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Nguyen Anh Khoa Dam
Université du Québec à Trois-Rivières, nguyen.anh.khoa.dam@uqtr.ca

Thang Le Dinh
Université du Québec à Trois-Rivières, thang.ledinh@uqtr.ca

William Menvielle
Université du Québec à Trois-Rivières, william.menvielle@uqtr.ca

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Completed Research

Nguyen Anh Khoa Dam
Université du Québec à Trois-Rivières
Nguyen.Anh.Khoa.Dam@uqtr.ca

Thang Le Dinh
Université du Québec à Trois-Rivières
Thang.Ledinh@uqtr.ca

William Menvielle
Université du Québec à Trois-Rivières
William.Menvielle@uqtr.ca

Abstract

The proliferation of the service sector in the age of big data highlights the role of customers as co-creators for business value. Customer interactions on digital platforms make a significant contribution to the vast amount of big data. Considering the lack of systematic and comprehensive studies on this research stream, the objective of the paper is to conduct a concept-centric literature review on customer co-creation from the lens of the service-dominant logic and guide future research. The paper systematically synthesizes and categorizes 50 articles by the concept matrix to reveal the interrelationships among them. The result of the paper provides a holistic overview of value, resources, and mechanisms relevant to customer co-creation. Concrete ideas for future research directions are also proposed for enriching the academic literature and promoting practical implications. The paper holds important implications for accelerating customer co-creation for service providers to achieve big-data-driven competitive advantages.

Keywords

Customer co-creation, service-dominant logic, big data, literature review.

Introduction

The era of digitalization along with the emergence of big data has witnessed the dominance of service and service-based products (Im and Qu 2017; Mikalef et al. 2020). The service sector makes a significant contribution to national GDP, particularly in developed countries with over two-thirds (Szirmai and Verspagen 2015). Nowadays, tangible products cannot survive without the accompany of service. The service-dominant (S-D) logic has penetrated many industries, including tangible and intangible products, and become a key indicator for competitive advantages (Vargo and Lusch 2017).

The S-D logic is portrayed through the interaction between customers and service providers to advance mutual interests (Ranjan and Read 2019). In the big data age, customers tend to interact with service providers on digital platforms (Fernandes and Remelhe 2016; Mikalef et al. 2019). These interactions offer values for both customers and service providers, hereafter called *customer value co-creation*. From the viewpoint of service providers, customer value co-creation provides a significant source of customer data for product and service innovation (Alves et al. 2016). Furthermore, the value of customer co-creation is not limited to innovation or problem solving; instead, customer co-creation reveals opportunities for potential market niches and supports organizational development (Crandell 2016; Jouny-Rivier et al. 2017). From the viewpoint of customers, customer value co-creation improves customer experiences and knowledge (Cambra-Fierro et al. 2018; Iglesias et al. 2018). Interactions with service providers and other customers help individuals solve the problems related to service (Burrell 2018). On the other hand, customers can discover new ways or shortcuts to consume a service (Ramaswamy and Ozcan 2019).

Even though the research stream on customer co-creation catches more interests from scholars, there is a small number of articles articulating a systematic and comprehensive literature review (Campos et al. 2018;

France et al. 2015). Furthermore, the majority of research on the value co-creation lacks the focus on customers although they are the resource providers of knowledge, skills, and experience (Galvagno and Dalli 2014; Ranjan and Read 2019). Consequently, the objective of this paper is to conduct a holistic literature review on customer co-creation from the lens of the service-dominant logic and guide future research. To respond to the research objective, the following research questions (RQ) are investigated:

> *RQ 1: How does literature conceptually approach customer co-creation through the S-D logic?*

> *RQ 2: What are the research gaps and future research opportunities?*

The remainder of this paper is structured as follows: a background on customers and value co-creation is derived. Then the research design is explained. The next section of the paper presents the results of reviewing the literature. The paper also discusses research gaps and future research directions. The last section of this paper indicates an in-depth discussion of limitations and contributions as a conclusion.

