



UNIVERSIDADE DE SÃO PAULO

SEP5843 TÓPICOS AVANÇADOS DE SERVIDEZ

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O artigo de revisão que você irá analisar nem sempre contém informações para todas as metainformações, além das que você pode encontrar na web. Se ele não contiver, digite NADA no tópico correspondente.

As informações podem ser inseridas em inglês, como cópia do original (citar a página)

Salvar este artigo antes de inserir o conteúdo, com o título: SEP5843 2020 - análise revisão <nome do aluno> <ano, autor principal>

1. Referência completa do artigo

Kohtamäki, M., Parida, V., Oghazi, P., Gebauer, H., & Baines, T. (2019). Digital servitization business models in ecosystems: A theory of the firm. *Journal of Business Research*, 104, 380-392.

2. Autores (um registro por autor)

Marko Kohtamäki (Kohtamäki, M)

2.1. Tipo: professor / aluno (que tipo) / parceiro de empresa

Professor of strategy, University of Vaasa – Finland and a visiting professor at LTU and USN.

Research areas: digital servitization, organizational change, strategic practices, business intelligence and strategic alliances

2.2. Idade:

± 45

2.3. Anos pesquisando no assunto:

± 9 anos (Servitização)

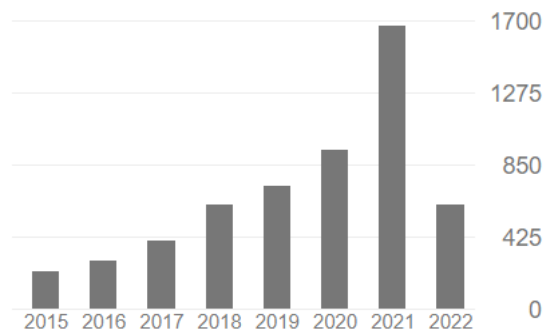
2.4. Instituição:

University of Vaasa (Finland)

2.1. Índice-h:

41 (Google Scholar) / 30 (Scopus)

Citado por	VER TODOS	
	Todos	Desde 2017
Citações	5998	5029
Índice h	41	39
Índice i10	76	66



2.2. Colegas da mesma instituição;

Rodrigo Rabetino

2.3. Quantidade de artigos já publicados:

66 (Scopus) / 64 (WoS)

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

#	Document title	Authors	Year	Source	Cited by
1	Non-linear relationship between industrial service offering and sales growth: The moderating role of network capabilities	Kohtamäki, M., Partanen, J., Parida, V., Wincent, J.	2013	Industrial Marketing Management	186
2	Exploration and exploitation strategies, profit performance, and the mediating role of strategic learning: Escaping the exploitation trap	Sirén, C.A., Kohtamäki, M., Kuckertz, A.	2012	Strategic Entrepreneurship Journal	181
3	Mastering the transition to product-service provision: Insights into business models, Learning activities, and capabilities	Parida, V., Sjödin, D.R., Wincent, J., Kohtamäki, M.	2014	Research Technology Management	125
4	Making a profit with R&D services - The critical role of relational capital	Kohtamäki, M., Partanen, J., Möller, K.	2013	Industrial Marketing Management	106
5	Co-creating value from knowledge-intensive business services in manufacturing firms: The moderating role of relationship learning in supplier-customer interactions	Kohtamäki, M., Partanen, J.	2016	Journal of Business Research	102
6	Entrepreneurial orientation-as-experimentation and firm performance: The enabling role of absorptive capacity	Patel, P.C., Kohtamäki, M., Parida, V., Wincent, J.	2015	Strategic Management Journal	92

2.5. Outros artigos significativos (mais citados) neste tema

#	Document title	Authors	Year	Source	Cited by
1	Digital servitization business models in ecosystems: A theory of the firm	Kohtamäki, M., Parida, V., Oghazi, P., Gebauer, H., Baines, T.	2019	Journal of Business Research	181
2	The relationship between digitalization and servitization: The role of servitization in capturing the financial potential of digitalization	Kohtamäki, M., Parida, V., Patel, P.C., Gebauer, H.	2020	Technological Forecasting and Social Change	106
3	An agile co-creation process for digital servitization: A micro-service innovation approach	Sjödin, D., Parida, V., Kohtamäki, M., Wincent, J.	2020	Journal of Business Research	86
4	How to convert digital offerings into revenue enhancement – Conceptualizing business model dynamics through explorative case studies	Gebauer, H., Arzt, A., Kohtamäki, M., (...), Witell, L., Wortmann, F.	2020	Industrial Marketing Management	23

2.6. Co-autores recorrentes

Author Documents

- Kohtamäki, M. 66
- Parida, V. 21
- Rabetino, R. 12
- Wincent, J. 10
- Huikkola, T. 8

Parida, V

2.1. Tipo: professor / aluno (que tipo) / parceiro de empresa

Part time professor in Strategic management at the University of Vaasa. Professor in Entrepreneurship and Innovation at the Luleå University of Technology.

