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Aspects of the Product-Service System in Brazilian Literature

Camilla Dandara Pereira Leite

Full address: Trav. Enéas Pinheiro 2626, Belém- PA- Brazil, 66095-715. Affiliation: Universidade do Estado do Pará. Email: dandaraleite3@gmail.com

Antonio Erlindo Braga Jr.

Full address: Trav. Enéas Pinheiro 2626, Belém- PA- Brazil, 66095-715. Affiliation: Universidade do Estado do Pará. Email: erlindo@uepa.br

ABSTRACT

The Product-Service System (PSS) in Brazilian literature is a theme that has a wide variety of definitions, which focus on different aspects of the theme, generating different approaches. These PSS aspects analysis will contribute to discussions development on the subject. Thus, the objective of this work is to define which approaches Brazilian researchers use to conceptualize this theme. To achieve this goal, a Brazilian literature review was carried out, collecting and grouping the definitions used in each article. As a result, a table was obtained with six groups of PSS concepts: Environment; Innovation; Integration/ Combination; Use-oriented/ Manufacturer's property; Service-oriented; and Value. It is concluded that there is no universal concept of this theme in Brazilian literature, but its definition varies depending on the focus of each research.

Key Words: PSS, Definitions, Brazil.

1. INTRODUCTION

The Product-Service System has been extensively investigated in recent years; in particular, there is an increase in publications of great relevance to this topic at the national level since until the year 2000 most of the publications were in foreign literature (Reis & Braga Jr., 2015).

However, still necessary to fill many gaps, especially on its characterization, and there are still inconsistencies in the works with this objective (Braga Jr., 2017). One possible justification for this is the fact that there is no consensus regarding the definition of this, and there is a great variety of concepts for the subject in the literature, which often differ in some respects, generating divergences of opinion among researchers (Haase, Pigosso, & Mcaloone, 2017).

Thus, in defining PSS, some researchers may follow a more environmental or economic aspect, for example. In this context, Zancul et al. (2011) argue that the issue of sustainability is not really a consensus in the PSS literature.

It is also known that the success of the PSS depends on the culture of the population since this influences its acceptance (Beuren, Ferreira, & Cauchick M, 2013). This culture interference can be in the acceptance of proposals as the types of PSS use-oriented and result-oriented. Therefore, it is interesting to help Brazilian consumer in understanding this type of approach, by conducting a study restricted to Brazil, instead of the inverse, which would impose on this a model in which there may be a difficulty of acceptance. Therefore, the objective of this work was to identify how Brazilian researchers of the Product-Service System conceptualize this theme.

2. THE PRODUCT-SERVICE SYSTEM (PSS)

According to Vezzoli, Kohtala and Srinivasa (2018), the definition of Sustainable PSS, proposed by the LeNS project is: "An offer model that provides an integrated mix of products and services that together are able to meet a particular customer demand (to deliver a "satisfaction unit") based on innovative interactions between stakeholders, production of value (satisfaction system), where the economic and competitive interest of suppliers continually seeks new solutions that are both environmentally and ethically beneficial partners".

An example of PSS, as pointed out by Zancul et al. (2011), is the Brastemp water filter where the product is the water filtering agent and the service is the maintenance of the product, which results in continuous provision of filtered water to the user, who only needs to pay a monthly fee for the use of the product and its maintenance. At the end of product life, the company determines the correct destination, which is 99% recyclable.

There are divisions of the PSS into categories, Tukker (2004) presents the following three main ones: product-oriented, use-oriented and result-oriented. From the first to the last, the value ceases to be in the product and becomes in the service, and there is still the presence of both. Braga Jr. (2017) explains that this does not mean that the focus becomes being in service, but rather that there is "a coexistence that leads to a new positioning of the product in the value chain and an increase in the importance of service in the same chain" (p.16).

Baines et al. (2007) called the aggregation of services to products in the PSS of Servitization of products and the aggregation of products to services of Productization of services. Since the product is the tangible part and the service is the intangible part of the offer.

Among the main benefits of PSS are: to allow a closer relationship with clients; create value for customers; impede imitation by competition; alternative to mass production, generating differentiation in supply; reduce environmental impacts through dematerialization; leads companies to take back and give the correct destination to their end-of-life products (Mont, 2002).

3. METHOD

In order to identify how Brazilian researchers of the Product-Service System (PSS) conceptualize this theme, it was carried out a literature review on PSS. Then, the definitions used were collected and grouped from similarities that presented among themselves.

For the collection of articles of the PSS, articles from national sources were considered as of 2008, and the sources considered for this research were:

- Congresses: “Brazilian Congress of Product Development Management” (Congresso Brasileiro de Gestão e Desenvolvimento do Produto- CBGDP) and “National Meeting of Production Engineering” (Encontro Nacional de Engenharia de Produção- ENEGEP), as well as the digital collections of the respective institutions that organize these events, namely the “Product Management & Development” (PMD) newspaper and the online library of the “Brazilian Association of Production Engineering” (Associação Brasileira de Engenharia de Produção- ABEPRO);
- Scientific journals: “Produção Online”, “Gestão e Produção”, “Produção e Engenharia”, “Produção em Foco” e “Produto e Produção”. These sources were chosen because it would be possible to find in them a relevant number of publications in the researched area.

