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iati-fema innovation ecosystem: a look at the culture of innovation and problem solving real challenges through collaboration

Iati-fema innovation ecosystem: a look at the culture of innovation and solving real-world challenges through collaboration

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SUMMARY

This study investigates the innovation ecosystem of the Academic Technology Incubator and Innovation (IATI) of the Machado de Assis Educational Foundation (FEMA), with a focus on culture of innovation and in solving real challenges through collaboration between companies participants. The study focuses on identifying innovation practices, challenges faced and the benefits obtained by companies that are part of this ecosystem. The central question is: what are the main challenges faced by companies in the ecosystem IATI-FEMA innovation goals and how collaboration contributes to overcoming them? The goal is examine the culture of innovation and the solution of real challenges in this collaborative environment. The relevance of the study is to contribute to the understanding of innovation processes and collaboration between companies, providing valuable insights to improve these practices and promote regional development. The theoretical framework addresses essential concepts on innovation ecosystems, the main agents involved and the benefits of integrating this environment, with a specific focus on the IATI-FEMA ecosystem. The research uses the action research methodology, with techniques such as bibliographic research, questionnaires semi-structured and participant observation, analyzing the data using the hypothetical method-deductive. The study offers insights into the culture of innovation and collaboration within IATI-FEMA identifies opportunities for improvement in business practices and contributes to formulation of policies that promote the sustainable development of the ecosystem.

Keywords: Ecosystem. Innovation. Collaboration.

ABSTRACT

This study investigates the innovation ecosystem of the Academic Incubator of Technology and Innovation (IATI) at the Machado de Assis Educational Foundation (FEMA), focusing on the culture of innovation and the resolution of real-world challenges through collaboration among participating companies. The research aims to identify innovation practices, the challenges faced, and the benefits gained by the companies within this ecosystem. The central question is: what are the main challenges faced by companies in the IATI-FEMA innovation ecosystem, and how does collaboration help to overcome them? The objective is to examine the culture of innovation and the solution of real challenges in this collaborative environment. The relevance of this study lies in contributing to a better understanding of innovation and collaboration processes among companies, providing valuable insights to improve these practices tices and foster regional development. The theoretical framework addresses key concepts related to innovation ecosystems, the main agents involved, and the benefits of integrating into such an environment, with a specific focus on the IATI-FEMA ecosystem.

The research adopts an action research methodology, using techniques such as literature review, semi-structured questionnaires, and participant observation, with data analyzed through the hypothetical-deductive method. The study offers insights into the innovation culture and collaboration within IATI-FEMA, identifies opportunities for improvement in business practices, and contributes to the development of policies that promote the sustainable growth of the ecosystem.

Keywords: Ecosystem. Innovation. Collaboration.

ABSTRACT

This study investigates the innovation ecosystem of the Academic Technological Incubator. logy and Innovation (IATI) of the Fundación Educacional Machado de Assis (FEMA), with focus on the culture of innovation and solving real challenges through collaboration- ción among participating companies.

The study focuses on identifying innovation practices, challenges faced and benefits obtained by companies that form part of this ecosystem. The central question tral es: which are the main challenges that companies face in the ecosystem of innovation of the IATI-FEMA and how does the collaboration contribute to overcoming them? The objective is

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1. INTRODUCTION

Innovation plays a crucial role in economic development and technological, boosting the competitiveness and sustainability of organizations in a globalized and dynamic market. In this context, innovation ecosystems emerge as complex and interconnected systems, composed of a network of agents, resources and institutions that collaborate and compete to foster the innovation process. This study focuses on the Academic Incubator of Technology and Innovation (IATI) of the Educational Foundation Machado de Assis (FEMA), with the aim of analyzing how the innovation ecosystem of IATI contributes to the growth and development of incubated companies.

The problem that motivates this study lies in the need to understand the effectiveness of innovation ecosystems in promoting startup success and identifying areas that need improvement. The central hypothesis of the study is that IATI, by integrating theory and practice through an action research model, offers significant support for the growth of incubated companies, which face challenges that need to be addressed to maximize your impact.

