

BURDENS OF ACCESS: UNDERSTANDING CUSTOMER BARRIERS AND BARRIER- ATTENUATING PRACTICES IN ACCESS- BASED SERVICES

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**This paper is an author post-print version of a paper published
in the *Journal of Service Research***

DOI: 10.1177/1094670517712877

Burdens of Access: Understanding Customer Barriers and Barrier-Attenuating Practices in Access-Based Services

ABSTRACT

Access-based services (ABS), which grant customers limited access to goods without any transfer of ownership, are unique technology-based service innovations requiring the substantial involvement and collaboration of customers, without employees' supervision. Although ABS offer several potential advantages, convincing customers to use them remains challenging. Combining 56 in-depth interviews with supplementary literature, the authors address this challenge by proposing an integrative framework that reflects the (1) barriers that prevent customers from using ABS and (2) practices in which customers engage to attenuate those barriers. The complex, multidimensional barriers relate not only to the service and technology features but also to other customers. Customers can engage in different practices to attenuate perceived barriers and create value, namely, "to distance," "to manage," "to elaborate," "to control," and "to relate." Yet they regard these barrier-attenuating practices as necessary sacrifices to use ABS. Complementing suggestions that customers adopt and use ABS to escape the burdens of ownership, the current research reveals that customers actually may confront several "burdens of access." This research suggests managers who wish to reduce rejection of their innovation could not only overcome customers' perceived barriers, but also facilitate and reduce the number of practices in which customers engage to attenuate those barriers themselves.

Keywords: Access-Based Services, Sharing Economy, Customer Barriers, Burdens of Access, Service Innovation.

For customers who question the value of ownership (Belk 2014), seek convenience (Berry, Seiders, and Grewal 2002), and pursue monetary savings (Lamberton and Rose 2012), access-based services (ABS) offer an opportunity to acquire consumption time with goods, in return for an access fee (Bardhi and Eckhardt 2012). By using ABS, customers can avoid the risks and responsibilities associated with ownership (i.e., burdens of ownership) by delegating the uncertainty of ownership to the service providers (Schaefers, Lawson, and Kukar-Kinney 2016). Examples of ABS that seek to capitalize on changing consumption patterns by allowing customers to access products, conveniently and cost effectively, include car- (e.g., Zipcar) and bike- (e.g., Cyclocity) sharing programs. PriceWaterhouseCoopers (2014) estimates that global revenues in the five most prominent sharing sectors could hit \$335 billion by 2025, up from \$15 billion today. According to Belk (2014, p. 1599), “we just may be entering the post-ownership economy,” which also promises to shake up established industries that rely on models of private ownership, as evidenced by established manufacturers’ development of ABS (e.g., DriveNow by BMW).

Even as ABS grow more widespread, convincing customers to use this service innovation remains challenging. Many access-based businesses have failed to induce sufficient demand (Needleman and Loten 2014); the French car-sharing offer Citroën Multicity withdrew in 2016, after three years in operation, due to a lack of customers (Murati 2016). According to a McKinsey & Co. (2012) survey, one-third of German urban customers are potential car-sharing users, yet only 2.5% actually adopt. Popular press releases underline this slow growth (e.g., McMahon 2016; Xiang 2016), indicating the pressing need to understand the barriers that keep customers from using ABS.

Although still technology-based, ABS are unique service innovations (Lawson et al. 2016), in that they grant customers the right to access a good temporarily but require them to share this particular good with other, unknown users. Accessing a good requires high levels of

customer involvement and participation, without much employee supervision. Customers therefore must rely almost exclusively on other customers for successful service production and delivery (Schaefer et al. 2016). Moreover, ABS typically substitute for ownership of goods, which may conflict with customers' beliefs and norms about ownership as an ideal consumption mode (Bardhi and Eckhardt 2012).

Systematic research conceptualizing the barriers to customer adoption of these services has been lacking (Schaefer 2013). Next to the burdens of ownership, Schaefer, Lawson, and Kukar-Kinney (2016) suggest burdens of access may also exist. Claudy, Garcia, and O'Driscoll (2015) offer insights into customers' reasons not to adopt ABS; security and availability concerns appear to be the primary drivers of rejection. The lack of widespread adoption and usage of ABS (Needleman and Loten 2014) also might give rise to other important barriers. Applying relatively limited knowledge about barriers to innovations—most of which stems from services that require less participation and lower levels of interdependence (Laukkanen 2016; Martin, Gustafsson, and Choi 2016)—to ABS might lead to partial, fragmented views of the actual barriers associated with this unique, emerging service innovation. Therefore, this article combines an extensive literature review with in-depth interviews to advance a comprehensive theoretical framework that can capture (1) the barriers impeding customers' usage of ABS and (2) the practices in which customers engage to attenuate those barriers.

In so doing, we integrate and extend several streams of research, including those focused on innovation rejection as well as coping and engagement behaviors. We thereby offer two main contributions. First, we extend scarce research on customer barriers to service innovations (e.g., Laukkanen 2016) and ABS (e.g., Claudy, Garcia, and O'Driscoll 2015) by developing an integrative framework of customer-perceived barriers, specific to the adoption and usage of ABS. We determine that a lack of acceptance of ABS is characterized by a

complex set of barriers, related to not only the service and technology features but also to other customers. These findings complement prior research that mainly investigates the reasons customers adopt ABS (e.g., Lamberton and Rose 2012). Second, whereas prior studies examine actions that firms can undertake to overcome customers' perceived barriers (e.g., Heidenreich and Kraemer 2016), we reveal the active, central role of customers and describe how they create value in practice by attenuating the barriers themselves. In identifying several practices in which customers can engage to attenuate perceived barriers, we show that avoiding rejection involves both firm variables (Heidenreich and Kraemer 2016) and various customer practices. With this insight, we respond to McColl-Kennedy et al.'s (2012) call for research on customer practices in services that demand high levels of customer participation.

Customers face many barriers to adopting ABS, and then they also experience the need to sacrifice additional resources to attenuate those barriers and effectively use the service innovations. The scarce extant research on innovation rejection mainly focuses on the characteristics of the innovation (e.g., Kleijnen, Lee, and Wetzels 2009; Laukkanen 2016). We challenge this perspective by proposing that explaining rejection requires a combined consideration of customer barriers and barrier-attenuating practices associated with the innovation. Prior research on ABS adoption shows that customers access goods to escape the burdens of ownership (e.g., Bardhi and Eckhardt 2012; Lawson et al. 2016); we extend this research stream by conceptualizing the “*burdens of access*,” which not only include *the barriers customers perceive when using access-based services, but also the practices in which customers engage to attenuate those barriers*. In turn, this research provides insights that managers can use to understand these customer barriers and practices related to ABS and thereby reduce rejection of their innovations.

ACCESS-BASED SERVICES

Access-Based Services as Unique Service Innovations

Echoing Lovelock and Gummesson's (2004) access paradigm, customers using ABS successively fulfill their needs by gaining access to tangible goods, in exchange for a fee (Schaefer et al. 2016). Drawing on Bardhi and Eckhardt's (2012) conceptualization of access-based consumption, we identify three main particularities that make ABS unique service innovations, compared with other services such as traditional rentals or other technology-based services that provide access to tangible goods.

First, ABS require a high level of customer involvement and, *simultaneously*, provide minimal supervision by the service provider. Unlike traditional rental services, customers using ABS participate substantively in the service production and delivery (Bardhi and Eckhardt 2012). In contrast with technology-based services, such as smart interactive services (Wunderlich, von Wangenheim, and Bitner 2013), ABS require customers to access products without any supervision or involvement by service employees. For example, car-sharing customers reserve the vehicle online, go to the car station, unlock it using their personal electronic card, use it to their own needs, and deliver it back to the station, without ever interacting with service personnel.