Service-dominant Logic and Customer Co-creation

Laid the foundation upon the service-dominant logic, the paper follows the definition of *service* as "a *process* of doing something for and with another party" instead of *services* as "*units of output*" from the product-dominant logic (Vargo and Lusch 2008). As a collaborative process, service is the application of knowledge and skills – which are also called *competences* – to offer benefits for service providers and beneficiaries (Vargo and Lusch 2017). The ultimate goal of the S-D logic is to leverage the value of both products and *services* - "units of output"- through *service,* the process to advance mutual interests. Therefore, the S-D logic sets a strong service-based foundation for all economic activities, including physical or tangible products (Lusch and Nambisan 2015). From the service perspective, customers are highlighted as co-creators of value through interactivities with service providers. The S-D logic gives prominence to the *operant resources* of customers - which are intangible and dynamic such as knowledge and skills - as the primary source of strategic benefits (Vargo and Lusch 2016). Accordingly, service providers will take advantage of *operant resources* of customers to offer values to other customers (Vargo and Lusch 2017).

This paper adopts the definition of customer co-creation developed by Vargo and Lusch (2017) as it sets a fertile ground on the S-D logic. Accordingly, customer co-creation is described as the joint creation of value by the service providers and customers through the mutual application of operant resources. This definition was created in 2004 and revisited many times so that it can fit into today's service-based economy (Vargo and Lusch 2017). To examine how literature conceptually approaches customer co-creation through the S-D logic, this paper relies on the co-creation framework by Saarijärvi et al. (2013). The co-creation framework by Saarijärvi et al. (2013) is chosen as it comprehensively covers different aspects related to the research objective of the paper. With the focus on the multifaceted nature of customer co-creation, the adopted framework which is in line with the S-D logic, would be ideal to categorize the selected articles.

The co-creation framework by Saarijärvi et al. (2013) consists of three components: value, resources, and mechanisms. Firstly, the *value component* clarifies what kinds of value are for customers and service providers. Secondly, the *resource component* consists of the actors and resources for co-creation. Actors (e.g.: consumer and business) form different relationships: Consumer-to-Business (C2B), Business-to-Consumer (B2C), Business-to-Business (B2B), and Consumer-to-Consumer (C2C). The resource component deals with customer and firm resources. Finally, the *mechanism component* discusses co-creation forms among actors such as co-design, co-development, and co-conception.

Research Design

Identifying Relevant Literature

To ensure a comprehensive literature review, the paper follows the approach proposed by Webster and Watson (2002). Searches are conducted in various academic databases, including Science Direct, Emerald Insight, EBSCOhost, ProQuest, and Google Scholars. Different keywords such as "customer co-creation", "customer cocreation", and "customer co creation" are used to look for articles from these databases. Synonyms, including "customer collaboration", "customer engagement", "customer cooperation", and "client co-creation", are also scrutinized. The search results in approximately 18,000 hits.