The general objective of this work is to evaluate the contribution of IATI to the development of incubated companies and identify the benefits and challenges associated with their participation in the innovation ecosystem. Specifically, we seek to: analyze the level of satisfaction of companies with the resources and activities offered by IATI; assess the impact of innovation activities in the evolution of companies; examine the interaction between companies and the academic community; and identify the main challenges and benefits perceived by ecosystem participants.

The justification for this research is anchored in the relevance of understanding how academic incubators can foster innovation and growth of startups. The research viability is guaranteed by the accessibility of data from questionnaires applied to incubated companies, and coherence is ensured by the use of robust analysis and interpretation methods, such as the hypothetical-deductive method.

The methodology adopted in this study is based on action research, and combines practices investigative, reflective and educational for an in-depth understanding of the reality of companies incubated at IATI. Data generation included bibliographic research, questionnaires semi-structured and participant observation. Data analysis followed the hypothetical-deductive, to explain the observed phenomena.

The theoretical framework of the study is based on authors such as CHESBROUGH (2006), DRUCKER (2005), HACKETT and DILTS (2004), and ETZKOWITZ and LEYDESDORFF (2000), which address the importance of resources, support and interaction within ecosystems of innovation.

The structure of the article is organized as follows: initially, the reference theoretical framework on innovation ecosystems and the methodology used. Then, the analysis of the results obtained through questionnaires and observations. Finally, the implications of the findings, highlighting IATI's contributions to the development of companies and suggesting improvements to strengthen the innovation ecosystem.

2. THEORETICAL FRAMEWORK

2.1 INNOVATION ECOSYSTEM

Innovation ecosystems represent complex and dynamic systems composed of by an interconnected network of agents, resources and institutions that collaborate and compete to foster the innovation process in a given region or sector. The word ecosystem, originating from biology, refers to the interactions that occur in a given environment and include an essential factor: relationships.

Innovation ecosystems allow us to understand and promote innovation in a increasingly globalized and interconnected context, recognizing interdependence and co-evolution of various elements, including companies, educational and research institutions, government, startups, investors, physical and digital infrastructure, entrepreneurial culture and regulations, which collaborate with each other in pursuit of a common goal: the generation of value shared.

According to Chesbrough (2006), innovation ecosystems play a key role crucial in stimulating the creation, dissemination and application of new and relevant knowledge, resulting in technological advances, development of new products and services, generation skilled jobs and sustainable economic growth. In addition, they can contribute to solving social and environmental challenges through innovative solutions (Chesbrough, 2006).

The essence of innovation ecosystems lies in their central motivation: to identify problems and propose innovative solutions to solve them. For Etzkowitz, and Leydesdorff, (2000) unlike traditional innovation models centered on companies, where the research and development often occurs internally and is driven by competition in the market, innovation ecosystems take a more holistic approach and collaborative. They recognize that contemporary challenges, whether social in nature, economic, environmental or technological, are often complex and multifaceted, requiring a variety of perspectives, knowledge and skills to be adequately addressed. Thus, collaboration between the various actors in the ecosystem becomes essential to identify gaps, explore opportunities and co-create solutions innovative solutions that can generate a positive impact.

One of the main differences between innovation ecosystems is their ability to promote the convergence of different disciplines, sectors and cultures, creating an environment conducive to interaction and exchange of ideas. According to Freeman, (1991) through formal and informal networks, networking events, acceleration and incubation programs, among other mechanisms, innovation ecosystems facilitate the connection between entrepreneurs, investors, researchers and other agents, encouraging collaboration and sharing of resources and experiences.

Furthermore, innovation ecosystems are characterized by their ability to adaptability and resilience, being able to adjust to changes in the external environment and emerging demands of society. Rather than following a prescriptive approach and hierarchical, these ecosystems tend to be more organic and decentralized, allowing that ideas and initiatives arise spontaneously and are tested and refined in a environment of experimentation and continuous learning.

In this way, they represent a powerful tool to boost transformation and progress on a local, regional and global scale. By promoting collaboration, co-creation and the generation of shared value, these ecosystems have the potential not only to solve existing problems, but also to create new opportunities and shape the future in a more sustainable and inclusive way.