Second, ABS feature substantial interpersonal anonymity (Bardhi and Eckhardt 2012). In contrast with traditional services that allow customers to access tangible goods publicly, using a self-service option (e.g., ATMs), customers of ABS gain exclusive access to the product on a private basis, without contact with other customers or employees (Bardhi and Eckhardt 2012; Lamberton and Rose 2012).

Third, ABS typically substitute for ownership, which remains an ideal consumption mode in many societies (Bardhi and Eckhardt 2012). In addition to potential norm conflicts, this characteristic implies that customers have limited rights (Bardhi and Eckhardt 2012) and attachment (Belk 2014) to the accessed product. This particularity likely influences the way

customers relate to the product, the firm, and other customers. For example, car-sharing customers do not forge strong attachments to the available cars, which affects the way they create value and care for the vehicles (Bardhi and Eckhardt 2012). All three particularities make ABS unique service innovations, whose complexities might not be fully captured by current research on barriers to service innovations.

Customer Usage of Access-Based Services

Despite the importance of understanding why customers do *not* use service innovations in general (Martin, Gustafsson, and Choi 2016), and ABS in particular (Schaefers 2013), most studies of ABS examine the reasons customers intend to adopt and use them. This research stream shows that customers' willingness to use car-sharing services depends on the transaction (i.e., good deals) and flexibility (i.e., products virtually everywhere) utility of ABS, the price, goods availability, and the perceived degree of substitutability between ownership and access (Claudy, Garcia, and O'Driscoll 2015; Lamberton and Rose 2012). In addition, customers' intentions to adopt ABS depend on their economic and environmental consciousness, the status associated with access-based consumption, and their lifestyle (Lawson et al. 2016; Schaefers 2013). Research further shows that car-sharing customers' usage intensity increases when the burdens of ownership (i.e., perceived financial, performance, and social risks) increase (Bardhi and Eckhardt 2012; Schaefers, Lawson, and Kukar-Kinney 2016). These studies offer valuable insights into the adoption and usage of ABS, without explaining customer rejection. Such an understanding is necessary though, because customer rejection differs qualitatively from customer acceptance of service innovations (Antioco and Kleijnen 2010). Overcoming customers' perceived barriers requires distinct strategies from those aimed at promoting acceptance (Kleijnen, Lee, and Wetzels 2009).

THEORETICAL FOUNDATIONS

Customer-Perceived Barriers to Service Innovations

Understanding customer reactions to innovations represents a top research priority in marketing (Hauser, Tellis, and Griffin 2006) and service (Ostrom et al. 2015) research. Diffusion of innovations literature consists of two major streams. The first seeks to understand drivers of customer adoption and acceptance of innovations (e.g., Blut, Wang, and Schoefer 2016), typically based on Rogers's (1976) diffusion of innovation theory, the technology acceptance model (TAM; Davis, Bagozzi, and Warshaw 1989), and the theory of reasoned action (Fishbein and Ajzen 1975). A second stream of research criticizes these theories and calls for more attention to barriers that trigger uncertainty and rejection of innovations (e.g., Ram and Sheth 1989). The high failure rate of innovations suggests that both researchers and practitioners might benefit from understanding why customers do *not* adopt and use innovations (Talke and Heidenreich 2014).

Researchers generally distinguish between psychological and functional barriers (e.g., Claudy, Garcia, and O'Driscoll 2015; Laukkanen 2016). Psychological barriers reflect compatibility and image concerns. That is, a compatibility barrier arises when the innovation conflicts with users' previous experience, social norms, usage patterns, or lifestyle (Karahanna, Agarwal, and Angst 2006). An image barrier occurs when customers have negative cognitive associations of the brand, its country of origin, or the innovation category (Kleijnen, Lee, and Wetzels 2009). The functional barriers instead refer to complexity and reliability. A complexity barrier emerges when an innovation is difficult to understand or use (Kleijnen, Lee, and Wetzels 2009), related to what Claudy, Garcia, and O'Driscoll (2015) call a "usage barrier." It mirrors the perceived ease-of-use concept in the TAM (Davis, Bagozzi, and Warshaw 1989). Finally, a reliability barrier refers to customers' perceptions of uncertainty about the innovation's performance (Talke and Heidenreich 2014).¹ These studies help explain barriers that prevent customers from using service innovations, but they might

not capture all the complexities associated with ABS (e.g., dependence on other customers). This study therefore pursues an in-depth understanding of the barriers associated with this unique type of service innovation.

Practices to Attenuate Perceived Barriers

Traditionally, firms regarded customers as passive recipients of their value-adding practices (Payne, Storbacka, and Frow 2008), a view that also marks prior research examining firms' efforts to attenuate customer-perceived barriers associated with service innovations (for a review, see Heidenreich and Kraemer 2016). Newer logics instead consider customers as active rather than passive, such that they integrate firm-provided and personal resources for value creation (Vargo and Lusch 2004). Accordingly, customers might actively engage in practices to attenuate perceived barriers on their own.

We use practice theory as a theoretical anchor to explore and identify the barrier-attenuating practices in which customers can engage. Practice theory defines practices as “ways of understanding, saying, and doing things” within a social system (Schau, Muñiz, and Arnould 2009, p. 31), such that it underlines the importance of customers' perceived roles (i.e., representational practices), activities (i.e., exchange practices), and interactions that occur through the integration of various resources (i.e., normalizing practices; Kjellberg and Helgesson 2007). People integrate resources through specific activities, depending on their mental representation of the world (Schau, Muñiz, and Arnould 2009). For example, as McColl-Kennedy et al. (2012) show, consumers who perceive that their role is to assemble and manage teams (representational practice) likely integrate substantial resources (normalizing practices) while engaging in co-learning and cooperating (exchange practices) to create value in healthcare settings.

A better understanding of barrier-attenuating practices would yield relevant insights for firms that could help them create greater acceptance for ABS (Needleman and Loten 2014).

Research that systematically examines what customers do in practice to attenuate these barriers is lacking. In particular, not all customers would engage in barrier-attenuating practices, given the potential difficulty associated with such practices (Sweeney, Danaher, and McColl-Kennedy 2015). In this case, customers might regard the barrier-attenuating practices as burdensome, leading us to propose the concept of the *burdens of access*.

METHOD

This study uses qualitative, in-depth interviews to explore both the barriers that prevent customers from using ABS and the practices in which customers engage to attenuate those barriers.

Sample Characteristics

In developing our sample, we sought to maximize diversity among the respondents to achieve a holistic view of customer rejection while still ensuring that they shared some characteristics, to facilitate comparisons of the results. All the participants thus live in Belgian city centers, where several ABS are available; ABS customers tend to be urban (McKinsey & Co. 2012). Yet they differ in their demographic characteristics (age, gender, number of children, marital status) and adoption (potential, actual, and lost customers). Our choice to include ABS customers in different adoption states reflects the observation that rejection might occur before, during, or after adoption. Customers who adopt the innovation may return to an evaluation stage or decide to stop using it, due to their continued uncertainty (Talke and Heidenreich 2014). Among actual users, some had used ABS for a few years, and others had just started using them. Similarly, some lost users had stopped using ABS a long time ago, whereas others had just defected. To extend previous studies on ABS that mainly focus on car sharing (e.g., Bardhi and Eckhardt 2012; Lawson et al. 2016), we include four examples of ABS (car-, bike-, toy-, and tool-sharing services), which supports an identification of customer barriers and barrier-attenuating practices related to ABS *in general*.