Articles	Customer Value	Firm Value	Actor Relationship	Customer resource	Firm resource	Engage Form
Alves et al. (2016)	*	*	*	*	*	
Breidbach and Maglio (2016)	*	*	B2B	*	*	
Brodie et al. (2013)	*	*	*	*	*	*
Cambra-Fierro et al. (2018)			*	*	*	
Campos et al. (2018)	*	*	*	*	*	*
Chen et al. (2018)	*	*	C2C	*	*	*
Crandell (2016)		*	*	*	*	
Delpechitre et al. (2018)	*		B2B	*	*	
Fernandes and Remelhe (2016)	*	*	*	*	*	
France et al. (2015)		*	C2C	*		*
Frow et al. (2015)	*	*	*	*	*	*
Frow et al. (2016)	*	*	*	*	*	
Galvagno and Dalli (2014)	*	*	*	*	*	*
Grissemann and Sauer (2012)	*	*	B2C			
Grönroos and Voima (2013)	*	*	*	*	*	
Gustafsson et al. (2012)	*	*	*	*	*	
Heidenreich et al. (2015)		*	*	*	*	*
Iglesias et al. (2018)	*	*	B2C		*	
Im and Qu (2017)		*	*	*	*	
Jouny-Rivier et al. (2017)	*	*	B2B	*	*	
Laud and Karpen (2017)			*	*	*	
Lusch and Nambisan (2015)	*	*	*	*	*	*
Trischler et al. (2017)	*		*	*	*	
Quach and Thaichon (2017)	*	*	B2C	*	*	*
Ramaswamy and Ozcan (2018)	*	*	*	*	*	
Ramaswamy and Ozcan (2019)	*	*	B2C		*	*
Rashid et al. (2019)	*	*	C2C	*	*	*
Ranjan and Read (2019)	*		*	*	*	
Rihova et al. (2015)	*	*	C2C	*	*	*
Russo-Spena and Mele (2012)	*	*	*	*	*	*
Saarijärvi et al. (2013)	*	*	*	*	*	*
Shamim et al. (2017)	*	*	B2C	*	*	
Storbacka et al. (2016)		*	*		*	*
Tuan et al. (2019)	*		B2B	*	*	
Tu et al. (2018)		*	*	*	*	
Oertzen et al. (2018)	*	*	*	*	*	*
OHern and Rindfleisch (2010)		*	*	*	*	*
Melton and Hartline (2015)	*	*	*	*	*	*
Payne et al. (2009)	*	*	*	*	*	*
Preikschas et al. (2017)	*	*	B2B	*	*	*
Vargo and Lusch (2016)	*	*	*	*	*	
Vargo and Lusch (2017)	*	*	*	*	*	*
Vega-Vazquez et al. (2013)	*		*	*		
Verleye (2015)	*	*	*	*	*	*
Witell et al. (2011)		*	*	*	*	*
Xie et al. (2016)	*	*	B2C	*	*	*
Xu et al. (2018)		*	*			*
Yi and Gong (2013)		*	*	*	*	
Zhang et al. (2015)	*	*	*	*	*	
Zhang et al. (2018)	*	*	*	*	*	
Total number of articles	38	43	50	45	46	25

Table 1. Categorization of the Reviewed Literature

Then the inclusion and exclusion criteria are applied to filter out relevant articles. Assuming the majority of research on customer co-creation is written in English, only publications in this language are chosen. The

period of a decade (from 2009 to 2019) is applied to filter out articles as it is broad enough to view changes in the research domain of customer co-creation. Other inclusion and exclusion factors are peer-reviewed criteria and research approaches. Articles that are not peer-reviewed are excluded. The selected articles are limited to studies that are conducted from the approach of service-dominant logic. Finally, publications that only mention the search keywords a couple of times and lack of focus on the topic are not considered. After the inclusion and exclusion process, about 1500 hits remain.

Regarding the next step, the definition of *service* as "*process* of doing something for and with another party" from the S-D logic is applied for screening and filtering. Publications considering *services* as "*units of output*" from the product-dominant (P-D) logic are disqualified. This reduction step ends with 48 most relevant articles. To ensure the validity and reliability of the literature review, a backward and a forward search are also implemented to avoid missing out relevant publications (Webster and Watson 2002). The backward search examines the reference and keywords of the reviewed articles while the forward search focuses on related work after the publication of an article. The backward and forward search ends the process of identifying relevant literature with a total of 50 articles.

Reviewing the Relevant Literature

The second phase of the literature review starts with categorizing selected articles based on the adopted framework by Saarijärvi et al. (2013) to identify relevant aspects, gaps, and trends on customer co-creation. The categorization of reviewed articles by years of publication and by industries is demonstrated to catch trends in this research domain.