2.2 MAIN AGENTS OF INNOVATION ECOSYSTEMS

Innovation ecosystems are formed by components and agents. components interact dynamically and interdependently within ecosystems of innovation, creating an environment conducive to the generation and dissemination of new ideas, technologies and business models. The success of an innovation ecosystem often depends on the ability of its components to work together to overcome challenges and take advantage of emerging opportunities. According to Freeman, (1991) one can find the following components in an innovation ecosystem:

• Key actors: innovation ecosystems are home to a diversity of actors, including established companies, startups, individual entrepreneurs, investors, educational institutions, research institutions, governments and regulatory agencies. Each of these actors play specific roles and contribute uniquely to the ecosystem.

• Resources and Infrastructure: Tangible and intangible resources are essential for the functioning of innovation ecosystems. This includes physical resources such as laboratories, factories, offices and technology parks, as well as human resources, such as talents, knowledge and technical skills. Supporting infrastructure, such as Internet networks, high speed, efficient transportation and coworking spaces, is also important for facilitate interaction and collaboration between the different actors in the ecosystem.

• Connections and Networks: the interconnection between the different actors in the ecosystem is fundamental to promote collaboration, resource sharing and exchange of knowledge. Formal networks, such as trade and industry associations, as well as Informal groups, such as interest groups and online communities, play a crucial role in creating networking and collaboration opportunities.

• Culture and Environment: an entrepreneurial culture and an innovation mindset are essential components of innovation ecosystems. This includes a tolerance for risk, a willingness to experiment and fail, a mindset of continuous learning, and a openness to new ideas and perspectives. An environment conducive to innovation, characterized by the presence of incentives, recognition and support for entrepreneurs and innovators, It is also important to stimulate creativity and initiative.

• Policies and Regulations: government policies and regulations can have a significant impact on innovation ecosystems. This includes policies related to education and research, tax incentives for research and development, protection of intellectual property, regulation of specific markets and sectors, and support for innovation programs and initiatives.

• Financing and Investment: access to financing and investment is fundamental for the growth and development of companies and innovative projects. This includes seed funding for startups, venture capital investment for companies in growth stage, public funding for research and development, and access to loans and lines of credit for established businesses (Freeman, 1991).

It takes intention, planning and consistency from all components involved. to make the innovation ecosystem thrive.

Innovation ecosystems are composed of a variety of agents that play distinct but interdependent roles in the promotion and development of innovation. This relationship refers to the interaction of very diverse agents considering that

plurality is a key factor in sustaining a thriving entrepreneurial environment and favorable to the generation of shared value. According to Saxenian, (1994) the main agents found in these ecosystems:

• Companies: they play a significant role in innovation ecosystems, bringing resources, experience and infrastructure and can collaborate with startups, educational institutions and research, providing funding, expertise and market access. They are a central element in the innovation ecosystem, since the market itself demands a continuous flow of idea generation

• Startups: are often considered the engines of innovation, introducing new ideas, technologies and disruptive business models. They are agile and adaptable, capable of exploring market niches and responding quickly to changing demands of consumers.

• Entrepreneurs: Entrepreneurial people also play a role crucial in an innovation ecosystem. They benefit from interactions with others actors and favorable conditions for the development of new businesses and entrepreneurial skills.

• Educational and Research Institutions: Educational institutions play a key role crucial in the generation of scientific and technological knowledge. The research carried out in educational institutions can lead to groundbreaking discoveries that have the potential to be commercialized and applied in the most diverse areas. From the interaction with the others ecosystem agents, people who are part of these groups have the opportunity to use the academic work to generate real impact on people's lives.

• Investors and Venture Capital: investors, such as venture capital funds and angel investors, provide initial funding for startups and innovative projects. They take risks in exchange for a share of future profits and play a role fundamental in the ecosystem by financing the development and growth of new companies.

• Governments and Regulatory Agencies: Government can play an active role in promoting innovation through public policies, investments in research and development, tax incentives and support programs for entrepreneurs and startups. Regulatory agencies can also create an enabling regulatory environment that encourages innovation and protect intellectual property rights.

• Incubators, Innovation Centers and Technology Parks: are designed to bring together companies, educational institutions and research institutions in a collaborative environment. They offer shared infrastructure, networking and technical support to promote collaboration and knowledge exchange.

• Civil Society Organizations and Academic Community: organizations of the civil society, such as trade associations, interest groups and online communities, can play an important role in networking and promoting innovation in specific areas. The academic community can also contribute through events, workshops and publications that promote knowledge dissemination and collaboration interdisciplinary.

