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Customer Participation in Services: Domain, Scope, and Boundaries

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Report Summary

Customer participation (CP) is prevalent across industries. Customers collaborate with service providers in healthcare and education, engage in self-service at gas stations and assembling IKEA furniture, and customize products like Nike shoes and M&M chocolates.

In this report, Beibei Dong and K. Sivakumar propose a framework that defines and classifies customer participation in services. Their research can help managers understand how various customer participation activities may influence, enhance, or even endanger customer experience.

They classify customer participation activities as mandatory, replaceable, or voluntary:

Mandatory activities can only be performed by customers and are essential for service delivery. Firms should ensure that mandatory activities are as foolproof as possible. For example, Turbo Tax offers a well-structured data entry process to simplify customer information provision.

Replaceable activities are essential for service provision but can also be performed by the service provider (e.g., gas pumping, tour planning). Wisely allocating resources between the firm and customers to increase efficiency is the core element in managing replaceable CP. For example, Ford allows customers to rapidly sort options when configuring cars to help them make decisions as efficiently as experienced employees.

Voluntary activities are not essential for service delivery but are performed at customers' discretion to improve the service experience (e.g., researching tips for tour planning). Stimulating voluntary CP can pay substantial dividends in promoting brand loyalty. For example, Fidelity encourages customers to look into Morningstar research on mutual fund ratings to facilitate their financial investment planning. In a service-dominant economy, voluntary CP activities may offer the greatest potential to firms.

Dong and Sivakumar also differentiate the concept of CP from customer engagement, incorporate and generalize existing CP frameworks, offer a comprehensive platform to compare and reconcile empirical findings across prior studies, apply their framework to various service classifications, incorporate operand and operant resources, and adapt the framework to different stages of the service process.

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Customer Participation in Services: Domain, Scope, and Boundaries

In the past decade, global business giants such as Cisco, Dell, Procter & Gamble, and Starbucks have all embraced the concept of "customer participation" (CP) (Ramaswamy and Gouillart 2010). CP is defined as *the extent to which customers are involved in service production and delivery by contributing effort, knowledge, information, and other resources* (Dabholkar 1990). Indeed, companies such as Coca-Cola, Google, and Lego increasingly engage customers to define service offerings and customer participation is enabling the reinvention of businesses in a changed world (*Forbes* 2013). For example, self-served frozen yogurt shops are making their ubiquitous mark in major U.S. cities (*Wall Street Journal* 2013); US airways have succeeded in shifting 50% of their routine check-in transactions to self-service kiosks and reducing boarding pass printing cost by 96% (*CIO* 2005); customers are co-creators of their own Nike shoes, M&M chocolates, and medical experiences (McColl-Kennedy et al. 2012); and customers even customize novels with their own named characters and created endings (Moreau and Herd 2010). These examples indicate that CP has become the "beating heart" of marketing (*Fast Company* 2012) and a burgeoning business trend (*Bloomberg Business Week* 2010).

Although customers have become increasingly involved in various stages of service production and delivery and engaged in a wide variety of participation behaviors (Atakan et al. 2014), a clear delineation of CP's domain and boundaries is still in its early development (Grönroos and Voima 2013). A comprehensive framework to define the domain of CP and to synthesize, classify, and differentiate various CP behaviors in different service contexts would clearly advance the literature in this domain (Homburg et al. 2016; Ranjan and Read 2016).

Moreover, distinct CP roles are neither clearly differentiated nor exhaustively included in existing conceptualizations of CP, resulting in conceptual confusion. For example, most CP research focuses on customer roles substituting for service employees' work (e.g., Bendapudi and Leone 2003; Dong et al. 2015); some studies are limited to CP behaviors that are not essential for service production but optional for service enhancement (e.g., Bettencourt 1997); some other studies mix the two (e.g., Chan et al. 2010; Yim et al. 2012). This conceptual confusion and overlap may explain the inconsistent empirical findings regarding the impact of CP: while some researchers find that increasing CP can have a positive effect on service quality and satisfaction (e.g., Chan et al. 2010; Gallan et al. 2013; Yim et al. 2012), others find a

negative relationship (e.g., Bendapudi and Leone 2003; Dong et al. 2015; Haumann et al. 2015) or an insignificant effect (e.g., Ennew and Binks 1999; Wu 2011).

To address these important gaps, we develop a conceptual framework to depict the various types of CP. More specifically, we answer three important research questions: What is the domain of CP? What are the different types of CP? How does this CP classification relate to, clarify, and integrate the existing body of knowledge? To answer these questions, we first clarify the domain of CP by discussing what is and is not CP and comparing the terminologies used in the literature. Then, we classify CP into three categories—mandatory, replaceable, and voluntary—based on whether the activity is essential for service provision and whether only the customer can perform such an activity. Next, we demonstrate the theoretical and managerial value of our framework by differentiating the concept of CP from customer engagement, demonstrating our framework's ability to incorporate and generalize existing CP frameworks using our unified approach, offering a comprehensive platform to compare empirical findings across prior studies and reconcile some empirical findings, applying our framework to various service classifications, connecting our framework to incorporate operand and operant resources as highlighted by the service dominant logic, and adapting the framework to different stages of the service process. Table 1 presents the structural framework, positioning, and contributions of our research.

(Tables and figures appear following References.)

Terminology Related to CP

The conceptualization of CP has evolved over time (Mustak et al. 2013). Early studies in the 1970s-1980s predominantly focused on productivity impact of CP (Achrol and Kotler 2012). CP was seen as interfering with service operations and negatively affecting production efficiency (Levitt 1972) until Lovelock and Young (1979) highlighted the possibilities of productivity gains by outsourcing labor to customers.

Over the last decade, conceptualizations of CP have gradually expanded to encompass a broad array of customer roles, behaviors, and resources during the service process (Lusch et al. 2010; Ranjan and Read 2016). For example, CP comprises various behaviors, including designing, production, information provision, decision making, and quality assurance (Franke et

al. 2009; Kellogg et al. 1997; Ranjan and Read 2016; Yi and Gong 2013), and a broad range of resources, from time, labor, and effort to information, preference, and knowledge (Bendapudi and Leone 2003; Chan et al. 2010; Moreau and Herd 2010).

Different terminologies

The evolution of research on the content and scope of CP has led researchers to use various terminologies interchangeably to describe CP. These terms include customer participation (e.g., Chan et al. 2010; Dong et al. 2015; Gallan et al. 2013), coproduction (e.g., Auh et al. 2007; Mende and van Doorn 2015; Haumann et al. 2015), customer participation in co-production (e.g., Bendapudi and Leone 2003; Troye and Supphellen 2012), cocreation (e.g., Heidenreich et al. 2014; Thompson and Malaviya 2013; Yi and Gong 2013), and a few others (e.g., customer voluntary performance [Bettencourt 1997], quality assurance behaviors [Kellogg et al. 1997], self-design [Franke et al. 2008; Moreau and Herd 2010]). However, the definitions of these terms as used in the literature indicate that they all converge to a similar theme—customers' involvement in service production and delivery (Dabholkar 1990). Table 2 summarizes various labels and definitions of CP used in the literature.

Next, we compare CP, co-production, and co-creation – the three most frequently used terms in the literature. The word "co-production" means that customers collaborate with service firms to produce the service; thus, "collaboration" and "production" are the two essential themes underlying this construct. However, researchers have used this terminology in a more flexible and inclusive way. We highlight three pertinent inferences from this research.

