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Communication Channels for In-home Services: The Moderating Role of Customer Participation

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STRUCTURED ABSTRACT

Purpose

We examine communication channels for in-home service provision. In particular, we focus on the joint effect of two converging trends: (1) the increase of in-home services involving high degrees of customer participation and (2) the extension of the number of channels that service firms use to communicate with customers. We assess which benefits customers desire of communication channels across in-home service production formats and how these benefit desires determine their preference for specific communication channels.

Design/Methodology/Approach

Based on a literature review a conceptual framework was constructed. Using the Association Pattern Technique (APT), a survey of 383 customers of a Dutch energy company was carried out. The APT enabled us to quantify the relationship between participative in-home service provision situations, desired communication channel benefits, and communication channel consideration.

Findings

Results show that customers focus more strongly on functionally- and economically-oriented communication channel benefits in high customer participation service formats. In contrast, socially-oriented communication channel benefits seem more appropriate when low customer participation in the provision of in-home services is involved. The match between benefits desired by the customer and benefits provided by a communication channel is identified as a central mechanism behind communication channel consideration for in-home services. Furthermore, evidence is found for customer heterogeneity in desired communication channel

benefits and communication channel consideration, based on age, education, and past channel usage.

Research Limitations/Implications

Our study mainly takes the service contextual contingency of level of customer participation in in-home service production into account. Channel-specific considerations, such as perceived channel quality or usage costs, were not investigated as determinants of communication channel consideration. Besides socio-demographics, customer-based characteristics (e.g., self-efficacy, technology readiness) are also likely to operate in determining channel consideration.

Practical Implications

Management should be aware that not all communication channels are equally effective for in-home service provision to customers. Given different levels of customer participation, knowledge of which benefits customers want and what channels can deliver is crucial and helps managers to optimize communication channel mix usage for effective service delivery.

Originality/Value

Based on expected value and cost-benefit considerations, this paper contributes to the multichannel knowledge base by hypothesizing and demonstrating how specific benefit desires raise from allowing/requiring customers to participate in service provision. Furthermore, based on a situation-contingent perspective, our study provides valuable insight into the mechanism behind communication channel consideration by customers during service provision.

Keywords

Customer participation, Multichannel, Service benefits, Channel consideration

Paper Type

Research paper

1. INTRODUCTION

Important macro-developments such as an ageing population and technological advances such as the growing availability of broadband internet access drive more and more firms towards providing services to support customers in their own homes (Flipo et al., 2007; Onder et al., 2007; Rust and Kannan, 2003). Until now, research in this domain seems to focus especially on areas such as healthcare and care giving, for instance to elderly people (e.g., Bass and Noelker, 1987; Hjalmarsson, 2009; Joung *et al.*, 2011; Phillipson and Jones, 2011; Soldo, 1985). However, the provision of in-home services is increasingly becoming more common to a broader consumer audience. For example, consumers can choose to watch a movie on demand on their TV, they can install their Internet connection at home, or they can even be personally monitored to see if their health condition is stable. In less technology driven service domains, consumers can also often choose to use in-home services. For example, they can choose to cook their own meals from pre-prepared ingredients, have a meal delivered to their door, or even have a chef come to their home to prepare a meal in their own kitchen. In this paper, we refer to all these types of services collectively as in-home services.

Despite the emergence of in-home service delivery, it is not well-understood how to best communicate with customers about such service provision. One particular challenge that we focus on in this study is that varying levels of customer participation in service production have become as common in in-home service delivery as they are in out-of-home situations occurring at the service providers' location (e.g., self-checkout when shopping for groceries or at a hotel, or using an ATM to withdraw money). Full-service vs. self-service options across out-of-home and in-home situations are also well-established (e.g., booking airline tickets via a travel agent or do it yourself via the Internet). However, since services are perceived to be more risky in general, especially when customers themselves perform the service production task in-home and in the absence of service providers' physical facilities,

the provision of information and effective communication becomes even more important for service firms (Murray, 1991). Firms have a need to understand how communicating with consumers about in-home self-service compares to when the firm is mainly producing the in-home service. Effective communication between firm and customers seems crucial for in-home service provision, especially since communication is a critical requirement to allow customers to become effective service producers and to provide support for a more autonomous service production task. Communication thus can be considered an important starting point as well as critical input for successful in-home service provision.

The challenge of communicating effectively with customers about in-home services is further reinforced by the fact that increasingly service firms use multiple channels to communicate about service delivery. In this paper, we define communication channels as *means through which customers communicate with service firms about in-home service provision and/or in-home service support*. As such, they “enable the flow of various types of information between buyers and sellers” (Li *et al.*, 1999) and may carry out marketing functions, among which information dissemination, promotion, ordering and payment (Peterson *et al.*, 1997). In addition to face-to-face contact, service firms have added a wide range of other communication channels, including paid and toll-free telephone contacts and web-based contacts, such as chat, virtual communities and video messaging (Patricio *et al.*, 2008; Prahalad and Ramaswamy, 2004). Illustrative examples include energy companies that offer their customers various modes of registering energy use themselves, including calling via telephone, texting via mobile phone, or interacting via their website. Likewise, backed by the slogan “Awaken the investor in yourself,” Australian bank Westpac also allows its customers to become more active participants in producing investment services backed up by communications channels such as personal support, telephone, and advanced Internet-based interfaces.

Desired and perceived costs and benefits are likely to underlie communication channel consideration by customers across participative in-home service provision situations (Mehta et al., 2003; Moore and Lehmann, 1980). For instance, easily accessible and transparent information and the facilitation of dialogue can help customers to become more active in-home service producers (Prahalad, 2004; Prahalad and Ramaswamy, 2000). Communication channels that adequately provide such benefits are then more likely to be included in the customers' consideration set. The main focus of this study is to investigate how customers' communication channels consideration may differ when high customer participation in in-home service production is involved compared to low participation situations. Because active participation requires customers to engage in new behaviors (Meuter et al., 2005), we propose they are likely to make different trade-offs for high versus low participation service situations and use distinct criteria when choosing between communication channels to fulfill their in-home service needs. It should be noted that in the perspective we take, the level of customer participation does not inherently restrict which communication channel can be used, rather it renders some channels more or less suitable depending on the level of customer participation in in-home service provision.

Our research contributes to the literature by investigating what communication channel benefits consumers desire for in-home service provision and how this is affected by high versus low in-home customer service participation. In particular, we propose three types of consumers' desired benefits that are central to in-home service communication: 1. functionally-, 2. socially-, and 3. economically-oriented benefits. Next, we theorize about how the importance of these benefits shifts depending on the level of customer service participation. Finally, we validate if the fit between perceived benefits of a communication channel and desired channel benefits by customers is indeed a crucial mechanism behind consumer communication channel consideration for in-home service provision. As such our

study provides new insights in consumer communication benefit requirements for in-home services. Furthermore, it is also one of only a small number of studies to empirically investigate how situational factors and specific channel attributes (Neslin et al., 2006; Verhoef et al., 2007) may combine to determine communication channel consideration by customers.