The relevant literature is categorized based on three key components or concepts of the adopted framework by Saarijärvi et al. (2013) including value, resource, and mechanism components. These components are broken down into six units of analysis: customer value and firm value (value component), actor relationship, firm resource, and customer resource (the resource component), and engagement form (the mechanism component). The reviewed articles, which cover these units of analysis, are noted with the asterisk symbol (*). Consequently, the selected articles are categorized by a concept matrix with units of analysis (Webster and Watson 2002). The concept-centric literature review supports the identification of the interrelationships and coherence among articles. This approach is also useful in proposing promising future directions. **Table 1** shows the classification of the literature review.

Results of the Literature Review

Categorization of the Reviewed Literature

According to **Figure 1**, the number of articles discussing the customer co-creation from the S-D logic has significantly increased over the past five years. This research stream reached a peak in 2018. The number of the reviewed literature came from various industries, including retailing, insurance, health, tourism and so on. Customer co-creation was often discussed in the fields of tourism, retailing, and health care as mentioned in **Table 2**. The selected articles were also categorized according to key components with units of analysis as the breakdown of concepts. These components are discussed in the next part of the paper.
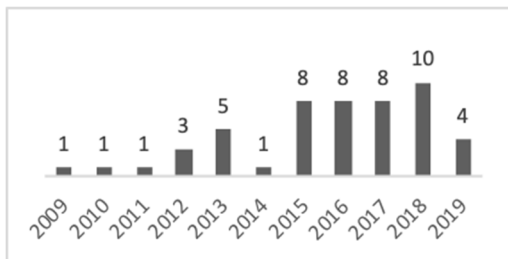

Figure 1. Year of Publication

Industries	Number of articles
General	14
Retailing	8
Insurance	3
Health care	7
Tourism	9
Finance	3
Telecommunication	3
Others	3

Table 2. Co-creation Industries

Value Component

Customer Value

In total, 38 articles deal with customer value. This indicates a relatively low level of discussion compared to other concepts. Customer value relates to customers' motivational drivers in joining the co-creation process (Trischler et al. 2017). Customers' primary motivation is to have their problem solved; therefore, their customer experience and satisfaction with the service are improved (Shamim et al. 2017; Vega-Vazquez et al. 2013). Customers can also enjoy extrinsic values such as economic benefits, including bonus points, monetary awards, discounts, or promotion by connecting new customers with service providers or even with partners of service providers (Fernandes and Remelhe 2016; Rashid et al. 2019). Furthermore, customers can achieve social benefits by making friends with customers with common interests and exchanging experiences (Ranjan and Read 2019; Zhang et al. 2015). The number of friends and followers on social media can infer the social status of customers (Quach and Thaichon 2017; Verleye 2015). Customers can learn from other customers, service providers, and also competitors; therefore, they receive knowledge benefits in the co-creation process (Xie et al. 2016). Benefits related to knowledge and hedonic pleasure can be described as intrinsic values (OHern and Rindfleisch 2010; Szirmai and Verspagen 2015).

Firm Value

The 43 reviewed articles point out the focus of the literature on firm value. Firms receive economic value, innovation, competencies, and other desired outcomes from customer co-creation (Oertzen et al. 2018; Tu et al. 2018). Firm value can be categorized into three types: i) economic value – the measure of profits), ii) social value – how customers influence other customers, and iii) cognitive value – value gained from customers' knowledge and experience (Oertzen et al. 2018; Xie et al. 2016). Knowledge and skills from customers are considered more significant as they are a great source for innovation and service improvement (Alves et al. 2016; Rashid et al. 2019).