Co-production can mean more than "production." For example, Auh et al. (2007) use the word "co-production" to denote CP behaviors that are more than *production* of the service (e.g., client preparation before meetings, client information provision for decision making). Chan et al. (2010) and Yim et al. (2012) use a different label "customer participation," while keeping the same definition of Auh et al. (2007). Bendapudi and Leone (2003) combine the two terms (i.e., "customer participation in co-production").

Co-production can mean more than "collaboration." Meuter and Bitner (1998) classify three types of service production: firm, joint, and customer production. By definition, co-production means joint production (Grönroos and Voima 2013). While some researchers concur

with this interpretation (e.g., Auh et al. 2007; Bendapudi and Leone 2003), others do not (e.g., Dong et al. 2015; Etgar 2008). For example, Haumann et al. (2015) use coproduction to denote self-production and self-assembly of products, and Etgar (2008) labels self-service technologies (SSTs) as co-production; clearly, both examples are forms of customer production.

Co-production versus co-creation. Vargo and Lusch (2004) introduce yet another term, 'cocreation,' in their delineation of the service-dominant logic. Lusch and Vargo (2006) argue that co-production and co-creation are nested concepts, with co-production being a subordinate concept to co-creation. However, co-creation differs from co-production in that it takes place in the usage/consumption stage, while co-production takes place in the production stage (Etgar 2008). As Table 2 shows, cocreation has been used somewhat loosely in the literature. For example, cocreation has been used to represent customer participation in production (e.g., online railway ticketing [Heidenreich et al. 2014]; making hotel beds [Xia and Suri 2014]), creation/design of products (e.g., information sharing [Yi and Gong 2013; designing weight-loss meal plan [Xia and Suri 2014]) or even interaction with brands (customer engagement) (e.g., advertisement design for Doritos chips [Thompson and Malaviya 2013]); moreover, cocreation is used to refer to both joint production (e.g., Sweeney et al. 2015) and customer production (e.g. Xia and Suri 2014).

CP as our preferred terminology

As shown in Table 2, it is clear that there is a lack of consensus as researchers continue to use different terms to denote CP. We use the term "customer participation" due to its dominant use in marketing and other related disciplines (Lovelock and Young 1979; Mustak et al. 2013), less conceptual confusion compared to the use of coproduction and cocreation (Dong et al. 2015), and its coverage of various forms of service production (firm, joint, and customer production) (Meuter and Bitner 1998), while coproduction generally refers to joint production.

Proposed Conceptualization

Three types of CP

To cover the broad conceptual domain of CP, we consider two important dimensions related to CP: the locus of service tasks (whether only customers can perform the tasks or the firm can

also do so) and the criticality of the tasks (whether the tasks are essential for service provision or are optional enhancements). The locus of the service task is important because of its role in resource sharing between the customer and the service provider. The criticality of the task determines the nature of the task, the necessity for customer roles in service provision, and customers' motivation for participating in such activities. Together, these two dimensions provide two characteristics of the service tasks that can be used to arrive at a conceptually appealing and operationally meaningful CP classification as illustrated in Fig. 1.

Mandatory CP refers to activities that can only be performed/ provided by customers and are essential for service delivery (Bitner et al. 1997); without this category of mandatory customer input, services cannot be produced or delivered. The mandatory customer input can be people (e.g., customer being present for nail polishing at a salon), objects (e.g., clothes being made available for tailoring), information (e.g., customer providing necessary diagnostic information to Geek Squad for enabling computer repair), and preference (e.g., customer choosing a particular RCN cable package for installation) (Lovelock 1983). As Dong and Sivakumar (2015) note, such inputs can be tangible or intangible.

Replaceable CP refers to customer activities/resources that are essential for service provision but can also be performed by the service provider (Bendapudi and Leone 2003; Lovelock and Young 1979); these are traditionally provided by service employees (Mohr and Bitner 1995) and are considered employee in-role behaviors in employee-assisted services (Bolton and Saxena-Iyer 2009). For example, the customer and the employee can both wash cars, file tax return, or develop tour plans. Similar to mandatory CP, replaceable CP can also be tangible (e.g., providing RCN with the modem for Internet setup) or intangible (e.g., the effort of repairing Internet connection) (Fließ and Kleinaltenkamp 2004). Considering that customers and employees are viable resources to the firm (Prahalad and Ramaswamy 2000), an important question for managers is how to effectively leverage external resources (customers) to replace internal resources (employees) (Lengnick-Hall 1996; Lusch et al. 2007). This type of replaceable CP has attracted the most attention in the CP literature because of its relevance for productivity gains and revenue enhancements (e.g., Bendapudi and Leone 2003; Lovelock and Young 1979). Replaceable CP is similar to mandatory CP in that both are essential for service provision;

however, the difference is that replaceable CP can be provided by employees or customers while mandatory CP can only be performed by customers.

Voluntary CP refers to activities/resources that are *not* essential for service delivery (Kellogg et al. 1997) but are performed at customers' discretion to improve their own service experience (Bettencourt 1997). These activities represent extra roles (MacKenzie et al. 1998), such as researching (e.g., looking into travel tips on TripAdvisor to improve tour design), intervening (e.g., monitoring the drywall repair process), and quality boosting (e.g., applying conditioner to improve the carpet quality after cleaning) (Yi et al. 2011).

Distinguishing CP from customer engagement

Using our framework to delineate the domain of CP, we offer further conceptual clarity to differentiate CP from another emerging construct in the service literature, customer engagement (CE).[1] These two constructs are sometimes used interchangeably in the literature. CE means that customers are jointly responsible for the management, ownership, and equity of a company's brand (Bolton 2011). CE represents customer behaviors that are often discretional, go beyond individual service transactions, and focus on the interaction with the firms and brands (van Doorn et al. 2010). For example, Threadless co-opts talented customers around the world to submit new product ideas (Chang and Taylor 2016); Microsoft engages customers to create award-winning ad formats (*Marketing Week* 2013); Nokia's beta-testing community invites customers to test prototypes in real-use settings (Chang and Taylor 2016); customers who buy Harley-Davidson motorcycles are motivated to join its well-known brand community (i.e., Harley Owners Group Chapter) and interact with other customers (Algesheimer et al. 2010).

While CE is similar to voluntary CP in that both represent voluntary and extra-role behaviors (Brodie and Hollebeek 2011) and are not essential for the specific service transactions, they differ in multiple ways. First, CP focuses on benefiting participating customers (Bendapudi and Leone 2003), while CE focuses on benefiting the firm/brand and/or other customers (Brodie et al. 2011) (e.g., customers making suggestions to improve their own investment portfolios belongs to CP, while customers providing general feedback to improve the overall consulting

[1] Prior research also differentiates CP from constructs such as customer involvement and consumer innovation (e.g., Dong and Sivakumar 2015). However, CE appears to be one of the emerging constructs that have been increasingly discussed in the service literature in relation to CP, and it has some overlap with CP conceptualizations (especially voluntary CP) in existing research. Thus, considering CE is particularly germane to the discussion of the CP framework.

process for the bank reflects CE). Second, CP takes place during the specific service transaction and is aimed at the customers' own service consumption (Auh et al. 2007), while CE goes beyond the specific service transaction (van Doorn et al. 2010). For instance, user-designed new Lego products to sell to other customers belong to CE, while self-designed Nike shoes indicate CP (*Forbes* 2013). Third, customer behaviors in CE are typically voluntary (Brodie et al. 2011), while CP behaviors can be mandatory, replaceable, or voluntary, as proposed in our research. Table 3 illustrates the distinction between CP and CE; in addition, it shows the conceptual and practical reasons for understanding them as distinct entities. Although some CE behaviors may benefit the customer (e.g., winning Doritos' "Crash the Super Bowl Contest") and/or originate from the specific purchase (e.g., sharing reviews on Yelp about a particular dining experience), the actual beneficiary is the firm, the brand, and/or other customers, and the outcome goes beyond a particular service transaction.

