

Meta-informações das revisões bibliográficas (2018)

1. Referência completa do artigo

RABETINO, R. et al. Structuring servitization-related research. **International Journal of Operations & Production Management**, v. 38, n. 2, p. 350–371, 2018.

2. Autores (um registro por autor)

Rodrigo Rabetino

2.1. Tipo: Assistant professor

2.2. Idade: ± 45

2.3. Anos pesquisando no assunto: ± 3

2.4. Instituição: University of Vaasa (Finland)

2.5. Índice-h: 5 (according to Scopus) / 11 (according to Google Scholar)

2.6. Colegas da mesma instituição: Tuomas Huikkola; Willem Harmsen; Jukka Sihvone; Marko Kohtamäki; Jukka Sihvonen

2.7. Quantidade de artigos já publicados:

- Scopus: 10

- Google Scholar: 48

- Researchgate: 38 (including articles (10), chapters (12), conference paper (12), technical report (3), and full-texts (1))

2.8. Outros artigos significativos (mais citados) sobre outros temas:

Three most cited papers in Scopus (within 6 papers):

- Individual, organizational and environmental determinants of new firm employment growth: Evidence from Latin America (28)
- Venture creation speed and subsequent growth: Evidence from South America (18)
- Human capital and growth in Romanian small firms (13)

Three most cited papers in Google Scholar (within 42 papers):

- Individual, organizational and environmental determinants of new firm employment growth: Evidence from Latin America (66)
- Venture creation speed and subsequent growth: Evidence from South America (47)
- Human capital and growth in Romanian small firms (38)

2.9. Outros artigos significativos (mais citados) neste tema:

Three most cited papers in Scopus (within 4 papers):

- Developing the concept of life-cycle service offering (17)
- Resource realignment in servitization: A study of successful service providers explores how manufacturers modify their (4)
- Strategy map of servitization (1)

Three most cited papers in Google Scholar (within 6 papers):

- Developing the concept of life-cycle service offering (28)
- Strategy map of servitization (11)
- Resource realignment in servitization (10)

2.10.Co-autores recorrentes:

Based on Scopus:

- Marco Kohtamäki (Vaasan Yliopisto)
- Joan Lluís Capelleras (Universitat Autònoma de Barcelona)
- Hugo D. Kantis (Universidad Nacional de General Sarmiento)

Based on Google Scholar:

- Marco Kohtamäki (Vaasan Yliopisto)
- Esteban Lafuente (Universidad Politecnica de Cataluña)
- Gabriel Yoguel (Universidad Nacional de General Sarmiento)

Based on Researchgate:

- Marco Kohtamäki (University of Vaasa)
- Gabriel Yoguel (Universidad Nacional de General Sarmiento)
- Tuomas Huikkola (University of Vaasa)

Willem Harmsen

2.11.Tipo: Research Assistant

2.12.Idade: NONE

2.13.Anos pesquisando no assunto: ± 3

2.14.Instituição: University of Vaasa (Finland)

2.15.Índice-h: NONE

2.16.Colegas da mesma instituição: Rodrigo Rabetino; Jukka Sihvonen; Tuomas Huikkola;
Marko Kohtamäki; Jukka Sihvonen

2.17.Quantidade de artigos já publicados:

- Scopus: 1
- Researchgate: 4 (including articles (1), conference paper (2), and full-texts (1))

2.18.Outros artigos significativos (mais citados) sobre outros temas

NONE

2.19.Outros artigos significativos (mais citados) neste tema

NONE

2.20.Co-autores recorrentes

Based on Researchgate:

- Marco Kohtamäki (University of Vaasa)
- Rodrigo Rabetino (University of Vaasa)
- Jukka Sihvonen (University of Vaasa)

Marko Kohtamäki

2.21.Tipo: Professor

2.22.Idade: ± 45

2.23.Anos pesquisando no assunto: ± 5

2.24.Instituição: University of Vaasa (Finland)

2.25.Índice-h: 11 (according to Scopus) / 18 (according to Google Scholar)

2.26.Colegas da mesma instituição: Rodrigo Rabetino; Jukka Sihvonen; Tuomas Huikkola; Willem Harmsen; Jukka Sihvonen

2.27.Quantidade de artigos já publicados

- Scopus: 46

- Google Scholar: 110

- Researchgate: 87 (including articles (63), books (3), chapters (5), conference paper (12), data (3), and full-texts (13))

2.28.Outros artigos significativos (mais citados) sobre outros temas

Three most cited papers in Scopus (within 32 papers):