These agents work together within innovation ecosystems, collaborating and competing to drive progress and transformation across diverse sectors and regions. Their interactions and connections create a dynamic and conducive environment for emergence of new ideas, solutions and business opportunities.

2.3 BENEFITS OF INTEGRATING AN INNOVATION ECOSYSTEM

Innovation ecosystems have emerged as an effective model for driving innovation. technological and economic progress in a globalized and digitalized economy. By integrating a variety of actors, resources and institutions, these ecosystems create an environment conducive to collaboration, experimentation and the creation of innovative solutions for complex challenges.

One of the benefits of integration into Innovation ecosystems is access to resources diversified. For Chesbrough, (2006) participating in an innovation ecosystem offers access to a wide range of resources, including expertise, funding, infrastructure and talent. This diversity of resources increases the chances of success of innovative projects and allows individuals and companies to expand their capabilities and achieve their goals more effectively.

Collaboration within an innovation ecosystem offers the company the opportunity to learn from the mistakes and successes of other businesses, integrating good practices and enriching your repertoire of references. Furthermore, when ideas are subjected to a

broad process of debate and refinement by a diverse group of individuals, its effectiveness tends to be significantly improved.

For Powell et al., (1996) collaboration and cooperation are great benefits of a innovation ecosystems, as there is interaction between different actors. By sharing knowledge, experience and resources, participants can solve complex problems more effectively and accelerate the development of innovative solutions.

Integration into an innovation ecosystem can establish strategic links for a business, allowing connections with a wide network of companies and professionals, the which offers several opportunities to identify new suppliers, customers, investors and partners. One of the main advantages of this networking is that the participants of ecosystem share similar goals, which facilitates the alignment of expectations and the collaboration on joint initiatives.

In addition to direct connections, an innovation ecosystem also promotes development of trusting relationships between its agents. This mutual trust is manifests itself not only in recommendations and references, but also in strengthening the reputation and image of the company within the community.

Another important benefit is the stimulation of creativity and open innovation. According to Chesbrough, (2003) by sharing ideas and insights, participants can generate new approaches and solutions to existing problems, leading to significant advances in various fields.

Furthermore, it is worth remembering that people are the engine that drives innovation. It is the human creativity and skill that allow the conception of genuinely transformative to solve challenges. Therefore, for companies seeking innovation, there is no There is nothing more crucial than recruiting talented individuals to join your internal teams.

Innovation ecosystems also offer an agile and dynamic environment that accelerates the innovation cycle, reducing the time it takes to take an idea from concept to marketing. For Adner, (2006) by providing support and necessary resources in all stages of the innovation process, these ecosystems allow companies to respond quickly respond to market changes and gain a competitive advantage.

Integration into innovation ecosystems not only benefits participants individually, but also generates shared value for society as a whole. Porter and Kramer, (2011) emphasize that by developing innovative solutions to challenges

social, economic and environmental, participants contribute to economic growth, improving quality of life and sustainable development.

Participation in innovation ecosystems offers a variety of benefits for individuals, businesses and society in general. By providing access to diverse resources, promote collaboration and cooperation, stimulate creativity and accelerate the cycle of innovation, these ecosystems create an environment conducive to development and implementing innovative solutions to complex challenges. To maximize these benefits, it is essential that participants actively engage in the ecosystem, contributing their knowledge, skills and resources, and collaborating with others members to achieve common goals in an effective and sustainable manner.

2.4 IATI-FEMA INNOVATION ECOSYSTEM

Academic Incubator of Technology and Innovation (IATI), of the Educational Foundation Machado de Assis (FEMA) was created in September 2018. It is an action for the promotion Entrepreneurship and Innovation, whose operation is carried out by the Innovation and Educational Technologies (NITED – FEMA).

It is intended to support innovative technology-based companies, originating from students of the Institution, bringing the academic environment closer to the business market, encouraging the posture entrepreneurial and generating innovative products and services, whose processes or products and services have relevant market prospects. IATI supports projects from all over the world the national territory, with innovative technology-based ventures whose processes or products and services have relevant market prospects.

Companies eligible for incubation are classified through a process of selection, whose participation, approval and classification criteria are determined in a notice available at the electronic address www.iatifema.com.br.

