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PSS creating business for sustainability: the Brazilian Olive Oil case in Mantiqueira Community

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Abstract

This study aims to investigate the influence of Product-Service-Systems on sustainability in small rural communities. The methodological approach is a case-based research. A case of olive processing in the Mantiqueira mountain range community, an inland region from Brazil, is in-depth analyzed. This case is a result-oriented PSS deployment that brings some insights on the creation of new business ecosystems, previously unfeasible due to the large amount of hectares dominated by small proprieties with intensive familiar farming labor. Some aspects of this PSS business model on producing olive oil more intensively introduced in the region by 2012 are the access to more financially viable technologies; financing and partnerships with government; on distance labor training possibility and compact equipment automation for olives processing. It enables new businesses previously limited to producers with large investment possibilities. In addition, it collaborates with the local economy, adding value to products offered by the farmers, promoting sustainable land management through the waste reuse and encourages tourism, job creation and skilled labor training, collaborating with progress in small agricultural towns in the inland.

Keywords: Result-oriented PSS feasibility, Sustainability aspects, Olive Oil Case Study

1. Introduction

Product-Service-Systems (PSS) offerings represent a focus change [1] from commercialization of manufacturing products to the approach of business based on the combination of products and services into an integrated offering [2]. Providing result-oriented PSS as a solution for new demands in B2B relationships, even though risky for the provider, since the responsibility for the whole process remains with him [3], is an opportunity to turn income flows more stable to the PSS provider[4]. Besides that, it is the business model more connected to the intrinsic potential of sustainability from types of PSS [5]. Studies proposed by authors like Lusch et al. [6] and Raddats and Easinghood [7] reinforce the importance of developing more studies in B2B field to identify further distinctive characteristics to be achieved by companies that aim to improve the PSS accomplishments.

Another important issue mentioned by Benedettini et al [8] are the factors that influence the viability of PSS (servitization) in some environments and not in all the contexts. Park et al [9] also mentioned the dependency of general needs and business system evolution patterns to create new product-service system concepts. The sustainability assessment in product-service systems is still a remarkable and necessary approach [10], that must take into consideration the triple bottom line (TBL)[11] based system dynamic and multidimensional approach for the understanding of the product-service system (PSS) influencing sustainability in communities [12].
This paper is an ongoing research and aims to answer two research questions: (1) How is PSS introduction capable of influencing sustainability in small farming communities? (2) What are the challenges and benefits of PSS in this environment?

To answer these questions this study presents a case-based study performed in the Mantiqueira community of olive farmers. The region has approximately 60 olive producers (mainly small ones), which 90% of the production is intended to the olive oil market. It is expected a production of 50 thousand liters of extra-virgin oil for the year of 2017. The PSS type deployed in the region is the result oriented-PSS, in which a larger olive producer is the owner of the processing equipment and sells his idle capacity to the smaller producers in exchange for a percentage of their oil production or cash. This new modality of business in the region emerged in 2012 with new knowledge acquisition and techniques of olive growing in partnership with the state government. Since then, the business has brought progress for the region.

This case in Brazilian was selected because the outstanding results this region has been achieving. Mantiqueira community is historically known by providing low income through the coffee cultivation dominated by small farmers. However, in the last years, since the climate and general conditions proved to be appropriate to the olive cultivation, the region has evolved significantly due to public-private partnerships. The main goal being to stimulate a more profitable rural activity, to bring more progress to this inland region.

Regarding the previous information, this paper is structured into five sections. The first section has presented the context of the study and research questions. The second one presents the PSS theoretical framework, with the typology, the kind of client focus, as well as PSS sustainability-related aspects. The third section describes the research methodology, followed by the fourth (findings and results, discussions, opportunities, and challenges) and the fifth main conclusions.

2. Theoretical Framework

Product-Service Systems are widely known as a system of products, services, networks of actors and support infrastructure that strives continuously to be competitive, meet the needs of customers and have a lower environmental impact than traditional business models [13]. They can also be defined as an offering solution, which involves both a product and a service element, to deliver the necessary functionality [14].

In this work, the product-service system (PSS) is considered as a result-oriented business model [15], which offers a complete solution system for the customer, with inseparable integration of products and services [16]. It aims to facilitate the transition to a system in which products, services, support infrastructure and networks are designed to serve consumers by providing them with quality of life, along with a potential minimization of environmental impacts due to changing consumption patterns [13, 17].

In this context, the economic prosperity and sustainable resource management [18] can contribute to the transition from a disposal society to a recovery society [19], towards a circular economy [20].

2.1. B2B Context and Types of PSS

There is also a specific type of PSS for each client. The PSS focused on the Business to Business (B2B) environment, according to Meier et al [3] is the Industrial Product-Service System (IPSS). It is characterized by the planning, development, provision and use of integrated and mutually determined parts of products and services, including its software components in B2B applications, representing a knowledge-intensive socio-technical system. Roy and Cheruvu [21] present a framework with the main drivers, contextual factors and capacities for an IPSS to be competitive describing that the coordination of the several elements throughout the life cycle to make profit for the solutions provider and value for the clients are: customer accessibility, revenue generation opportunities, global competition, technology development and environmental sustainability.

Besides B2B, PSS business may focus on individual consumers, that is Business to Consumer (B2C). In this modality, the clients of the PSS provider are persons about to change patterns of personal business and consumption, such as the bike sharing systems users [22].

The types of PSS are commonly classified into three categories [23]: 1) product-oriented, i.e. after-sales, maintenance and Consulting; 2) use-oriented, i.e. bike and car sharing; and 3) result-oriented, i.e. "Pay-per-use" and chemical management services.

The selection of a type of PSS depends mainly on the demands of the customers, the physical products, the attributes of the products, as well as the values associated with the property [24, 25]. According to Tukker [25], in the PSS category named "product-oriented", the provider offers a service mainly related to the product offering. Still regarding this author, in "use-oriented" category, the provider makes the product available under renting, sharing, pooling or lease relationships, but does not sell it; in the "result-oriented" category, the provider offers the customer a particular result instead of a specific product or service. The use-oriented and result-oriented PSS focus on delivering the utility and result to the assets from the manufacturers, encouraging them in the designing phase to think about recycling, reuse, remanufacturing and repair - the end of life towards a sustainable design [26]. Moreover, this PSS type maximizes the utility of physical products, offering greater approximation to sustainability[5].

2.2. Sustainable Product-Service Systems Perspective

The PSS represents a family of sustainability-focused business model [27-29], designed to meet social needs in an economically and environmentally sustainable manner [30]. Therefore, some authors have adopted the term Sustainable Product-Service System, when the PSS actually influences the reorientation of more sustainable trends and consumption practices [17, 27, 29, 31, 32].

Lee et al [12] present a simplified definition for sustainability in PSS from the perspective of TBL, which not only include monetary profit but also include benefits in terms
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