The remainder of the paper is structured as follows. First, we briefly discuss customer participation in the context of in-home services and how this relates to communication channels. Next, we develop hypotheses on desired communication channel benefits given different levels of customer participation in in-home service provision and communication channel consideration. We conclude by discussing our findings and explore their managerial and theoretical implications.

2. BRIEF LITERATURE REVIEW AND DEFINITIONS

Although various previous studies relate to our topic of investigation (see Appendix for an overview of selected research), little is known about why and when customers prefer one communication channel over the other in the context of participative service delivery. For example, research on customer participation has focused on issues such as the psychological implications of customer participation in co-producing services (Bendapudi and Leone, 2003), customers as contributors to service satisfaction (Van Raaij and Pruyn, 1998), customers as partial employees (Bitner *et al.*, 1997; Kelley *et al.*, 1990; Mills and Morris, 1986), as well as customer evaluations, intentions to use, and trial of technology-based self-service options (Curran *et al.*, 2003; Dabholkar, 1996; Dabholkar and Bagozzi, 2002; Meuter *et al.*, 2005). In addition, multichannel-oriented research has addressed the design of multi-interface service experiences (Patricio *et al.*, 2008), the contribution of delivery channels to customer satisfaction (Patricio *et al.*, 2003), and multichannel marketing (Ansari *et al.*, 2008; Frambach *et al.*, 2007; Konuş *et al.*, 2008; Verhoef *et al.*, 2007). Furthermore, based on the notion that

culture influences the formation of attitudes and preferences (Lovelock and Yip, 1996), Van Birgelen et al. (2002) confirm the moderating role of national culture on the perceived quality-satisfaction relationship for various types of technology-based after-sales service contact modes. To the best of our knowledge, however, no prior work has specifically addressed variations in desired communication channel benefit types across high versus low customer participation in service provision situations. Furthermore, the consequences of such shifts in desired benefits on consumers' communication channel consideration have remained empirically unexplored so far.

The expansion of the channel mix through which firms and customers may interact has important consequences for service firms' communication strategies for in-home service provision. Indeed, the development of a better understanding of customer behavior in a multichannel environment is a key challenge for multichannel customer management, conceptualized as "the design, deployment, coordination, and evaluation of channels through which firms and customers interact..." (Neslin *et al.*, 2006, p. 95). In this paper, we adapt this conceptualization to define communication channels as *means through which customers communicate with service firms about in-home service provision and/or in-home service support*. Firms then face the challenge of what communication channels to use, when and for what service, given that customers themselves may play a more important role in service provision than before (Leggett, 2006). Simply extending the level of customer participation in service production without adapting the communication channel mix seems problematic from an operational excellence as well as a customer preference point of view (Curran *et al.*, 2003).

In line with Dabholkar (1990), customer participation in service provision implies that a customer actively performs one or more service production tasks for which he or she is likely to incur monetary as well as nonmonetary costs. For instance, in order to be billed correctly for energy consumption, customer may self-report energy use levels via the Internet. This is

fast, but requires customers to invest time and effort. For adequately defining high vs. low customer participation in service production we rely on Etgar's (2008) notion that co-production occurs when customers actively participate in the performance of various activities that lead to the desired outcome. These activities may involve "intellectual work of initiating and designing, resource aggregating and processing activities which lead to creation of outputs that serve as platforms for delivery of values used/consumed later on, up till ensuring delivery and executing use (consumption)" (Etgar, 2008, p. 98). Meuter and Bitner (1998) differentiate between joint production and customer production, depending on the participative role of the customer vis-à-vis the service firm. For the purpose of this paper, we define high customer participation in in-home service provision as *an in-home service provision situation in which the desired service outcome is predominantly produced by the customer by performing production-facilitating activities*. In contrast, in line with the traditional conceptualization of service delivery, which Meuter and Bitner (1998) refer to as firm production, low customer participation in in-home service production is defined as *an in-home service provision situation in which the desired service outcome is predominantly produced by the service providing organization by performing production-facilitating activities*.

At this point it is important to emphasize that our definitions of high and low customer participation do not specify the channels via which customers and service firms can communicate about in-home service provision and also that the use of channels to communicate about service provision is distinct from the channel (or means) through which the actual service is realized. Thus customers may use one and the same communication channel (e.g., telephone or website) for both high and low customer participation in in-home service provision situations and one and the same communication channel may be used regardless of the service delivery channel (e.g., more traditionally via a service employee or

via technology-based (self-)service). According to our definitions of customer participation, customers may be highly active in producing the desired in-home service themselves or the in-home service may be produced for them by the service firm. In both cases, customers can communicate about the desired service using one and the same channel (or different ones if they so please). For instance, consider the situation where a consumer wants to change to another Internet provider for his Internet connection at home, which would imply installing new hardware. This consumer can choose to do so by him- or herself and contact the service firm via telephone to order a do-it-yourself installation package. Alternatively, the consumer can also use the telephone to request a service employee to come to the consumer's home to install the Internet connection. At the same time, both the do-it-yourself installation package and the appointment with the service employee could also be arranged via the firm's website.

3. COMMUNICATION CHANNEL BENEFITS FOR IN-HOME SERVICES

A customer is likely to evaluate communication channels based on the benefits they deliver (e.g., Neslin *et al.*, 2006, Zeithaml, 1988). Depending on the outcome of this evaluative process a channel is more or less likely to be included in the customer's consideration set of communication channels. More specifically, expected value (utility) theory of rational choice (e.g., Homans, 1961; Tversky and Kahneman, 1986) as well as cost-benefit-oriented research (e.g., Bell *et al.*, 1998; Creyer *et al.*, 1990; Messinger and Narasimhan, 1997; Roberts and Nedungadi, 1995; Smith *et al.*, 1982) suggest that individual choices and behavior can be explained from basic principles of benefit maximization and costs minimization. Following these would predict that across service situations consumers weigh the benefits delivered (e.g., fast) against the costs involved (e.g., but more expensive).