Research areas include Servitization and advanced service innovation, Business model innovation, Digitalization of industrial ecosystems, Circular economy and sustainable product service-system, Entrepreneurial orientation and innovation in SMEs and new ventures.

2.2. Idade:

Nada

2.3. Anos pesquisando no assunto:

± 10 anos (Servitização)

2.4. Instituição:

Luleå tekniska Universitet, Lulea, Sweden

2.7. Índice-h:

40 (Semantic Scholar) / 38 (Scopus)

2.5. Colegas da mesma instituição;

Nada

2.6. Quantidade de artigos já publicados:

118 (Scopus)

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

#	Document title	Authors	Year	Source	Cited by
1	Inbound Open Innovation Activities in High-Tech SMEs: The Impact on Innovation Performance	Parida, V., Westerberg, M., Frishammar, J.	2012	Journal of Small Business Management	452
2	Product-Service Systems (PSS) business models and tactics - A systematic literature review	Reim, W., Parida, V., Örtqvist, D.	2015	Journal of Cleaner Production	437
3	Non-linear relationship between industrial service offering and sales growth: The moderating role of network capabilities	Kohtamäki, M., Partanen, J., Parida, V., Wincent, J.	2013	Industrial Marketing Management	186
4	Nonlinear effects of entrepreneurial orientation on small firm performance: The moderating role of resource orchestration capabilities	Wales, W.J., Patel, P.C., Parida, V., Kreiser, P.M.	2013	Strategic Entrepreneurship Journal	150
5	A systematic literature review of entrepreneurial opportunity recognition: insights on influencing factors	Mary George, N., Parida, V., Lahti, T., Wincent, J.	2016	International Entrepreneurship and Management Journal	130
6	Smart Factory Implementation and Process Innovation: A Preliminary Maturity Model for Leveraging Digitalization in Manufacturing Moving to smart factories presents specific challenges that can be addressed through a structured approach focused on people, processes, and technologies.	Sjödin, D.R., Parida, V., Leksell, M., Petrovic, A.	2018	Research Technology Management	128

2.8. Outros artigos significativos (mais citados) neste tema

#	Document title	Authors	Year	Source	Cited by
1	Adopting a platform approach in servitization: Leveraging the value of digitalization	Cenamora, J., Rönnerberg Sjödin, D., Parida, V.	2017	International Journal of Production Economics	201
2	Digital servitization business models in ecosystems: A theory of the firm	Kohtamäki, M., Parida, V., Oghazi, P., Gebauer, H., Baines, T.	2019	Journal of Business Research	181
3	Digitalization Capabilities as Enablers of Value Co-Creation in Servitizing Firms	Lenka, S., Parida, V., Wincent, J.	2017	Psychology and Marketing	178

2.9. Co-autores recorrentes

Author ↑	Documents ↓
Parida, V.	117
Wincent, J.	50
Sjödín, D.	21
Kohtamäki, M.	20
Oghazi, P.	17

Oghazi, P. (Pejvak Oghazi)

2.1. Tipo: professor / aluno (que tipo) / parceiro de empresa

Professor of Business Studies and Logistic Program at Sodertorn University, School of Social Sciences.

Research areas: Business Models, Digitalization, AI, Blockchain, Logistics & Marketing

2.2. Idade:

Nada

2.3. Anos pesquisando no assunto:

±1 ano (Digitalization)

2.4. Instituição:

Sodertorn University, School of Social Sciences.

2.8. Índice-h:

28 (Google Scholar) / 19 (Scopus)

2.5. Colegas da mesma instituição;

Nada

2.6. Quantidade de artigos já publicados:

65(Scopus)

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

#	Document title	Authors	Year	Source	Cited by
1	How collaborative innovation networks affect new product performance: Product innovation capability, process innovation capability, and absorptive capacity	Najafi-Tavani, S., Najafi-Tavani, Z., Naudé, P., Oghazi, P., Zeynaloo, E.	2018	Industrial Marketing Management	169