- Exploration and exploitation strategies, profit performance, and the mediating role of strategic learning: Escaping the exploitation trap (62)
- Enabling relationship structures and relationship performance improvement: The moderating role of relational capital (28)
- Configurations of entrepreneurial-customer-and technology orientation: Differences in learning and performance of software companies (26)

Three most cited papers in Google Scholar (within 105 papers):

- Exploration and exploitation strategies, profit performance, and the mediating role of strategic learning: Escaping the exploitation trap (152)
- Configurations of entrepreneurial-customer-and technology orientation: Differences in learning and performance of software companies (70)
- The role of personnel commitment to strategy implementation and organisational learning within the relationship between strategic planning and company performance (57)

2.29.Outros artigos significativos (mais citados) neste tema

Three most cited papers in Scopus (within 14 papers):

- Non-linear relationship between industrial service offering and sales growth: The moderating role of network capabilities (59)
- Making a profit with R&D services—The critical role of relational capital (50)
- Mastering the transition to product-service provision: Insights into business models, learning activities, and capabilities (34)

Three most cited papers in Google Scholar (within 5 papers):

- Non-linear relationship between industrial service offering and sales growth: The moderating role of network capabilities (106)
- Making a profit with R&D services—The critical role of relational capital (96)

- Mastering the transition to product-service provision: Insights into business models, learning activities, and capabilities (71)

2.30. Co-autores recorrentes:

Based on Scopus:

- Vinit Parida (Lulea Tekniska Universitet)
- Joakim Wincent (Lulea Tekniska Universitet)
- Jukka Partanen (University of Vaasa)

Based on Google Scholar:

- Vinit Parida (Lulea Tekniska Universitet)
- Jukka Vesalainen (University of Vaasa)
- Jukka Partanen (University of Vaasa)

Based on Researchgate:

- Rodrigo Rabetino (University of Vaasa)
- Elina Varamäki (Seinäjäski University of Applied Sciences)
- Jukka Vesalainen (University of Vaasa)

Jukka Sihvonen

2.31.Tipo: Assistant professor

2.32.Idade: NONE

2.33.Anos pesquisando no assunto: 1

2.34.Instituição: University of Vaasa (Finland)

2.35.Índice-h: 1 (according to Scopus)

2.36.Colegas da mesma instituição: Rodrigo Rabetino; Jukka Sihvonen; Tuomas Huikkola; Willem Harmsen

2.37.Quantidade de artigos já publicados:

- Scopus: 3
- Researchgate: 14 (including articles (13) and full-text (1))

2.38.Outros artigos significativos (mais citados) sobre outros temas

In Scopus (within 2 papers):

- Forward-Looking Monetary Policy Rules and Option-Implied Interest Rate Expectations (2)

2.39.Outros artigos significativos (mais citados) neste tema:

NONE

2.40.Co-autores recorrentes

Based on Scopus:

- Sami Vähämaa (University of Vaasa)
- Willem Harmsen (University of Vaasa)
- Marco Kohtamäki (University of Vaasa)

Based on Researchgate:

- Sami Vähämaa (University of Vaasa)
- Timo Korkeamäki (Hanken School of Economics)
- Marco Kohtamäki (University of Vaasa)

3. Estrutura do abstract (contextualização, gap/lacuna, objetivo, metodologia, resultados e conclusão)

- Contextualization: NONE
- Gap: NONE
- Objective: The purpose of this paper is to organize and connect past research from different servitization-related scholarly communities
- Methodology: This study reviews more than 1,000 articles by combining author co-citation and qualitative content analyses
- Results: The structure and boundaries of the field are mapped, and the characteristics of the three identified servitization-related communities are assessed qualitatively. These three communities are product-service systems, solution business, and service science. The findings demonstrate that a narrow range of theories and qualitative methods dominate in existing research. Through the lens of the sociology of science, this review critically evaluates servitization-related research and offers a list of themes that are considered important to the future development of the field.
- Conclusion: Regarding future research, the main recommendations are as follows: increasing the use of well-established theories from adjacent mature fields, borrowing ideas from different research communities to stimulate knowledge accumulation within and across communities, and reducing the level of description while increasing the number of confirmatory, quantitative, and longitudinal research designs. Finally, the development of formal structures for socialization (e.g. conferences and special issues) could allow the field to achieve a greater degree of scientific maturity and would influence the direction and pace of the development of servitization-related research.

Note: The structure of the abstract was determined by the journal, following the topics: purpose, design/methodology/approach, findings, originality/value.

