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RESEARCH ARTICLE

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## HOW HAS UNIVERSITY EXTENSION CONTRIBUTED TO THE LOCAL ECONOMIC DEVELOPMENT OF A SMALL MUNICIPALITY

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### ABSTRACT

This article analyzes the contributions and impacts triggered by university extension activities in the economic development environment. Based on the case of a small town, represented by the municipality of Iporá (Goiás, Brazil), we discuss how this way of interaction/relationship between university and society has an impact on the valorization of local resources and aptitudes and on the promotion of new vocations through a process of disseminating knowledge and searching for collective solutions to local problems. For this, a qualitative approach was used through semi-directive interviews with local actors. As a result, the role played by a multifaceted set of extension projects is evident, sometimes in partnership with local actors, who pay attention to economic, environmental, and social issues integrated with technology, enabling the advancement of the agricultural and livestock vocation. In parallel, part of the project is aimed at the professional empowerment of part of the community and the strengthening of community networks and bonds.

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## INTRODUCTION

The university is seen as a key player in the local economic development (LED) process due to its daily activities based on the teaching-research-extension tripod. In particular, the role of this institution in small towns acquires relevance by contributing in a multifaceted way to the local socioeconomic environment. On the one hand, the university's final actions have a more direct impact on the actors with whom it interacts in this environment. On the other hand, there is also a set of actions that generate impacts on the development capacity of these actors, mainly via knowledge transfer/overflow (Huggins et al. 2008; Döring and Schnellenbach, 2004). The parallel performance of these functions is marked by the type of interaction/relationship that connects the university to the local community, whose path is paved mainly by university extension activities. This pillar that embodies the university's mission integrates and serves as a bridge for resources and/or results of teaching and research to be brought to society through projects that seek to engage and bring benefits to that portion of the public not directly linked to the educational institution (Oliveira Jr, 2014; Wolff, 2013). Thus, the practice of extension is predominantly conceived as the key to a transformative interaction of the place through the relationship between university and society, denoting the specific influence of the first in relation to the second (Forproex, 2012). This transformative character can substantiate the enhancement of pre-existing assets and aptitudes and the collaborative construction of new vocations and

possibilities for the locality (Gunasekara, 2006). In the 1990s, Saxenian's (1996) analyses of the development capacities of Silicon Valley compared to Route 128 (both in the United States of America) revealed a watershed for the longevity and resilience of those processes due to the type and intensity of interactions/relationships, in terms of trust and reciprocity within a structured and innovative network of LED actors. Operationally, university extension involves the execution of technical-scientific projects to be applied outside the walls of the educational institution for the benefit of the external community, thus bringing together researchers, students, and technicians from the university, on the one hand, and public or private agents benefited, on the other hand. With this in mind, this article analyzes the contributions and impacts of university extension in the process of LED in Iporá, Goiás, Brazil. The region has a single federal public institution of higher education – the Federal Institute Goiano (IF Goiano) – which, due to its characteristics, is the main actor of LED that promotes activities related to the extension. The article looks at the conditions and the results of the relationship between the different actors who build that LED reality, using a methodological script anchored in a qualitative approach that includes the theoretical framework, document analysis, and semi-structured interviews with LED actors from Iporá.

## THEORETICAL REFERENCE

A distinctive feature of the university's performance derives from its primacy over the processes of production, accumulation, and

dissemination of formal knowledge. Among the ways that structure the path of this protagonism, university extension stands out as the most immediate link between the university and society, which combines disseminating knowledge and providing services/assistance to the external community. Not only that, but the activities and extension projects involve the exchange of non-formalized knowledge that originates in personal experience, in practical learning and in the social relations that constitute what is identified as the socialization of tacit knowledge. Therefore, it is evident that there is a two-way street involving overflowing knowledge and extension actions (Döring and Schnellenbach, 2004; Etzkowitz, 2001). From this point of view, university extension has a multifaceted impact on the dynamics of LED, including enabling socioeconomic dynamism that reinforces community ties and networks, increasing knowledge and recognition among people who, in turn, contribute to development capabilities. In this context, opportunities are created for the collective solution of local problems and for the internal and external participants of the university to improve/empower themselves throughout the process (Larédo, 2003). Indeed, the analytical model of LED emphasizes the network of actors with the capacity to build the reality of LED, understanding as an actor all agents (individual or collective) that influence public policy processes (Secchi, 2013).