2	Achieving tourist loyalty through destination personality, satisfaction, and identification	Hultman, M., Skarmeas, D., Oghazi, P., Beheshti, H.M.	2015	Journal of Business Research	117
3	Online purchase return policy leniency and purchase decision: Mediating role of consumer trust	Oghazi, P., Karlsson, S., Hellström, D., Hjort, K.	2018	Journal of Retailing and Consumer Services	70
4	Artificial intelligence in supply chain management: A systematic literature review	Toorajipour, R., Sohrabpour, V., Nazarpour, A., Oghazi, P., Fischl, M.	2021	Journal of Business Research	62
5	Circular business model challenges and lessons learned-An industrial perspective	Oghazi, P., Mostaghel, R.	2018	Sustainability (Switzerland)	59
6	Dynamic capabilities, operational changes, and performance outcomes in the media industry	Jantunen, A., Tarkiainen, A., Chari, S., Oghazi, P.	2018	Journal of Business Research	55

2.8. Outros artigos significativos (mais citados) neste tema

Nada

2.9. Co-autores recorrentes

Author name	
<input type="checkbox"/> Oghazi, P.	(65)
<input type="checkbox"/> Parida, V.	(17)
<input type="checkbox"/> Hultman, M.	(14)
<input type="checkbox"/> Mostaghel, R.	(13)
<input type="checkbox"/> Patel, P.C.	(10)

Tim Baines

2.1. Tipo: professor / aluno (que tipo) / parceiro de empresa

Professor at Professor of Operations Strategy & Executive Director of the Advanced Services Group

2.2. Idade:

Nada

2.3. Anos pesquisando no assunto:

14 anos (Servitização)

2.4. Instituição:

Aston University, Birmingham, United Kingdom

2.9. Índice-h:

47 (Google Scholar) / 38 (Scopus)

2.5. Colegas da mesma instituição;

Nada

2.6. Quantidade de artigos já publicados:

72 (Scopus)

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

#	Document title	Authors	Year	Source	Cited by
1	Developing and evaluating a methodology for business process improvement	Adesola, S., Baines, T.	2005	Business Process Management Journal	117
2	State-of-the-art in lean design engineering: A literature review on white collar lean	Baines, T., Lightfoot, H., Williams, G.M., Greenough, R.	2006	Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture	114
3	Improving supply chain performance through improved visibility	Bartlett, P.A., Julien, D.M., Baines, T.S.	2007	The International Journal of Logistics Management	108
4	Humans: The missing link in manufacturing simulation?	Baines, T., Mason, S., Siebers, P.-O., Ladbroke, J.	2004	Simulation Modelling Practice and Theory	88
5	State-of-the-art in integrated vehicle health management	Benedettini, O., Baines, T.S., Lightfoot, H.W., Greenough, R.M.	2009	Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering	84
6	Examining green production and its role within the competitive strategy of manufacturers	Baines, T., Brown, S., Benedettini, O., Ball, P.	2012	Journal of Industrial Engineering and Management	82

2.8. Outros artigos significativos (mais citados) neste tema

#	Document title	Authors	Year	Source	Cited by
1	State-of-the-art in product-service systems	Baines, T.S., Lightfoot, H.W., Evans, S., (...), Walton, I.M., Wilson, H.	2007	Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture	1334
2	The servitization of manufacturing: A review of literature and reflection on future challenges	Baines, T.S., Lightfoot, H.W., Benedettini, O., Kay, J.M.	2009	Journal of Manufacturing Technology Management	922

3	Servitization: revisiting the state-of-the-art and research priorities	Baines, T., Ziaee Bigdeli, A., Bustinza, O.F., (...), Baldwin, J., Ridgway, K.	2017	International Journal of Operations and Production Management	328
4	Towards an operations strategy for product-centric servitization	Baines, T., Lightfoot, H., Peppard, J., (...), Shehab, E., Swink, M.	2009	International Journal of Operations and Production Management	307
5	Servitization of the manufacturing firm: Exploring the operations practices and technologies that deliver advanced services	Baines, T., Lightfoot, H.W.	2014	International Journal of Operations and Production Management	293

2.9. Co-autores recorrentes

Author name	
<input type="checkbox"/> Baines, T.	(52)
<input type="checkbox"/> Baines, T.S.	(20)
<input type="checkbox"/> Ziaee Bigdeli, A.	(12)
<input type="checkbox"/> Schroeder, A.	(9)
<input type="checkbox"/> Kay, J.M.	(8)
<input type="checkbox"/> Lightfoot, H.	(8)

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

Objetivo: This study extends the discussion of digital servitization business models by adopting the perspective of the theory of the firm.

Metodologia: We use four theories of the firm (industrial organization, the resource-based view, organizational identity, and the transaction cost approach) to understand digital *servitization business models of firms in the context of ecosystems*.