Despite the clear distinction between the conceptual domains of CP and CE, these two constructs are sometimes used interchangeably in the existing literature. For example, Claycomb et al. (2001) find a positive effect of CP on satisfaction and service quality when operationalizing CP as readiness to help other customers and making innovative suggestions for firms; likewise, Bettencourt (1997) views promoting the firm, cooperation to smooth the process, and suggestions to improve the firm as voluntary CP behaviors. Per our conceptualization, both studies are examining CE to some extent rather than CP. Such mixing of the constructs in the literature is not uncommon (e.g., Fang 2008; Hoyer et al. 2010) and adds further conceptual confusion and difficulty to compare empirical findings related to the effect of CP. Therefore, to be consistent with previous CP research (e.g., Chan et al. 2010; Dong et al. 2015; Yim et al. 2012), the domain of CP in our research covers any customer behaviors that are for participating customers' own consumption and are part of the focal service transactions. CE is not part of the domain of CP, and thus is not the focus in this research. We believe that differentiating CP from CE in our framework clarifies the respective domains of these two critical constructs and brings additional clarity to the literature. Given the rich tradition and the growing managerial application of these two constructs, service research would benefit by treating them as distinct constructs.

Link to existing CP research

Existing CP research has covered various participation behaviors as evidenced either in the conceptual frameworks in the theoretical CP research or the conceptualizations of CP operationalized in empirical research, as we summarize in Table 4. Although all three types of CP (mandatory, replaceable, and voluntary) have been discussed individually or mixed to some extent in previous research, our framework offers a more inclusive approach to cover the broad domain of CP, differentiates the three types of CP, and disentangles CP from customer engagement. We first review some of these frameworks and discuss how our three-part framework extends, clarifies, and overcomes the limitation of prior research and then explain how our framework can help reconcile the inconsistent empirical findings in the literature.

Prior CP conceptualizations. Rather than elaborating every single framework listed in Table 4, we highlight several frameworks as exemplars and show how our framework differs from prior works and adds to the discourse on the conceptualization of CP. Bitner et al. (1997) classify services according to the magnitude of CP. Low CP services per their classification are similar to mandatory CP, and high CP services mirror replaceable CP. Superimposing their work with our framework provides increased clarity by separating the two dimensions—magnitude of CP and type of CP.

Next we discuss three recent research papers examining the conceptualization of CP and explain how our work extends their work. Mustak et al. (2013) provide a comprehensive review of the CP literature and focus on the value creation outcomes of CP. Although they do acknowledge that a wide variety of customer activities comprise CP, they do not offer a comprehensive framework to classify such activities. Indeed, the mixing of CP with CE is evident in their discussion and they do not distinguish among mandatory, replaceable, and voluntary CP. Compared to their definition of CP ("customer's activities or provisions of tangible or intangible resources related to the development or creation of offerings") (Mustak et al. 2013; p. 352), our framework offers a pathway to more systematically classify CP activities, clearly delineates the difference between CP and CE, and goes beyond the "coproduction" theme reflected in their definition. Dong and Sivakumar (2015) provide a process-output classification for replaceable CP only (to the exclusion of mandatory and voluntary CP) and use that framework to study the moderating effect of the magnitude of CP. In addition to offering a more

inclusive framework to consider all types of CP behaviors, our expanded framework integrates various other aspects of the literature (e.g., service classifications, service stage) with CP conceptualization. More recently, Ranjan and Read (2016) examine value co-creation by dividing it into two dimensions: co-production and value-in-use. They further sub-divide *co-production* (which is close to our concept of CP) into knowledge, effort, and interaction; however, these sub-dimensions do not differentiate among the types of CP per our framework (e.g., knowledge could be *mandatory*, *replaceable*, or *voluntary*). Hence, although Ranjan and Read (2016) recognize the complexity in the activity profile involved in CP, they too do not offer a comprehensive classification framework to incorporate the variety of CP behaviors nor do they distinguish CP from CE.

In addition to the conceptual CP research described above, we also include some examples of empirical CP research to show that the lack of a clear demarcation of CP's dimension is also evident in empirical operationalization of CP. In general, the conceptualization and operationalization of CP in existing empirical research is either limited to one type of CP (e.g., replaceable CP [Bendapudi and Leone 2003; Dong et al. 2015; Xia and Suri 2014], voluntary CP [Bettencourt 1997; Kellogg et al. 1997]), thus lacking an inclusive framework, or mixes the various types of CP without disentangling their individual meanings or effects (e.g., Auh et al. 2007; Gallan et al. 2013; Yim et al. 2012). For example, Kellogg et al. (1997) focus specifically on customer quality assurance behavior, which includes preparation, relationship building, information exchange, and intervention; customer behaviors are primarily limited to voluntary CP, while some are mixed with replaceable CP (e.g., information exchange) or CE (e.g., relationship building). Likewise, some researchers (e.g., Chan et al. 2010; Yim et al. 2012) define CP as customers actively sharing information, providing suggestions, and making decisions. Considering their conceptualization of CP through the lens of our framework, sharing information could be *mandatory* (e.g., basic information for tax preparation [Bitner et al. 1997]), *replaceable* (e.g., information sharing for completing financial decisions [Chan et al. 2010]), or *voluntary* (e.g., offering financial investment tips learned from online forums [Yim et al. 2012]); making suggestions (e.g., focusing on energy-related investment options) is largely *voluntary* to enhance service experience, and decision making (e.g., choosing Vanguard's mutual fund) could be *replaceable*.

We next provide some examples to highlight the conceptual confusion and overlap in the operationalization of CP in existing empirical research. For example, Yi and Gong (2013) consider a variety of CP behaviors (i.e., information seeking, information sharing, responsible behavior, and personal interaction) and customer citizenship behaviors (i.e., feedback, advocacy, helping, and tolerance). Although participation behaviors in their work largely belong to replaceable CP, some behaviors are mixed with mandatory CP (e.g., mandatory information sharing); likewise, citizenship behaviors are similar to voluntary CP in our proposed framework, but some citizenship behaviors in their work are mixed with CE (e.g., advocacy, helping others). Similarly, Sweeney et al. (2015) operationalized CP in three categories: focal firm-based activities, beyond-focal firm activities, and self-generated activities. In their three-category operationalization, they mixed mandatory CP (e.g., compliance, information sharing), replaceable CP (e.g., decision making), voluntary CP (e.g., healthy diet, information seeking) and CE (e.g., relationship with other customers). We find a similar overlap in Mende and van Doorn's (2015) operationalization measuring preparation, cooperation, information sharing, and decision making.

