationally. In this line of thought, Centro Universitário Cidade Verde proposed the creation of an environment of innovation: Smart Space.

The construction of the environment is based on the Triple Helix perspective, articulating market, government, and society; and has as its central objective is the promotion of entrepreneurship and innovation for students, alumni, and the external community. For this, the environment's performance is divided into three pillars: Creative Economy, Innovation, and New Business and Organizational Challenges.

Smart Space was created in 2021, having a physical headquarters on the campus of Centro Universitário Cidade Verde. The physical space was developed to stimulate the development of projects, facilitating interaction through the availability of tables, chairs, and also a space for the presentation and articulation of ideas - the grandstand. Due to the institution's profile, which has a large number of students in distance learning, Smart Space was challenged to promote actions for distance learning as well. After several discussions and participation in events and training, it was possible to delimit at which moment of the innovative cycle the environment would focus, and it was defined by the management of the space that initially, the environment would work with the ideation, that is, the promotion of new ideas.

A fundamental issue in the creation and configuration of space was the understanding of innovation as a result of a collective process. And for that reason, Smart Space sought to strengthen its participation in society by getting involved in all innovation and entrepreneurship discussion groups: Entrepreneur Service Point, Maringá Innovation Center, Health Innovation Hub, Innovation Center; Through this participation, the environment managed to create partnerships with Sebrae, Investors (Maringá Capital) and other innovation environments, thus facilitating the development of joint actions that allow for the reduction of efforts and the achievement of more effective results. Today, Smart Space is configured as the main link between the market (companies) and the academy, promoting projects that allow the development of students and graduates through real challenges and also, the oxygenation of companies with the ideas arising from these challenges.

In its first year of operation, Smart Space carried out several projects. The highlights are (a) Day One - monthly meetings with entrepreneurs whose objective is to promote entrepreneurship among students from all over Brazil. In these meetings, entrepreneurs share their stories, experiences, and challenges, and more than that, they inspire students. Entrepreneurs from different segments, genders, and sizes of companies are invited, in short, the proposal is to bring plurality to speech, thus facilitating the identification of students. The event takes place live on youtube, which ensures interaction between participants and entrepreneurs. (b) Esperançar - project focused on students who already have entrepreneurial activities. It arises from the need to train this entrepreneur, thus facilitating his journey. The project consists of a cycle of workshops: strategic planning, costs, sales price formation, business dissemination, and also on formalizing the business. The lecture cycle is annual, with monthly

meetings. It is important to highlight that Esperançar is born from the careful look of support, care, and encouragement towards those who are starting the entrepreneurial journey. An interesting point of the project is that it was built with a storytelling perspective, and therefore, each edition embraces the story of an entrepreneur, in the 2022 edition, we have the story of Rafaela who has a beauty salon. All workshops are carried out based on the information in this case, allowing a better visualization by the participant.

Figure 1 - Communication Model: Esperançar Project.



Origin: Site Smart Space (2022) - <https://unicv.edu.br/esperancar/>

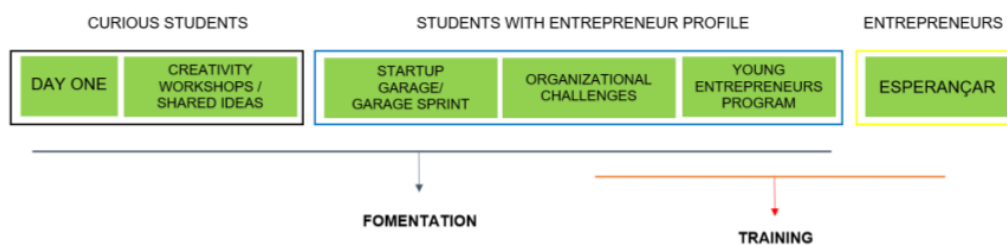
It is also worth noting that for the participants of Esperançar de Maringá (headquarters of the institution), a fair is held monthly in which they can sell their products. (c) Projects developed in partnership with Sebrae, such as creativity workshops, Shared Ideas (one-off events that discuss a point in the entrepreneurial journey that students have doubts about), and the Startup Garage and Garage Sprint. These last two are already focused on the development of new solutions for the market, according to the identification of pain. Here students are encouraged to create, develop, question, and propose. (d) Young Entrepreneurs, a project developed in partnership with the Associação Comercial de Maringá (ACIM) to promote entrepreneurship among high school students. (e) Organizational Challenges, and 2021 the eco-packaging challenge was carried out in partnership with Gela Boca ice cream shop. In this challenge, students had to present proposals for the development of packaging from the perspective of the circular economy. In 2022, the following are in progress: 1. Re-modeling - a challenge built in partnership with Sebrae open to the entire state of Paraná. In this challenge, students need to develop new options for textile waste. 2. Pedagogical game - consists of the proposal for the development of pedagogical games by the students. Both challenges were developed to serve distance learning students, therefore, the methodology is entirely online. Regarding the challenges, it is important to highlight the care taken in leveling the information, that is, all challenges have a learning path; this allows students from different areas to participate fairly.