4. Palavras-chaves e se foram citadas no abstract (Y = Yes / N = No).

- Keywords: servitization (Y); service infusion (N); bibliometric analysis (N); integrated solutions (N); product-service systems (Y); service transition (N).

5. Introdução e/ou revisão bibliográfica introdutória, afirmações / constatações (tipo) versus citações (essa lista pode ser longa, por isso coloquei em forma de tabela)

Afirmação / Constatação	Tipo (*1)	Referência (*2)
Born in the late 1980s, research on product-service integration took off in the mid-2000s after the publication of many foundational articles. (RABETINO et al., 2018, p. 350)	C	(Brax, 2005; Davies, 2004; Gebauer et al., 2005; Mathieu, 2001a, b; Mont, 2002; Oliva and Kallenberg, 2003; Tukker, 2004)

Introduced by Vandermerwe and Rada (1988), the term “servitization” gained popularity after two reviews by Baines et al. (2007) and Baines, Lightfoot, Benedettini and Kay (2009). (RABETINO et al., 2018, p. 350)	C	(Vandermerwe and Rada, 1988) (Baines et al., 2007) (Baines, Lightfoot, Benedettini and Kay, 2009)
These PSS typically include advanced lifecycle services and involve changes in companies’ business models. (RABETINO et al., 2018, p. 350)	C	(Durugbo, 2013; Rabetino et al., 2015)
Evidence demonstrates that some iconic manufacturers across industries, such as Caterpillar, IBM, and Rolls-Royce, have escaped the product commoditization trap and increasingly garnered benefits from their shift to services. (RABETINO et al., 2018, p. 350)	C	(Huikkola et al., 2016)
Knowledge has accumulated within related scholarly communities, i.e. groups of scholars who “are linked by shared interest in distinct yet related problems in the same research area”. (RABETINO et al., 2018, p. 350)	G	(Lightfoot et al., 2013) (Vogel, 2012, pp. 1018-1019)
In addition to the industrial marketing-led and service operations management-led servitization research (the mainstream), Kamp and Parry (2017, p. 12) recognize other International “aligned research communities” that “refer to servitization-related concepts without using the term itself.” (RABETINO et al., 2018, p. 350-351)	C	(Kamp and Parry, 2017, p. 12)
In this fast-growing domain (Kowalkowski, Gebauer and Oliva, 2017), the coexistence of multidisciplinary viewpoints, methods, and terminologies has increased complexity, which limits knowledge accumulation (Geum and Park, 2011; Pawar et al., 2009; Tukker, 2015). (RABETINO et al., 2018, p. 351)	L	(Kowalkowski, Gebauer and Oliva, 2017) (Geum and Park, 2011; Pawar et al., 2009; Tukker, 2015)
Although meticulous review efforts already exist, the inclusion of a limited number of articles and the use of different strategies to organize conceptual contributions hinder the integration of the results. (RABETINO et al., 2018, p. 351)	L	(Baines et al., 2007; Baines, Lightfoot, Benedettini and Kay, 2009; Boehm and Thomas, 2013; Brax and Visintin, 2017; Luoto et al., 2017; Velamuri et al., 2011)
Thus, there is a need to create an accurate understanding to permit better integration and a deeper analysis of the interactions among adjacent but detached research communities. (RABETINO et al., 2018, p. 351)	J	(Cavalieri and Pezzotta, 2012; Boehm and Thomas, 2013; Lightfoot et al., 2013)

(*1) Tipos de afirmação / constatação: G (geral), C (contexto), J (justifica o artigo / pesquisa), L (explicita a lacuna). A constatação da lacuna é muito importante. Mas é difícil diferenciar J de L.; (*2) Inserir somente autor(es) e ano. A referência completa encontra-se no próprio artigo

6. Casos citados e principais características dos casos

Caterpillar, IBM, and Rolls-Royce. The authors did not present any information about that cases.

7. Questão da pesquisa, Foco (escopo) e Objetivos (geral primário e secundários)

- Research Questions: How servitization-related research is structured?

How the structure of the domain might affect its future development?

- Main goal: “[...] the aim of this study is to discuss the intellectual structure of the [servitization] field.” (RABETINO et al., 2018, p. 351)

- Specific goal: “[...] this paper clarifies the structure and boundaries of the domain, qualitatively elaborates the content of servitization-related research, and offers a list of themes that are considered important to the future development of the field.” (RABETINO et al., 2018, p. 351)

8. Qual o diferencial deste artigo (análise da revisão) com relação a outras revisões e/ou surveys? (segundo o autor, caso ele tenha citado). Avaliar uma por uma, caso o autor tenha feito isso. Pode montar uma tabela se for o caso.