Prior research especially in the services domain then enables us to further identify relevant differences in the benefits that customers may desire from a communication channel under

conditions of high versus low participation in in-home service production. More specifically, Gwinner *et al.* (1998) found that customers may pursue receiving several relational benefits when interacting with service firms: confidence, social, and special treatment benefits. Confidence benefits pertain to psychologically-oriented notions of trust, reduced anxiety, and confidence (e.g., Berry, 1995; Bitner, 1995; Grönroos, 1990; Morgan and Hunt, 1994). Social benefits focus on the interpersonal relationship between customer and firm and perceptions of familiarity, personal recognition, friendship, and rapport (e.g., Berry, 1995; Czepiel, 1990; Hennig-Thurau *et al.*, 2006). Finally, special treatment benefits combine economic benefits, such price breaks and nonmonetary time savings (e.g., Peterson, 1995; Sheth and Parvatiyar, 1995) and customization benefits, pertaining to tailoring the service offering to specific needs, preferential treatment, extra attention, and special service (e.g., Barlow, 1992; Berry, 1983; Crosby, 1991). Inspired by Gwinner *et al.*'s (1998) categorization of relational service benefits, we also propose a three-dimensional benefit structure for communication channels to deliver across participative in-home service provision contexts. First, well-designed *functional* communication channel features are likely to instill confidence in the customer that a service production task can be adequately performed in an autonomous manner (e.g., Dabholkar, 1994, 1996, 2000; Dabholkar and Bagozzi, 2002), as would be the case in a high customer participation situation. Second, *socially-oriented* communication channel features may become more relevant for traditional service production, in which a service employee performs the service task for the customer (Gwinner *et al.*, 1998; Parasuraman *et al.*, 1991). Third, *economically-oriented* characteristics, targeted at relative advantages, may also be instrumental in determining customer perceptions and behavior across service situations (e.g., Gwinner *et al.*, 1998; Meuter *et al.*, 2005).

It is suggested that the benefits which customers desire from a product or service may vary across usage situations (Ratneshwar and Shocker, 1991; Srivastava *et al.*, 1981) and that

the usage context helps customers precisely define the benefits desired when choosing among available options (e.g., Warlop and Ratneshwar, 1993). For instance, Wendel and Dellaert (2005) found the situational context to be affecting consumers' desired benefits in the context of media channel consideration. In this research, we also argue that communication channel benefits a consumer desires are not necessarily universal across service situations and that different communication channels have different perceived benefits. We do so based on several theoretical perspectives relevant for the purpose of our study.

Due to costs and benefits involved, we propose that a customer will evaluate one and the same communication channel differently depending on whether high versus low participation in in-home service provision is involved. Such proposition clearly acknowledges that situational factors, one being task definition (e.g., Mathwick *et al.*, 2002; Neslin *et al.*, 2006), may operate in customer channel selection. As also suggested by Tversky and Kahneman (1986), different representations (i.e. high versus low customer participation) of the same choice problem (i.e. considering a specific communication channel or not) are not likely to yield the same preference by subjects.

Figure 1 provides a graphical representation of our conceptual framework and our hypotheses for the three benefit domains identified (H₁₋₃). We investigate the mechanism behind communication channel consideration, which we posit to originate from the match between desired communication channel benefits and the benefits which customers perceive a specific communication channel to deliver. As will be elaborated later upon, it is represented by a moderation effect of desired channel benefits on the main effect of perceived channel benefits on communication channel consideration (H₄).

Take in Figure 1

4. CUSTOMER PARTICIPATION, DESIRED COMMUNICATION CHANNEL BENEFITS, AND CHANNEL CONSIDERATION

4.1. Functionally-oriented Benefits

Since participating in in-home service provision involves effort on behalf of the customer, we expect that communication channel benefits providing utility to the customer by supporting the active service production task become particularly relevant. Once again, consider the example of a consumer wanting to have Internet installed at home by a new Internet provider and suppose the provider's website is involved as the communication channel. According to our definition, high participation in producing the desired service outcome (having Internet installed at home) implies that the customer needs to play a significant and active role in getting connected to the Internet (for instance, by using a do-it-yourself kit). Substantive and independent judgment of information presented on the site and Internet connection possibilities is then likely to be necessary for the customer, preferably at an hour or day most convenient to him or her. This customer would thus need to invest time in browsing the site and be required to invest mental effort into evaluating the information presented. We expect that such requirement stimulates a desire for communication channel features assisting the customer to perform the requested in-home service production task as effectively and efficiently as possible.

Issues such as ease of use and adequate performance were found to be important determinants of customer attitudes in the context of technology-based self-servicing and channel selection behavior (e.g., Dabholkar and Bagozzi, 2002; Keen *et al.*, 2004; Montoya-Weiss *et al.*, 2003). Customer considerations pertaining to time convenience (e.g., Kleijnen *et al.*, 2007; Nicholson *et al.*, 2002; Verhoef and Langerak, 2001), search convenience (e.g., Childers *et al.*, 2001; Hoque and Lohse, 1999), and information quality and availability (e.g., Hoque and Lohse, 1999; Montoya-Weiss *et al.*, 2003; Ratchford *et al.*, 2001) are likely to

increase preferences for benefits such as a website being well-designed, consistently up-and-running, and providing high-quality ‘one-or-two-mouse-clicks-away’ information. In this paper, we label such benefits as *functionally-oriented* benefits, defined as *communication channel properties that enhance the effectiveness of the service outcome production*. Operationally, functionally-oriented benefits may include aspects such as informational reliability as well as 24/7 availability (e.g., Dabholkar, 1996; Van Gorder, 1990). When actually provided by a communication channel, such benefits will enable customers to exercise more control over the service production process by being better informed (Guiry, 1992)¹. Although such communication channel benefits may also play a role in low customer participation service situations, we propose that these are relatively more relevant for high participation in in-home service provision situations (Dabholkar and Bagozzi, 2002), mainly since these support the customer in their service production task. This leads us to hypothesize that:

H₁: Customers are more likely to desire functionally-oriented communication channel benefits in high than in low participation in in-home service production situations.

4.2. Socially-oriented Benefits

In the previous Internet connection example, low customer participation could imply that the connection will be installed for the customer by a service firm employee. When communicating with the firm about this desired service for instance via the Internet, the customer is more likely to operate from a more traditional, ‘being-served’ mindset and seeking to be more passively provided or directed to relevant information on the firm’s website. In line with our definition, the firm itself will now play a crucial role in creating the

¹ Note that the benefits used to quantitatively test hypotheses 1-4 were derived from a wider range of benefits identified and evaluated during the qualitative stage of our investigation (to be discussed) and selected based on their relevance for our research context.

desired service outcome for the customer (i.e. getting the customer connected to the Internet using an employee) and will have to facilitate this in a more active way. In order to effectively serve the customer the firm needs to develop a thorough understanding of customer needs and wants and develop trust and confidence within the customer that the service will be adequately performed for him or her. Much in a being-served-like manner, we posit that 'interpersonal'-, traditional service-related features then become more prominent for determining communication channel considerations. Indeed, previous research suggests that service is an important determinant of channel selection (e.g., Burke, 2002; Montoya-Weiss *et al.*, 2003) and the importance of adequate interpersonal interaction has been extensively confirmed in services (e.g., Dabholkar, 1996, Parasuraman *et al.*, 1991; Parasuraman *et al.*, 1985, 1988; Zeithaml *et al.*, 1996), retailing (e.g., Forman and Sriram, 1991; Wang *et al.*, 2007), as well as with respect to the use of interactive media (e.g., Cowles, 1989).