Contexto: Digitalization transforms the business models of solution providers and shapes their firm boundary decisions as they develop digital solutions across organizational boundaries within ecosystems such as harbors, mines, and airports. Thus, digitalization not only affects individual firms' business models but

also requires the alignment of the business models of other firms within the ecosystem. Hence, business models in digital servitization should be viewed from an ecosystem perspective.

Resultados: Based on a rigorous literature review, we provide suggestions for future research on digital servitization business models within ecosystems.

2. Palavras-chaves e se foram citadas no abstract.

Digitalization

Industry 4.0

Ecosystems

Digital servitization

Product-service systems (PSS)
Firm boundaries
Business model innovation
Platforms and sustainability

3. 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)
Digitalization aids servitization in manufacturing companies, creating new opportunities for services, platforms, intelligent products, and novel business models. In servitization studies, digitalization is increasingly viewed as an enabler and driver of the business model, value creation, and value capture	C	(Lerch & Gotsch, 2015; Parida, Sjödin, & Reim, 2019; Porter & Heppelmann, 2014)
transition toward digital servitization seems far from easy, and the implementation of digital servitization and the related technologies, routines, and business models adds complexity and creates challenges. Smart solutions (e.g., smart product-service systems) entail changes in terms of business model configuration (i.e. the purchase of reliability, availability, or outcomes rather than a product and service agreement;	J	Visnjic, Neely, & Jovanovic, 2018).

(*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

4. Casos citados e principais características dos casos
 Não aplicável

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

How does digital servitization shape business model configurations, and which research directions should be taken based on the interplay between digital servitization business models and theories of the firm within ecosystems and platforms?

This study taps into the discussion of digital servitization business models from the perspective of the theory of the firm. This review establishes what types of business model configurations are discussed in the servitization literature and how the digital shapes servitization business models. This study contributes to both the servitization and the digital servitization literature.

6. Caso seja uma survey sobre o assunto: qual o diferencial deste artigo (análise da revisão) com relação a outras revisões e/ou surveys? (segundo o autor, caso ele tenha citado). Avaliar cada um dos diferenciais separadamente, caso o autor tenha feito isso. Pode montar uma tabela se for o caso.

Não aplicável

7. Metodologia

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

Qualitativo

Revisão de Literatura

7.2. Fontes (referências) utilizadas sobre os métodos científicos adotados. Pode montar *uma tabela: método x fonte.*

Não há referências sobre métodos científicos

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

1 referência de 1937 e 1986 e demais referências iniciam em 2001 até 2019

7.4. Tamanho da amostra analisada

465 servitization articles

7.5. Quantidade de referências citadas

7.6. Foram realizadas observações complementares?

Não aplicável

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

AJG3- and AJG4-ranked journals (AJG is the ranking used by the UK Research Assessment Exercise) in strategic management, management, marketing, organization, innovation, operations, and supply chain management.

7.8. Estratégia para construção da string de busca

We used two search strings to retrieve the relevant literature to achieve our research aims. The first search string covered servitization related keywords. The search was conducted based on article titles, keywords, and abstracts. The second search string filtered for AJG3-and AJG4-ranked journals (AJG is the ranking used by the UK Research Assessment Exercise) in strategic management, management, marketing, organization, innovation, operations, and supply chain management.

The second search enabled us to narrow the focus to papers in high-impact journals in relevant research areas. We used the Scopus database to conduct the search.

7.9. String de busca

The first search string covered servitization-related Keywords. The second search enabled us to narrow the focus to papers in high-impact journals in relevant research areas - AJG3-and AJG4-ranked journals

7.10.Filtros

The first search without the journal filter returned 465 servitization-related studies in all journals. Of these, 161 studies were published in AJG3 and AJG4 journals.

- 7.11.Técnica / método de análise utilizada
 - Qualitativo por palavras chaves
- 7.12.Metodologia para definição de pesquisas futuras
 - Qualitativo por palavras chaves

8. Resultados

8.1. Quantidades resultantes antes e após cada filtro

Table 1

Firm boundary theories, digitalization, and business models in the servitization literature.

Firm boundary theories	Number of studies
Servitization	465
Resource-based view	85
Industrial organization	5
Organizational identity	19
Transaction cost approach	4
Digital servitization (IoT in servitization)	43
Business model	96

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

The **value system** as a concept refers to the system extending from raw material suppliers to end-customers (Porter, 1980). Ecosystems can exist within the value system. They operate using market or networked organizational forms. These systems are organized as hierarchies, markets, or networks (Kohtamäki, Rabetino, & Möller, 2018; Thorelli,1986; Williamson, 1985). An interorganizational network is typically described as an organizational form between markets and hierarchies, suggesting that a network is more integrated than the market but less integrated than a hierarchy (Thorelli, 1986). This is important When business models are conceptualized within ecosystems, acknowledging the interdependency and alignment between a firm and ecosystem actors (Adner, 2016; Jacobides, Cennamo, Gawer, & Mgmt, 2018) , particularly when developing smart solutions. The ecosystem as a concept emphasizes the value creation and capture between interrelated firms.