Firms' privacy policies make it inherently difficult to access actual and lost users. We recruited participants mainly through snowball sampling, asking selected respondents to identify other potential participants who shared the characteristics of interest for this study (Patton 2014). In line with recent research (e.g., Grougiou and Pettigrew 2011), respondents were also recruited in multiple offline (e.g., university hall) and online (e.g., forum dedicated to mobility) channels. For this opt-in recruitment process, interested persons contacted us to take part in the study. The sampling process ceased at theoretical saturation, when the information gathered became redundant and no new information appeared in the data (Patton 2014). The resulting sample included 56 persons, consistent with recommended sample sizes for exploratory research (McCracken 1988). The semi-structured interviews include 19 potential customers, 20 actual customers, and 17 lost customers of ABS. Among them, 30 are women and 26 are men, and their ages range from mid-20s to early 70s, with a mean age of 36 years (for more details, see the Web Appendix).

Interview Guide

The interview guide consisted of questions related to the informants' concerns, perceptions, and experiences related to the adoption and use of ABS, along with prompts and follow-ups (McCracken 1988). It contained four parts. The first part began with general questions (e.g., "Please tell me what you think about ABS"), designed to prompt a first-person narrative of the respondent's experience (McCracken 1988). In the second part, participants were encouraged to identify (1) barriers that (could) arise when engaging with ABS, along with (2) contextual details and examples. The latter request helped us avoid misinterpretations of the data (Wallendorf and Belk 1989). If a respondent's adoption or usage experience related to a particular ABS, we conducted this part of the interview in relation to the focal service. In the third part, participants reflected on access to other product categories (cars, bikes, tools, and toys²) and on the barriers they had previously mentioned.

Finally, the fourth part contained deeper questions about participants' role and activities in barrier-attenuating processes (e.g., "How do you deal with this barrier?" "What do you actually do to overcome this issue?"). We discussed additional barriers that emerged from other interviews too, which enabled us to identify further barrier-attenuating practices.

Analysis and Interpretation

The interviews lasted 27 to 99 minutes, with an average of 53 minutes. All interviews were audio-recorded and transcribed verbatim, before being coded and analyzed with NVivo. The transcription resulted in approximately 600 single-spaced pages of text. We analyzed the data using a discovery-oriented, thematic analytic approach, that is, an iterative process of reading, assessing, and identifying emerging themes and categories that organize and describe data in detail (Braun and Clarke 2006). The thematic analysis followed a two-step procedure.

First, we coded the verbatim transcript, paragraph by paragraph, to identify relevant themes. Theoretical codes identified from prior literature (e.g., compatibility barrier; Karahanna, Agarwal, and Angst 2006) were established prior to starting the coding, and then inductive codes were added throughout the process to capture themes as they emerged from the data (Patton 2014). At this stage, we developed a coding plan to (1) list all identified customer barriers and barrier-attenuating practices, (2) label and define each construct, and (3) offer typical statements to illustrate the meaning and content of each construct. The author team reviewed and discussed this plan for internal consistency, leading to some refinements to the labels and definitions.

Second, we jointly developed theoretical, abstract categories for the identified constructs. During the categorization procedure, we constantly compared the emerging findings with supplementary literature to integrate and extend prior knowledge (Strauss and Corbin 1998). In this integrative process, we included research pertaining to barriers to innovation (e.g., Talke and Heidenreich 2014), innovation resistance (e.g., Kleijnen, Lee, and

Wetzels 2009), customer coping behaviors (e.g., Duhachek 2005), customer citizenship behaviors (e.g., Bove et al. 2009), customer engagement behaviors (e.g., Verleye, Gemmel, and Rangarajan 2014), and customer value creation practices (e.g., McColl-Kennedy et al. 2012). The findings of this study result from this analytical procedure.

Trustworthiness Assessment

We ensured the trustworthiness and credibility of our findings by applying both data³ and researcher triangulation. First, we constantly compared our data with supplementary research streams (Strauss and Corbin 1998). Second, throughout the analysis, we carefully checked the transferability of the identified concepts across the different examples of ABS and types of customers (i.e., potential, actual, and lost users). All concepts were transferable, though some differences of magnitude arose for customers across the different adoption states. For example, actual and lost users of ABS reported more practices than potential users. Third, for researcher triangulation, the authors discussed the coding plan and jointly categorized the findings, while also ensuring internal consistency and seeking agreement through discussion.

In terms of reliability, two independent judges—both familiar with qualitative research—reviewed the coding plan and then used it to code the verbatim data of 15 randomly selected interviews (27% of the sample), which exceeds the recommendation to use 10% of the sample to achieve representativeness (Lombard, Snyder-Duch, and Campanella Bracken 2002). The interjudge reliability scores, calculated using the proportional reduction in loss measure, for both customer barriers (.89) and barrier-attenuating practices (.72), exceeded the .70 threshold recommended for exploratory research (Rust and Cooil 1994). Then in a second step, we asked three new independent judges to assign the themes and statements of the coding plan to the abstract categories. The interjudge reliability scores for the barriers (.97) and practices (.88) were satisfactory. Finally, we discussed the results with three experts in

the service research field and the CEO of a company providing ABS, before presenting and discussing the findings during an academic workshop. The analytical process and the trustworthiness assessment both provide us with the confidence that our findings capture the key customer barriers and barrier-attenuating practices related to ABS.

FINDINGS

Customer Perceived Barriers to Access-Based Services

We identified six categories of barriers that impede customer adoption and usage of ABS: complexity, reliability, contamination, responsibility, compatibility, and image barriers. As depicted in Figure 1, we disaggregate the respective content of these barriers and uncover both existing and new dimensions that can explain ABS rejection. Table 1 lists the definitions and some typical statements describing the emerging concepts. In the next subsections, we focus explicitly on *new* concepts and effects.⁴

[Insert FIGURE 1 and TABLE 1 here]

Complexity barrier. This barrier refers to the perceived difficulty associated with understanding, access to, transaction with, and usage of the innovation. Customers consider ABS complex, because they are difficult to understand, access, use, and/or to make transactions. Echoing Berry, Seiders, and Grewal's (2002) study of service convenience, customers consider the service delivery experience (usage dimension) but also all the actions needed to initiate and terminate this service delivery (accessibility dimension) and then to secure the right to use it (transaction dimension). When these factors are complex, it can hinder acceptance of ABS:

Each time bringing back the car to the dedicated station and then going home on foot ... it was such a burden! (ID 11)

First you must register to the system... then you must inform the company each time you want to use the product; I guess you must go through a reservation process before using it or something else similar.... No no no... (ID 20)

The data also suggest that all dimensions of the complexity barrier should be operationalized with regard to specific contextual issues. For example, the accessibility dimension for ABS refers to product scarcity (Claudy, Garcia, and O'Driscoll 2015; Lamberton and Rose 2012) but also to the availability of stations, the proximity of the products and stations, and the perceived difficulty associated with locating the products and stations. Similarly, the transaction dimension captures customers' perceptions of their complex subscription, deposit, and payment-related obligations (e.g., pay-per-use system).

The complexity barrier frequently has been investigated in prior innovation research (Talke and Heidenreich 2014), which conceptualizes it as the difficulty associated with understanding and using the innovation (e.g., Ram and Sheth 1989). Prior studies on ABS (e.g., Lamberton and Rose 2012) use the same conceptualization to examine customer acceptance. Yet this conceptualization initially was developed in a product innovation context (Kleijnen, Lee, and Wetzels 2009; Ram and Sheth 1989), such that it might not capture the complexities inherent to the conceptual characteristics of *service innovations* (Martin, Gustfasson, and Choi 2016). By accounting for the particularities of service innovations, and ABS in particular, this research uncovers additional, relevant dimensions that might better explain how a complexity barrier can lead to the rejection of service innovations such as ABS. On the basis of these findings, we propose:

Proposition 1: The more customers perceive a complexity barrier (reflected in accessibility, transaction, understanding, and usage complexity), the more likely they are to reject ABS.