“While complementing previous reviews, this study differs from them in its objectives, research design, and coverage. [...] In contrast to previous studies providing qualitative interpretations of the field, this review also provides a quantitative analysis based on more than 1,000 articles and their references. (RABETINO et al., 2018, p. 351)

9. Metodologia

9.1. Descrição Geral: Nome do(s) método(s); se é qualitativo, quantitativo ou combinação de ambos

- Method: systematic literature review. “Lengthy strings were used in the search, which returned many irrelevant hits that were manually removed by reviewing the abstracts, rather than narrow strings that could prevent the system from finding relevant articles. Following Newbert (2007), the selected articles were required to contain a minimum of one of the chosen primary keywords in the title, keywords, or abstract to avoid unrelated articles. Each of the selected articles was also required to include a minimum of one of the selected supplementary words in the text to ensure substantive relevance.” (RABETINO et al., 2018, p. 351)

“Snowballing”: the lists of references in the selected articles were examined to identify potential additional papers.

Bibliometric analysis based on co-citation analysis method.

- Approach: qualitative and quantitative analysis (descriptive statistics)

9.2. Período de análise das referências (publicações desde que ano)

The authors did not present the initial data for searching references. They only stated that set the end of the search period for February 10, 2017.

9.3. Tamanho da amostra analisada

1092 papers

9.4. Quantidade de referências citadas

124 references

9.5. Foram realizadas observações complementares?

The authors considered only peer-reviewed scholarly articles and reviews in English (published and in press). Books, book chapters, and conference papers were excluded.

9.6. Fontes da revisão (casos, periódicos específicos, e quais bases de dados). Quais as justificativas para escolher essas fontes.

- Cases: NONE

- Specific journals: NONE

- Databases: Scopus and Web of Science. Justification: NONE

After the search was done in those databases, other major databases were used to identify potential missing papers: ABI Inform Complete, Ebsco, Emerald, Sage Journals, Springer, and Taylor&Francis Online. Multiple searches were also performed by including the keywords in Google Scholar. Justification: NONE

9.7. Estratégia para construção da string de busca

For defining the search string, the authors used the most popular keywords in previous literature reviews, using the references of Boehm; Thomas (2003), Lightfoot et al. (2013) and Velamuri et al. (2011) to support that decision.

9.8. String de busca

- Structure of search string: [(“primary search phrase 1” OR “primary search phrase 2” OR...) IN (title OR abstract OR keywords)] AND [(“supplementary search phrase 1” OR “supplementary search phrase 2” OR...) IN (full text)]

- Primary search phrases: “complex products and systems,” “custom* solutions,” “from products to services,” “integrated product-services,” “integrated solutions,” “product service syste*,” “product/service syste*,” “product-service offerings,” “product-service syste*,” “service infusion,” “service science,” “service transition,” “servicification,” “servicisation,” “servicization,” “serviti*,” or “solution business models.” (RABETINO et al., 2018, p. 352)

- Supplementary search phrases: “advanced services,” “after-sales service,” “business solution,” “capability contract,” “complex service systems,” “customer care service,” “customer support service,” “customer-centric,” “dematerialization,” “downstream integration,” “experiential services,” “extended products,” “full service,” “functional product,” “functional sales,” “high-value manufacturing,” “hybrid offering,” “industrial service business,” “industrial service offering,” “industrial service*,” “installed base service,” “integrated product and service offering,” “integrated solution,” “IPS2,”

“manufacturing-oriented services,” “operational services,” “outcome-based contract,” “outsourcing services,” “performance services,” “performance-based contract,” “post-sales service,” “process-related services,” “product life-cycle services,” “product service bundling,” “product-based service,” “productization,” “product-oriented services,” “product-related services,” “result-oriented services,” “service addition,” “service agreement,” “service engineering,” “service orientation,” “service package,” “service strategy,” “service*,” “service-dominant logic,” “service-driven manufacturing,” “service-supporting clients,” “service-supporting processes,” “service-supporting products,” “solution business,” “solution selling,” “tertiarisation,” “tertiarization,” “total care product,” “total solution,” “use-oriented services,” “value-in-use,” “value migration,” or “value-added solutions.” (RABETINO et al., 2018, p. 352)

9.9. Filtros

- Literature search in the selected databases in the field of Title, Abstract and Keywords using primary search phrases and in the field of Full Text using supplementary search phrases.
- Excluding duplicates.
- Scanning for relevance by reviewing the abstracts.
 - Criteria to include the papers: “Following Newbert (2007), the selected articles were required to contain a minimum of one of the chosen primary keywords in the title, keywords, or abstract to avoid unrelated articles. Each of the selected articles was also required to include a minimum of one of the selected supplementary words in the text to ensure substantive relevance.” (RABETINO et al., 2018, p. 351)
- Examination of the list of references in the selected papers to identify additional papers.
- Search in other major databases to identify potential missing papers. Multiple searches were also performed by including the keywords in Google Scholar.