When low participation in in-home service provision is involved, we expect that in the communication between firm and customer the ability of the firm to adequately respond to customer needs in a socially-oriented manner becomes particularly relevant. Effective inter-customer-firm communication (real-life, but also virtually via electronic means) is useful in this respect, because it facilitates conveyance of trust and informal responses to (often fuzzy) customer desires (Maruping and Agarwal, 2004). Here, relevant communication channel features focus on reducing risk perceptions (e.g., Forsythe and Shi, 2003; Park and Jun, 2003), for instance by enabling customers to ask questions in a more open-ended format, or providing service (e.g., Baker *et al.*, 2002; Montoya-Weiss *et al.*, 2003), for instance by giving personal attention and advice and assisted guidance to relevant and reliable information. We conceptualize such benefits as *socially-oriented* benefits, which we define as *communication channel properties that increase the effectiveness of the customer-firm interaction*. Operationally, such benefits include aspects such as friendliness towards the

customer, personalized contact between service provider and customer, getting assistance, as well as direct follow-up in case of questions, problems, or special requests. Without suggesting that socially-oriented communication channel benefits do not play a role in high customer participation service situations (e.g., due to differences in customer traits such as self-efficacy, need for interaction, or readiness to use innovations (Dabholkar and Bagozzi, 2002; Meuter *et al.*, 2005; Parasuraman, 2000)), we propose that they are relatively more relevant in low customer participation service situations. In the latter the main focus for a customer lies on being adequately provided with the service rather than producing the service him- or herself. Effective interaction between service firm and customer will therefore be of particular importance in low participation service production. Therefore, from the high participation perspective, we hypothesize that:

H₂: Customers are less likely to desire socially-oriented communication channel benefits in high than in low participation in in-home service production situations.

4.3. Economically-oriented Benefits

As was mentioned before, active participation in service provision requires customers to invest time as well as cognitive, emotional, and maybe even physical effort into the task at hand. Therefore, principles of costs minimization are likely to be activated in customer cognitions and behavior in this setting. Indeed, that perceptions of costs (monetary-, time-, and effort-wise) may operate in channel choice behavior has been established in previous research (e.g., Baker *et al.*, 2002; Bhatnagar and Ratchford, 2004; Burke, 2002; Keen *et al.*, 2004; Kleijnen *et al.*, 2007; Montoya-Weiss *et al.*, 2003). In the context of customer participation in service production, an additional argument for expecting an ‘economically’-oriented customer mindset may be derived from organization behavior theory, suggesting that

in a working context requirement demands create a psychological contract between a firm and its employees (Rousseau, 1989). Such contract is based on employees' perceptions that the contributions they make oblige the firm to reciprocate. Such reciprocal commitment represents a form of recognition for the contributions provided and should result in more committed employees (Shore and Tetrick, 1991). Because high participation in service production requires customers to in fact become an operant resource (Vargo and Lusch, 2004) or partial employees for a certain period of time (Bitner *et al.*, 1997; Kelley *et al.*, 1990), actively contributing to service production, they may expect something in return for their efforts. Specifically, we hypothesize that to offset their efforts customers' thinking will be focused on obtaining *economically-oriented* communication channel benefits, defined as *communication channel properties that lower the costs of the consumer-firm interaction*. These may manifest themselves for instance by being able to save time or to save money (e.g., when installing the Internet connection oneself and in need for help waiting for a reply on an e-mail will take longer than being able to contact a 24/7 helpdesk via telephone; being able to make use of a virtual agent functionality may be cheaper than contacting the firm via telephone and having to wait for minutes before being direct to a service employee). Research on social information processing (Salancik and Pfeffer, 1978) suggests that the effects of such benefits on customer cognition and behavior may even grow stronger when the promises of high participation benefits are overt, as for example is typically the case on websites promoting faster and cheaper transactions when customers become more actively involved. The failure to deliver on a promise in a high participation setting could be perceived as a breach of the psychological contract between firm and customer, which may result in customers choosing not to perform their service task adequately, losing trust in the firm, and perhaps even defecting to competitors (e.g., Robinson, 1996). Thus, we hypothesize that:

H₃: Customers are more likely to desire economically-oriented communication channel benefits in high than in low participation in in-home service production situations.

4.4. Customer Participation and Communication Channel Consideration

To understand which communication channels customers will consider for use, it seems not enough to know which benefits they desire in the context of a specific participative service situation. Managers must also be aware of the benefits that different communication channels can actually deliver. Different modes of communicating between firm and customers are likely to incorporate distinct properties (e.g., Maruping and Agarwal, 2004). For instance, in-person, face-to-face, or voice-to-voice communication (e.g., via telephone) may be more effective for receiving immediate feedback and facilitating a swift reaction to specific customer desires than communicating via electronic channels (e.g., via e-mail). Voice-to-voice channels may also help customers to receive easy and fast access to more in-depth, personalized, information and ready-made solutions (Feinberg *et al.*, 2002). In contrast, electronic channels may score higher for benefits such as receiving repetitive, consistent, and reliable service. Furthermore, they may help customers to become better-informed by reducing the informational asymmetry between them and the firm through facilitating the exchange of more elaborate information (Bauer *et al.*, 2002) and reduce the necessity for customers to visit crowded local offices, possibly resulting in perceptions of poor service quality (Patricio *et al.*, 2003).

Frambach *et al.* (2007) found the drivers of channel preference to differ across buying situations due to (in)congruities between benefits desired and channel capabilities offered. Also, Verhoef *et al.* (2007) found differences in channel usage depending on the situational purpose. We also believe that the fit between benefits desired by the customer and the benefits provided by a communication channel will be a decisive factor for channel consideration

across participative in-home service provision situations. Research on the notion of cognitive fit suggests that the fit or match between the requirements of a specific activity in which a person is involved and the means by which this activity might be accomplished will determine that person's attitudes and behaviors toward the activity (e.g., Hong *et al.*, 2004; Vessey, 1991). In the context of technology use, such fit has been found to depend on the degree to which task-specific requirements match the actual features of a specific technology and to determine the likelihood that persons will use that technology (Goodhue and Thompson, 1995). Related to our case in point, customers use various channels to communicate about in-home service provision and across participative service situations. As such, the communication channel represents the 'technological' means to initiate or facilitate the service provision from service firm to customer. Since the customer's task differs substantially between high versus low participation in in-home service production, some communication channels should better fit high participation production, whereas others should fit low participation in service production. We expect this process to operate through the match between the channel's perceived benefits and the benefits desired by the customer given the specific service situation at hand. If such match between perception and desire occurs for a given communication channel, customers should be more likely to consider using this channel. Therefore, our final hypothesis is:

H₄: Across participative in-home service production situations, customers are more likely to consider using a communication channel if there is a match between the participation-level based desired channel benefits and the channel's perceived benefits.