Although there is debate among service researchers as to whether mandatory customer activities should even be considered in the domain of CP (Bitner et al. 1997), our three-pronged framework supports the inclusion of mandatory CP. Such a more inclusive approach implies that managers must not neglect the facilitation and management of mandatory CP, which serves as the minimum requirement for successful service provision. Likewise, our framework is consistent with previous CP research that gives replaceable CP the most attention in light of its implications for productivity gain and value co-creation. Moreover, although previous researchers have touched on the concept of voluntary CP separately (e.g., Bettencourt 1997; Kellogg et al. 1997) or mixed it with other CP behaviors in empirical settings (e.g., Claycomb et al. 2001; Mende and van Doorn 2015), our inclusion of voluntary CP as a distinct entity and differentiating it from CE expand and clarify the conceptual domain of CP.

Prior empirical findings. Table 5 summarizes additional empirical research related to CP and shows that the three CP categories are discussed in isolation or mixed without differentiation, again demonstrating the need for an inclusive classification framework to synthesize, integrate, and differentiate CP behaviors. The conceptual overlap among different types of CP might explain the inconsistent empirical results of CP. For example, voluntary CP could largely lead to

positive service outcomes, such as increased satisfaction or improved service quality (e.g., Bettencourt 1997; Kellogg et al. 1997), while the effects of replaceable CP could be mixed: positive (Moreau and Herd 2010; Gallan et al. 2013; Norton et al. 2013), negative (Bendapudi and Leone 2003; Dong et al. 2015; Reinders et al. 2008), or insignificant (Cermak et al. 1994; Wu 2011). Moreover, because much of the prior research treats CP as a combination of mandatory, replaceable, and voluntary components (e.g., Auh et al. 2007; Chan et al. 2010; Ennew and Binks 1999; Sweeney et al. 2015; Yim et al. 2012), the observed effects of CP on service outcomes are mixed, suggesting the need to assess the individual effects of the three types of CP to achieve increased clarity.

Incorporation of operand and operant resources

Vargo and Lusch (2004, 2016) argue that the new service-dominant logic considers service provision as an integration of resources. In particular, they highlight two types of resources that are pertinent to the discussion of services: operand and operant. Operand resources are tangible resources over which a consumer or a firm has allocative capabilities to act in order to carry out a behavioral performance (Arnould et al. 2006). Such tangible resources include equipment, raw materials, tools, and physical products (Arnould et al. 2006). Operant resources are intangible resources such as knowledge, skills, and information that enable a consumer or a firm to perform or function (Arnould et al. 2006). Based on the service-dominant logic (Vargo and Lusch 2004), operant resources are employed to act on operand resources and other operant resources, and it is these operant resources contributed by customers that really create value and help enhance a company's core competency (Lovelock and Gummesson 2004). As such, prior empirical CP research has predominantly focused on operant resources and not given equal attention to operand resources; however, a customer could contribute both operand and operant resources during CP (e.g., customer providing both vehicle and labor to deliver furniture home) (Fließ and Kleinaltenkamp 2004; Moeller 2008), suggesting the need to use a more inclusive and balanced approach to these two resources.

Combining our framework with Vargo and Lusch's (2004) operand/operant resource classifications, we offer an integrative view to understand the various resources customers contribute to service participation when performing different roles, as shown in Table 6. In the

lawn-mowing example, a customer could provide operand (tangible) resources to perform all three CP roles: making the lawn available for service (mandatory CP), providing the lawn mower (replaceable CP), and preparing the fertilizer (voluntary CP, not required for the service provision of lawn mowing); likewise, a customer could offer operant (intangible) resources to all CP roles: deciding to mow the lawn (mandatory CP), performing the activity (replaceable CP), and spreading fertilizer on the lawn after mowing (voluntary CP).

Link to existing service classifications

Customers can participate in various service contexts, ranging from interpersonal services (e.g., weight loss, education) to SSTs (e.g., gas pumping, grocery checkout), from offline services (e.g., dry cleaning, landscaping) to online services (e.g., online bill pay, online shopping), and from knowledge-intensive services (e.g., health care, legal service) to labor-intensive services (e.g., buffet meals, furniture assembly). Our framework allows us to cover a wide variety of services. For example, for Internet setup, a customer needs to provide a modem and router (mandatory CP), can work to set up the Internet (replaceable CP), and may research installation tips (voluntary CP).

The last four decades have witnessed several important service classifications. The more prominent among them include: (1) Lovelock's (1983) process-based service classification which includes people-processing, possession-processing, information-processing, and mental stimulus services, (2) Nelson's (1970) multi-attribute model (i.e., search, experience, and credence services), and (3) the SST vs. non-SST service classification (Meuter et al. 2005). Table 7 shows how our framework can be integrated with these service classifications.

Link to stages of service process

The service process spans across different stages (Hoyer et al. 2010; Lusch, Vargo, and Tanniru 2010). Atakan et al. (2014) propose that CP could take place in either the design stage, the production stage, or both stages. Participation in the design stage entails a series of steps that customers take to create and develop product/service ideas (e.g., designing a picture frame, designing a CD, developing a landscaping plan) (Atakan et al. 2014), while participation in the

production stage involves a series of steps taken to implement and execute the product/service ideas (e.g., assembling a picture frame, making a CD cover, implementing a landscaping plan) (Atakan et al. 2014). Table 8 delineates how our proposed classification could be integrated with the stages of service process—that is, how customers could be engaged in the three types of CP in the design and/or production stages. Customers' roles in the design and production stages can vary depending on the types of services: not all services have both design and production stages, and firms may not want to include customers in both stages (Dong 2015). Regardless, combining our classification with the service stages outlines a valuable managerial framework for companies to determine the stage and the manner in which they want to involve customers in service provision.

Discussion

Theoretical contributions

To articulate the value of our research, we draw on MacInnis's (2011) description of the types of conceptual contributions. Of the eight distinct ways that conceptual contributions can be made (MacInnis 2011), our work contributes along five dimensions: (1) identifying (e.g., our articulation of what is and is not CP), (2) delineating (e.g., our proposed three-dimensional classification; elaboration of our framework in the context of the existing body of knowledge), (3) summarizing (e.g., demonstrating that our conceptualization can account for a wide variety of customer resources, service contexts, and service stages), (4) differentiating (e.g., distinguishing the three types of CP, clarifying the distinct domain of CP and CE), and (5) integrating (e.g., combining our framework with existing CP conceptualizations, and service classifications to provide more nuanced frameworks for guiding managerial practice).

Previous CP research has largely focused on examining the impact of the magnitude of CP on service outcomes (i.e., how increasing the degree of participation effort influences service outcomes) (Bitner et al. 1997). In integrating this magnitude perspective with our proposed CP types, we suggest that each type of CP can fall on a spectrum with different degrees of participation (e.g., low vs. high). In other words, by keeping the magnitude of CP and the type of

CP as two dimensions, we can create a 2 × 3 matrix to capture different levels of mandatory, replaceable, and voluntary participation.

