HORTALIÇÁRIO: GARDEN FOR ANY SPACE

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ABSTRACT
This article, through a systematic review of the bibliography and case study, discusses new perspectives for sustainability in the environmental, socioeconomic and economic spheres, highlighting the importance of sustainable product-service systems (S. PSS) and design tools to build business models that are more innovative, competitive and sustainable in the face of opportunities and challenges and in pursuit of lifestyles more coherent with the current panorama. The design tools and the Sustainability Design Systems Method (MSDS) were applied to the startup Hortaliçário in order to show the possibility of thinking about a business model that, from its origin, includes socio-environmental actions. The result was a systemic understanding of the business within the analyzed aspects, understanding the product in such a way that it is service oriented and ecoefficiency, in order to contribute to the development of solutions for more sustainable products and services.
Key Words: S. PSS; Business model; design tools; social innovation; society

1. INTRODUCTION
This paper deals with important concepts and tools that seek to balance the relationship between society, production, consumption and the environment. In the contemporary world, it is noticed that business models and labor relations are changing. Companies can no longer position themselves and compete only with prices, term and quality as a differential. Customers (users) are increasingly demanding, eager for news that makes their lives easier and environmentally conscious. Thus, the need for a new way of offering products, processes and services aimed at the well-being of the population and significantly reducing environmental impacts is understandable (HASHIMOTO and SANTOS, 2006). According to Maldonado (2009), Design has the task of mediating consumption and production, challenging the defiance of proposing innovative and sustainable solutions for the current systems of production / consumption, from the efficient integration between products and services , as he states in his study.
It is necessary to innovate and in a sustainable way. According to Engler (2009), innovation only makes sense if it is carried out in a sustainable way, regardless of whether it is a product, process or service. The more the company has, in its organizational culture, of commitment to environmental practices and understanding of these new users, the greater its sales. In this sense, the concept of a sustainable product-service system is presented as an innovative strategy that associates product supply (tangible part) with services (intangible part), promoting new sustainable business models. For Manzini and Vezzoli (2003), the shift of focus from physical products to an integrated system of goods and services aims to offer solutions to the consumer, satisfying a specific customer demand.
The design tools and the Sustainable Design Systems Method (SDSM) that will be detailed throughout the research are a support to create a project / business / business thinking for more sustainable purposes from the outset. In this way, we place the central objective of this research, which is to show the importance of thinking about the essence behind the business from the foreground. In addition, valuing the construction of businesses and entrepreneurs who look beyond the limits of the company itself and cultivate socio-environmental actions for a more harmonious world.
In order to reach these objectives, the concept of product-service systems will be worked out, demonstrating how it is expressed, its objectives, its categories and some tools and design method for its construction and application in business models. In a

second moment, these concepts will be exemplified by means of the business model proposed for the startup Hortaliçário, "Gardens for any space".

2. METHODOLOGY

The methodology for the development of this work consists of qualitative research of applied nature. The research is exploratory and will be developed by combining bibliographical studies and exploration of a case study, in a descriptive approach through the qualitative analysis of the data.

The first stage was based on a theoretical study addressing the following themes: Design Method for Sustainability (DMS), design tools, Product-Service System (PSS) and Sustainable Product-Service System (SPSS).

The second stage concerns the case study that was conducted applying and reflecting on the concepts and tools of the theoretical reference that led to the formulation of the business model of the startup Hortaliçário, because according to Ganem, 2016 when we write and put into practice and when we bring the practice for our texts, writing is impregnated with a different energy. The startup, acting on a local scale, was chosen among the others as a case study, since it has its business model based on sector 2.5, in a way that seeks to undertake and at the same time generate social impact. Hortaliçário is not only about profit, proposing the association of financial sustainability with the positive impact it can generate in society, by offering solutions that integrate products, processes and services aimed at the well-being of the population. The startup has structured the niche market, the supply system (products, services and production), communication channels, distribution and sales, relationship with customers and suppliers, human resources and local partnership.