The incubator is a tool available to FEMA academics, useful in improvement of skills linked to entrepreneurship with technology and innovation.

Today, there are twenty-two pre-incubated companies, fifteen incubated companies, twenty-two graduated companies. and sixty-three business partners, linked to IATI under a contract of cooperation. Together, academics, teachers, partners, entrepreneurs, community and sixteen incubated companies make up the academic innovation ecosystem.

According to the fundamental principles of ecology, ecosystems are defined as "[…] composed of the relationships between living and non-living beings and the environment in which they are inserted. The interactions form a balanced, stable and self-sufficient system" (Source not assigned).

Gastaldi et al. (2015) define an academic innovation ecosystem as a community of actors interacting as a single system to produce flows interorganizational. In this way, IATI promotes processes of cooperation and competition simultaneous with the participation of academics, since companies and entrepreneurs are challenged to take their demands to the classroom, and the students, mediated by the teachers, share their knowledge and experiences with all stakeholders in the ecosystem.

The concept of business ecosystems first emerged in the 1990s, when James Moore introduced the idea of collaborative networks composed of systems and dynamic subsystems. Moore described these ecosystems as environments in which there are interdependent relationships and constant changes, reflecting the evolutionary nature and adaptive nature of business interactions.

Almost three decades have passed since Moore's initial proposition, but his point from a precursor perspective remains extraordinarily relevant in the social and market context current. Innovation ecosystems, which are based on the same principle of creating networks collaborative, they bring together agents who collaborate with each other to generate shared value. However, the significant difference lies in the central motivation of these ecosystems: the identification of problems and the proposition of innovative solutions to solve them. According to with Gastaldi et al., (2015) this approach aims not only to promote collaboration between participants, but also catalyze the resolution of complex challenges and stimulate economic and social progress.

Gastaldi et al., (2015) argue that academics are effective in leveraging all three main characteristics that characterize group learning: breadth and depth of sharing, where knowledge, routines or behaviors are distributed between group members; storage, with changes in the group's repertoire need to be stored in memory for learning to persist over time; and recovery, or rather, the ability of members to find and access knowledge to

later use. This sequence deals with learning from the academic innovation ecosystem, which is managed by the apprentices themselves.

According to the trajectory of the Academic Innovation Ecosystem, the first step is admission to undergraduate studies. Students begin their solution projects by integrating the content learned in the semester to real demands, provided by the incubated companies. The second step seeks to value the academics' final course work. Thus, it recognizes, publishes and awards TCCs that stand out in innovation.

The third stage is called SmarthHub, a Platform focused on challenge and project-based learning. The goal is to connect community, academia and academics, and the challenges proposed by the community are evaluated and proposals are made solutions in the classroom by academics, who will later give feedback to the proposer.

From the fourth step onwards, the incubation process takes place, at which point applications for admission to the academic incubator, through the opening of a specific notice. The The notice may allow the registration of pre-incubated companies, which aims to develop the profile entrepreneur, innovator and support for the development of ideas and new businesses; or incubated, companies in the consolidation and business phase. When pre-incubated, the company receives training and mentoring from entrepreneurs with sharing of ideas, and MVP (Minimum Viable Product) with the result of maturation of products and services and the business model business. After passing the incubation phase, the acceleration phase occurs, the expansion phase of the business, attracting investments and improving sales channels. The incubators also form partnerships with other startups, enabling networking and the development of new business.

Candidates, legal entities, with adherence to the following areas of activity: Commerce, Industry, Services and Agriculture, or when a pre-incubation notice is open, candidates, whether individuals or legal, without the need for a CNPJ, with adherence to these same areas.

The project must be presented in accordance with the Incubator proposal model. A commission will assess the technical feasibility of the project, the degree of innovation and the entrepreneurial potential of the proposals.

The seventh step is the graduation stage, which aims at stability in the market and achieving the ideal relationship with the customer. At this stage, the company receives support from

incubator to check if it remains stable in the market. Finally, the post-graduation, in which the company receives annual monitoring for 5 years. Graduates are invited to join the bank of volunteer mentors, continuing the ecosystem of innovation.