This definition of actors encompasses governmental actors (politicians, bureaucrats, judges) and non-governmental actors (civil society organizations, class associations, the media), and recognizes the unique role of higher education institutions (public universities, federal institutes of education) and private colleges that often act as facilitators and/or bridge between the various parties involved (Romeiro; Prearo; Mazzali, 2011; Feldman and Desrochers, 2003). Consequently, the impacts of this action tend to be more significant as the university shows itself to be engaged, entrepreneurial, adaptive, and responsive to local demands to enhance the use of endogenous resources and the creation of new skills and vocations (Gunasekara, 2006). The culmination of this process is a bifurcation in two types of impact of the University-society relationship: i) technological development (which contributes mainly to economic capacities); and ii) human development (which contributes mainly to the capacities of building social capital and of civic conscience). The first translates into the dissemination of practices and techniques that enable the improvement of products, processes, and performances, and the second concerns the increase in the skills of the workforce and its empowerment for the full exercise of citizenship (Huggins; Johnston; Steffenson 2008; Gunasekara, 2006). Therefore, technological development and human development are complementary variables that directly influence the LED trajectory of a location. In addition to the requirements and assumptions of the university's activities in extension activities, it is evident that the scope of the impacts and results generated are also products of the characteristics that mark the social fabric that interacts with this University (Oliveira Jr, 2014; Gunasekara, 2006). Considering the premise of social transformation that primarily guides university extension, it is important to examine how LED actors understand, legitimize, and reflect the possible benefits and/or gaps derived from the university extension they receive in the context of a small municipality such as Iporá. Such requirements prove to be decisive so that the overflow of knowledge and the increase in development capacities are made possible and are carried out through university extension.

## METHODOLOGY

In methodological terms, the article uses a qualitative approach to data collection and analysis supported by two complementary procedures: document analysis and semi-structured interviews with LED actors from Iporá. Data analysis was guided by categories extracted from key concepts identified in the theoretical framework and evidenced in the content of the interviews. Preliminarily, the documentary analysis interpreted the content (objectives, clippings, methods, and results) of the set of 94 extension projects implemented by the IF Goiano Campus Iporá between 2017 and 2020. The initial

milestone of the period corresponds to the entry into operation of the extension module on the SUAP platform. The final milestone corresponds to the realization of the field research in the city of Iporá. The access and collection of this collection of extension projects took place via the Unified Public Administration System (SUAP), a digitalized platform maintained by the Federal Government that centralizes a series of management resources linked to public institutions of higher education. Within SUAP, there is a specific module containing detailed information about each extension project developed by the institution. The platform also contains a classification of the projects in six major thematic areas (multidisciplinary, technology and production, environment, work, education, and culture) that helps in understanding the cuts and emphases of the extension activities and, therefore, in the disclosure of the results and more significant impacts. The methodological script culminates with the presentation and discussion of data from exploratory research on the spot via semi-structured interviews with LED actors. In this context, 24 interviews were conducted covering internal actors (11 interviewees) and external (13 interviewees) to the institution. Among the first included components of the Rectory of the IF Goiano are local managers of the Iporá Campus and those directly responsible for the research and extension areas. Among the latter are class and union leaders (both employers and workers), leaders of the municipal executive and legislative branches, and civil society representatives. The interviews were guided by a semi-directive script dealing with the general and specific approach themes, which were later transcribed, tabulated, and analyzed according to the above theoretical-conceptual framework.

## RESULTS AND DISCUSSION

In the light of the research *modus operandi* highlighted above, this section discusses and questions the main results and indicators achieved. The thematic distribution of the extension projects implemented by the educational institution in Iporá during the 2017–2020 period is evident. Among the six thematic areas, three account for 75% of the extension activities: multidisciplinary, technology and production, and environment. This cut allows us to see the prevalence of an integrative approach among different fields of knowledge that is frequently stimulated by searching for solutions to the problems of productive and technological order faced by LED actors while also paying attention to the transversality and the urgent need for heritage conservation. Cultural and natural resources of the Cerrado biome that prevails in the locality.

**Table 1. Extension projects for the 2017–2020 period of the IF Goiano - Iporá campus by project thematic area**

Thematic Area of the Project	Quantity of Projects	% in the total of projects carried out
Multidisciplinary	35	37.2
Technology and Production	22	23.4
Environment	14	14.9
Work	9	9.6
Education	7	7.4
Culture	7	7.4
Total	94	100.0

Source: Own elaboration based on data from the Unified Public Administration System (SUAP)

These traits have one of its most important consequences in the emphasis attributed to the agricultural segment. For example, in the multidisciplinary thematic area, 16 of the 35 projects are directly linked to agriculture and/or livestock. In general, this focus stems from taking advantage of the regional agricultural vocation and acquires contours highly adapted to that context as a significant portion of the projects prioritizes meeting the needs of small and medium-sized family farming (GUNASEKARA, 2006). In the thematic area of technology and production, this trend is repeated: seven of the 22 projects are addressed to the agricultural sector. This context is perceived and valued by the LED actors interviewed according to the attributes evidenced in their manifestations,

concretizing the contributions and impacts conceptually projected in the extension activity.