9.10. Técnica / método de análise utilizada

Method: Bibliometric analysis. Co-citation analysis was chosen as the main method for identifying researchers who represent similar ideas and boundary-spanning scholars.

Tool: VOSviewer (analytical tool)

9.11. Metodologia para definição de pesquisas futuras

NONE

10. Resultados

10.1. Quantidades resultantes antes e após cada filtro

- After first literature search: 4572 (3058 from Scopus and 1514 from Web of Science);
- After excluding duplicates and scanning for relevance by reviewing the abstracts: 894;
- After including additional papers: 1092 from 296 sources.

10.2. Definições (resultantes da análise ou mesmo adotadas como premissas no início da publicação)

They based on the following information for defining the three communities discussed in the paper:

- Lightfoot et al. (2013) recognize five communities: services marketing, service management, operations management, PSS, and SSME.
- Identification of the SSME community by Baines, Lightfoot, Peppard, Johnson, Tiwari, Shehab and Swink (2009) and the information systems stream by Boehm and Thomas (2013), which were not isolated by any other review.
- Lightfoot et al. (2013) and Baines, Lightfoot, Peppard, Johnson, Tiwari, Shehab and Swink (2009) recognize service management as a community, whereas Boehm and Thomas (2013), Velamuri et al. (2011), and Pawar et al. (2009) embed this community within larger groups referred to as the business management, organization view and integrated solutions groups, respectively.

10.3. Evolução da pesquisa / das publicações no assunto

The servitization-related research has increased over the past 15 years, and 51 literature reviews were published.

10.4. Comunidades / “tribos” / “igrejas” / áreas de conhecimento / disciplinas identificadas

Scholarly communities: PSS; solution business; service, science, management and engineering (SSME).

10.5. Características de cada tribo (os atributos e/ou explicações são definidos pelo próprio artigo)

- PSS: is composed by the environmental agenda and the PSS design and development;
- Solution business: encompasses customer solutions, project-based integrated solutions and operations management in service transition.
- Service, science, management and engineering (SSME): act as link between communities.

10.6. Principais “achados” (*findings*)

Communities

Among different scholarly communities that have been identified in previous studies, three of them were elucidated.

- PSS scholars have proposed a model of the functional economy that is based on the eco-design, cleaner production, efficient delivery, and remanufacturing of sustainable PSS. It is based on the dematerialization idea and is oriented toward selling functionality instead of products while considering social-, environmental- and ownership-related aspects.
 - PSS environmental agenda:
 - Focuses on: configuration of sustainable PSS in B2B and B2C contexts; impact of the eco-efficient PSS on the environment and economic

- growth; policy implications and societal impacts of sustainable production and consumption.
 - Main authors: Mont; Vezzoli; Tukker; Evans
- PSS design and development:
 - Focuses on: integration of PSS solutions and combines engineering- and business-oriented approaches. Central topics are: servitization strategies, organizational structure, value chain organization and positioning, PSS availability and performance, and service operations capabilities and management.
 - Streams: functional product (PF) development (total care products / functional sales [business model]); integrated product and service engineering; service engineering; information systems; product-service systems development.
 - Main authors: Aurich; Sakao; Shimomura; Roy; Shehab
- When describing the transition from selling products and basic services, the terms servitization and servicification are the most widespread concepts.
- Solution business community focuses on many subjects, including service innovation and operations management, servitization paths, service strategies and business models, and challenges/barriers during the adoption of servitization strategies.
 - Customer solution:
 - Includes the paradigm of marketing and focuses on the integration and marketing of hybrid value propositions that are typically referred to as customer solutions. Emphases: selling process, customer relationships management, and value co-creation with customers.
 - Main authors: Galbrath; Windahl; Eisenhard; Matthysse; Gronroos
 - Operation management in service transition:
 - Streams: Operation management → Focuses on after-sales industrial services, operations strategies, supply chain management, and organizational change. Service transition/infusion → focuses on the antecedents, drivers, characteristics, and outcomes of and barriers to the transition from products to products and services.
 - Main authors: Gebauer; Brax; Edvardsso; Baines; Johnson; Neely; Vandermer; Martinez; Kingston; Peppard; Kallenber; Oliva.
 - Project-based integrated solutions:
 - Focus on analyzing organizational and operational subjects related to organizational design and capability development during the implementation of long-term integrated solutions-based business model.
 - Streams: The first one builds on concepts such as system integration and CoPS to describe manufacturers' value migration toward lifecycle integrated solutions. The second stream focuses on project integration and management, business networks, and business models.
 - Main authors: Davies; Hodbay
- Service science community overlaps with the IS stream of the PSS community, service marketing stream and studies related to new service development. It is a multidisciplinary approach. It combines organizational, technological, and human understanding to study how service systems should be configured and evolve to foster