We use the **concept of an ecosystem when we refer to a predominantly local context**. To explain the context we seek to depict here, we use a harbor as an example of a local ecosystem, where technologies and business model configurations of multiple firms must combine to create an autonomous harbor. This approach is to extend the use of the ecosystem concept in a localized, highly specific setting (in contrast to global settings, which are also relevant). In contrast to the concept of an interorganizational network, **the concept of an ecosystem is indifferent to whether exchanges are coordinated through markets or network-type mechanisms**. This would at least separate ecosystems from interorganizational networks

Hence, the development of, for example, autonomous or semi-autonomous harbors requires the development of smart solutions, technologies, and business model configurations that go beyond firm boundaries. When firms develop connected smart solutions and there is a shift toward the IoT, new ecosystems are likely to emerge. These new ecosystems are not necessarily organized as interorganizational networks; instead,

assisted by smart technologies such as blockchain, they can be organized as markets. Hence, it is important to conceptually differentiate ecosystems and interorganizational networks. Otherwise, we risk mixing concepts.

Gawer and Cusumano (Gawer & Cusumano, 2014: 417; Iansiti & Levien, 2004) defined platforms as “products, services, or technologies that act as a foundation upon which external innovators, organized as an innovative business ecosystem, can develop their complementary products, technologies, or services.” Hence, platforms enable connections between actors (e.g., multiple suppliers and customers) within an ecosystem. **In practice, a platform can refer to a webstore that links multiple suppliers and customers (multi-sided markets) and that is managed by a manufacturer.** Uber and Airbnb are prominent examples of platform business models. Hence, this type of platform is a **business model**.

Because many potential activities depend on technologies and other capabilities of other companies, implementing strategies is always limited by collaboration with other actors within the ecosystem. Thus, the focus on ecosystems remains a key condition for digital servitization. We call for research from this ecosystem perspective in digital servitization.

We argue that **digitalization** is inherently embedded in servitization because servitization builds on integrated product-service-software systems. Thus, servitization is the transition from products and add-on services to integrated product-service-software systems. Because the digital servitization literature is in its infancy, a commonly accepted definition does not yet exist. We define **digital servitization as the transition toward smart product-service-software systems that enable value creation and capture through monitoring, control, optimization, and autonomous function. To gain value from digital servitization, firms must capitalize on three dimensions of digital offerings (i.e., products, services, and software), which should work together.**

To conceptualize **digital servitization business models**, we start with the product-service-software offering that reflects well the company's solution strategy (Ehret & Wirtz, 2017; Kohtamäki, Partanen, Parida, & Wincent, 2013). This strategy is evident in the offerings, and the construction of the business model builds on the value proposition. A variety of dimensions can be used to construct offerings in digital servitization. We use three dimensions: 1) solution customization (from standardization to customization of offerings; Kowalkowski et al., 2015; Mathieu, 2001; Matthyssens & Vandenbempt, 2010), 2) solution pricing (from product-oriented to outcome-oriented; Gebauer, Saul, Haldimann, & Gustafsson, 2017; Parida, Sjödin, Wincent, & Kohtamäki, 2014), and 3) solution digitalization (from monitoring to autonomous solutions; Porter & Heppelmann, 2015; Fig. 3). These are the core characteristics of smart solutions that digital servitization business models are built on.

We use four theories to study the optimal digital servitization business model configurations within platforms and ecosystems and thus understand these configurations. We use the theory of the firm to craft the business model configurations of digital servitization (Santos & Eisenhardt, 2005). The theory of the firm provides four theoretical perspectives to analyze how digitalization affects servitization within platforms and ecosystems. Typically, strategy theory provides four theories to conceptualize the theory of the firm: industrial organization, the resource-based view, organizational identity, and the transaction cost approach (Santos & Eisenhardt, 2005).

The **resource-based view** was developed to understand how combinations of valuable, rare, inimitable, nonsubstitutable, and organized resources (VRIN/O) can generate competitive advantages for a firm (Barney, 1991; Penrose, 1959). Competitive advantages emerge as

combinations of VRIN/O resources and processes in servitization too (Baines, Lightfoot, Smart, & Fletcher, 2013; Lenka, Parida, Sjödin, & Wincent, 2017; Paiola, Saccani, Perona, & Gebauer, 2013; Ulaga & Reinartz, 2011).