Reliability barrier. The reliability barrier refers to uncertainty about consistent, accurate performance by the products, the self-service technology, other customers, and the consumer him- or herself. Extant research focuses on firm-related reliability—especially pertaining to the product (Claudy, Garcia, and O'Driscoll 2015) and self-service technology (Blut, Wang,

and Schoefer 2016)—but our data suggest that customers also resist ABS due to the poor reliability of other customers. That is, if users regard other users as opportunistic (Bardhi and Eckhardt 2012), they question their reliability. Even if they simply think that everyone has his or her own way of using things, it affects their perception of overall reliability. The interdependence dimension of the reliability barrier thus emerges when customers perceive that using the service innovation requires too much dependence on others:

Such services are not really reliable! What if the previous user does not bring back the product on time? That's an issue! I mean ... it also depends a lot on others! This would be a concern to me. (ID 27)

I think people do not always behave in a very appropriate way when using toys; one piece is missing very quickly, or is damaged and ... a board game for instance may become useless very easily because of others' lack of attention. (ID 11)

As indicated in this statement, the interdependence dimension also affects other dimensions of the reliability barrier. High levels of dependence on other customers may cause users to grow even more concerned about the consistent, accurate performance of the product. For instance, because of high user interdependence, customers are even more concerned about the potential defectiveness or poor condition of the product in ABS (i.e., product reliability dimension).

Our data also suggest customers are concerned about their own performance:

When I was using the bike-sharing system ... one of the big concerns I always had was that I often had difficulties using it ... actually sometimes I didn't pay enough attention or forgot doing some things, and I could not take a bike! It was just impossible!... This is a barrier on its own I think. (ID 7)

Engaging in services that require high levels of customer participation in the production requires both technical and psychological skills (Etgar 2008). Customers must coordinate these skills to ensure accurate, consistent performance each time they use the service.

However, good performance is uncertain, and negative consequences are likely. Customers thus question their own reliability, which ultimately leads them to reject ABS.

As mentioned previously, prior research mainly focuses on firm-related reliability when examining the impact of the reliability barrier on the adoption and usage of technology-based service innovations (e.g., Blut, Wang, and Schoefer 2016; Claudy, Garcia, and O'Driscoll 2015). As an exception, Wunderlich, von Wangenheim, and Bitner (2013) propose that customers also consider the reliability of their service counterpart (i.e., employee). We extend this research stream to propose that customers question the reliability of other customers, as well as their own reliability, when evaluating highly participatory service innovations such as ABS. Therefore, we propose:

Proposition 2: The more customers perceive a reliability barrier (reflected in the goods', the self-service technology's, other customers', and their own reliability), the more likely they are to reject ABS

Contamination barrier. This barrier refers to customers' perceptions of product contamination, because it has come in actual or imagined physical contact with others. Contamination issues arise when a customer believes that someone else has touched the product of interest (Argo, Dahl, and Morales 2006). Once they are activated, customers experience disgust and repulsion, which can create inconvenience and a fear of being contaminated by toxic, alien germs (Rachman 2004). In ABS, touching the tangible products is necessary to benefit from the service: "You have to sit, drive, touch the steering wheel..." (ID 1). Our data suggest that both the reliability barrier and the anonymity specific to ABS increase the salience of this contamination threat. Customers do not know who else has used the product before, nor do they know how they used it. In the respondents' words:

You do not know who else used the bike before.... I must admit that when I come home,
I always clean my hands! Maybe specifically because I don't know who used it... (ID 44)

Toy-sharing programs? No I wouldn't use them. I know myself, I would be too concerned about ... who else used it, etc. Some products are personal. No, in this case, this is far too personal! (ID 19)

Contamination has been ignored in prior studies on innovation adoption but addressed in retail (e.g., Argo, Dahl, and Morales 2006), branding (e.g., Newman and Dhar 2014), and healthcare (e.g., Rachman 2004) contexts. Prior innovation adoption literature suggests that psychological barriers typically entail compatibility and image issues (Kleijnen, Lee, and Wetzels 2009; Laukkanen 2016); we posit that contamination is an additional psychological barrier to ABS acceptance. From the interviews, we find that contamination not only deters customer usage of ABS (Bardhi and Eckhardt 2012) but also negatively influences the adoption of these service innovations. We therefore propose:

Proposition 3: The more customers perceive a contamination barrier (reflected in contamination due to actual and imagined physical contacts), the more likely they are to reject ABS.

Responsibility barrier. This barrier refers to customers' concerns about being held responsible for their own or others' usage of the innovation. Some respondents were reluctant to be held responsible for a product they did not own, because of the uncertain negative outcomes (e.g., financial or social losses):

I knew that if I had a car accident, I wouldn't need to bother with all the insurance-related stuff, the repairs etc., but.... It's actually more convenient to break one's own object, instead of someone else's object! Although the firm says it's fine, I would feel so uncomfortable to be responsible.... (ID 6)

This specific dimension is especially salient when the customer also experiences a reliability barrier. Participants worried about their potential for inconsistent and inaccurate performance were more likely to worry about being held responsible for their usage too.

A second dimension of the responsibility barrier relates to other customers. The high level of dependence on other customers leaves respondents concerned about being held responsible for other customers' usage. One respondent even calls this situation "an additional responsibility" (ID 3). The following statement illustrates this dimension:

If I didn't do anything ... if there is an issue because of the previous customer ... this is a big concern! Being held responsible for others' misbehavior! (ID 51)

The responsibility barrier has not been widely examined in prior studies on innovation adoption, though Claudy, Garcia, and O'Driscoll (2015) consider liability following an accident as a context-specific factor that represents a risk barrier identified in prior research. The risk barrier is commonly defined as customers' "subjectively determined expectations of loss" (Mitchell 1999, p. 168). In particular, customers' perceived risks are associated with potential financial, inconvenience, physical, and psychological losses (Mitchell 1999). Our findings suggest that responsibility is a distinct barrier related to ABS, so we derive the following proposition:

Proposition 4: The more customers perceive a responsibility barrier (reflected in responsibility for one's own and others' usage), the more likely they are to reject ABS.

Customer Barrier-Attenuating Practices

The second research aim was to identify the roles (representational practices), activities (exchange practices), and integrated resources (normalizing practices) of customers who attempt to attenuate the barriers related to ABS. As we show in Table 2, customers engage in five representational practices to attenuate these barriers: distance, manage, elaborate, control, and relate. We provide an in-depth discussion of findings related to each barrier-attenuating practice, then conclude this section with two general propositions about the effects of these practices.

[TABLE 2 HERE]

To distance. Customers engaging in distancing mainly integrate their own resources through two distinct self-generated activities: *self-distancing* and *ignoring*. In both situations, customers seek to gain some distance from either the firm or the social environment to feel free in their actions and thereby attenuate psychological and functional barriers associated with ABS. As two respondents explain:

I know that those services are sometimes considered by some people as ‘green’, or only used by hipsters you know? But I really don’t care.... I tend to ignore such things. (ID 24)

Sometimes the car condition is not so good, cars are damaged etc., but ... it’s not such a big issue because the firm brand is written on it, with big letters in orange; it actually shows it’s not mine so it’s OK to drive it. (ID 11)

By taking this distance, consumers can attenuate the perceived barriers, which ultimately may make them less likely to reject ABS. The firm does not require customers to engage in these practices for the service delivery (Bove et al. 2009), so they constitute a unique form of customer citizenship or extra-role behaviors. In this case, the extra-role practices are directed less toward the firm or other customers (Groth 2005) and more toward themselves. Prior studies of customer coping behaviors typically assert that consumers’ distancing practices are detrimental for firms (e.g., Mick and Fournier 1998), but our findings suggest this logic does not apply to all distancing practices; they also can benefit the firm, by attenuating specific adoption barriers.