service innovation and quality, and how value is co-created within those dynamic systems.

- Main authors: Vargo; Lusch; Brown; Spohrer

The authors pointed out the lack of interdisciplinarity among the communities, classifying the servitization-related research as a “fragmented adhocracy”. “The three communities remain relatively endogenous and find most of their theoretical support in their own research. For each community, approximately 70 percent of the references belong to the same community. Thus, servitization-related research is a fragmented multidisciplinary domain composed of three sharply bounded communities that draw on different disciplines, concepts, methodologies and terminologies.” (RABETINO et al., 2018, p. 361) They indicate the existence of a theoretically nascent domain positioned at the junction of several consolidated disciplines. It is necessary differentiation.

“The domain still lacks a critical mass of formal structures such as specialized journals, associations, and conferences [...] Structures within the field of research [...] play a fundamental role in the construction of the identity, boundaries, and content of the domain.” (RABETINO et al., 2018, p. 362)

Methodology

Regarding the theoretical and methodological challenges, most articles in the data set do not build up their theoretical framework from a grounded theory but merely combine arguments from previous servitization-related research.

The main methodologies related to the servitization-related researches are: methodology-wise, conceptual analysis and qualitative studies. Most of papers are based on cross-sectional and descriptive case studies.

On PSS community: combination of application of specific methods, such as modeling and simulation.

On solution business community: case studies from Western countries.

10.7.Outros tópicos que não foram tratados aqui (sugestão para nova meta-informação ou resultados significativos)

NONE

10.8.Proposições de pesquisas futuras (geral)

- Interdisciplinary studies among the communities, borrowing ideas from other research communities;
- More critical research is needed to challenge prevailing assumptions;
- To extend and develop the domain using well-established theories and theoretical frameworks from different disciplines;
- Acknowledging the tensions emerging from the servitization process;
- To use discourse analytic and narrative approaches;
- Middle-range theories addressing the servitization process, especially the particularities of organizational change processes during servitization;
- Add clarity about the micro-foundations of different servitization strategies;
- To apply sense-making theory or identity theory to investigate the effects of servitization on different dimensions of the social psychology of organizing and organizational behavior;

- Methods to measure the degree of servitization and distinguish among different servitization evolutionary paths/patterns;
- To use a long timeframe by designing retrospective and longitudinal cases with novel propositions;
- To apply quantitative methods.

10.9.Contribuições (para academia / prática / ambas?)

“The present study will help newcomers to the field navigate the foggy research landscape and experienced researchers bridge these research communities. In both cases, mapping the structure of the field provides a starting point for understanding the conceptual roots and the development of the theories, concepts and methods utilized by the different communities, and it facilitates better positioning of future research.” (RABETINO et al., 2018, p. 365)

11. Conclusões

11.1.Trabalhos futuros (que o autor se propõe, diferente das proposições futuras)

To use the document co-citation analysis and bibliographic coupling to study both changes in the intellectual structure of the servitization domain and emerging trends.

11.2.Limitações

- Articles may have been overlooked due to differences in terminology, timeframe limited to February 10, 2017 or because some publications were not cited in the literature or were not available in the databases.
- The classification of the papers into communities was supported by a software, but still is subjective and may be unclear.
- The clustering process depends on technical decisions regarding different parameters, being affected by the authors point of view.

12. SUA ANÁLISE

12.1. Pontos fortes

The paper presents the structure of servitization-related research into communities and an assessment through the lens of the sociology of science. It is a recent publication concerning the PSS and servitization field. The authors employed a lot of keywords (primary search terms combined with supplementary search terms) for conducting the literature search, resulting in more than 1000 papers analyzed.

By means of bibliometric analysis, the authors presented a map with the main authors per community in accordance with the main research subject (called by stream).

There are many interesting definitions about the terminologies, providing the distinction among them.