5. EMPIRICAL STUDY

5.1. Research Setting and Approach

Our hypotheses are tested on the basis of data collected using the Association Pattern Technique (APT) which enables us to quantify the relationship between participative in-home service provision situations, desired communication channel benefits, and communication channel consideration (Ter Hofstede *et al.*, 1998). We do so using a survey of real-world customers of a Dutch household energy supply company predominantly active in providing in-home services. This represents a relevant setting because of the increasing importance attached to involving households actively in efficient energy consumption and energy saving efforts. Furthermore, competition in the (European) market for household energy is intensifying with key players operating across borders. Service delivery excellence represents an important competitive instrument, particularly since the technical quality of core service (energy) is hard to assess for consumers. As a consequence, energy suppliers offer various additional services to household customers using a mix of multiple communication channels. Obviously this development was facilitated by their high level of connectivity to Dutch households, originally for providing gas and electricity. By the mid-80's cable-TV was introduced and with that the road was paved for extending their services portfolio with internet connectivity and cable-based telephony from the end of the 90's and onwards.

To test our hypotheses, we follow a two-step procedure. First, a qualitative phase serves to identify the service situations, communication channels, and service benefits that seem to be most relevant in the context of household energy supply and to classify service situations and benefits into the proposed theoretical conceptual categories. Step two involves an empirical study among energy customers, in cooperation with a major Dutch energy supply firm, in order to quantitatively test our hypotheses.

5.2. Measurement

On the basis of five focus group interviews (involving 34 participants) and discussions with industry experts, we identify the service situations, communication channels, and service benefits that are most relevant in the context of household energy supply. Participants in the focus groups include consumers who are responsible for decisions about energy supply and related services (e.g., Internet connectivity) offered by energy supply firms. The industry experts include marketing managers from the major household energy supplier with which we worked on this project and consultants in this industry. As part of the discussions during the focus groups and meetings with experts, we ask participants to discuss typical service situations as well as to list communication channels that consumers may use to communicate with service firms active in this industry for initiating or supporting the provision of in-home services. On the basis of this list, we ask participants to discuss the specific benefits that each communication channel provides and mention important differences among them.

Subsequently, in line with our definition of high versus low customer participation in in-home service production, the service situations are classified into these two categories by judging if it is the customer or the service providing organization that is predominantly performing activities required to produce the desired in-home service outcome. Such activities would for instance pertain to performing intellectual work, aggregating necessary resources, as well as processing activities (Etgar, 2008). In a small-scale follow-up this classification is also done by 40 respondents who are asked to rank the various service situations on a customer participation scale of 1 (= low customer participation) to 7 (= high customer participation) based on our definitions. The results confirm the researchers' classification of the service situations. Specifically, three situations pertain to high customer participation in service production (overall mean = 4.5) — setting up your Internet account, calculating your potential advantage/disadvantage of switching to green electricity, and registering and

communicating your energy supply meter score for correct billing purposes — and three situations pertain to a low customer participation in service production situation (overall mean = 3.6) — having your Internet connection physically installed, resolving complaints about your Internet connection, and resolving an electricity failure in your home. The difference in overall means between the two groups is significant (t-value = -4.0, $p < .001$).

The communication channels mentioned by the experts and participants in the focus groups are: telephone, a physical information desk, e-mail, the firm's website, an interactive virtual service agent (actually called Eva) on the firm's website, and traditional mail. Any of these six communication channels can be used for any of the three high customer participation situations as well as for the three low participation situations.

A next follow-up is aimed at testing our proposed benefit categorization. Here, the nine most frequently mentioned benefits identified in the focus groups and by the experts are classified into conceptual categories by a group of 23 respondents. Category one to three refer to functionally-, socially-, and economically-oriented benefits, in accordance with the conceptual part of this paper. A fourth category 'other benefit' is also included and allows respondents to assign benefits they can not clearly classify into the proposed three categories. A benefit is confirmed in a specific category if the majority ($>2/3$) of the respondents assigns that benefit to the respective category. If no clear classification emerges the benefit is assigned to the 'other' category. The following benefit classification is the result of this procedure: (1) functionally-oriented benefits: information availability, information reliability, and 24/7 availability; (2) socially-oriented benefits: friendliness towards the customer and personal contact between organization and customer; and (3) economically-oriented customer benefits: saving time and saving money. The benefits of getting immediate help from the right source and direct follow-up in case of questions or problems are assigned to the 'other benefit' category, which we tentatively label "response efficiency-oriented" benefits (since

they seem to be targeted at a firm's responsiveness to customer requests or problems) and which are included in our empirical tests as control variables.

Overall, our measurement approach thus results in a multichannel service setting in which six different service situations, three high on customer participation in service production and three low on customer participation in service production, six different communication channels, and nine different benefits, belonging to one of four categories, are being investigated in step two of our research procedure.

5.3. Questionnaire Design

To measure respondents' perceptions of communication channel benefits, service situation benefit desires, and communication channel considerations, we construct a survey using the APT approach (Ter Hofstede *et al.*, 1998, 1999; Wendel and Dellaert, 2005). The APT approach originally studied the relationships that consumers perceive among different products (e.g., cars), product benefits (e.g., low emission), and their personal objectives (e.g., protect the environment). Unlike qualitative approaches to collecting data, the APT approach enables researchers to quantify the relationships among products or channels and their perceived benefits. In particular, we can quantify the relationship between the type of service situation and the desired benefits in which we are interested, as well as between the type of service situation and communication channel considerations. The questionnaire format of the APT also enables us to collect data in an efficient manner, because unlike laddering interviews for example, APT requires no experienced and trained interviewers. Because it also clearly presents questions about the communication channel–service situation–benefit relationships in a table format and uses a relatively simple binary response task, it is very suitable for quantitative and large-scale analyses.

In this study, the APT technique is used to elicit benefits that are deemed to be particularly relevant (desired benefits) to the respondent in a specific consumer participation situation. This does not imply that other benefits may not affect respondents' channel choices. In fact in estimating our channel consideration model (to be discussed), main effects for all benefits are included and their relative impact on channel consideration is captured by the parameters in the model. Thus, respondents can make trade-offs between benefits in the proposed model (for example, between information availability and saving time). The specific contribution of the APT approach is that it allows us to highlight systematic differences in relative benefit importance depending on the consumer participation situation.

The specific APT approach we employ asks consumers to use a binary response to indicate, in pre-constructed tables, which relationships they believe exist between different variables (e.g., communication channels and perceived benefits). Figure 2 presents an overview of the APT-response tables used. Specifically, we present respondents with three tables that ask them to indicate: (APT-response table 1) which benefits they perceive each of the communication channels to have (providing (yes, no) responses for each benefit per channel), (APT-response table 2) which benefits consumers desire a communication channel to have in each of the six service situations investigated (belonging to either the low or the high customer participation type) ((yes, no) responses for each benefit per service situation), and (APT-response table 3) which channels they consider in each of the six service situations ((yes, no) responses per channel per service situation). To measure consideration, we select the formulation "consider the communication channel acceptable for use," in line with findings about consideration measures (Brown and Wildt, 1992) and previous research regarding situational effects on consideration (e.g., Srivastava *et al.*, 1984; Wendel and Dellaert, 2005).