Understanding that the opening of the innovation environment in the institution presented a rupture in terms of culture, bringing a faster, questioning profile closer to the market, it was necessary to initiate actions to raise awareness and train employees and teachers;

especially teachers, to train multipliers for the proposal. For this, lectures were held with all professors, and some participated in a greater training aimed at setting up the innovation environment (promoted by Sebrae).

In summary, it can be said that today the innovation environment works with actions to encourage entrepreneurship and innovation, and training and projects often have both functions, as can be seen in the following figure.

Figure 2 - Summary of Smart Space (UniCV) actions.



Origin: Developed by the authors (2022).

Finally, the actions are segmented by the student's profile. Some are aimed at curious students, to raise awareness. This student does not have an entrepreneurial profile (yet) and, in general, is not interested in undertaking, but ends up participating in the actions out of curiosity. Then we have students who already have an entrepreneurial profile, who, even if they have not yet undertaken an undertaking, have the will to undertake; and therefore, interest in more practical activities that put their creative and logical reasoning skills in check. Finally, some students are already entrepreneurs and need support in managing their businesses.

The main objective of the space is, of course, to better prepare students to work in the market, encouraging them to be agents of change and promote improvements within the organizations they work (intrapreneurship) or solving society's demands with new proposals, and entrepreneurship. With less than two years, it is already possible to perceive reflections of the innovation environment in the students. In 2022, it was already possible to identify a greater volume of students from the institution participating in external events aimed at promoting new ideas, such as Hackathons and challenges. Since some students are already starting to reach prominent positions in these events.

4.3 Developments and future research

Specifically, regarding the proposed object of study, future research may move towards measuring the results of the projects carried out. For this, the innovation environment has carried out an annual survey of the students' entrepreneurial profile, the space proposal is that in the medium term, the actions already have an impact on the student's profile. Broadening the view, it is suggested that broader studies be carried out with innovation ecosystems to identify projects to support the construction of better cities, and yet, it would be

interesting to map the interest of public bodies in these ecosystems, such as public notices funding, public versus private partnerships.

5 CONCLUSION

It is known the importance of higher education institutions for the development of better cities. Especially because institutions are training the new generations, and therefore, they need to be attuned to current trends and technologies, and for that, an intimate connection between educational institutions and other market actors is essential, allowing the student to be more plural and connected to your reality. Here in this study, an action by a higher education institution in the northwest of the State of Paraná is presented in search of expanding the proximity of academia and the market, creating an environment of institutional innovation.

It can be seen from the presentation of the projects, the positioning of the innovation environment as an articulator (intermediary) between society, the business sector, and academia. Especially through the promotion of organizational challenges, in which Smart Space seeks real problems of companies, systematizes, and presents them for students to solve. This point is crucial for the development of more qualified professionals, as it allows the experience of practice and the connection with theory, in addition to oxygenating companies with ideas, thus facilitating the resolution of the challenge.

By training qualified professionals, and promoting and articulating student participation in an environment of innovation, Centro Universitário Cidade Verde (UnicV) has contributed to the generation of better cities, in addition to technical training, it has helped to develop skills such as logical reasoning, entrepreneurship/intrapreneurship, teamwork, problem-solving and also, creativity and a careful look at the environment (environmental and social).

It is also said that the articulation between these actors - professors, students, entrepreneurs, and companies - is only possible through the systematization of the project elaboration process and formalization. In this sense, each actor is clear about their role and stages, and, as the innovation environment is within the educational institution and has students as its main audience, it is also very important in the project design to align the expectations of each actor. After all, the proposals are prepared by students and not by consultants in the area. In the city of Maringá, for example, interaction with civil society is facilitated especially by the Commercial Association and also by the Economic Development Council - CODEM.

Finally, considering that the objective of this work was to discuss the role of Higher Education Institutions (HEIs) in the creation and maintenance of innovation ecosystems in cities, based on a case study, it is concluded that the objective was achieved, bringing relevant contributions to provoke and strengthen the debate about important actions for the development of smart and sustainable cities.

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