12.2. Pontos fracos

Although the authors stated that there are many scholarly communities that have been identified in previous studies, they did not present the differences among them. Also, they did not show how they isolated the three communities explained in the paper.

The formulation of the cluster is not clear. The authors only cited that they used the VOSviewer software.

The assessment through the lens of the sociology of science is a little superficial, missing details that could provide a more in-depth knowledge.

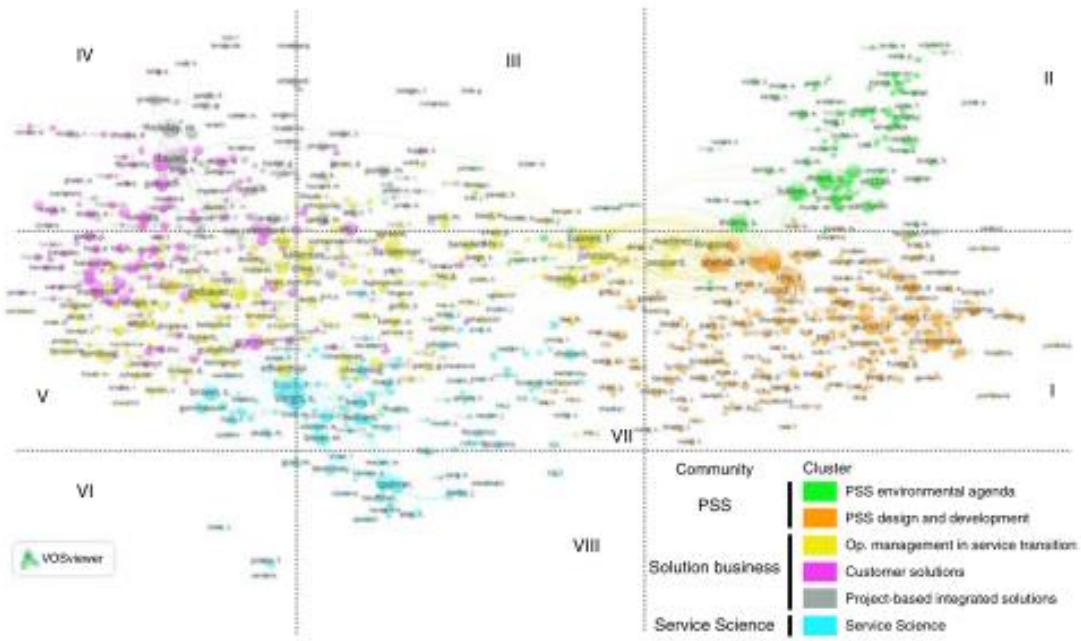
12.3. Sugestões para melhoria do artigo

My suggestions are:

- Presenting how the three communities were achieved, and the main differences/similarities in relation to other communities;
- Explaining how the clusters on Figure 1 were defined.
- Consolidating the emergent trends in servitization-related research.

13. Figuras ou tabelas importantes (caso você queira copiar e citar nos tópicos anteriores)

- Figure 1:



- Table 1:

Clusters	Streams	Representative definitions		Main concepts
		The transition process	The integrated offering	
PSS sustainability and environmental agenda		(Servicizing) "the emergence of this growing class of product-based services, which blurs the distinction between manufacturing and traditional service sector activities" (White <i>et al.</i> , 1999, p. 2)	(PSS) "A system of products, services, networks of actors and supporting infrastructure that continuously strives to be competitive, satisfy customer needs and have a lower environmental impact than traditional business models" (Mont, 2004, p. 71) (FP) "[...] also known as 'total care products,' are products that comprise combinations of 'hard' and 'soft' elements. Typically, they are described as comprising hardware combined with a service support system" (Alonso-Rasgado <i>et al.</i> , 2004, p. 515) (IPS ²) "[...] a new solution-oriented approach for delivering value in use to the customer during the whole life cycle of a product" (Meier <i>et al.</i> , 2011, p. 1175) (PSS) "...hybrid solutions including products and services that create higher value for customers [...]" (Shimomura <i>et al.</i> , 2015, p. 145)	PSS concept; sustainable development; policy; eco-efficiency; eco-design; eco-efficient producer services; environmental impact; dematerialization; performance contracting; business model; product-service system methodology FP; total care products; functional sales (business model); remanufacturing; design for remanufacturing; supply chain. IPSE; integrated product and service offerings; IPS/IPS ² ; service delivery; lifecycle; availability contracts; value in use; functionality; environmental impact; total offering; business models; B2B; OEMs; SE; service network SE; servicification; computer-aided design; service artifacts, content, and channels; quality function development; failure mode and effect analyses
PSS design and development	Functional product (FP) development	No particular concept		
	Integrated product and service engineering (IPSE) Service engineering (SE)	(Servicification) "...adding more services to [companies'] customized products. This 'servicification' of products is made available by integrated product service engineering" (Sundin <i>et al.</i> , 2009, p. 56) (Servicification) "intensifying service contents (servicification) is crucial not only for arriving at environmentally conscious design and manufacturing but also for creating more added value in future advanced societies" (Tomiya, 2001, p. 614)	(PSS) "are bundles of physical technological elements and service elements that are integrated to solve customer problems" (Berkovich <i>et al.</i> , 2012, p. 161) (PSS) "[...] is a specific business concept that focuses primarily on customers' demands and is meant to provide them with all the product benefits (functionality, utility, self-esteem offered by brand) without necessary ownership, while being less harmful to the environment" (Dimache and Roche, 2013, p. 1437)	Modeling; hybrid products; value bundles; requirements engineering; SE; bundling; service network
	Information systems (IS)	No particular concept		
	Product-service system (PSS) development	(Servitization) "[...] essentially describes the move on the PSS continuum from 'product plus services as an add-on' to 'complete service delivered through the product'" (Dimache and Roche, 2013, p. 1437).		PSS integration; servitization; availability; performance; lifecycle; service operations and delivery; supply chain