The amount of replaceable CP is largely the choice of the firm or customer, while the extent of voluntary CP is mostly at the customer's discretion (though firms could work to motivate more voluntary CP). Although compared with the other types of CP the amount of mandatory participation often depends on the nature of the service, customers still could exhibit different levels of mandatory CP, as determined by the particular service involved. For example, a mortgage service may require the sharing of extremely detailed personal financial information (*high mandatory CP*), while the opening of a bank account only needs some brief customer information (*low mandatory CP*). The differences in the configuration of participation magnitude across the three types of CP further highlight the usefulness of the proposed framework.

Our framework provides an inclusive structure to divide CP into three components, but it is equally applicable if one or more components are absent or not clearly observable in a service setting; in other cases, some of these components may occur together rather than as separate entities. For example, what happens when a customer has flexible travel dates for making a car-rental reservation? What if a customer is not sure if a particular clothing item fits and the service provider must help him or her decide and, if necessary, provide the alteration service? In both cases, the line between mandatory and replaceable CP gets blurred. Regardless of how the customer views the service, however, our framework provides a mechanism for visualizing these various CP avenues. In addition, as the nature of services becomes varied, our three-component framework may need to be modified into a continuum. For example, in medical service, patients' sharing of basic symptoms and medical history is mandatory for medical diagnosis, while elaboration of extensive medical histories of immediate family members and personal health preferences is optional but valuable for more personalized health care services (Gallan et al. 2013). However, ensuring mandatory customer input as the minimum baseline and encouraging more voluntary customer contributions are still goals service firms want to achieve.

Managerial implications

Service providers should pay careful attention to the differences in customer value propositions resulting from mandatory, replaceable, and voluntary CP and try to prevent service failures that originate from each component. By making the mandatory CP component as

foolproof as possible, firms will be able to effectively address recovery strategies arising from replaceable CP—because the service is replaceable, recovery strategies can also potentially be replaceable. In contrast, for voluntary CP, the firm may not have much control over customer activities, and it behooves service firms to carefully design opportunities for voluntary CP in a way that does not detract from the overall service experience but adds optional enhancement.

As mentioned previously, the minimum requirement for mandatory CP is ensuring easy and less error-prone processes so that customers perform their mandatory jobs correctly and do not create additional problems in service delivery downstream. Thus, the firm's task for mandatory CP becomes straightforward—good system design for customer input. Turbo Tax provides one such great example in managing mandatory CP. By offering well-structured step-by-step data entry process, Turbo Tax makes the mandatory customer information provision really simple, error-free, and even entertaining.

For replaceable CP, because the activity is necessary for service provision, the primarily objective for a firm is to allocate resources between the firm and the customer; this allocation will be jointly determined by factors such as customer expertise (i.e., can the customer do it?), cost consideration (i.e., should the firm spend money on it?), and risk consideration (i.e., does having the customer do it result in unnecessary process variability?). Indeed, although CP confers productivity and revenue benefits (Chan et al. 2010; Lovelock and Young 1979), it is not cost free (Chan et al. 2010; Dong et al. 2015). Companies are increasingly faced with the dilemma as to the extent to which they should provide opportunities for customers to define, control, and manage their brands (van Doorn et al. 2010). Giant retailers such as Wal-Mart have made aggressive use of self-checkout kiosks to reduce labor costs; however, the decrease in store traffic and increase in customer complaints have forced the retailers to reassess the economics of that approach (*Wall Street Journal* 2014). Conversely, high-end retailers such as Nordstrom have not joined the bandwagon of self-checkout in any significant way. Before the Thanksgiving holiday in 2014, Wal-Mart announced that it would increase the staffing of human cashiers and bring back its legacy checkout model. The company had also nixed its pilot program called "Scan & Go," a program that allows shoppers to use their mobile phones to scan items as they walked through stores and pay at self-service kiosks, skipping the cashier lines (*Wall Street Journal* 2014). Apparently, the outsourcing of checkout to customers was more complicated than the retailer had envisaged (*Wall Street Journal* 2014). American Express and Ford provide some

positive examples about how companies can effectively design their interaction with customers by making decision-making in replaceable CP much easier (e.g., allowing customers to rapidly and visually sort options with each click when finding cards or configuring cars (*McKinsey Quarterly* 2009).

Ultimately, the extent to which companies decide to engage customers in replaceable CP will boil down to the cost–benefit calculation (Yim et al. 2012). Furthermore, considering the dynamics between firm participation and CP, judicious use of slack resources will enable the firm to easily replace CP with firm participation (for a discussion of slack resources and service quality, see Sok and O'Cass 2015). Such deployment of slack resources will be especially beneficial when firms believe that too much CP can indeed be detrimental to the overall service experience because of either customer inability or service complexity.

The voluntary aspect of CP is perhaps the least understood in the literature, but one that has great potential for the service-dominant economy (Vargo and Lusch 2004). By its very definition, voluntary CP is challenging to proactively control or even design; however, practices in managing "extra-role" employee behaviors may provide additional insights to encourage voluntary CP. Especially in the age of social media, firms can develop careful strategies in which voluntary CP is an important component of brand loyalty–building activities and may even be an unexpected source of competency to leverage. For example, Cisco encourages customers to share tips for using its software in the company's online forum, using customer expertise to enhance every user's experience. Similarly, to connect effectively with Millennials, Coca-Cola has introduced a new generation of fountain dispenser, FreeStyle machines. The innovation allows customers to create new and unique flavor combinations, a new mobile app assists in saving all their favorable blends, and such valuable customer-generated ideas are further submitted to Coca-Cola by its technical monitoring system for future new product development (*Wall Street Journal* 2013). These examples illustrate how firms can translate CP (a personalized solution for one customer) to CE (customer-designed solutions for the brand). Thus, clear differentiation between CP and CE in understanding and implementing the broader strategies of service production and delivery will not only help in conceptual clarity but also provide insightful guidelines for managerial implementation.

Our research also sheds light on the intersection of type of CP and type of resources contributed. As the complexity of the service increases, customers who have less expertise will

expect the service firm to provide more operant resources, while the distribution of operand resources between the service provider and the customer may be more driven by efficiency (time and cost) considerations. For example, a customer who is not familiar with different mutual funds may expect the firm to suggest specific funds (CP as an operant resource), while time considerations likely drive the use of the self-checkout feature at the grocery store (CP as an operand resource). A firm that can judiciously distribute CP of different resources between replaceable and voluntary CP may be able to strategically manage the overall service outcome.