By participating in the ecosystem, everyone wins, since the incubated company receives mentoring of specialized professionals, increases your network of contacts and gains visibility, being able to attract new business. Academics create solutions by integrating the content learned in semester to real demands and experience professional reality throughout the course. The ideas Innovative ideas are discussed in groups, which helps and encourages the exchange of knowledge.

The IATI Governance Model brings values such as connectivity, practicality, sustainability and economy, agility, mobility and flexibility and its mission is encourage regional development as an education entity.

The incubator provides all the physical infrastructure of the Educational Institution to which is linked. IATI has chosen to use an innovative incubator management model, the same used by Stanford University which is a private research university located in Palo Alto, California, United States, and one of the most prestigious institutions in the world. The model used at IATI does not have a fixed location, but it is possible to use all FEMA facilities, with prior appointment.

In addition, the incubated companies participate in classes and demands are resolved in together with academics and teachers in the classroom, which enables integration biggest between academia, new businesses and community, constantly feeding the innovation ecosystem. In this way, management, legal and accounting advice is provided by teachers, through mentoring activities for academics who have the opportunity to work on real cases in the classroom and, upon completing the undergraduate course, they are better prepared for the job market. Consulting, mentoring and training are carried out by professors, invited entrepreneurs and partner companies.

Innovation ecosystems formed from academic incubators are parts members of a broader network in which different agents collaborate to generate value shared. The interaction between participants inside and outside the incubator feeds mutually, driving both business development and the progress of community toward prosperity. IATI-FEMA not only provides internal support for the growth and development of startups and innovative projects, but also

fosters external connections with investors, mentors, established companies and others institutions, thus creating a robust and dynamic innovation ecosystem. This environment of collaboration and interaction favors the individual success of the incubated companies and the broader economic and social development of the region in which it is located.

3. MATERIAL AND METHOD

This study sought to explore the dynamics of innovation within IATI - Incubator Academic of Technology and Innovation, using the action research methodology as research structure. Following Thiollent's definition (2009), action research was conceived and carried out in close association with the action of solving collective problems, with the active participation of researchers and participants.

Fiorentini, (2004) highlights that in this methodology, the investigative, reflective and educational go hand in hand. Thus, this approach was guided by the continuous interaction between research and action, allowing a deeper understanding of the reality of companies incubated at IATI.

Barbier (2004) highlights the social, pedagogical and political role of action research, which reinforces the commitment to social transformation through innovation. Researchers played an active role, encouraging dialogue and participation of those involved in the process.

The action research adopted in this study was based on the concept of education liberating, as proposed by Pinto and Bosco, (1989) which emphasizes the empowerment of popular sectors in the search for knowledge and transformation of reality.

To ensure the productivity of action research, the following assumptions were incorporated: highlighted by Thiollent, (2009) as respect for the knowledge of participants and belief in potential for knowledge production by all involved.

As for the technical procedures, bibliographic research and questionnaires were used. semi-structured, consisting of seven closed questions and one open question, and observation participant. Data analysis and interpretation were conducted based on the method

hypothetical-deductive, as proposed by Gil, (2008) aiming to explain the phenomena observed and explored during the research.

By integrating theory and practice, action research at IATI enabled an understanding more comprehensive and in-depth innovation processes, contributing to the development of both the incubated companies and the incubator itself as a whole.

4. RESULTS AND DISCUSSION

During the month of July 2024, a questionnaire consisting of seven closed questions and two open questions for the fifty-nine participating companies (pre-incubated, incubated and graduated) from the Academic Incubator. Of these, fifty returned responses to the questionnaire, with the newest incubators choosing not to participate because they consider that they are still in a phase of evaluating the real results provided by participation in the academic innovation ecosystem.

The first question to be analyzed addressed the level of satisfaction of companies with the resources made available by IATI. Of those interviewed, 74% are completely satisfied, 16% are very satisfied, 8% are satisfied and 2% are very dissatisfied.

This data demonstrates that the resources made available by IATI are meeting the expectations of most incubated companies. Satisfaction with resources can be a indicative that the infrastructure and services offered by the incubator are well-aligned with the needs of startups, corroborating the importance of quality resources for the success of incubated companies. According to Chesbrough, (2006) the quality of resources and the support offered by an incubator can be decisive for the success of companies who participate in it.