Resource Component

Actor Interrelationships

The reviewed literature acknowledges discussions of all selected articles related to actors – customers and service providers, especially the interrelationships between these two actors. It is noticeable that the interrelationships among these two actors have changed in recent studies. Previous studies emphasize the role of B2C and B2B (Galvagno and Dalli 2014). However, recent studies have witnessed different interrelationships: C2B and C2C (Oertzen et al. 2018). Interrelationships among actors fluctuate depending on industries. For example, C2C co-creation seems to dominate in the tourism industry in which customer experience with service is valuable to potential customers (Rihova et al. 2015). C2C co-creation often happens on social media platforms where customers can create and share their content (Chen et al. 2018). Those platforms connect customers with similar minds to share their knowledge and experience (Rashid et al. 2019). On the other hand, actor interrelationships also stimulate different resource applications. In B2B interrelationship, salespeople – particularly their emotional intelligence and empathy – have a significant influence on customer co-creation (Delpechitre et al. 2018; Tuan et al. 2019).

Customer Resources

A total number of 45 articles highlight the importance of customer resources. Customer resources can be individual resources, including knowledge, skills, and experience relevant to service consumption (Im and Qu 2017; Quach and Thaichon 2017). Customer resources can also be social network resources of customers (Xie et al. 2016). Through social media platforms, this resource reflects through network size (numbers of friends and followers) and their social roles (Fernandes and Remelhe 2016; Laud and Karpen 2017).

Firm Resources

Similarly, firm resources are frequently discussed with 46 articles. Firm resources include knowledge about market and customers along with financial, human, and technological resources (Mikalef et al. 2020; Storbacka et al. 2016). Financial resources are incentives or monetary rewards that service providers offer

to customers and employees to facilitate customer co-creation (Preikschas et al. 2017). In terms of human resources, previous studies give prominence to cross-functional teams and frontline employees to stimulate customer engagement in co-creating value (Grönroos and Voima 2013; Melton and Hartline 2015). Direct and ongoing interactions between customers and service providers lead to more value (Grissemann and Sauer 2012; Vega-Vazquez et al. 2013). Moreover, it is essential to consider the participation style, team cohesion, and team identity of frontline employees along with task conflicts (Trischler et al. 2017; Zhang et al. 2018). Technological resources involve digital engagement platforms such as websites, social media, tools and other interfaces (Frow et al. 2015; Verleye 2015).

Mechanism Component

Engagement forms. Only 25 articles discuss engagement form. In the digital age, customers emerge with various roles in co-creating values. Customers can involve as ideators for service innovation, as designers for service development, and as intermediaries for sharing knowledge in the business ecosystem (Xie et al. 2016). The role of customers is also noticed in co-branding through brand communities, especially in specific industries such as health and fitness (Brodie et al. 2013; Quach and Thaichon 2017). The studies of Oertzen et al. (2018) and Frow et al. (2015) clarify different roles of customers, including co-innovation, co-valuation, co-test, co-launch, co-experience, co-consumption, co-investment, and co-production. Co-ideators and co-development are more appreciated than other engagement forms in customer co-creation (Russo-Spena and Mele 2012; Witell et al. 2011).

Discussion of Research Gaps and Future Research Directions

The analysis of three components with six units of analysis from the adopted framework by Saarijärvi et al. (2013) stimulates promising future research directions. These directions are proposed and grouped towards the three components including value, resources, and mechanisms.

Value Component

With an aim to offer values that can attract customers, it is significant to understand customers' behaviors and preferences (Ranjan and Read 2019; Zhang et al. 2015). The value component triggers the motivation to conduct further studies on customer intelligence to approach customer insights, especially in different stages of customer value maturity (Grönroos and Voima 2013; Melton and Hartline 2015). Furthermore, the value component stimulates the need to improve customer experience through the integration of various channels in co-creation (Shamim et al. 2017; Vega-Vazquez et al. 2013). These interesting research directions supporting the value component are presented as follows.

Customer intelligence. Customer intelligence is described as insights on customers through interactions with service providers (Gustafsson et al. 2012). Customer intelligence has made significant contributions for both service providers and customers as it accelerates customer loyalty, satisfaction, and firm performance (Ramaswamy and Ozcan 2019; Zhang et al. 2018). Despite a consensus that customer intelligence is beneficial, there is a lack of studies on how to explore and exploit it. Accordingly, future scholars can further examine relevant aspects related to the exploration and exploitation of customer intelligence considering the current context of big data era such as data mining techniques, information technology infrastructure, and dynamic capabilities (Breidbach and Maglio 2016; Mikalef et al. 2019).