Understanding and managing customer experience is considered as one of the cornerstones of marketing and a key driver of firm's long-term success (Grewal et al 2009; Puccinelli et al. 2009; Homburg et al. 2016; Verhoef et al. 2009). It has been recognized as the highest research priority by Marketing Science Institute for 2014-2016. As customer value cocreation is considered one important route to sustain customer experience (Gentile et al. 2007), our research to define the domain, scope, and boundaries of CP adds great insights to understand how various cocreation activities will influence, enhance, or even endanger customer experience (Verhoef et al. 2009). Further, to better understand customer experience, companies must get a complete understanding of customer decision-making journey (Berry et al. 2002) and customers' path to purchase. In 2009, McKinsey & Co. proposed the concept of "consumer decision journey," which called into question the traditional purchase funnel in favor of a new model that incorporated customer experience and advocacy (*McKinsey Quarterly* 2009). Our framework is consistent with and integrates well with the emerging concepts of customer experience management and customer decision journey. As customers become cocreators, increasingly seize control of the service process, and actively "pull" information helpful to them, voluntary CP (e.g., researching product information on the Internet) becomes an integral part of their decision journey when they evaluate products, and on occasion, even after product purchase (*McKinsey Quarterly* 2009). For example, in McKinsey's research, they find that two-thirds of the touch-points during consumer's active evaluation phase involve consumer-driven activities (e.g., reading product reviews, researching product information – *voluntary CP*); and more than 60% of consumers purchasing facial skin care products go online to conduct further research after the purchase (*voluntary CP*) —a touch point unimaginable in the traditional consumer funnel. Hence, our conceptualization of CP helps managers to understand the most influential touch points to focus effort on (e.g., stimulating voluntary CP during initial evaluation stage). Moreover, our

delineation of the types of CP and integrating it with various resource types, service classifications, and service stages offers new ways for managers to influence consumer's decision-making journey (*Forbes* 2015). For example, managers need to co-opt customers to carefully delineate their cocreation experience by specifying what to contribute (type of CP), how much to participate (degree of CP), where to participate (which types of services under the different classification schemas are amenable for CP), what resources to provide (operand vs. operant), and when to participate (service stage). Such an enhanced understanding facilitates the integration of our framework and emerging concepts and ultimately offers guidelines for service providers to increase the chance to engage customers in the right place, at the right time, with the right degree and type of participation.

Future research directions

Prior empirical research has typically focused on one of the three types of CP or a combination without differentiating among them. As CP conceptualizations become more elaborate, more complex factorial experimental designs need to be deployed in which the nature of CP varies across each type, thereby gaining a fuller understanding of the three types of CP regarding their individual and interaction effects. Extant CP research reports inconsistent effects of CP across different situations. Experimental research augmented by field experiments may potentially reveal that the effect of CP may be different for mandatory, replaceable, and voluntary participation; other contextual factors may further moderate these differences, such as the type of customer resources (Table 6), the type of service (Table 7), and the stage of service process (Table 8). Together, an expanded examination of contextual factors influencing the role of CP will further enhance our understanding of customer experiences in the service production and delivery process, especially as firms leverage the benefit-enhancing and cost-reducing features of technology to find creative means of serving the customers.

Research could also augment our framework to incorporate other customer-related factors (e.g., perceived urgency in obtaining a service, customer ability) (Dong et al. 2016; Yim et al. 2012), service-related factors (e.g., search services vs. experience services) (Nelson 1970), task-related factors (e.g., knowledge-based services vs. labor-based services), and external environmental factors (e.g., cultural nuances, legal environment regarding liabilities for failure) (Chan et al. 2010). For example, a customer who is knowledgeable about mutual funds may be

willing to engage in more voluntary CP and may also expect the consultant to seek more customer input; in contrast, customers with limited knowledge may have different expectations towards the three types of CP.

Consistent with existing CP research, we focus on CP activities that take place during single service encounters (e.g., one visit to the doctor's office and not the entire medical treatment). This single service interaction as our focal unit of analysis is consistent with much of the extant service research (e.g., Bendapudi and Leone 2003; Chan et al. 2010; Yim et al. 2012). However, in some cases, the overall service experience can include a series of separate but interrelated service episodes that cover a longer period. Such examples include extended medical treatment for chronic illnesses (Spanjol et al. 2015), prolonged financial counseling (Mende and van Doorn 2015), and complicated remodeling of homes. Examining the evolving mix of mandatory, replaceable, and voluntary CP components over time would offer additional insights.

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Table 1
Defining and Delineating the Domain of CP

Aspect Examined in This Research	Description	Orienting Questions Addressed	Element in the Paper
Terminology	Reviewing and evaluating existing terminology and identifying the most appropriate terminology	• What terms are currently used? • Are there overlaps in meaning? • What can be done to overcome the confusion?	Table 2
Proposed CP Framework	Devising a unified framework with dimensions that are mutually inclusive and collectively exhaustive	• What are the dimensions to depict CP? • How do these dimensions interact to reveal different types of CP? • What examples illustrate these dimensions?	Figure 1
Similar Concepts	Delineating CP as a conceptually distinct entity	• How is CP different from CE based on the proposed framework? • What is the value of the proposed conceptual separation?	Table 3
Prior CP Conceptualizations	Comparing the proposed conceptualization with existing CP frameworks	• How can the proposed framework incorporate current approaches? • How is the proposed framework simpler and more inclusive than existing frameworks?	Table 4
Prior Empirical Research	Integrating with prior operationalization of CP and reconciling with conflicting findings	• How has prior empirical research incorporated CP? • Can the new framework reduce confusion in assessing and clarifying the findings of existing research?	Table 5
Operant/Operand Resources	Incorporating operant and operand resources identified by the service-dominant logic	• Can the proposed framework account for different resources contributed by the customer? • Can the framework add additional clarity to the variety of resources involved in CP?	Table 6
Service Classifications	Demonstrating the consistency of the proposed framework with various service classifications	• Is the framework consistent with alternative service classifications? • Can the framework accommodate the wide variety of service examples emanating from the different service classifications?	Table 7
Service Stages	Conceptualization of CP along the different stages of the service process	• Does the framework incorporate different stages of the service production and delivery process? • Can it handle the nuances across the different stages?	Table 8

Note: CP = customer participation, CE= customer engagement

Table 2
Existing Terminologies Used for Customer Participation

Article	Definition	Examples of Customer Roles Discussed
CP		
Chan et al. (2010), Gallan et al. (2013), Yim et al. (2012)	Customers expending time and effort to share information, provide suggestions, and get involved in decision making	Sharing information, providing suggestions, and getting involved in decision making
Cermak et al. (1994), Wu (2011)	Customer behaviors related to specification and delivery of a service	Spending time and effort
Claycomb et al. (2001)	Customers' active involvement in helping create the service value	Attendance, information provision, and co-production
Dabholkar (1990), Dong et al. (2015)	The degree to which the customer is involved in producing and delivering the service	Production (e.g., gas pumping, car wash) or other participating behaviors (e.g., communicative investment objectives to financial consultants)
Ennew and Binks (1999)	Customers participating through information sharing, responsible behavior, and personal interaction	Information sharing, responsible behavior (monitoring relationships), interaction with service providers
Coproduction		
Lengnick-Hall (1996)	Customers working as "partial employees" by either directly or indirectly participating in the production process	Direct participation (e.g., product design, quality assurance, delivery) or indirect participation (e.g., personnel selection, policy development)
Auh et al. (2007); Haumann et al. (2015)	Constructive participation, which requires meaningful, cooperative contributions	Production (e.g., furniture assembly, online tickets purchase) or other participating behaviors (e.g., preparation, information provision)
Etgar (2008)	Customization behaviors	Customizing Dell laptops and software
Mende and van Doorn (2015)	Participation in creating the core offering	Client-provider collaboration (joint production) (e.g., information sharing, cooperation, preparation, decision making)
CP in Coproduction		
Bendapudi and Leone (2003)	Same as Dabholkar 1990	Production (e.g., self-service photo printing, shelf assembly, frame building, legal-letter drafting, hotel reservation, self-grocery checkout)
Cocreation		
Heidenreich et al. 2014, Xia and Suri 2014	Customers creating and delivering a service jointly with the service provider	Production (e.g., online railway ticketing, making coffee, housekeeping in hotel, self-parking, library search, cable self-installation)
Roggeveen et al. (2012), Sweeney et al. (2015), Yi and Gong 2013	Integration of resources through activities and interactions with collaborators in the customer's service network	Participation behavior (e.g., information seeking and sharing, responsible behavior, personal interaction) and citizenship behavior (e.g. feedback, advocacy, helping, tolerance)
Thompson and Malaviya 2013	Customer creating and/or producing the advertisements	Generating the concept of the ad or both generating the concept and producing the ad (e.g., advertisement design for Doritos chips)