Take in Figure 2

5.4. Econometric Analysis

Our econometric analysis approach is aligned with the two research contributions as outlined in the introduction. First, differences in communication channel benefit desires arising when consumers face high compared with low participation in in-home service production are tested using a benefit desire model. Second, testing if a shift in consumers' communication channel consideration occurs depending on the match between the participation-based channel benefit desires and a channel's perceived benefits is done through a channel consideration model. Both models are further discussed below.

Benefit Desire Model

To test the hypothesized effects of high versus low participation in service production on consumers' communication channel benefit desires (H_{1-3}), we conduct an analysis in which the dependent variables are consumers' benefit desires depending on the service format type (i.e. high vs. low participation level). These desired benefits were obtained from respondents answers in APT-response table 2. As mentioned, the specific contribution of the APT approach is that it allows us to highlight systematic differences in relative benefit importance depending on the consumer participation level. This is captured by estimating the moderating effect of participation on the main effect of each benefit. Significance of this moderating effect demonstrates that respondents' benefit trade-offs are shifted depending on consumer participation level. We estimate a random coefficient binary probit model with a dependent variable D_{sbi} , indicating whether or not a person i ($i \in I$) desires channel benefit b ($b \in B$) to be available for service format type s (high vs. low participation in service production). The following independent variables are used: a service format type-specific random coefficient

intercept α_{si}^D that remains constant across all benefit desires, a dummy variables X_b for each channel benefit with parameter vector η_b , and an interaction of the benefit dummy with service format type dummy X_s and parameter θ_{sb} . If these interactions are significant, they support the hypothesis that benefit desires differ across participative service formats. We assume that all error terms ε_{sbi}^D are independently and identically normal distributed to obtain the binary probit model. The service format type-specific intercept α_{si}^D is a random coefficient with mean α_s^D and a normally distributed individual error component ν_i^D , such that

$$D_{sbi} = \alpha_{si}^D + \eta_b X_b + \theta_{sb} X_s X_b + \varepsilon_{sbi}^D, \text{ and} \quad (1)$$

$$\alpha_{si}^D = \alpha_s^D + \nu_i^D.$$

We operationalize the nine distinct benefits as eight dummy variables (service provider friendliness towards the customer arbitrarily functions as the methodological reference category) and regress them on the consumer's indication of whether a specific benefit is desired (0 = not desired, 1 = desired). In addition to the eight benefit dummy variables, we include a dummy for service format type in the analysis, constructed by combining the three high participation situations (setting up your Internet account, calculating your potential advantage/disadvantage of switching to green electricity, and registering and communicating your energy supply meter score for correct billing purposes) into the high participation group (1 = high participation). The other three participation situations (having your Internet connection physically installed, resolving complaints about your Internet connection, and resolving an electricity failure in your home) constitute the low participation group (0 = low participation). Finally, eight interaction terms (benefit dummies \times service format type dummy) enable us to test for the moderating influence of participation in service production

on consumer benefit desires. To test whether the effect of high participation increases consumers' focus on functionally- and economically-oriented benefits (H₁ and H₃), we analyze whether the moderating influence of the service format type dummy on these benefits is positive; in contrast, we expect a negative moderation for the focus on socially-oriented benefits (H₂).

Communication Channel Consideration Model

To model and test the impact of high versus low participation in in-home service production benefit desires on consumers' communication channel consideration (H₄), we formulate a second random coefficient binary probit model. Respondents channel consideration per service participation level was obtained in APT-response table 3. These results were combined with respondents' perceived benefits per channel as observed in APT-response table 1 and their desired channel benefits as observed in APT-response table 2 to construct our model. The model follows previous models of consideration developed by Andrews and Srinivasan (1995) and Bronnenberg and Vanhonacker (1996), who model the probability of considering an alternative as the probability that the alternative's utility exceeds the subject's threshold of consideration. We model the probability of consideration by a person i of a channel c ($c \in C$) for service format type s ($P(\text{consider}(s,c,i))$) as a function of the benefits the person perceives that communication channel to provide and the benefits the person desires for that service format type. To allow for heterogeneity in consumers' responses to service formats and their evaluations of the perceived benefits, we use a random coefficient intercept specification. We express the probability of consideration as follows:

$$P(\text{consider}(s, c, i)) = P(E_{sci} > L_{sci}), \quad (2)$$

where E_{sci} is consumer i 's latent evaluation of using a specific channel c for service format type s , and L_{sci} is that consumer's latent threshold for consideration, established by a consumer specific intercept. We then express E_{sci} as follows:

$$E_{sci} = \alpha_{sci}^E + \sum_B (\beta_b Z_{cbi} + \beta_{sb} D_{sbi} Z_{cbi}) + \varepsilon_{sci}^E, \text{ and} \quad (3)$$

$$\alpha_{sci}^E = \alpha_c^E + \delta_{sc} + \nu_i^E,$$

where α_{sci}^E is the consumer- and service format type-specific channel intercept, Z_{cbi} is person i 's perception of channel c with respect to benefit b , β_b is the effect of the perceived channel benefit b on channel evaluation, β_{sb} is the moderating effect of consumer i 's desire to have benefit b available in service format type s on the impact of the perceived channel benefit on channel evaluation, and ε_{sci}^E is an error component that captures measurement errors on the part of the researchers. In addition, we express the channel intercept α_{sci}^E as a random coefficient with a channel mean α_c^E , a service format - channel effect δ_{sc} , and an error component ν_i^E . We assume that the error in the random coefficient is independently normal distributed.

The consideration threshold then can be expressed as

$$L_{sci} = \alpha_i^L + \varepsilon_{sci}^L, \quad (4)$$

where α_i^L is the consumer-specific threshold intercept, and ε_{sci}^L is the related error component. To obtain the random coefficient binary probit model, we normalize α_i^L to 0 and assume that the error terms ε_{sci}^E and ε_{sci}^L are independently and identically normal distributed.

More specifically, we include the following variables in the equation: five communication channel dummy variables representing the six channels under consideration (regular mail

functions as the reference category), the service format type dummy variable, the interactions between the channel and service format dummy variables, nine perceived benefit dummy variables, and nine perceived \times desired benefit interaction dummy variables. If the parameter estimates for these interactions are significant, we find support for H₄. To test for the significance of the match between the perceived communication channel benefits and those desired according to the service format type, we also estimate the model without the perceived \times desired benefit variables. A significant match between desired and perceived benefits would result in the model fit of the latter (nested) model being lower. Communication channel consideration serves as the dependent variable in both analyses (0 = not considered, 1 = considered).