Building on the cognitive perspective of strategy, **organizational identity** is concerned with who we are as an organization. As a theory, organizational identity builds on managerial and strategic cognition as well as sensemaking (Gioia, Patvardhan, Hamilton, & Corley, 2013).

The **power approach** builds on the long tradition of studies that explore the impact of positioning on bargaining power, competitive advantage, and performance. Thus, the roots of the power approach are in the realist, objectivist approach of industrial economics, where rational actors seek the highest profits (Ezzamel & Willmott, 2004). Under this approach, the theory and operational criteria are used to determine how a firm can build an optimal position within the industry, strategic group, or value system, where this position should be optimized for growth and bargaining power.

Since its infancy, the **transaction cost** approach has been used to develop a theory on make-or-buy decisions and the conditions that determine the emergence of transaction costs (Coase, 1937; Williamson, 1985). In the provision of product-service-software systems, transaction costs can be significant because of the sales and delivery of highly complex, customized smart solutions. Delivering smart solutions also incurs significant transaction costs because of upstream interactions with the service supply chain in addition to product supply. Digitalization may potentially increase visibility in the exchange relationship and, because of this visibility, decrease transaction costs.

8.3. Evolução da pesquisa / das publicações no assunto

In terms of the evolution of citations of the 465 studies in all journals, Fig. 1 shows that the number of citations per year and the number of studies per year in servitization increased over the period 2010 to 2018 (Kowalkowski *et al.*, 2017; Rabetino *et al.*, 2018). *Based on these yearly numbers, servitization research has experienced considerable growth.*

8.4. Comunidades / “tribos” / “igrejas” / áreas de conhecimento / disciplinas identificadas *Four theories of the firm (industrial organization, the resource-based view, organizational identity, and the transaction cost approach) to understand digital servitization business models within ecosystems*

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

Abordado em outros tópicos

8.6. Principais “achados” (*findings*)

We extend the dialogue on digital servitization by presenting a typology of five business models (Huikkola & Kohtamäki, 2018; Kowalkowski *et al.*, 2015). The goal is to describe digital servitization business model configurations within ecosystems. We craft a three-dimensional model consisting of the dimensions of solution customization (standardized, modular, or customized), pricing (product-, agreement-, availability-, or outcome-oriented pricing), and digitalization (monitoring, control, optimization, or autonomous). These dimensions are then used to define five business models: 1) the product business model, 2) industrializer, 3) integrated solution provider, 4) outcome provider, and 5) platform provider. (Table 3)

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

Nada

8.8. Proposições de pesquisas futuras (geral)

Research Direction 1a: The literature on digital servitization should study the interplay between servitization, the IoT, and different theories of the firm.

Research Direction 1b: The interplay between theories of the firm may shed light on the business model configurations in digital servitization and therefore deserve further attention in future studies.

Research direction 2a: The literature on digital servitization should explain how digital capabilities in servitization generate competitive advantage and what types of configurations of resources and processes they require. We call for studies on strategic capabilities in digital servitization.

Research direction 2a: Research is needed on the role of dynamic capabilities in resource reconfiguration for digital servitization

Research direction 3a: Research on digital servitization should explain how digital servitization transforms the identity of a manufacturing company. We call for research on the profound effect of digital servitization on the organizational identity and culture of manufacturing companies.

Research direction 3b: Research is needed on the paradoxical tensions between product, service, and software organizations and organizational identities in solution providers

Research direction 4a: Digital servitization studies should examine how digitalization transforms bargaining power in different sections of value systems and ecosystems and how manufacturers increase their power using digitalization

Research direction 4b: Future research is needed to explore not only how digitalization enables value creation but also how manufacturers shift their value capture from product-centric, to service-centric, and further to data-centric.

Research direction 5a: The servitization literature lacks studies of the role of transaction costs in servitization. The digital servitization literature has so far neglected the effect of digitalization on transaction costs in downstream and upstream interactions. We call for studies that explore how digitalization transforms collaboration in servitization ecosystems.

Research direction 5b: The creation of ecosystems for autonomous smart solutions entails significant transaction costs as developers must configure and integrate technologies, routines, and business models between multiple firms within the ecosystem. More research is needed on the role of transaction costs in these collaborations and on appropriate governance structures for these collaborations

Research direction 6a: Because the digital servitization research domain lacks empirical studies of smart solutions and advanced services, digital servitization scholars should analyze the role of digitalization in developing these companies, their offerings, and capabilities, as well as the role of digitalization in developing these companies.