- Table 2:

Clusters	Streams	Representative definitions		Main concepts
		The transition process	The integrated offering	
Customer solutions		(Servitization) "Offering fuller market packages or 'bundles' of customer-focused combinations of goods, services, support, self-service, and knowledge. But services are beginning to dominate" (Vandermerwe and Rada, 1988, p. 314) (Service infusion) "...an organization-wide embracement of a basic set of relatively enduring organizational policies, practices, and procedures intended to support and reward service-giving behaviors that create and deliver service excellence" (Kowalkowski <i>et al.</i> , 2013, p. 19) (Service transition) "a unidirectional repositioning along a product-service continuum—from basic, product-oriented services towards more customized, process-oriented ones—ultimately leading to the provision of solutions" (Kowalkowski <i>et al.</i> , 2015, p. 59)	(Solution) "A solution is a customized, integrated combination of products, services and information that solves a customer's problem" (Sawhney <i>et al.</i> , 2006, p. 78) (Full service) "[...] a comprehensive bundle of products and/or services that fully satisfies the needs and wants of a customer related to a specific event or problem" (Stremersch <i>et al.</i> , 2001, p. 2) (Product services) "A type of service which is independent from the company's goods, meaning that a client may experience the company's service without consuming its goods" (Mathieu, 2001b, p. 453)	Customer solutions; service innovation; service orientation; service business; service strategies; business models; business-to-business services; organizational design; service networks
Operations management in service transition	Service transition/infusion		(Integrated solutions) "[...] a combination of physical products or services, or both, plus knowledge are used to provide a specific outcome fulfilling the customers' needs" (Windahl and Lakemond, 2010, p. 1278) (Installed base service) "[...] the range of product- or process-related services required by an end-user over the useful life of a product in order to run it effectively in the context of its operating process" (Oliva and Kallenberg, 2003, p. 163)	Solutions; integrated solutions; service strategies; service offering; service business; service orientation; organizational structure; manufacturing industries/companies
	Operations management	(Servitization) "[...] has been introduced to describe a growing propensity for manufacturing firms to develop service offerings that extend beyond their traditional core product offerings" (Benedettini <i>et al.</i> , 2015, p. 947)	(Integrated solutions) "[...] a bundle of physical products, services and information, seamlessly combined to provide more value than the parts alone, that addresses customer's needs in relation to a specific function or task in their business system; it is long-term oriented, integrates the provider as part of the customer's business system, and aims at optimizing the total cost for the customer" (Brax and Jonsson, 2009, p. 541) (Integrated solutions) "[...] firms design, integrate, and deliver complex products and systems (CoPS) on a project basis in small batches or as one-offs for business users, operators, service providers and/or government agencies" (Brady <i>et al.</i> , 2005, p. 360)	Industrial services; after-sales services; (complete/total/integrated) solutions; service extensions; modularity; supply chain.
Project-based integrated solutions		(Value migration) "By expanding the scope of the product offering to include services, firms can capture life cycle profits associated with servicing an installed base" (Davies, 2004, p. 731)		Integrated solutions; solutions; system integrator; capabilities; lifecycle; project business; business models; project management; project delivery