To manage. Customers may also attenuate barriers by taking a management role, exhibited in behaviors such as *adapting*, *fixing*, and *self-organizing*. When taking a management role, customers integrate their own resources and adapt to attenuate the barriers. Our field data show that adapting involves changing habits (or ways of doing things; McColl-Kennedy et al. 2012) and seeking alternative solutions in specific situations (Duhachek 2005), as well as being ready to alter or postpone one’s needs. As one respondent explains:

My needs have always been flexible. If I needed the car for shopping at one specific hour, but it was not available ... well it was not a big deal, I used to do it later then ... or I used to go further at another station where there was a car available. (ID 13)

Prior research on customer citizenship behaviors shows customers can adapt (Bove et al. 2009) and be flexible (Gruen 1995) during the service creation process, which ultimately promotes firm effectiveness. We extend this research stream by showing customers whose perceived role is to manage then engage not only in adapting (Bove et al. 2009) but also in fixing and self-organizing to attenuate barriers and create value. That is, they act with a sense of an autonomous, deliberate choice. Some participants thus reduce the uncertainty that results from the complexity barrier (e.g., product scarcity) by planning in advance, organizing accordingly, or optimizing their usage:

It's up to the customer to self-organize! If you want to use this service, it means you need it at specific hours. You can organize yourself accordingly. It seems clear to me! It's logic in such a system in which you access things that ... it really requires you to respect a certain order, you must have a planning that you impose yourself. (ID 29)

To elaborate. Customers may engage in different cognitive activities—namely, *counterbalancing* and *reasoning*—to attenuate perceived barriers. When counterbalancing, they develop a positive attitude (McColl-Kennedy et al. 2012), engage in counterfactual thinking, compare the innovation with alternatives (Kahneman and Miller 1986), or voluntarily remember the specific advantages associated with the service by undertaking rational thinking (Duhachek 2005):

When you decide to use such a service, this is your decision! The availability issue is far less important compared to other aspects. For instance, the financial one! When you own a car, you accept facing potential financial issues, due to breakdowns or accidents! When using car-sharing, you avoid these problems! And this is much more important, as far as I am concerned, than walking 300 meters to take a car! (ID 15)

By reasoning, customers may engage in sense-making (McColl-Kennedy et al. 2012) and in self-justification. One participant (ID 43) explained that he could justify the choice of ABS instead of ownership, which helped him attenuate the compatibility barrier and conflicts with social norms. Similarly, some respondents mentioned they would consider the accessed product as a tool or a means to an end in their effort to attenuate barriers:

What matters to me is having a vehicle that works and brings me to my destination!...

It's just a tool! It's a tool for going from A to B, nothing more! (ID 55)

To control. In contrast with elaborating, customers whose perceived role is to control integrate both internal self-resources and external (i.e., firm or other customer) resources to master their environment. Consumers might engage in three main exchange practices to bolster their control beliefs and attenuate barriers: *policing*, *securing*, and *self-controlling*. When policing, customers try to discourage other customers' opportunistic behaviors, by complaining to the firm about their misbehavior (Bettencourt 1997) and exerting social controls. Due to the limited contact between customers using ABS (Bardhi and Eckhardt 2012), the latter activity tends to be less frequent than complaining to the firm. Nevertheless, some respondents note that they would explain to previous customers that they had not behaved normatively if they had the opportunity to do so.

Customers also engage in securing to minimize the likelihood of negative outcomes resulting from perceived barriers. For example, participants explained they searched for information (Dowling and Staelin 1994), carefully checked the product, and gathered tangible evidence before their usage experiences. As depicted in Figure 1, this procedure helps reduce the negative effects of the reliability and responsibility barriers on ABS acceptance:

Before picking up a bike, in general I was checking the saddle for instance to see if it was moving or not; sometimes I didn't do it and I regretted it.... Checking if the bike chain was there.... I used to do this, because I wanted to make sure I would be able to use it without any problem. (ID 7)

Finally, the data suggest that customers seek to control their environment and themselves to attenuate perceived barriers. As Baumeister, Vohs, and Tice (2007) predict, participants exerting self-control tend to resist impulses to use the service if they deem it not absolutely necessary. In turn, they can attenuate specific barriers associated with ABS, such as the complexity barrier:

There are so many stupid things I do not do! If I had my own car, I would take it for going to the city center, the cinema, etc. I think this is completely ridiculous, but I know I would do it if I had the car in front of my door.... It really forces me to rationalize my usage! It is not in front of my door therefore I only take it when I really need it! (ID 45)

To relate. Customers also may seek to feel connected to others—the firm, other customers, or relatives—to boost their trust beliefs and attenuate barriers. Customers can do so by *cooperating*, *helping*, *tolerating*, or *connecting*. In line with McColl-Kennedy et al. (2012), customers build relationships and cooperate with the firm by accepting and complying with organizational rules and procedures, which help them reduce uncertainty and create value. By cooperating, participants noted that they believed this activity would encourage collective cooperation. Echoing Verleye, Gemmel, and Rangarajan's (2014) findings about customer engagement behaviors, our respondents explained that they help the service provider and other customers through a variety of activities (e.g., providing the firm with feedback for improvement, informing other users about issues). Through these helping practices, they build relationships, which allow them to attenuate specific barriers (e.g., reliability). As one respondent mentions:

There is a particular signal between users to signal that a bike is broken: you just need to rotate the saddle! So when you notice that a saddle is reversed, it means the bike is defective!... I actually enjoy doing this, as I am glad to think the following person knows about this signal. (ID 44)

When relating, customers engage in benevolent acts of service facilitation (Bove et al. 2009), including tolerance and patience (Lengnick-Hall, Claycomb, and Inks 2000). Prior research typically investigates benevolent acts directed toward employees (e.g., Bove et al. 2009; Gruen 1995; Verleye, Gemmel, and Rangarajan 2014), so our findings extend this research stream by suggesting that customers also engage in tolerating practices directed toward other customers, which then helps attenuate the reliability barrier, for example:

If the previous user is stuck in a traffic jam or his move for instance takes more time than expected ... well I can wait! Waiting 15 minutes, or even half an hour ... it's fine, I wouldn't care! I would try to show understanding. (ID 29)

Customers also attenuate barriers by connecting with others, such as seeking support through word of mouth (Duhachek 2005), building indirect relationships, considering other users similar to themselves, imagining other users, or taking particular care of the tangible products. Despite the lack of contact between customers in ABS, some respondents still tried to relate to other users and attenuate barriers (e.g., reliability) by building indirect relationships with them:

When you pay attention, you notice these are usually the same persons using the car. We never met, but you notice for instance their writing style in the notebook, their names ... without knowing each other, I think we create a kind of link between us. (ID 41)

In contrast with prior research that suggests customers do not establish communal links with others and instead seek control (Bardhi and Eckhardt 2012), our data suggest that they can experience mutualism perceptions (i.e., my success depends on others' success; Dant and Schul 1992) and develop a sense of community, as well as trust beliefs in other customers, to attenuate perceived barriers. This finding suggests that the influence of interpersonal trust on innovation acceptance is important not only when the object of trust is a brand (Gefen, Karahanna, and Straub 2003) or an employee (Wunderlich, von Wangenheim, and Bitner 2013), but also when it pertains to other customers. This finding further extends literature on

coping behaviors; customers partner with goods (Mick and Fournier 1998) and seek emotional support among friends and relatives (Duhachek 2005), but they also develop relationships with other customers to cope with uncertainty.