3. METHOD AND DESIGN TOOLS

The method selected in this study to analyze the business model during the case study was the Sustainable Design Systems Method (SDSM) proposed by Vezzoli (2010), with the objective of providing support and guiding the process of development of innovations of a sustainability system. According to Vezzoli (2010), the method allows the joining of several design tools, in the same way that allows the remodeling and / or addition of new activities, according to the needs of the project.

According to Dias (2016), the basis of the SDSM is structured in five main stages: strategic analysis, stage where the data necessary for the subsequent generation of ideas with sustainable potential is gathered and processed; exploration of opportunities, where the promising opportunities for strategies are recognized, identifying contexts for the orientation of sustainable projects; development of system / project concepts, the ideas with the greatest potential for success are chosen, through the involvement of all the actors; detailing the system, the specific requirements of the developed idea are identified, without which, it is not possible to execute them; and communication, the aspects of the projected solutions, especially those concerning sustainability, are communicated.

These tools were selected for application and analysis: the Sustainability Design-Orienting (SDO-Toolkit) and the System Map. The first tool guides the process of generating ideas for product-service systems through a priority checklist for each sustainability pillar / radar, as well as making it possible to check for potential improvements over the existing system. The second describes graphically the actors involved in the process and the interactions between them regarding the flows of materials and products, information, money and work performance, contributing to the representation of the existing system and its organization (VEZZOLI, 2010).

In addition to these tools, the following tools were used: Personas that are archetypes created through the understanding of the behavioral, cultural and geographical characteristics recognized in extreme profiles of consumers; Analogous scenarios where parallel situations are analyzed that tend to facilitate the view of the business by new perspectives; Competitive differentials in relation to singularity that makes a company unique and better than its main competitors; and Tomorrow headlines where fictitious calls from journals and magazines are projected where one wants to be in the future, trying to generate understanding as to what kind of impact the service or product will bring to society.

4. DEVELOPMENT

4.1 Concept of the product-service system (PSS) and sustainable product-service system (S.PSS)

The concept of the Product-Service System expresses more than simply adding services to the products. There is still no consensus on its meaning, but the present study suggests the following definition: system of products, services, actors / support network and support infrastructure aiming at competitiveness, meeting customer needs and a lower environmental impact compared to traditional business models (GOEDKOOP et al., 1999; MONT, 2002). The business goes from a simple transaction selling a product to a more complex relationship with the customer (OLIVA; KALLENBERG, 2003).

With respect to the elements that constitute a PSS, the product consists of the tangible part of the value, and the service consists of its intangible part (TUKKER, 2004). With regard to the infrastructure and network of PSS actors, Neto, et.al. (2014) score:

Infrastructure fulfills its role in the PSS through the supply of area, energy, materials, technology and various consumables, as well as the provision of the necessary organizational context. This element of PSS enables the creation and extension of value, which may consist of the pre-existing infrastructure of the manufacturers or service providers, or an own infrastructure for the planned enterprise. The network of actors involved in the extension of value creation in the PSS is understood by the service network and the production network. The service network comprises the branches and location of the services, as well as their distribution, whether or not they may involve partnerships. This network is responsible for the regular delivery of services in the product life cycle. The production network, in turn, includes the PSS provider, the suppliers of parts, components, modules or subsystems. This network is responsible for producing the main physical product of the PSS at a limited number of production sites (NETO et.al., 2014, p.921).

Pawar et al. (2009) argue that the design of a PSS begins with defining the value unit that will satisfy consumers; then the cost estimate as well as the risks involved. Subsequently, one starts to think and design the PSS that will create the defined value. Finally, it is necessary to identify and manage the network of partners that, together with the organization, will build the value proposition, using the PSS. The advantages of a PSS are synthesized by Tukker (2004) as: providing customers with integrated and personalized solutions; build a long-term relationship with customers, favoring loyalty; providing more speed in innovation, since the focus is to meet the needs of customers through solutions; and reducing the environmental impact of products and the costs involved throughout their life cycle.