Omnichannel customer experience. Partnering with other service providers of customers to provide an omnichannel environment for better customer experience (Ramaswamy and Ozcan 2019). Starbuck partners with Spotify to stream relevant music for customers instead of playing some random music. In addition, Starbuck combines other factors such as lighting, an assemblage of tables and chairs, Wifi service and artwork showcase to create an omnichannel store environment for customers. The research stream on omnichannel customer experience holds important implications for customer co-creation.

Customer value maturity. Literature acknowledges the significance of customer value in co-creation. However, the maturity of customer value varies in different forms of co-creation. Customers seem to contribute much value to the design phase instead of the development phase of service (Melton and Hartline 2015). Examining customer value maturity for different engagement forms of customer co-creation would open up interesting avenues for future studies.

Resource Component

The resource component prompts the necessity to allocate resources in different stages of customer co-creation. Resources also influence customer experience, especially through the interaction with technological resources such as big data platforms (Frow et al. 2015; Verleye 2015). This vitalizes the importance of research on the user-machine acceptance level. The age of big data also brings the challenge of integrating different resources from various networks to form a co-creation ecosystem (Xie et al. 2016). These concerns arising from the resource component are proposed as potential research paths.

Resource allocation through co-creation maturity. It is important to adjust resource investment in different maturity stages of customer co-creating, including exploration, buildup, maturity, and decline (Cambra-Fierro et al. 2018). Each stage of customer co-creation is characterized by investment, resources, behaviors, objectives, motivational drivers, and other factors (Yi and Gong 2013). Understanding the characteristics of each stage would assist service providers to achieve value from customer co-creation. Uncovering myths under this research path would yield potential outcomes (Mikalef et al. 2020).

Customer experience. Literature calls for future research on customer experience, which involves how customers interact with service from pre-purchases to post-purchases (Payne et al. 2009). In particular, analyzing data related to contexts or co-creation environment helps service providers manage customer experience (Verleye 2015). Future studies can continue with the application of context-data analytics to reinvent and optimize customer journeys, especially key journeys. Furthermore, characteristics of co-creation actors, which also affect customer experience, can be another interesting research path.

Big data platforms. The vast amount of customer data, including transactional data, browsing data, and other digital customer-generated data stimulate the need for a big data platform to capture relationships between customers and service providers (Xie et al. 2016). The challenges of live communication and smooth connection among different platforms are waiting for future scholars to solve these issues (Zhang et al. 2018). Scholars can start with social media platforms, which are ideal for customers to share skills, knowledge, needs, and opinions (Rashid et al. 2019). The extent of customer co-creation on social media depends on the characteristics of media pages such as visual appeals and fulfillment for customer tasks (Zhang et al. 2015). Literature calls for future studies on influential factors of social media platforms.

User-machine acceptance level. In the digital age, machines and technologies are considered as actors (Breidbach and Maglio 2016). Future research can add more rigors on how to efficiently interact with machines. Fittingly, potential research directions can be user-friendly machine interface, level of emotional engagement of machines, or level of technology acceptance by users (Storbacka et al. 2016).

Co-creation ecosystems. Amazon forms a network of ecosystems, including Amazon.com, Amazon Music, Amazon Book, Amazon app, and even Wholefood to make all service accessible through one order from devices such as Amazon Fire, Echo and Dash (Ramaswamy and Ozcan 2019). An ecosystem is in charge of cohering all actors and their resources for the well-being of each other (Frow et al. 2016; Lusch and Nambisan 2015). To capture this phenomenon, future studies can examine characteristics of ecosystems, especially new platforms of ecosystems such as crowdsourcing and crowdfunding communities (Chen et al. 2018). Indicative measures of the well-being of an eco-system can be a research direction.