By going beyond research that focuses on how firms can overcome customer-perceived barriers associated with their service innovations (Heidenreich and Kraemer 2016), this study identifies customers as active value creators in the barrier-attenuation process. The combined results reveal that mitigating rejection can depend on firm actions, but it also can stem from customer practices. We identify five representational practices in which customers can engage to attenuate perceived barriers themselves and ultimately create value. Accordingly, we derive a general proposition:

Proposition 5: When customers engage in barrier-attenuating practices (reflected in customers' roles to distance, manage, elaborate, control, and relate), the impact of perceived barriers on ABS rejection is decreased.

Not all customers are ready to engage in these practices though, especially if they regard barrier-attenuating practices as burdensome. Firms do not require customers to engage in these practices for effective service delivery, but some respondents believe they *must* engage in them to be able to benefit from ABS. Referring to the attenuation of the complexity barrier (reflected in the accessibility dimension), one respondent explains:

You need to plan in advance.... This is such a burden! You always must think about it, plan everything, you cannot say: "OK I must be there in 10 minutes, I need it now!" No, I wouldn't use it! (ID 23)

Our findings suggest that the barrier-attenuating practices in which customers engage even can become detrimental for firms if customers perceive these practices as too difficult (Sweeney, Danaher, and McColl-Kennedy 2015), too demanding in terms of resources (e.g., time), or too numerous. In one respondent's words:

This is so binding you know.... When you come to take the vehicle, you should check it, go around it and take time to do it very carefully! I didn't do it many times, because I was just too busy! Ideally you should take into account the time required for checking the car when reserving it, adding a safety margin or so when planning your use; but it's too much! So when you arrive, you notice you should do it and say: "Damn it! I must do this again!" No... (ID 2)

Prior research examining how customers create value in practice typically assumes practices relate to positive outcomes (e.g., Bonsu and Darmody 2008; Cova and Dallı 2009; McColl-Kennedy et al. 2012). In line with Echeverri and Skålén (2011), we instead argue that some practices may hinder firm performance. In particular, our findings indicate that customers may regard barrier-attenuating practices as difficult, required sacrifices of their resources, leading them to reject ABS. In addition to overcoming customers' perceived barriers to reduce their rejection of innovations (e.g., Heidenreich and Kraemer 2016), our findings suggest that firms must also facilitate and reduce the number of practices in which customers engage to attenuate those barriers themselves. That is,

Proposition 6: Customer barrier-attenuating practices directly and positively influence rejection of ABS when customers perceive such practices as too difficult, too demanding in terms of resources, and/or too numerous.

DISCUSSION

Theoretical Contributions

Despite the importance of understanding why customers choose *not* to use service innovations (Martin, Gustafsson, and Choi 2016), prior research provides limited insights into customer rejection of unique access-based service innovations. This study addresses recent calls for more research aimed at understanding both customers' perceived barriers to ABS (Schaefer 2013) and what they do in practice to attenuate those barriers and create value (McColl-Kennedy et al. 2012).

First, we extend scarce research on innovation rejection (e.g., Laukkanen 2016; Talke and Heidenreich 2014) by focusing on a unique service innovation. Prior research focuses mainly on drivers of customer adoption and shows that customers use ABS to escape the burdens of ownership (e.g., Bardhi and Eckhardt 2012; Lawson et al. 2016; Schaefer, Lawson, and Kukar-Kinney 2016). We expand this view by focusing on barriers that prevent customers from adopting and using ABS. Specifically, we conceptualize customer-perceived barriers to ABS and disaggregate their respective content into distinct dimensions. For example, the reliability barrier in ABS is best conceptualized as a multidimensional construct with four dimensions: product (Claudy, Garcia, and O'Driscoll 2015), technology (Blut, Wang, and Schoefer 2016), other customers (interdependence), and the self. Prior research mainly addresses barriers associated with product innovations (e.g., Kleijnen, Lee, and Wetzels 2009), so our multidimensional conceptualization contributes to this research stream by also accounting for the particularities of service innovations. Moreover, we uncover new psychological barriers that managers of ABS might seek to overcome, to reduce customer rejection; that is, customers worry about compatibility (Karahanna, Agarwal, and Angst 2006) and image (Kleijnen, Lee, and Wetzels 2009) but also contamination and responsibility when evaluating service innovations such as ABS.

Second, this study examines the active, central role of customers in the barrier-attenuating process. We integrate and extend several related research streams, including those pertaining to customer value creation practices (e.g., McColl-Kennedy et al. 2012) and customer coping behaviors (Duhachek 2005). In particular, we contribute by developing a typology of five representational practices, involving various activities and resources, in which customers engage to attenuate barriers and ultimately create value. Some of these practices go beyond coproduction (Etgar 2008), in that the firm does not require them for successful service production and delivery. Therefore, we argue that some customer barrier-

attenuating practices represent unique customer citizenship (Bove et al. 2009) or engagement (Verleye, Gemmel, and Rangarajan 2014) behaviors. We contribute to these research streams by identifying various extra-role practices in which customers engage to attenuate the barriers themselves: Customers help other customers (Verleye, Gemmel, and Rangarajan 2014) and provide the firm with feedback (Groth 2005), but also exert social control, postpone their needs, or repair products.

Our findings also show that customers consider barrier-attenuating practices necessary for adopting and using ABS. But not all customers are willing to engage in such practices, especially if they perceive them as too difficult (Sweeney, Danaher, and McColl-Kennedy 2015), too demanding in terms of resources, or too numerous. Therefore, our findings suggest that customers reject service innovations not only in response to numerous perceived barriers associated with the innovation (e.g., Laukkanen 2016; Talke and Heidenreich 2014) but also out of consideration of the practices in which they must engage to attenuate those barriers. Customers typically adopt and use ABS to avoid the burdens of ownership (Bardhi and Eckhardt 2012; Lawson et al. 2016). We show that they reject ABS due to the *burdens of access*, which include both the barriers to access and the barrier-attenuating practices in which they must engage to use ABS. Understanding *both* customer barriers and barrier-attenuating practices is critical for theory and practice; it can reveal new ways to see, examine, and manage such innovations. In particular, the observation that, in trying to escape the burdens of ownership, customers may confront burdens of access raises critical questions about customers' decision-making processes. The burdens of access ultimately may represent (sunk) costs, such that they start to perceive the burdens of ownership as less severe. This study represents a valuable addition to the research program dedicated to understanding customer behaviors in ABS.

Managerial Implications

The markets for ABS are likely to grow substantially in coming years. However, it appears this is currently a growth mainly fueled by an increasing supply, and not so much by an increasing demand; indicating a broader consumer acceptance of ABS is needed. The current findings thus provide valuable insights for firms that offer such service innovations, as well as for manufacturers that plan to increase their revenues by offering new ABS. In particular, managers can use our results to identify the particular barriers their customers perceive with regard to their ABS, and then which practices their customers engage into in order to attenuate those perceived barriers. Managers might use our framework like a checklist of rejection factors that appear likely to influence their customers.

Regardless of their adoption state, consumers reject highly collaborative service innovations such as ABS because of their functional (complexity and reliability) and psychological (compatibility, image, contamination, and responsibility) barriers. Our findings, grounded in field data, provide fruitful examples of such barriers, as well as their underlying dimensions. Taken together, this combined set of functional and psychological barriers effectively explains why many ABS fail (Needleman and Loten 2014). Moreover, the data suggest that customers proactively engage in various practices to attenuate barriers. In turn, firms should seek to understand consumers' different roles (e.g., to control), various activities (e.g., policing other users), and integration of several resources (e.g., firm and self) to attenuate barriers and create value. Managers might interview or observe customers, to discern which practices their customers (1) engage into, (2) consider too demanding in terms of resources, or (3) perceive as too difficult. These findings then might help firms identify which practices they should facilitate or limit. Further research is needed to define more precise methods for firms to use to do so.