The second question sought to investigate whether entrepreneurs believe that innovation activities developed in the ecosystem contributed to the growth of its company in recent years. Of those interviewed, 68% are completely satisfied, 16% are very satisfied, 14% are satisfied and 2% are very dissatisfied.

The satisfaction expressed by 68% of respondents regarding the contribution of activities of innovation in the ecosystem for the growth of their companies highlights the effectiveness of these

activities to promote business development. This data suggests that innovation promoted by the ecosystem is not only perceived as valuable, but also as essential for the continued growth of incubated companies. According to Drucker, (2005) the innovation is a key factor for the competitiveness and growth of organizations, being vital for sustainability in the Market.

The third question sought to analyze how companies evaluate the role of IATI-FEMA in boosting their growth and development. Of those interviewed, 70% are fully satisfied, 18% are very satisfied and 12% are satisfied.

With 70% of respondents fully satisfied with the role of IATI-FEMA in driving its growth and development, it is clear that the incubator has a significant positive impact on incubated companies. This result reinforces the importance of the continuous support offered by the incubator in the development of startups. According to with Hackett and Dilts, (2004) the support offered by an incubator can accelerate the growth of startups and increase their chances of success.

The fourth question sought to analyze how many times the company collaborated with the innovation ecosystem by participating in the classroom and interacting with academics and teachers. Of those interviewed, 46% participated more than three times, 10% participated 3 times, 24% participated twice, 14% participated once and 6% never participated.

The analysis shows that 46% of companies participated in the activities more than three times such as classes and interactions with academics, indicating an involvement significant in the innovation ecosystem. However, 6% of companies have never participated, which may suggest a need to increase the integration of these companies into activities academic institutions. According to Etzkowitz and Leydesdorff, (2000) the interaction between educational institutions and companies is essential for creating a robust innovation environment, which reinforces the importance of greater corporate engagement.

The fifth question sought to analyze how many times the company participated in any event, fair or workshop promoted by the IATI innovation ecosystem. Of the interviewed, 34% participated more than three times, 10% participated 3 times, 12% participated twice, 22% participated once and 22% never participated.

Participation in innovation ecosystem events was also significant, with 34% of companies participated more than three times. However, 22% never participated, which may indicate a lack of engagement or perception of value on their part.

companies. According to Freeman, (2007) participation in innovation events and networks is crucial for the development of companies, as it facilitates access to new ideas and collaborations.

When asked about the main challenges the company faces, being possible to mark more than one alternative, 22% state that it is the lack of access to financing suitable for investing in innovative projects, 34% say it is difficult to find qualified or specialized talents to join the team, 28% say that the barriers are regulatory or bureaucratic barriers that hinder the implementation of new ideas or technologies, 24% say there are challenges in collaborating effectively with other companies or institutions, 18% encounters internal resistance to change or an organizational culture that does not favor innovation, 24% say there are limitations on resources or investment capacity in research and development, 52% say they lack access to networks or opportunities for networking, 20% say it is the rapid obsolescence of technologies or difficulty in keep up with market trends, 34% say competition is fierce and 16% say it is the challenges in protecting intellectual property or ensuring data security. One of the companies reported having difficulty in prospecting for customers. Tidd and Bessant, (2014) highlight that overcoming these barriers is essential for companies to innovate and grow sustainably.

When asked about the main benefits they find in participating of the IATI innovation ecosystem, being able to select as many options as they wanted, 82% stated that it was access to networking and collaboration opportunities with other companies and institutions, 84% said it was the sharing of knowledge and good practices with other companies in the ecosystem, 74% cited access to research resources and infrastructure and development, 78% mention participation in events, workshops and programs training promoted by IATI, 78% say it is the greatest visibility and recognition of brand in the market, 70% mention access to mentoring or specialized advice for drive the company's growth and development, 68% highlight opportunities for validate products or services in a controlled environment, 70% mention access to talent qualified or opportunities to recruit new employees, and 82% say it is the participation in activities with academics promoted by IATI.

Among the main benefits highlighted, access to networking (82%) and knowledge sharing (84%) were the most mentioned. This highlights the

importance of the ecosystem in providing opportunities for collaboration and exchange of knowledge, which is essential for the development of companies. As pointed out by Powell, Koput and Smith-Doerr, (1996) networking and knowledge exchange are elements critical to innovation, allowing companies to access resources and ideas that would otherwise be form would not be available.