Research direction 6b: Considering the product-oriented focus of these companies, studies should focus on how IoT applications can shape future business models and how the IoT affects the role of services in the future

Research direction 7a: The digital servitization literature fails to provide detailed micro-level empirical evidence of the role of modularity in digital servitization or servitization in general. Future research should provide more detailed empirical findings on modularity and related routines in digital servitization, particularly concerning industrializers.

Research direction 7b: The configuration of the product, service, and software modules to ensure better service and digital content needs clarifying. What should constitute a core module and how is it possible to benefit from such a modular approach

Research direction 8a: The digital servitization literature broadly neglects changes in business model configurations of customized integrated solution providers. More empirical evidence is required to understand how digitalization shapes the ability of customized integrated solution providers to engage with other ecosystem actors to deliver higher value to customers.

Research direction 8b: A related issue has to do with how to codevelop business models with ecosystem partners. How is it possible to co-create and capture value over extended contracted duration of the solution?

Research direction 9a: The literature on outcome-based business models is still relatively scarce, and the role of digitalization in these models seems to be understudied. Thus, more empirical research on the role of digitalization in outcome-based business models is needed. There is a need for further research on outcomes in these business models (e.g., energy savings) and the increasing role of sustainability in these business models.

Research direction 9b: A key challenge for outcome solution providers is to deliver the promised performance over time (e.g., three or more years of contracts). There is currently a poor understanding of how to manage digitalization-enabled governance mechanisms during this implementation phase.

Research direction 10a: The literature on platform-based business models is modest or almost nonexistent in the digital servitization literature. Thus, we call for the digital servitization literature to tap into platform business models. Further research is also needed on the role of sustainability in the provision of platform-based business models.

Research direction 10b: The management or orchestration of multiactor business models needs further investigation. We also call for empirical studies that capture process insights into how providers transition toward becoming platform providers

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

Our first contribution is the review of the servitization literature. Drawing on previous studies (Kowalkowski et al., 2015), we provide a definition and conceptualization of digital servitization. Second, we extend the dialogue on digital servitization by presenting a typology of five business models (Huikkola & Kohtamäki, 2018; Kowalkowski et al., 2015).

The third and perhaps most important contribution is the use of four theories of the firm (industrial organization, the resource-based view, organizational identity, and the transaction cost approach) to understand the configurations of the five identified digital servitization business models.

From a practical perspective, this paper sheds light on how digital servitization can emerge within an ecosystem from the perspective of a firm boundary. This could be of significance as digitalization becomes more and more central to success within industries and markets. More specifically, we provide three key contributions to managers responsible for digitalization and servitization initiatives within manufacturing companies. First, we recommend that managers recognize the linkages between servitization and digitalization because they work best together. We foresee challenges and missed opportunities for value creation and value capturing if firms overlook the use of these concepts together. For example, service delivery benefits from digitalization capabilities for logistic management. Similarly, remote monitoring technology would need service contacts to capture the value it generates for customers. Second, we present five digital servitization business models. These business models are unique in relation to the level of offer configuration, servitization, and digitalization. We recommend that managers critically evaluate which business model best fits their internal capabilities and external market environment because all these business models have the potential to generate revenue and growth. However, for long-term competitiveness, we foresee the need to move toward a more advanced offering with customization, outcome-oriented, and autonomous characteristics. Finally, we urge companies to recognize that, in increasingly competitive and turbulent market environments, they must work and experiment with multiple business models. Being locked into a single business model, no matter how profitable, can create deep-rooted rigidity. Thus, continuously exploring business model innovation, such as through servitization and digitalization, is critical for survival.

Managerial contribution by highlighting the configurations of digital servitization business models, thereby enabling managers to design Internet-of-Things-related digital servitization business models and practices such as sayings and doings (Kohtamäki, Baines, Rabetino, & Bigdeli, 2018)

9. Conclusões

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

A key message of this study is that companies may choose between the digital servitization business models and that each of them could provide performance gains for the company. Finally, as the number of studies of digital servitization increase in the coming years, we call for more studies to adopt an ecosystem or value system perspective. Most studies are firm centric, and few studies have taken a dyadic view of servitization (Forkmann, Henneberg, Witell, & Kindström, 2017) and digital servitization. However, as firms mature in their ability to combine servitization with digitalization, they advance in their monitoring, control, optimization, and automation capabilities. This would imply that digital servitization business models will require value system actors' involvement and that this platform andecosystem would be critical.