Perhaps most important, firms need to be careful when communicating the benefits of adopting and using ABS. Our findings suggest that customers using ABS experience several

burdens of access. In line with research that demonstrates the benefits of two-sided communication (i.e., positive and negative information) in value propositions (Eisend 2006), we recommend that firms offering ABS should inform customers about both their benefits and their burdens. Then firms can establish accurate expectations among customers planning to use ABS in the future.

Limitations and Research Directions

Our study choices created some limitations, some of which offer fruitful avenues for research. The exploratory and conceptual nature of our study calls for empirical verification and validation of our key research propositions. Table 3 lists specific research questions associated with the broad directions for research that we discuss next: (1) scale development and validation of barriers and practices, (2) relative importance of customers' perceived barriers, (3) application beyond ABS, and (4) cultural and individual differences.

[TABLE 3 HERE]

Scale development and validation of barriers and practices. Researchers should develop and validate measurement scales for the barriers we have identified. This study provides insights for developing appropriate operational measures, which might be linked to various customer outcomes, such as adoption and loyalty intentions. In a similar way, the customer extra-role practices identified in this study (i.e., activities in Table 2) call for the development and validation of new scales of customer engagement behaviors. Such an effort could enhance understanding of customer engagement behaviors (Verleye, Gemmel, and Rangarajan 2014).

Relative importance of customers' perceived barriers. Continued research should test the relative importance of each of the barriers we identified for preventing customers from using ABS. We checked the transferability of the barriers across customers' adoption states (i.e., potential, actual, and lost users), and these data suggest some differences of magnitude

between certain groups. For example, potential customers seem more concerned about the interdependence dimension of the reliability barrier, compared with actual or lost users. The barriers also transfer across the different examples of ABS we study, but with different magnitudes. Further research could examine these differences in more detail.

Application beyond access-based services. Our research focused explicitly on ABS, which represents a growing service innovation field. We believe our conceptualization of the burdens of access also might apply to other types of service innovations though, especially services that require significant customer participation during service delivery but do not offer employee supervision. Further research could test the applicability of our identified concepts to other services, such as peer-to-peer sharing systems (e.g., AirBnB), which continue to gain importance in today's economy (Belk 2014).

Cultural and individual differences. Culture refers to a system of shared understandings that influence people's ideas, intentions, and behaviors (Hofstede 1997). The rejection of innovation thus is likely to be influenced by cultural orientations. For example, customers high (low) in uncertainty avoidance should be more (less) likely to consider all barriers important in their decision-making process. Similarly, culture might shape how customers attenuate barriers in practice; some practices might appear more or less appropriate, depending on the person's cultural value orientations. The rise of ABS worldwide requires a better understanding of the burdens of access as they become manifest across cultures. Prior research usually investigates the impact of both technology and individual characteristics on innovation adoption (e.g., Laukkanen 2016), so along these lines, further research should consider the effects of individual cultures, demographics, or personality traits on the burdens of access too.

FOOTNOTES

1. For a more extensive review of the factors influencing the acceptance/rejection of innovations, see Blut, Wang, and Schoefer (2016) and Talke and Heidenreich (2014).
2. We discussed toy- and tool-sharing programs with these interviewees (e.g., www.usitoo.be). These services are based on the car-sharing model: Users subscribe to the system, book their product of choice, go to a place in their neighborhood where products are stored, use the product, and return it in due time, all by themselves. This part of the interviews was short, because most respondents were not familiar with these ABS, which remain prototypes in Belgium. The statements that illustrate the findings thus mostly refer to car- and bike-sharing programs.
3. As a means of data triangulation, we also conducted six focus groups with 36 potential customers of ABS. Each focus group lasted 70 minutes on average. Among the respondents, 24 were women and 12 were men; their ages ranged from 22 to 63 years, with a mean age of 33 years. An independent researcher conducted the focus groups, then coded and analyzed the data using a procedure similar to that described for this study. The results converged with the results we report.
4. None of the data from the interviews or focus groups captured new dimensions of the compatibility and image barriers, as conceptualized in prior innovation research. The data also support the “understanding” and “usage” dimensions of the complexity barrier. Accordingly, we limit our discussion here to newly identified concepts.

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Table 1: Customers' Perceived Barriers, Definitions, Dimensions, and Illustrative Statements

Barrier*	Definition	New dimension*	Illustrative statement
<i>Functional barriers</i>			
Complexity barrier	Customer's perceived difficulty associated with understanding, accessing, transacting, and using the innovation	• Accessibility • Transaction	"I find it really discouraging if there is no product available in the range of 400 meters from where I am!" (ID 46) "Just going through the whole subscription process, having a credit card, etc., blocks me! I'd rather find another solution, asking a relative, a friend of mine." (ID 27)
Reliability barrier	Customer's perceived uncertainty related to the consistent and accurate performance of the product or the self-service technology, other customers, and the self	• Other customers (interdependence) • Oneself	"I think this is a service that depends highly on other users and on their goodwill ... I think we cannot always be sure it's going to work out well" (ID 11) "I know how to use it [bike-sharing program] but ... I wouldn't be certain I did it properly, that it's well clipped at the station, to terminate the reservation, you see?" (ID 33)
<i>Psychological barriers</i>			
Contamination barrier	Customer's perceived contamination of the tangible features that come into actual and/or imagined physical contact with others	• Actual physical contact • Imagined physical contact	"I didn't like noticing that someone else had used the car ... I know this is how it works, but I didn't want to see others' lives, or others' residues inside the car." (ID 1) "I would not like it ... putting my hands where everyone put theirs ... and you never know.... The tissues, diseases, yuck no! There might be a guy who coughed on the steering wheel the whole day, and then you must put your hands on it!" (ID 28)
Responsibility barrier	Customers' concerns about being held responsible for their and/or others' usage of the innovation	• One's usage • Others' usage	"I would be afraid of driving a vehicle that is not mine you know? Because what if I do something wrong when using it? Anything.... It's just a matter of responsibility!" (ID 27) "Personally, being held responsible for someone else's damages frightens me! This is very annoying, especially since people might not pay attention.... I believe this situation occurs quite often.... You always wonder: what if I didn't see the damage? Or what if there is something wrong after turning the key? Who will they hold responsible? This really frightened me!" (ID 2)

Note. *Only the newly identified barriers and/or dimensions are presented in this table.