Some authors (GOEDKOOP et al., 1999; MANZINI; VEZZOLI, 2003) point the importance of association of PSS with sustainability. For these authors, the PSS can lead to the sustainable consumption of resources and transform patterns of consumption. But, according to Manzini and Vezzoli (2002), this should be checked on a case-by-case basis. It is only when the PSS contributes to the reorientation of unsustainable consumption practices that it can be called a Sustainable Product-Service System. The work in question starts from the understanding of the importance of integrating the PSS with the pillars of sustainability - socioeconomic, economic and environmental - to promote new business models that are more necessary and in coping with the current scenario.

Carlo Vezzoli (2006) presents some key moments in terms of extending the scope of the sustainability pillars associated with design. At first, concerns in the production process were linked to the selection of low-impact materials and energy, such as safe, recyclable, biodegradable and renewable materials. Then the planning of the product with low environmental impact was taken into consideration taking into account its entire life cycle. Subsequently, we began to think of more radical changes in production and consumption models, and the focus turned to a design of eco-efficient product-service systems, with a larger dimension than the individual product. The author points out some criteria to determine the eco-efficiency of this type of system: optimization of the system life; reduced transportation and distribution; resource minimization; minimization and recovery of waste; increased biocompatibility and conservation; minimization of toxicity.

More recently, scholars have opened the discussion about the role of design in relation to social and ethical sustainability, in which the principle of equity is directly associated, not indirect, with a potential result of a radical reduction of resources in industrial contexts (promoting responsible and sustainable consumption), as well as paying attention to the distribution and availability of these resources in an egalitarian way (promoting fairness among partners). Other aspects of the association of design with the socio-pillar are raised, such as: improving working conditions, prioritizing local resources, promoting social cohesion and integrating marginalized people.

In this context, Vezzoli (2006) places the promise of the emerging distributed economy model, whose main goal is to make products and services available locally, in a flexible and connected network system. For the author, distributed economics can reduce environmental impact and facilitate democratic access to resources. In this way, in terms of sustainable consumption and innovation system, a key role could be played by local companies, based on structured networks, initiatives and activities.

5. CASE STUDY: HORTALIÇÁRIO

The startup team Hortaliçário is formed by the partners-founders Thalita Barbalho, Graphic Designer; Ana Carolina Lacerda, Architect and Urbanist; and Letícia Hilário, Designer of Environments - all three having a Master in Design, Innovation and Sustainability in common. Horticultural, "Gardens for any space", "provides not only a physical garden, but also quality of life."

The startup satisfaction unit is access to quality food. It offers the solution to those customers who: (a) want a vegetable garden and do not know how to start, (b) have tried to have a vegetable garden, but the seedlings have not avenged, (c) would like something that would facilitate the acquisition of seedlings and maintenance of the garden, (d) have no incentive to start or continue production. The solution that Hortaliçário delivers to its customers is the product - the vegetable garden (module[1] with a three-seedling kit) - associated to the service (experience and practicality), which is offered through a subscription plan with integrated and customized solutions according to customer needs. The garden module, besides being adaptable and flexible, suits different spaces, is a biodegradable product, which contributes to the reduction of environmental impact.