9.2. Limitações

One limitation is our decision not to conduct a general review of servitization because such extensive reviews already exist (Baines et al., 2016; Kowalkowski et al., 2017; Rabetino et al., 2018). Hence, we excluded studies that did not explicitly focus on servitization business models, any of the firm boundary theories, or the digital or software component in servitization.

10. SUA ANÁLISE

10.1. Pontos fortes

O artigo é bem estruturado, principalmente das teorias e definição dos construtos utilizados para o estudo e correspondente argumentação, além de prover uma série de potenciais direcionamentos para pesquisa futura,

10.2. Pontos fracos

Na parte de metodologia poderia ter esclarecido se ao final das seleções dos artigos, foram considerados os 465 artigos e utilizados somente 252 artigos que foram classificados nas quatro teorias.

Os autores não explicam o porque consideraram como palavra chave IoT como uma derivação de digitalização para servitização. Existem outras tecnologias “digitais” que poderiam ser consideradas no estudo ou não uma conceituação clara do que significa IoT para os autores.

10.3. Sugestões para melhoria do artigo

Mesmo sendo um artigo

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

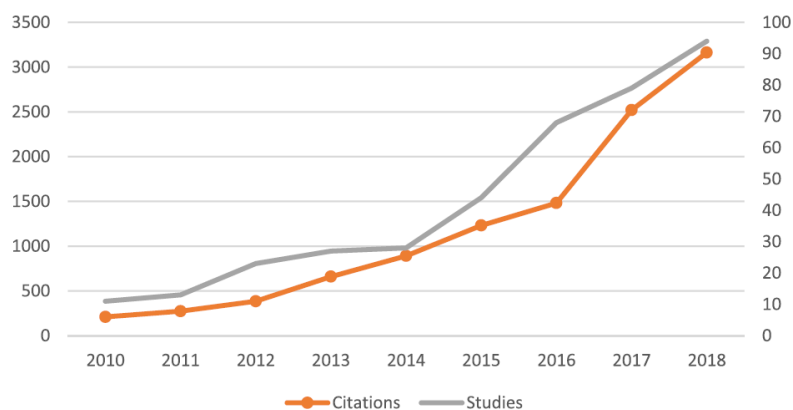


Fig. 1. Evolution of citations in servitization research (number of citations on the left-hand axis and number of studies on the right-hand axis)

Table 3
Connecting business models and firm boundaries in digital ecosystem.

	Product provider	Industrializer	Integrated solutions provider	Outcome provider	Platform provider
Description of the business model	Emphasis on standardized products and add-on services	Modular product offerings and service agreements	Customized/modular product-service systems with some performance guarantees or operational services Provision of availability	Customized/modular product-service systems owned by the manufacturer, predominantly performance pricing	Service-dominant business model where the platform provider enables provider-customer interactions and sharing services
The role of digitalization	Some smart features based on remote diagnostics	Efficient use of some remote diagnostics features, typically related to monitoring, diagnostics, and proactive maintenance	Remote diagnostics enabling provision of availability requiring effective monitoring, control, and optimization	Remote diagnostics enabling monitor, control, optimization, and autonomous operation (in some highly advanced cases such as moving vehicles)	Digital platform enabling effective interactions. Operator may monitor, control, optimize, and provide ecosystem enabling autonomous products (e.g., vehicles)
Resource-based view	Capabilities related to product selling, manufacturing, distribution, and delivery as well as brand management.	Capabilities to mass customize while maintaining high production capacity. Particular emphasis on modularity-based efficiencies.	Solutions sales and delivery, remote diagnostic, preventive maintenance, advanced services, IoT. Increasing emphasis on project management capabilities	Value-based selling, delivery of outcome-based services, IoT, AI solutions	Digital platform, user interface, and large number of providers and customers. Brand development. IoT to enable monitoring, control, optimization and autonomous products
Power approach	Product differentiation or cost-advantage	Product-service strategy relies on cost-advantage and scale economies	Customized product-service system, advanced services, customer lock-in	Base of buying and use, customer lock-in	Strong provider holds significant power generated by knowledge about actors and the ecosystem
Organizational identity	Product manufacturing	Technology and Manufacturing orientation	Solution provider, customer orientation, balancing between technology and customer orientation	Performance provider: Fully customer oriented, yet also evolving technology orientation	Interest in platform and true service-dominant logic. "Saves the world" through sharing business model and waste reduction
Transaction cost approach	Low relationship-specific investments More stable and simple business environment	Intermediate relationship-specific investments Dynamic and complex business environment	High relationship-specific investments Very dynamic and complex business environment	High relationship-specific investments Very dynamic and complex business environment	Digital platform enabling creation of sharing services. Digital platform saves transaction costs