Table 2: Synthesis of Customer Barrier-Attenuating Practices

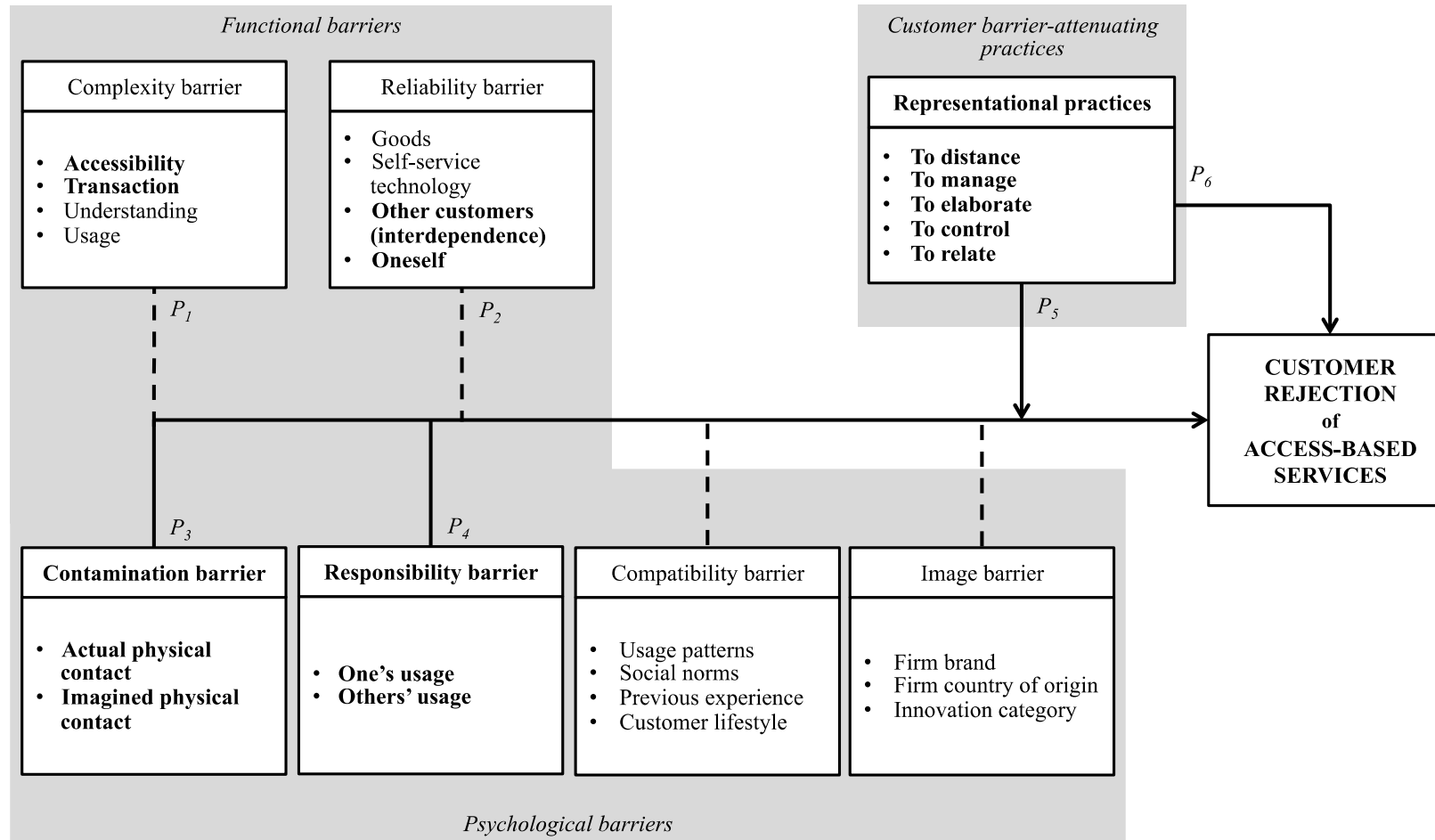
Role	Main Integrated Resource(s)	Category of Activities	Activity	Literature Support*
To distance	Self	Self-distancing	• Delegating responsibility to the firm	Yes
			• Detaching oneself from the products	No
			• Limiting one's responsibility	No
			• Reducing one's dependency on the service	Yes
		Ignoring	• Ignoring judgment	Yes
			• Ignoring other users	No
			• Ignoring firm rules	Yes
			• Neglecting the tangibles	Yes
To manage	Self	Adapting	• Changing one's habits	Yes
			• Postponing one's needs	Yes
			• Seeking alternative solutions	Yes
		Fixing	• Cleaning and/or disinfecting the tangibles	No
			• Repairing the tangibles	No
		Self-organizing	• Adding a safety margin	No
			• Optimizing usage	No
			• Planning one's usage	No
To elaborate	Self	Counterbalancing	• Comparing to alternatives	Yes
			• Having a positive attitude	Yes
			• Remembering advantages	No
		Reasoning	• Considering the product as a tool	No
			• Justifying oneself	Yes
			• Sense-making	Yes
To control	Self, others, and firm	Policing	• Complaining about other customer misbehavior	Yes
			• Exerting social control	No
		Securing	• Checking the tangible resources prior to usage	No
			• Checking the location of resources prior to usage	No
			• Keeping tangible evidence	No
			• Searching for information	Yes
		Self-controlling	• Rationalizing one's usage	Yes
			• Thinking twice about one's usage	Yes
To relate	Self, others, and firm	Connecting	• Building indirect relationships	No
			• Considering other customers as similar	No
			• Seeking support	Yes
			• Imagining other customers	No
			• Extra-caring the product and others	No
		Cooperating	• Accepting rules	Yes
			• Complying with rules	Yes
		Helping	• Informing other users about issues	Yes
			• Providing the service provider with feedback	Yes
			• Signaling issues to the service provider	Yes
		Tolerating	• Accepting imperfection	No
			• Being patient	Yes

Note. *Customer activities identified in prior research include customer coping as well as customer citizenship and engagement behaviors.

Table 3: Research Agenda for Customers' Perceived Barriers and Barrier-Attenuating Practices

Topic	Research Questions and Comments
Customer barriers	<i>How do customers' perceived barriers interact?</i> Our data suggest the reliability barrier influences rejection not only directly but also indirectly, through the contamination and responsibility barriers. What is the combined impact on customers' overall rejection of innovations? <i>What mechanism underlies the impact of customers' perceived barriers on adoption and usage of service innovations?</i> Prior research identifies perceived risks as a distinct, functional barrier, with mixed results. Our data show that all barriers create potential negative consequences, so the risk construct might be a potential mediator. <i>What is the role of the contamination barrier in services?</i> What triggers contamination in services? Why are contamination effects salient in ABS, whereas they are weak in contexts where contacts are expected (Argo, Dahl, and Morales 2006)? Who is most likely to experience contamination effects? <i>What specific barriers likely hinder customer adoption <u>and</u> retention in service innovation contexts?</i> Research on innovation adoption has not been linked to research on customer retention. Our data suggest some barriers can explain both rejection and defection though. What strategies might firms implement to kill two birds with one stone and reduce costs? <i>Which perceived barriers drive different forms of resistance to service innovations?</i> Prior research distinguishes three types of customer resistance that all represent important challenges for firms: postponement, rejection, and opposition (Kleijnen, Lee, and Wetzels 2009). Which barriers likely play more important roles, across these resistance types, in service innovation contexts?
Customer barrier-attenuating practices	<i>How should firms facilitate and/or limit the number of practices in which customers engage to attenuate barriers?</i> Prior research suggests that firms should adopt agency mechanisms and signal investments to help customers make decisions under uncertainty. What impacts do such control mechanisms and investments have on customer barrier-attenuating practices? <i>How and when do specific barrier-attenuating practices influence both customer trust and control beliefs about the firm <u>and</u> other customers?</i> Customer trust and control beliefs about other customers and the firm might relate in a service delivery network. Can a lack of trust/control in one party be compensated for by stronger trust/control beliefs in another party? <i>What impact does the level of customer participation in the service delivery process have on customer agreement with role attributions?</i> Customers might disagree with role attributions and consider some in-role practices as extra-role practices. Can co-defining these roles with customers reduce disagreement? <i>What impact does blame attribution have on customer practices in services that require high participation from all customers?</i> We expect customers to engage into specific exchange practices aimed at bolstering their control beliefs about other customers if they blame the previous user (versus the company) following a service failure.

Figure 1: Integrative Framework of Customer Barriers and Barrier-Attenuating Practices Related to Access-Based Services



Notes. Concepts newly identified and/or not included in prior conceptualization of the related construct appear **in bold**. Customers' perceived barriers and the barrier-attenuating practices together form the **burdens of access** (greyed out).

→ Newly identified effects regarding customer rejection of service innovations

--→ Previously established relationships