Table 3
Distinguishing Customer Participation and Customer Engagement

Timing of Customer Activity	Beneficiary of Customer Activity: Focal Customer	Beneficiary of Customer Activity: Firm/Brand/Other Customers
Associated with the specific service transaction	CP (e.g., gas pumping, Internet setup, customized shoes)	CE (e.g., writing user reviews)
Beyond the specific transaction	CE (e.g., brand community building; winning user-designed ad contests)	CE (e.g., peer assistance, new product development)

Note: CP = customer participation, CE= customer engagement

Table 4
Prior Research on Conceptualization of Customer Participation in Services

Prior Research	Nature of Work	Key Aspects of CP Classification	Types of CP Covered	Contribution of the Proposed Framework in Relation to the Cited Prior Research
Lengnick-Hall (1996)	Conceptual	Identified five roles that customers can play: customer as resource, co-producer, buyer, user, and product.	Mostly focused on replaceable CP.	Broadens the scope of CP.
Bettencourt (1997)	Empirical	Examined customer voluntary performance by operationalizing as loyalty, cooperation, and participation.	Mixed voluntary CP with CE.	Differentiates different types of CP and differentiates from CE.
Bitner et al. (1997)	Conceptual	Classified services into three types based on level of CP: low CP (mere presence), medium CP (information provision), and high CP services (co-production).	The classification of low CP is similar to mandatory CP; high CP is similar to replaceable CP.	Suggests level of CP considered orthogonal to type of CP; that is, it is possible to have different levels of CP under each of the three CP types.
Kellogg et al. (1997)	Conceptual	Classified customer quality assurance behavior into preparation, relationship building, info exchange, and intervention.	Primarily voluntary CP; also replaceable CP mixed with CE.	Goes beyond voluntary CP and differentiates the three types of CP.
Ennew and Binks (1999)	Empirical	Operationalized CP as information sharing, responsible behavior, and personal interaction.	Mixed mandatory CP with replaceable CP.	Differentiates the three types of CP and expands the domain of CP.
Claycomb et al. (2001)	Empirical	Operationalized CP as attendance, information provision, and co-production.	Though called CP, most of the scale items are pertained to CE.	Distinguishes CE as a separate research domain in relation to CP.
Halbesleben and Buckley (2003)	Conceptual	Classified two conditions of co-production: employee replacement and strategic partner.	Both pertained to the domain of replaceable CP.	Expands the view of CP beyond replaceable CP.
Auh et al. (2007)	Empirical	Operationalized CP as information sharing, making suggestions, and decision making.	Mixed the three types of CP as well as CE.	Differentiates three types of CP and disentangles from CE.
Bolton and Saxena-Iyer (2009)	Conceptual	Classified CP depending on degree of technology and degree of CP.	Focused on replaceable CP in interactive services.	Goes beyond replaceable CP and interactive services.
Chan et al. (2010)	Empirical	Same as Auh et al. (2007)	Same as Auh et al. (2007)	Same as Auh et al. (2007)
Wu (2011)	Empirical	Operationalized CP as cooperation and attentive communication.	Mixed of replaceable CP, voluntary CP, and CE.	Differentiates three types of CP; separates CP from CE.

Yim et al. (2012)	Empirical	Same as Auh et al. (2007)	Same as Auh et al. (2007)	Same as Auh et al. (2007)
Chathoth et al. (2013)	Conceptual	Compared and contrasted co-production and co-creation in the hotel context.	Focused on replaceable CP.	Goes beyond replaceable CP.
Mustak et al. (2013)	Conceptual	Reviewed CP literature and summarized the value creation outcomes of CP.	Mixed CP and CE and three types of CP.	Differentiates three types of CP; separates CP from CE.
Yi and Gong (2013)	Empirical	Examined participation behaviors (information seeking and sharing, responsible behavior, and personal interaction) and citizenship behaviors (feedback, advocacy, helping, and tolerance).	Participation behaviors similar to replaceable CP, but some mixed with mandatory CP; citizenship behaviors similar to voluntary CP, but some mixed with CE.	Differentiates three types of CP; separates CP from CE.
Xia and Suri (2014)	Empirical	Manipulated CP as labor/effort substituting for employees (e.g., making coffee, procuring ice, and housekeeping in hotels).	Focused on replaceable CP.	Goes beyond replaceable CP.
Dong and Sivakumar (2015)	Conceptual	Divided CP based on two dimensions: output specificity and process structure.	Focused on replaceable CP only.	Goes beyond replaceable CP.
Mende and van Doorn (2015)	Empirical	Operationalized CP as preparation, cooperation, information sharing, and decision making.	Mixed mandatory, replaceable, and voluntary CP.	Differentiates three types of CP.
Sweeney et al. (2015)	Empirical	Operationalized CP as focal firm-based activities (e.g., information sharing, compliance, and decision making), beyond-focal firm activities (e.g., relationship with other customers and healthy diet), and self-generated activities (e.g., positive thinking).	Mixed mandatory CP (e.g., compliance and information sharing), replaceable CP (e.g., decision making), voluntary CP (e.g., healthy diet) and CE (e.g., relationship with other customers).	Differentiates three types of CP; separates CP from CE.
Ranjan and Read (2016)	Conceptual	Examined co-creation as two dimensions: co-production and value-in-use. Sub-divided co-production into knowledge, effort, and interaction.	Mixed three types of CP (e.g., knowledge could be mandatory, replaceable, or voluntary), and did not differentiate CP and CE.	Differentiates three types of CP; separates CP from CE.
Our research	Conceptual	Proposes an inclusive framework to divide CP into three types based on two key dimensions: necessity for service provision and the locus of participation.	Mandatory, replaceable, and voluntary CP.	Offers a more inclusive but simple framework, differentiates three types of CP, separates CP from CE, integrates existing conceptualizations, and reconciles mixed empirical findings.