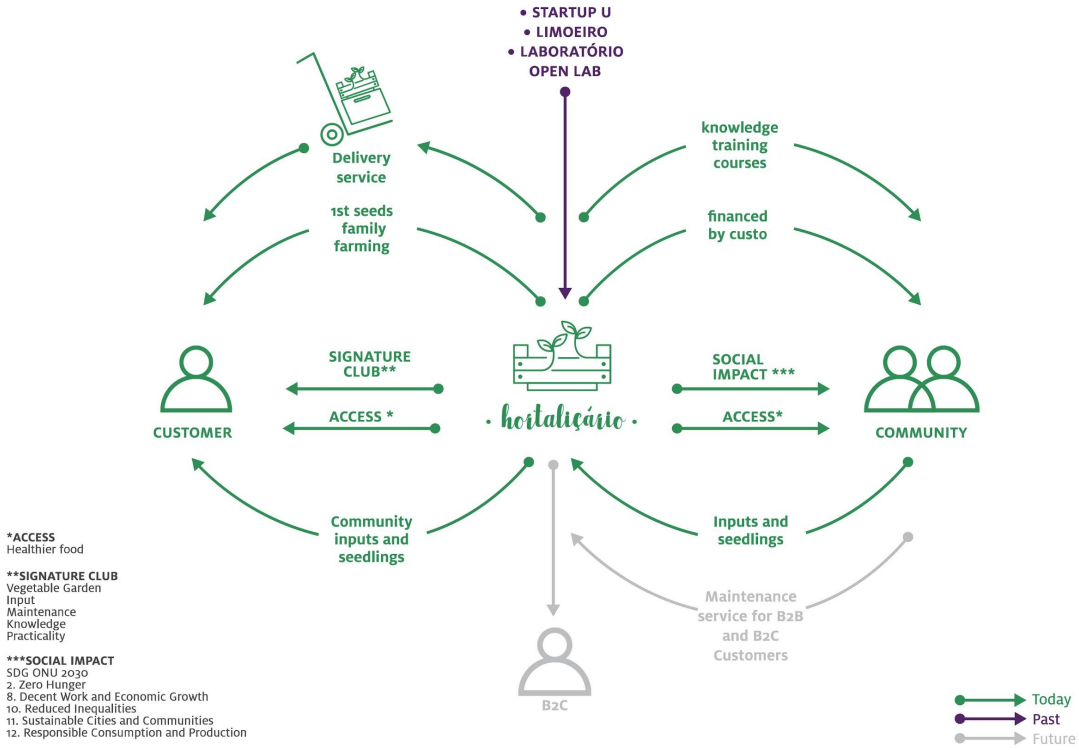
The benefits delivered through the plans consist of products that are needed to maintain the garden (kit of seedlings, fertilizers and organic manure), exclusive courses, tips, recipes, online consulting opportunities and gifts to enable customization of the product. There are three types of plans: monthly (R $ 42.00), semiannual (R $ 38.00 / month) and annual (R $ 30.00 / month). Through these plans and values, Hortaliçário seeks to build a long-term relationship with customers, favoring their loyalty.

The social impact generated by Hortaliçário is linked to the fact that, with each vegetable sold, the startup undertakes to enable, support and empower (through courses and training) community gardens, for production of agro-ecological foods to be consumed by the producers themselves or destined for sale, generating income for the impacted community. Some of the seedlings produced by the community vegetable garden will still be acquired by the startup, which contributes to the growth of the local enterprise and feeds Hortaliçário. When the assisted community garden is self-sufficient, another garden is chosen to start the same support process.

The current market niche of Hortaliçário is in the B2C (Business to Commerce) model, that is, the commercial transaction is between the company (distributor) and the final consumer, through an electronic platform (e-commerce). In the near future, the startup expects to act in a B2B (Business to Business) niche, conducting business-to-business transactions, meeting the demand of condos and restaurants through a new business model. Hortaliçário does not have a physical unit, therefore, its sales are made, as mentioned, online, and its revenue is the result of the association of sale of products and services signatures.