*The Federal Institute has provided high regional development. He came to help the region grow with milk and qualified beef cattle farming, and also in the field of farming (interviewed n° 15).*

*As it is a region of very strong agricultural expression, I believe that the mission [of the institute] is this: to promote professional training to meet these local and regional demands, in a public and quality manner, and referenced by society and society. community that is being served (interviewee n° 03).*

*Teachers have developed many research and extension activities in the agricultural area, seeking to help some sectors, such as milk and smallholder production (interviewed n°22).*

The intersection of thematic and sectorial areas is harmonized so that the valorization of internal agents in the locality generates greater socioeconomic dynamism and increases the quality of life of people, which necessarily involves the strengthening of interpersonal relationships and community bonds. Such a requirement is fundamental for the overflow of knowledge to be inclusive and comprehensive and for the development capacities to be disseminated not only among the actors most directly linked to the educational institution (Döring and Schnellenbach, 2004; Larédo, 2003). In Iporá, the profile of university extension that has been developing shows itself related to these premises. "We had a very big gain in the knowledge and professionalization of the workforce" (interviewee n° 10). As a consequence came "the possibility of young people here to deepen their knowledge and people to change the reality of our region" (interviewee n° 21). In this sense, the reinforcement of the local agricultural vocation are recurrent arguments that "young people have just graduated and are changing the reality within rural properties. They go on convincing and teaching parents, uncles or grandparents to improve the production system. This brings a lot of positive changes" (interviewee n° 20). On the other hand, the exchange of knowledge between project participants is also present. The beneficiaries' personal experiences and practical learning are the raw material of a notable subset of extension projects among the 14 that make up the thematic area of the environment, whose focus is on non-conventional food plants (PANC). The repertoire of these initiatives expressly contemplates concerns with the "exchange of knowledge", the "rescue of traditional knowledge from the West of Goiás", and the "rescue of food culture in the Cerrado", which is combined with the revitalization of traditional productive activities with specimens such as Creole corn and rustic pastures typical of the Cerrado. All of this brings together in the sense that there is a constant exchange of tangible and intangible goods among LED actors that take place in community gardens and herbariums, as well as at fairs, exhibitions, field days, and thematic events also arising from extension activities. Actions with a significant impact on local development capacities have, among their most representative examples, the Fair of Agribusiness of the West of Goiás (AGROTECNOESTE).

*AGROTECNOESTE is an extension activity that includes local producers and companies, like a fair, which gives space for both small producers to show what they have been producing and also to seek partnerships with the Federal Institute and researchers to help improve his production. In addition to large companies that come to demonstrate technologies and products that are launching on the market (interviewee 22).*

*One event that catalyzes all partnerships is AGROTECNOESTE. With each edition, it has been growing in terms of partners, people interested in exhibiting at the fair. It is a fair that takes place every two years at Fazenda Escola and brings together producers from different areas, and there we end up bringing these partners to exhibit as well. There is a whole relationship between the institutions and the participants of the fair, and from*

*there, bonds are built between the different partners. It is a very big event. In fact, it is the largest one we have here (interviewee 19).*

Given this integrative approach to an extension that combines final actions and middle actions, it is worth noting the key role played by the projects inserted under the umbrella of the Crop-Livestock-Forest Integration (ILPF). Through a technique that combines agricultural, livestock, and forestry production with environmental conservation, the ILPF recommends the simultaneous or alternate reproduction of these activities within the same area to increase efficiency in the use of land and other natural resources. According to records of the projects on the SUAP platform, the main objective is to make the state of Goiás a reference in the use of crop-livestock-forest integration systems (ILPF) with the implementation of Teaching, Research, and Extension Units (UEPE) with this technology. To this end, four of these units are already in operation, distributed in areas of the municipality of Iporá and the surrounding areas. Like other initiatives, there is also a differentiated service to the demands and needs of family farming. In the case of one of these UEPE's, Boa Esperança, the work revolves around adapting the ILPF technique to agrofamly systems for milk and vegetable production (AÇÃO, 2017).