Table 5
Examples of Empirical Research in Customer Participation

Authors	Empirical Findings	Type of CP as Mapped to Our Framework
Auh et al. (2007)	CP positively affects attitudinal loyalty but not behavioral loyalty.	Combination of replaceable and voluntary CP
Bendapudi and Leone (2003)	CP decreases satisfaction.	Replaceable CP (e.g., assembling picture frame, booking hotel)
Bettencourt (1997)	Customer satisfaction, commitment, and perceived support for customers positively lead to customer voluntary performance.	Voluntary CP (e.g., loyalty to promote the firm, cooperation to smooth the process, suggestions to improve the firm)
Cermak et al. (1994)	Positive effects of CP on service quality/satisfaction for non-profit services, but not for-profit services.	Replaceable CP (e.g., information sharing)
Chan et al. (2010)	CP enhances customer satisfaction.	Combination of mandatory, replaceable, and voluntary CP (e.g., information sharing, making suggestions and decision making)
Claycomb et al. (2001)	CP does not influence satisfaction, but influences some dimensions of service quality (e.g., assurance, empathy).	Voluntary CP (e.g., readiness to help others, making innovative suggestions, willingness to put in effort beyond normally expected)
Dong et al. (2015)	Depending on customer readiness, the effect of CP on service quality and satisfaction could be positive, insignificant, or negative.	Replaceable CP (e.g., setting up Internet, designing tour plan)
Ennew and Binks (1999)	CP has an insignificant impact on service quality and satisfaction. The direct impact of CP on retention is weak.	Combination of mandatory, replaceable, and voluntary CP (e.g., information sharing, responsible behavior)
Franke et al. (2009)	Greater satisfaction if customers have better preference insights, better ability to express preferences, and greater product involvement.	Replaceable CP (e.g., customizing products)
Kellogg et al. (1997)	Customer quality assurance behaviors produce greater percentage of satisfaction than dissatisfaction.	Voluntary CP (e.g., preparation, relationship building, information exchange, and intervention)
Mende and van Doorn (2015)	CP increases financial well-being (increased credit score and decreased financial stress).	Combination of mandatory, replaceable, and voluntary CP (e.g., information sharing, cooperation, preparation, decision making)
Moreau and Herd (2010)	Social comparison makes the evaluation of self-designed products more favorable than designer-designed products.	Replaceable CP (e.g., backpack design)
Norton et al. (2013)	Customer-assembled products have higher valuation than pre-assembled products.	Replaceable CP (e.g., IKEA boxes, folded origami, Lego sets)
Reinders et al. (2008)	Forcing customers to use SSTs results in negative attitudes and behavioral intentions.	Replaceable CP (e.g., Railway ticketing and travel information kiosks)
Sweeney et al. (2015)	Customer effort in value co-creation activities increases quality of life, satisfaction with service, and behavioral intentions.	Combination of mandatory, replaceable, and voluntary CP, and CE
Yim et al. (2012)	CP positively affects satisfaction, with self-efficacy positively moderating the link between CP and enjoyment.	Same as Chan et al. (2010)
Wu (2011)	CP has no significant effect on customer satisfaction.	Combination of replaceable CP, voluntary CP, and CE
Xia and Suri (2014)	For CP, consumers expect to save more than they are willing to pay a provider for service.	Replaceable CP (e.g., performing basic housekeeping in hotels)

Table 6
Incorporation of Operand and Operant Resources

Type of Resources	Type of CP		
	Mandatory CP	**Replaceable CP**	**Voluntary CP**
Operand Resources	1. Lawn mowing - customer makes the lawn available.	1. Lawn mowing - customer provides the lawn mower.	1. Lawn mowing - customer provides the fertilizer to improve the quality of the lawn.
	2. Furniture assembly - customer makes him- or herself available.	2. Furniture assembly - customer has all the furniture pieces ready for assembling.	2. Furniture assembly - customer has other furniture in the room available for setting up room layout.
	3. Carpet shampooing - customer has the carpet ready for shampooing.	3. Carpet shampooing - customer provides the shampoo.	3. Carpet shampooing - customer provides the conditioner to further enhance the outcome.
Operant Resources	1. Lawn mowing - customer makes the request of lawn mowing.	1. Lawn mowing - customer mows the lawn.	1. Lawn mowing - customer spreads the fertilizer on the lawn.
	2. Furniture assembly - customer initiates the basic furniture assembling request.	2. Furniture assembly - customer assembles the furniture.	2. Furniture assembly - customer moves other furniture to find the location of the furniture in the room.
	3. Carpet shampooing - customer requests carpet shampooing.	3. Carpet shampooing - customer shampoos the carpet.	3. Carpet shampooing - customer applies the conditioner to the carpet to further protect the carpet.

Table 7
Illustration for Different Services and Service Classifications

	Service Example	Service Classifications			Type of CP		
		Lovelock (1983)	Nelson (1970)	SST	Mandatory CP	Replaceable CP	Voluntary CP
1	Online car reservation	Information processing	Experience service	SST	Specifying the time, date, and pickup location	Following the steps on the screen to make the reservation	Providing additional insurance information
2	Immigration application	Information processing	Credence service	Non-SST	Providing necessary personal information and documents (e.g., passport)	Filling out legal forms, developing statement to justify qualification, compiling documents, and mailing to the immigration office	Reviewing other successful cases and sharing any other knowledge to strengthen the application
3	Internet setup	Possession processing	Search service	SST	Providing modem, router, and computer	Configuring the systems, connecting all the devices, setting the password, and testing the performance	Reading user reviews to become familiar with the setup process and to speed up the process
4	Car repair	Possession processing	credence service	Non-SST	Having the car available, providing basic description about the problem (e.g., with the air conditioner)	Performing the diagnosis test, analyzing the results of the diagnosis test, and replacing the corresponding parts	Watching YouTube video to figure out how to replace parts
5	Guided tour	People processing	Experience service	Non-SST	Being present for the tour, and providing basic information (e.g., dates, time, number of people, destination)	Developing a private tour plan, and driving for the entire tour by customers themselves	Doing extensive research by reading other tour reviews online
6	Haircut	People processing	Search service	Non-SST	Specifying basic haircut request; being present for the haircut	Designing a hairstyle that works best, cut the hair	Doing research to identify the hairstyle that best fits the customer's facial features
7	Online education	Mental stimulus	Credence service	SST	Being present for learning and attentive to digest knowledge learned	Self-administering interactive learning activities online	Doing additional practice exercises to further enhance learning outcome
8	Psychological counseling	Mental stimulus	Credence service	Non-SST	Being present for counseling and mentally processing information	Performing mediation oneself following video instructions	Sharing thoughts with other customers online to get more tips

Table 8
Customer Participation in Different Stages of Service

Service Stage	Type of CP		
	Mandatory CP	**Replaceable CP**	**Voluntary CP**
Design Stage	1. Frame design – customer agrees/requests to design the frame.	1. Frame design – customer selects the material, size, shape, and color of the frame.	1. Frame design – customer reviews award-wining frame design ideas to stimulate interesting design ideas.
	2. Landscape design – customer decides to design landscape.	2. Landscape design – customer outlines a landscape plan by specifying the trees, shrubs, and flowers planted and their specific locations.	2. Landscape design – customer reviews online forum discussions to further solicit landscaping ideas.
	3. Weight-loss program design – customer provides personal weight-loss history.	3. Weight-loss program design – customer chooses the program that fits his/her needs.	3. Weight-loss program design – customer discusses with fellow customers to learn the tips for weight-loss program.
Production Stage	1. Frame building – customer initiates the basic frame building request.	1. Frame building – customer assembles the pieces of frame.	1. Frame building – customer reviews online user videos to better understand how to build a frame.
	2. Gardening – customer makes the garden available for landscaping.	2. Gardening – customer follows the landscaping plan to plant trees, shrubs, and flowers.	2. Gardening – customer collects unused plants and materials for future use.
	3. Weight-loss program implementation – customer follows the program plan to exercise and consume specified food.	3. Weight-loss program implementation – customer follows the program plan to collect necessary materials and food.	3. Weight-loss program implementation – customer goes beyond the program plan to do extra workout.

Figure 1
Types of Customer Participation