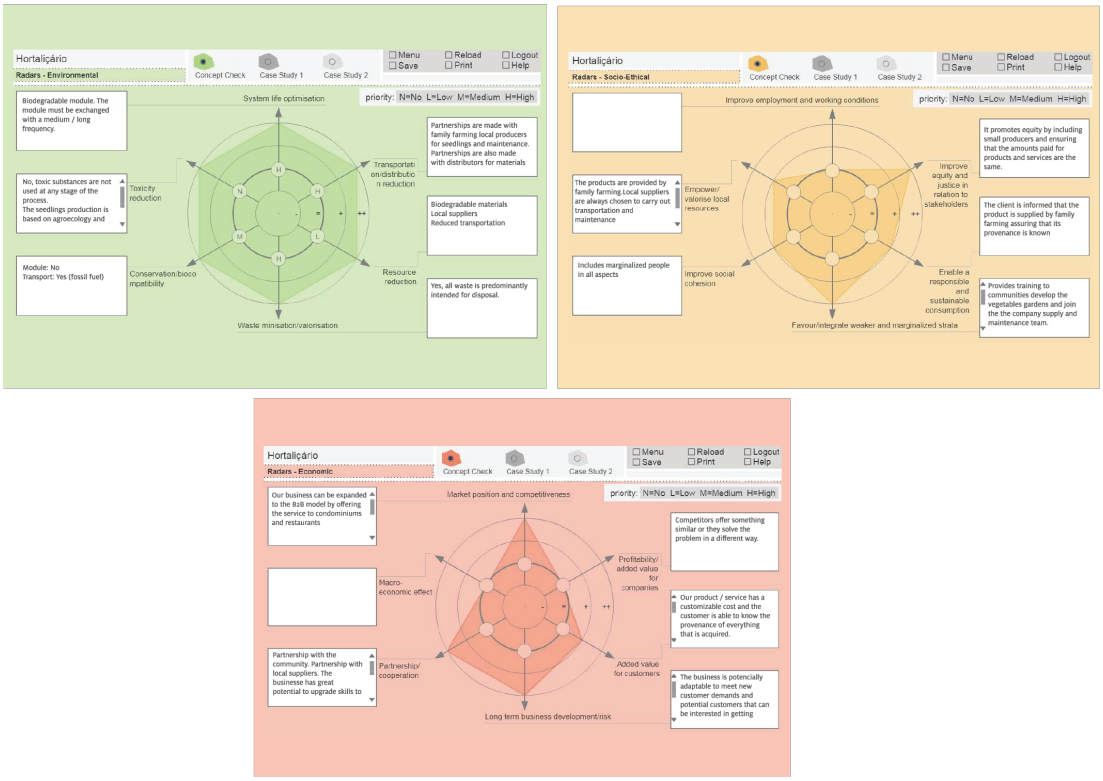
[1] Modular biodegradable container: Today, the startup offers two options, one to be placed on the floor and another to be placed in the window or wall.

Hortaliçário today has partners/suppliers who collaborate to build a successful venture, such as the Senai Open Laboratory, which supports the creation and execution of the biodegradable module for vegetable gardens; CEDTec (Design and Technology studies centre - Design School/UEMG), which, through research and extension projects, collaborates in the choice of gardens to be impacted and in the effectiveness of partnerships; and Agroecology in the Periphery, a potential partner for the purchase of seedlings, whose objective is to promote socio-environmental development in peripheral communities and the strengthening of urban agriculture network of the Metropolitan Region of Belo Horizonte through training workshops, joint efforts and exchanges with focus on agroecology to guarantee the right to sustainable cities.
In order to build this system model, a strategic analysis and the recognition of opportunities achieved through a pre-acceleration conducted by Startup U (initiative of the UFMG's Junior Business Center) were carried out with a practical methodology and meetings with mentors who work in the entrepreneurial field. These analyzes, recognition of opportunities, and the subsequent development of system concepts involved all actors in the process - partners / employees, clients and potential partners - through interviews and questionnaires that led the team to recognize the promising opportunities for sustainable strategies and determine/detailing the business system. Hortaliçário's business model is product-oriented S. PSS, so the sale is still essentially product-oriented, but some extra services are added, such as after-sales services - maintenance, training and consulting. The communication of the aspects of projected solutions was carried out throughout the whole process, mainly with respect to sustainability
Figure 1 below shows the startup system map. The image shows the main fluxes, observed in green, referring to the present; the secondary ones, in gray, referring to the future; and the others, in purple, referring to past actions. The main flows are characterized by direct relationship with the customer (paying), community supported (social impact) through the sales and distribution sectors for the first and financing and training for the second (and possibly later, sales of seedlings by the community for the Horticultural and maintenance of the client gardens in response to the given training). Secondary flows refer to possible and future actions in the B2B market niche (business to business) by making transactions between companies (condominiums and restaurants). The purple flow is characterized by pre-acceleration and fruit awards from this, which started the construction of the business system.