Mechanism Component

The mechanism component highlights the significance of innovation management in stimulating customer engagement. This also links to social responsibilities of enterprises in building trust for customers to participate in co-creation. On the flip side, it is vital to consider factors that can destroy customer co-creation. These issues are discussed as potential research directions for the mechanism component.

Innovation management. Innovation management is characterized by customer's subjective evaluations, motives, outcome quality, and consumption settings of service (Crandell 2016; Jouny-Rivier et al. 2017). It becomes a significant challenge for many service providers as it has direct impacts on customer co-creation (Xu et al. 2018). Scholars can shed more light on those research directions.

Corporate social responsibility. Customer co-creation is strongly related to corporate social responsibility (Tuan et al. 2019). Specifically, the study of Iglesias et al. (2018) points out the positive relationship among co-creation, social responsibility, customer loyalty, and trust. As this research only

considered attitude measures, future scholars should develop other behavioral and attitude ones. Social responsibility is particularly significant for service providers in developing brand communities. Co-branding requires service providers to deal with sustainability and other environment-related issues (Payne et al. 2009). Validating the role of trust in co-branding can be a noteworthy research path for scholars.

Co-destruction. Co-destruction can be considered as the failure of co-creation when customers and service providers cannot reach a common voice in co-creating value (Heidenreich et al. 2015). To avoid the risk of co-destruction, service providers need to pay attention to customer attitudes and behaviors during interactions (Laud and Karpen 2017; Shamim et al. 2017). Co-destruction can also be caused by service providers' lack of resource provision, trust to share knowledge, value, or other factors (Heidenreich et al. 2015; Quach and Thaichon 2017). Researchers can continue to explore factors causing co-destruction, especially contextual factors such as time, frequency, location, emotion.

Limitations

This literature review is limited to five databases and a specific set of keywords. Although those databases are broad enough to identify relevant articles, searching with additional databases would reinforce the validity and reliability of the paper. Another limitation comes from the inclusion and exclusion criteria on peer-review. As a result, book chapters, white paper, and other relevant documents are not considered. A diversity of reviewed documents might yield a better outcome. Finally, the proposed future directions are not pre-defined. They are identified through the review of selected articles. Some future research directions are labeled as working definitions that require further studies.

Conclusion

The paper presents a concept-centric literature review of 50 articles on customer co-creation through the lens of the S-D logic in the age of big data. All articles are systematically categorized by the concept matrix to reveal the interrelationships among them. This literature review provides a holistic overview of research on customer co-creation, especially the potential applicability of customer co-creation in different industries to promote social innovations which are defined as social practices supporting innovative solutions from communities (Frow et al. 2016; Lusch and Nambisan 2015). Concrete ideas for future research directions are also proposed from the analysis of the reviewed literature.

Regarding theoretical contributions, the categorization of the reviewed literature discloses interesting findings on customer co-creation. Despite the fact that research on customer co-creation is supposed to focus on customers, a significant number of studies neglect customer value and over-emphasize firm value. Additionally, the reviewed literature indicates the missing research gap in customer engagement forms. It is argued that customer co-creation is advantageous; however, what value to offer to customers and how to engage customers with service providers are still unresolved issues. Proposed research directions of the paper would serve as a great starting point for academics to fill research gaps and enrich the literature.

In terms of practical contributions, the paper holds important implications for accelerating customer co-creation for service providers. Firms can rely on the results of the paper to gain a comprehensive understanding of resources, value, and mechanisms with relevance to customer co-creation. The reviewed literature enables service providers to apply their resources and offer value to customers through appropriate mechanisms. Exploiting customer resources to gain value through the co-creation process helps service providers achieve big-data-driven competitive advantages (Breidbach and Maglio 2016; Mikalef et al. 2019). Finally, service providers can take advantage of the proposed future research directions as hints for potential market opportunities.

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