5.5. Sample

In total, 383 respondents participate in the empirical phase of our study (step two), all of whom are private, household-based customers of the same energy supply firm. The necessary contact details were obtained from the company. Potential respondents received a letter via mail, signed by the firm as well as the research team and outlining the purpose of the research. This letter accompanied the questionnaire to be filled out. The sociodemographics of the sample are diverse. Approximately two-thirds of the respondents are men (65% versus 35% women). Respondents' ages vary as follows: 5% are younger than 25 years, 46% are between 25 and 50 years, 32% are between 50 and 65 years, and 17% are older than 65 years of age. In terms of education levels, 44% have a bachelor's degree or beyond, 25% have received vocational education, 23% had not continued after their secondary education, and 5% only undertook primary education (approximately 3% answered "other"). Income levels are distributed as follows: 29% earn a yearly-based gross income of less than 20,000 Euro,

36% between 20,000 and 35,000 Euro, 25% between 35,000 and 50,000 Euro, and 10% earn more than 50,000 Euro.

5.6. Hypotheses Testing Results

Benefit Desire Model

We hypothesize that the benefits customers desire from communication channels differ depending on whether high or low customer participation in in-home service production is involved. Compared with low participation, high participation should prompt customers to desire functionally-oriented benefits (H_1) and economically-oriented benefits (H_3). In contrast, they should be less likely to desire socially-oriented benefits (H_2). To test these hypothesized shifts in benefit desires, we estimate the effects of the benefit dummy variables, the participation in service production dummy variable, and their interaction on whether a specific benefit is desired. We present the results in Table 1.

Take in Table 1

Our results provide partial support for H_1 and full support for H_2 and H_3 . Specifically, for H_1 , we find that information availability (i.e., receiving enough and relevant information), a functional benefit necessary to perform service tasks autonomously, is the benefit most desired in high participation in service production formats ($b = 1.15, p < .01$). Furthermore, the likelihood that reliability is desired is significantly higher in high participation contexts ($b = .21, p = .05$). Somewhat surprisingly however, the likelihood that the third functional benefit, 24/7 availability, is desired does not significantly increase compared with customer friendliness in the case of high customer participation in service production formats.

Despite the fact that consumers may be uncertain about their ability to perform well in high participation situations they significantly express a lower need for the socially-oriented benefit of personal contact ($b = -.50, p < .01$), which supports H₂. Next, the results of our analysis also provide support for H₃. As expected, the probability that customers desire economically-oriented benefits increases when shifting from low to high participation in service production. Specifically, the significant interaction terms (with customer friendliness as the reference benefit) of being able to save money ($b = .64, p < .01$) and time ($b = .55, p < .01$) score high in terms of their service format contextual desire. As a consequence, we find support for H₃. In addition, the benefits which have tentatively been classified as response efficiency-oriented benefits based on the qualitative phase of our study are less desired in high participation formats. These benefits are obtaining immediate support from the right source if the service process fails ($b = -.58, p < .01$) and receiving direct follow-up in case of questions ($b = -.36, p < .01$). These results are insightful in that these benefits further underline the lower need for (efficiency-oriented) social interaction benefits in the case of high participation in service production.

Communication Channel Consideration Model

Next, we hypothesized that across participative in-home service production formats customers will consider using a channel to communicate with the service provider about the service if the channel's perceived benefits match those desired for the service production task at hand (H₄). This match between desired and perceived communication channel benefits thus is the central mechanism behind communication channel consideration and is represented by a moderation effect of desired channel benefits on the main effect of perceived channel benefits on communication channel consideration. To test this hypothesis, we estimate two additional models. First, we test how the desired benefit dummy variables moderate the effect of the

nine perceived benefit dummy variables on consumer channel consideration. We present the results of this model in Table 2, which reveals significant moderating effects for five of the nine benefit perceptions on consumer channel consideration.

Second, we test whether these moderating effects indicate an overall significant effect of the match between perceived and desired communication channel benefits on consumer service channel consideration. Thus, we estimate a restricted (nested) channel consideration model that does not include the proposed perceived \times desired benefit effects, which would be accurate if consumers do not take the match between desired and perceived benefits into account when considering different communication channels. On the basis of a log-likelihood ratio test of the proposed and restricted model (i.e., χ^2 test of $-2 \times$ difference in log-likelihood, 9 degrees of freedom), we find strong support for the proposed model with perceived \times desired benefit interactions and thus for H₄. Specifically, the difference between the log-likelihood values of the model with (-5,280.06) and without (-5,473.88) interactions is significant and supports the extended model ($p < .001$). Substantively, we observe increases in the effect sizes for communication channel \times service format type when we exclude the benefit interactions from the model. Thus, perceived \times desired benefit effects effectively take up part of the communication channel \times service format type effects. In essence, this means that the benefit-determined ‘why?’ of communication channel consideration across participative in-home service production situations significantly helps to better explain channel consideration than only taking ‘which channel?’ into account. The significance of this matching principle between benefits desired and benefits perceived provides strong support of H₄ in our study.

Take in Table 2

From the communication channel consideration model testing, it is learned that when customers desire certain benefits because of a specific in-home service production task, the communication channels for obtaining the service must offer these benefits. If not, the likelihood of channel consideration declines significantly. This may seem somewhat obvious as a general finding, but on the level of specific benefits our findings offer interesting insights, mainly since they provide a differentiation between relevant and less relevant communication channel benefits across participative in-home service formats. More specifically, personal contact offers the most influential benefit when it is both desired by customers and provided by the communication channel ($b = .44, p < .01$). Information availability comes next ($b = .28, p < .01$), followed by customer friendliness ($b = .19, p < .01$) and immediate help from the right source ($b = .18, p < .05$). This last finding is interesting, given that perceptions of immediate help alone do not contribute significantly to communication channel consideration. Finally, 24/7 availability significantly influences communication channel consideration when desire and perception meet ($b = .11, p < .05$).

5.7. Additional Findings

Our analyses provide some additional interesting findings as well, since this type of analysis of the data yields an intricate insight into customer preferences. First, as we reveal in Table 2, regardless of high or low participation in service production, customers are not equally likely to consider the six communication channels we investigate, which implies a general preference for certain channels across service format types at least in our research setting. Specifically, relative to the traditional mail channel, the telephone offers the highest chance of being considered ($b = 2.70, p < .01$), and e-mail earns the second highest chance of being considered as a communication channel ($b = .55, p < .01$). The information desk ($b = .37, p < .01$) and traditional mail follow these channels, whereas virtual agents and the website are

considered significantly less often than traditional mail ($b = -.43, p < .01$ and $b = -.45, p < .01$, respectively).

Second, four of the five channel \times service format type interactions are significant in our investigation (mail as the baseline channel). In the case of high customer participation, the additional effect on communication channel consideration is greatest for the website ($b = .56, p < .01$), indicating a strong preference for the Internet as a communication channel when customers have to perform service tasks for themselves. In contrast, we find significant negative effects for the virtual agent ($b = -.30, p < .05$), the information desk ($b = -.42, p < .01$), and the telephone ($b = -1.85, p < .01$). That is, in high participation in service production situations, customers are less likely to consider using these channels to communicate about in-home service delivery.