[Figure 1] System map — Hortaliçário (Font: Thalita Barbalho, 2017)

Complementing the system map, Figures 2, 3 and 4, next, present the tool SDO (Sustainability Design Orienting) according to the environmental, socioeconomic and economic radars, respectively.
For the analysis of the graphs below, it is considered the priority level of the projects as important actions for the enterprise in A (high), M (medium), low (L) and neutral (N), besides comparing the proposal of the startup with the services and products offered by competitors, between: radical improvement (++), incremental improvement (+), without significant changes (=) and depreciation (-).



[Figure 2] SDO — Environmental, socio ethical and economic dimensions (Font: lens.polimi.it - Sustainability Design Orienting Toolkit, 2017)

In the environmental radar, the analysis showed that, in relation to the existing systems, Hortaliçário has high priority in relation to: optimization of the lifesystem, placing emphasis on the use of the biodegradable module; transport and distribution, emphasizing the partnerships with local producers for maintenance and distribution of seedlings; minimization and recovery of waste, with a view to reuse of food waste (in the future, through the people involved in community gardens). On the other hand, the medium priority occurs in relation to the increased conservation and biocompatibility; the low priority, in relation to the minimization of resources; and the neutral priority in relation to the minimization of toxicity, since there are no toxic substances involved at any stage of the process.

On socio-ethical radar, analysis demonstrated that the system has a high priority for Design in all criteria: promoting fairness between partners by including local producers in the process and ensuring a fair payment for products and services; integrating marginalized people by providing community training for the development of community gardens and, in the future, enabling trained people to join the company's supply and maintenance team; promote social cohesion; prioritize local resources; promote responsible and sustainable consumption; and improve working conditions.

In the economic radar, analysis showed that the system has a high priority of Design with respect to actions in the following criteria: partnerships and cooperation, emphasizing the important partnership with local communities and producers; market position and competitiveness, due to the fact that startup is the first home gardening club, in addition to being able, in the future, to expand the market niche for B2B, carrying out transactions with condominiums and restaurants; long-term business development as the business is potentially adaptable to meet the new demands of customers and potential customers who may be interested in getting courses, information and even seedlings whether or not they have a home garden; and added value for customers, for offering customizable cost and for the customer to know the source of all products being purchased. As a criterion of medium importance, we identified: macroeconomic effects and added value for companies, with no actions with low or neutral priority.

5. FINAL CONSIDERATIONS

The creation of a S. PSS business model allows us to think and believe in more environmentally correct, socially just and economically viable production and consumption models. In addition, the implementation of this system in companies presents a series of strategic benefits, "[...] as opportunities for innovation and market development; increased efficiency of operations; more stable and long-term relationships with consumers / suppliers; enhancement of corporate identity; and better return on consumer needs "(SANTOS, 2009).

It was understood that the use of design tools in this process of building a S. PSS business model is extremely valuable with respect to aspects of: identifying and guiding the products and services to better meet specific demands of customers; define priorities for sustainability radars; create the map of enterprise system, making it clear what are the partners and flows, among other elements; view competitors and recognize competitive differentials; projecting at what point you want to be in the future and what impacts on society this business model can lead.

It is also understood the importance of this study beyond the understanding and analysis of tools and method. Through the case study, the valuation of entrepreneurs and businesses that transform a good idea from the beginning into something concrete and good not only for company, but for society, thinking about the pillars of sustainability, is put in the agenda.
The startup Hortaliçário did what most companies, as a rule, do not: think the product associated with the service so that it is service-oriented and eco-efficient. Thus, the startup seeks to develop more sustainable production and consumption solutions and contribute, even at a local scale, to behavioral /cultural change of communities.
As a proposal for future work, it is possible to point out the possibility of reflecting on new case studies that approach companies that have as a guideline sustainable purposes, making a consistent survey about the number of companies that have emerged, and which have the desire to generate positive impact in the world building initiatives that change reality for the better, thus expanding the knowledge of these activities and inspiring similar actions.

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