*These Crop-Livestock-Forest Integration (ILPF) projects were motivated by factors such as the existence of large areas of degraded pastures in the region, the rainfall regime and the need to rationalize the use of these resources through the production of grains, pastures and forest raw materials together with the preservation of native Cerrado species (interviewee n° 14).*

Therefore, it is possible to verify a concentration of efforts to transform the local reality, combining technological development and human development that go hand in hand in LED processes (Huggins et al., 2008). A robust indication that a march of socioeconomic dynamism is underway in Iporá under the promising action of university extension comes from the growing success in obtaining certificates of software and patent registrations. Of a total of seven records of this nature (accumulated in the short interval between 2017 and 2020), a good part is linked to extension projects within the thematic area of technology and production. Once again, initiatives related to the agricultural segment are highlighted alongside innovations in teaching and learning. In the first case, there are three official registrations made by the National Institute of Intellectual Property (INPI), the body responsible for these procedures in Brazil. A singularity related to the three records from agricultural projects draws attention: a single project focused on aquaculture obtained two records, being an innovation patent for automated machinery for feeding fish and a certificate of registration by the embedded software that controls the operations of this system.

The third registration certificate refers to a software/application developed to improve the post-harvest soybean classification process. In terms of teaching-learning innovations, there are three software registration certificates dedicated to science education and a fourth registration linked to a virtual student talent bank. Considering this performance, it is significant that none of the interviewees declared to know these results in the area of innovation. It is possible to affirm that there is a gap regarding the dissemination/publicization that, in turn, tends to undermine part of the empowerment potential of LED actors. In other words, finalist actions like these can end up not feeding back the middle actions that impact specific development capacities since the actors do not know or recognize them (Secchi, 2013; Larédo, 2003). Knowing the importance of a social fabric organized around dynamic relationship networks, especially in the context of a small city, it is necessary to implement increasingly comprehensive and articulated actions so that aspects, such as resilience, malleability, and extraversion are spread among the people. LED actors in the light of known successful experiences (Saxenian, 1996). The above questions tend to provide positive returns to the university, which is increasingly encouraged to expand

extension activities that, as demonstrated, can become a pillar for LED processes.

## FINAL CONSIDERATIONS

This article sought to analyze the contributions and impacts of university extension in the economic development process of a small town in the light of the experiences of the city of Iporá, Goiás, Brazil. Articulating conceptual categories related to extension activities, such as the overflow of knowledge and development capacities in a relational perspective related to the actors and dynamics of LED, it was possible to highlight the determining role played by the university in the use of local skills in conjunction with actions of a transformative character that are guided by the construction of new vocations and alternatives both for technological development and for human development. The appreciation of the documentary collection of extension projects in parallel with the collection and analysis of information from interviews with LED actors revealed a favorable context for the socioeconomic dynamism that presents, among its assumptions, a predominantly integrative and multifaceted approach, in addition to considering emphases aligned with the priorities and strategies that are being built more and more collaboratively. This materializes, for example, in the enhancement of initiatives linked to the agricultural segment, in general, and in meeting the needs of small and medium-sized family farming in a specific way. Such conditions also take shape in the pursuit of activities and projects that combine the economic, social, and environmental spheres, as seen in initiatives such as the Crop-Livestock-Forest Integration (ILPF) AGROTECNOESTE, or even those related to Unconventional Food Plants (PANC). Another development of these initiatives refers to obtaining registrations and patents. Key indicators in terms of innovation, registration certificates, and patents attest that the relationships between the university and society, in general, are marked by reliability, resilience, and maturity that, in the privilege of the small size of the locality, have made it possible to achieve the appreciable feat of seven innovation records in the 2017–2020 quadrennium. However, these achievements require greater investments in their dissemination/publicization so that they are understood, legitimized, and passed on by LED actors. As a result, it is possible to pave the way for a strengthened exchange and feedback of positive stimuli among these LED actors, with an increasingly proactive and prosperous gear at the university and its extension activities. In this sense, the present study suggests that the extension becomes at least four dimensions of practices: one, characterized by an essentially social perspective, meeting the needs and needs of the community; another covered by a technical and technological character that meets the demands of the private productive environment and the public environment; another of a pedagogical nature, which internalizes knowledge about the empirical environment and combines it with scientific knowledge, adding new values to university education; and the last dimension, of an

essentially innovative nature, which promotes the sharing of entrepreneurial knowledge – formal and tacit – with local actors through the development of innovative products and processes and the registration of patents.

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