Within the open questions, interviewees were able to mention specific experiences in which collaboration with the academic community or other companies in the ecosystem innovation has been especially successful or valuable and describe the quality of the interactions and partnerships established with the FEMA academic community, from the academic innovation ecosystem.

The experiences mentioned, such as legal assistance and market analysis, were considered valuable by companies, highlighting the importance of collaboration between academia and entrepreneurs. The quality of interactions with the academic community seems be well evaluated, which suggests that the ecosystem is managing to create positive synergies between the different actors involved. According to Cohen and Levinthal, (2012) the ability to a company's ability to absorb external knowledge is a critical factor in its ability to innovate, reinforcing the importance of these interactions.

The research carried out with companies incubated at IATI-FEMA reveals a scenario positive, in which most entrepreneurs express high levels of satisfaction with the resources and activities offered by the innovation ecosystem. The predominant satisfaction with the support provided by the incubator, as well as the perception that the activities of innovation contributed significantly to the growth of companies, reinforces the role vital role of IATI in the development of startups.

Despite the advances, the challenges faced by companies, such as the lack of access to networks of contacts and qualified talent, in addition to regulatory barriers, highlight areas that need greater attention so that companies can maximize their growth potential innovation and growth. Active participation in the ecosystem, through events, workshops and interactions with the academic community, is seen as a key factor in overcoming these difficulties and make the most of the opportunities offered.

The benefits perceived by companies, especially in terms of networking and knowledge sharing, underline the importance of collaboration and exchange of experiences within the ecosystem. This synergy between academia, companies and government,

as discussed in the literature on innovation, it is essential to create an enabling environment to technological and business development.

In summary, the research confirms the effectiveness of IATI-FEMA in providing support robust for the incubated companies, while identifying areas of improvement that can be worked on to further strengthen the innovation ecosystem and ensure the continued success of the startups involved.

FINAL CONSIDERATIONS

The present study investigated the impact of the Academic Technology Incubator and FEMA's Innovation (IATI) in the growth and development of incubated companies, inserted in the context of innovation ecosystems. The research had as its central problem the need to understand how IATI contributes to the success of startups and which challenges persist in this process. The hypothesis raised was that IATI offers support significant, but faces challenges that need to be addressed to maximize its impact. Action research was chosen as a methodology to provide a practical and reflective of the reality of incubated companies.

The main objectives of the study were achieved. The general objective of evaluating the IATI's contribution to the development of companies was achieved, showing that the incubator has a significant positive role, with most companies expressing high satisfaction with the resources and activities offered. The specific objectives were also served: the analysis of the level of satisfaction with the resources revealed that the infrastructure and services offered are well-aligned with the needs of startups; the impact assessment of innovation activities showed a significant contribution to the growth of companies; and the analysis of interactions with the academic community highlighted the importance of these collaborations. The challenges identified, such as the lack of access to contact networks and qualified talents, highlight areas that require attention to optimize the potential of innovation.

The findings reinforce IATI’s effectiveness in fostering innovation and supporting startups, while indicating the need for improvement in areas specific to overcome barriers such as lack of financing and difficulty in finding

talents. The research revealed that the IATI innovation ecosystem contributes significantly significant for the development of companies, offering significant benefits such as access to networking, knowledge sharing and research support and development.

For future investigations, it is recommended to explore in more depth the challenges faced by companies, such as technological obsolescence and barriers regulatory. Further studies may focus on implementing strategies to improve the access to networks of contacts and talent, as well as analyzing how different types of support can influence the success of startups in different contexts.

The contribution of this study to the academic world is significant, as it provides a detailed analysis on the effectiveness of academic innovation ecosystems, especially in incubators such as IATI. The research not only contributes to the theoretical understanding of the dynamics of innovation ecosystems, but also offers practical insights for management incubators and policies to support entrepreneurship. Its impact can influence the way incubators are structured and operate, promoting a more effective environment for the development of startups and technological innovation.

In short, the research confirms the value of IATI as a vital support agent for the success of startups, while highlighting the importance of continuing the evolution of innovation ecosystem to address emerging challenges and maximize benefits for incubated companies.

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