As keywords, for the search of the articles, the following were considered: sistema produto-serviço, sistema produto serviço, product service system, Product-Service System, PSS, productization, produtização, servitization e servitização. Although the concepts related to Servitization and Productization are not interesting for this work, these terms were used as keywords in order to find more concepts of PSS, since these three terms are closely related to each other.

The title and summary of each article found were read, in order to identify if they were actually related to the PSS, to be collected or not.

The accepted articles were read, in order to identify the PSS concepts used by the authors. For the organization of these concepts, it was used a worksheet organized in three columns for each paper: Concepts; Observations; and Access Link to the paper.

In order to generate criteria to define accepted concepts for this work, first it was discarded the excerpts that presented repetitions. They also went through filtering from the format as written. The considered criterions of exclusion were:

- To present only the advantages of the PSS, as in the excerpt: "It is a strategy that seeks the dematerialization of consumption, contributing fundamentally to the reduction of the environmental impacts related to the consumption of tangible products";
- To be very generic, that is, to present characteristics that can refer not only to the PSS, as in the sections: "A product-service system (PSS) is an adequate way to defend the idea of sharing";
- Conceptualize something else, as in the excerpts: "They define Servitization as offering an integrated package of products, services, knowledge and customer support in order to add value to the main business of the company";
- Be inserted in another, that is, a concept that is an identical repetition of part of another concept.

Then, for the grouping of the accepted concepts, a diagram of affinities was made. This tool has the objective of grouping a large number of ideas and information according to the affinity they present to each other. The definitions that fit into more than one group were allocated to the one that represented its more emphasized PSS aspect. Similar passages also went through filtering, giving preference to the older, for avoiding redundancy.

Finally, the groups were nominated according to the PSS aspect they presented.

4. RESULTS AND DISCUSSION

In the “Congress CBGDP 2017”, 7 papers were found, all of which were accepted. In the “PMD Journal”, 6 were found, all of which were accepted. In the ABEPRO digital platform, 31 articles were found, however, one gave an error when accessing, resulting in 30 papers from this platform.

Regarding the collection carried out in the magazines, in the “Produção Online” the research returned 18 papers, of which, after reading the title, abstract and keywords, 8 were accepted. The “Product and Production” magazine returned only 1 paper in the search, which was accepted. The other journals added for research in this survey did not return any results with the insertion of the string.

Altogether, this collection yielded a total of 52 papers.

In these papers, it was found 83 passages that seemed to conceptualize the PSS. From which, after the filtering and grouping, it remained 31 concepts, considered as PSS definitions for this work.

The grouped concepts were called Aspects of the PSS, which consisted of six: Environment, Innovation, Integration / Combination, Use-oriented / Manufacturer’s property, Service-oriented, and Value.

In the environment group, all the definitions that mentioned the benefit to the environment or to sustainability as a criterion were added. In the Innovation group, all the definitions that presented the PSS as an innovation strategy for the company were added. In the Integration / Combination group, all the

definitions that emphasized the integration between product and service were added. In the Use-oriented/Manufacturer's property group, all definitions that focus on the non-transferring of product ownership from the company to the customer were added. In the Service-oriented group, all the definitions that emphasized the service offering added to the product were added. And In the Value group, all definitions that presented the PSS as an opportunity to generate value were added.

From the constituent concepts of these groups, 6 are authorial from the papers found in the Brazilian literature review carried out in this work. Only 1 concept is a citation from a national paper not included in the collected ones from this work. And 24 concepts are a citation from foreign literature.

It is noticed that the PSS can be approached from several points of view, and has several aspects to be taken into account, which can be emphasized depending on the researcher or on the focus of the research. However, it is also noticed that there are a very small number of Brazilian researchers' definitions for this theme, and thus, an even smaller number of national works' citations.

5. CONCLUSION

Through this literature review on PSS, it is concluded that this theme can be conceptualized following six different approaches, which are Environment, Innovation, Integration / Combination, Use-oriented / Manufacturer's property, Service-oriented, and Value. In addition, some Brazilian researchers use different concepts, which fall into more than one of the groups mentioned. It means that there is not a unique concept of this theme in Brazilian literature, and it may vary depending on the researcher or on the focus of each research.

This study may contribute to the advancement of the Product-Service System as a research theme, once it helps its definition understanding in Brazilian literature.

As future research, it is proposed to continue this work carrying out a survey with Brazilian researchers to identify which of these groups of aspects they consider more important in defining the PSS. It is also proposed that Brazilian researchers develop studies using their perspectives and experience in their research sites to develop concepts for PSS that reflect the Brazilian reality and point of view.

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