Third, potential heterogeneity among customers has been assessed by conducting latent class model estimation for the desired benefits and including customers' channel use history into the channel consideration analysis². With respect to the benefits desired, estimating a latent class probit model using socio-demographic customer characteristics such as gender, age, education level, and income as potential predictors of class membership suggests three classes to exist for which membership is based mainly on age and education ($N = 383$; McFadden $R^2: .12$). Specifically, older and lower educated customers are more likely to belong to a class for which participative in-home service more strongly triggers the desire for saving money. In contrast, the desired benefit pattern of the other classes strongly resembles the general pattern previously discussed and reconfirms the main importance of information availability. Furthermore, older and lower educated customers seem somewhat less pronounced in their benefit desires when participating in in-home service production; they express a specific desire for three benefits (i.e. saving money, information availability, and

² Customers' past communication channel usage was also assessed in the questionnaire. In the interest of expositional clarity and conciseness, the authors chose to present these results as additional analyses and findings.

saving time), whereas the remaining classes as well as the overall model suggest one additional benefit to be important as well (24/7 availability for class 2 and information reliability for class 3 as well as the overall model). Although the differences are marginal, older and lower educated customers thus seem to find the possibility to save money particularly relevant when co-producing an in-home service.

Finally, estimating an additional random effects binary probit model (N = 383; McFadden R^2 : .30) suggests that customers' past communication channel usage also plays a role in determining future channel consideration (with regular mail as reference category). More specifically, (1) a specific channel is more likely to be considered when that channel has already been used in the past (suggesting a channel lock-in effect (Joo and Park, 2008)), (2) the information desk, e-mail, and regular mail are less likely to be followed up by telephone contact, (3) the info desk is less likely to be considered when the website has been used (these channels are possibly perceived as being too different in terms of channel properties), (4) the info desk is less likely to be followed up by e-mail (again, too different), but e-mail is more likely to be considered as a follow-up to the website (perceptually more equal), (5) the website is less likely to be considered when the info desk or regular mail has been used in the past, but more likely when the virtual agent has been used, and (6) regular mail is less likely to be followed up by a virtual agent communication functionality. In general, this indicates a lower preference for technology-based communication among more 'traditional' communicators, and vice versa.

6. CONCLUSION

6.1. Discussion

In this paper, we focus on an emerging, but not often investigated phenomenon in services; the increase in customer participation in the production of in-home services. Macro-

developments such as an ageing population and the growing availability of broadband internet access cause more and more firms to offer services to support customers in their in-home activities (Flipo *et al.*, 2007; Onder *et al.*, 2007; Rust and Kannan, 2003). Specifically, we set out to answer the basic but both theoretically and managerially relevant question in multichannel servicing (see Neslin *et al.*, 2006) of how service benefit desires and communication channels can best be matched in the context of customer participation in in-home service provision. The insights provided by our study can be considered a useful addition to the existing literature on services management dealing with self-servicing (e.g., Bendapudi and Leone, 2003), self-service technology (e.g., Curran *et al.*, 2003; Dabholkar, 1994, 1996, 2000; Dabholkar and Bagozzi, 2002), and the increasing use of multiple service channels to cater specific customers' wants and needs (e.g., Meuter *et al.*, 2005; Patricio *et al.*, 2003, 2008).

Based on expected value and cost-benefit considerations (cf. Bell *et al.*, 1998; Creyer *et al.*, 1990; Homans, 1961; Messinger and Narasimhan, 1997; Roberts and Nedungadi, 1995; Smith *et al.*, 1982; Tversky and Kahneman, 1986), we were able to formulate and test specific hypotheses about differences in communication channel benefit desires in high versus low customer participation service format types. The differentiation between these service format types was based on the level of active participation of customers in service production activities leading to the desired service outcome (Etgar, 2008). Indeed, the benefits customers desire from communication channels were found to differ according to whether they adopt high or low participation in in-home service production. First, in line with existing literature on technology-based self-servicing and channel selection behavior (e.g., Childers *et al.*, 2001; Dabholkar and Bagozzi, 2002; Hoque and Lohse, 1999; Keen *et al.*, 2004; Kleijnen *et al.*, 2007; Montoya-Weiss *et al.*, 2003; Nicholson *et al.*, 2002; Ratchford *et al.*, 2001; Verhoef and Langerak, 2001), high participation in in-home service production clearly creates a desire

for more functionally-oriented benefits when communicating with a service firm to initiate or support service delivery. For instance, providing sufficient and relevant information to customers seems important, as this will enable customers to perform the respective service task more autonomously. The provision of reliable information when communicating with customers is also crucial in self-service contexts, whereas interestingly 24/7 availability appears to play a less important role then. The by service organizations often pronounced customer desire adagio for 24/7 availability thus seems to be of lesser prominence from the customer's perspective.

We further hypothesized that high customer participation in-home service production is less likely to activate being-served-like, socially-oriented communication channel benefit desires among consumers as much as in-home service production with lower customer participation does (cf. Burke, 2002; Cowles, 1989; Dabholkar, 1996; Dabholkar and Bagozzi, 2002; Forsythe and Shi, 2003; Maruping and Agarwal, 2004; Meuter *et al.*, 2005; Montoya-Weiss *et al.*, 2003; Parasuraman, 2000; Parasuraman *et al.*, 1991; Wang *et al.*, 2007). The results support this claim, because the benefit investigated in this domain—namely personal contact—is less relevant for high participation in service production tasks. Personalized attention and care during communication thus seems not be what customers are looking for when a service task is awaiting them. The same holds for what we now refer to as response efficiency-oriented benefits such as getting immediate help from the right source and direct follow-up in case of questions or problems. Originally, we thought of such benefits as being socially-oriented. However, during the qualitative phase of our investigation these were grouped together into what was labeled response efficiency-oriented benefits, which seem to pertain more to corrective actions, for instance when things are not clear. It may be that when having to do things themselves customers first and foremost expect procedures to be straightforward and easy and that things do not go wrong. From the customer's perspective,

communication with the firm should reflect this and stress features mainly targeted at service production efficiency and effectiveness and less at problem-solving. When things do not work out as expected, service activities would become targeted more at service recovery and thus, in a move from customer to firm production (Meuter and Bitner, 1998), perceptions of interactional justice are likely to become more important (Smith *et al.*, 1999). As a consequence, the desire for personal contact, immediate assistance, and direct follow-up would be enhanced.

Furthermore, customers also might expect to be economically compensated for their efforts in high participation situations; in line with the notion that perceptions of monetary-, time-, and effort-related costs operate in channel choice behavior (e.g., Baker *et al.*, 2002; Bhatnagar and Ratchford, 2004; Burke, 2002; Keen *et al.*, 2004; Kleijnen *et al.*, 2007; Montoya-Weiss *et al.*, 2003), we find that the ability to save money and time indeed represent important communication channel benefits when the service production task moves from the service provider to the customer. Thus, when servicing themselves in-home, customers apparently value direct gains and from heterogeneity analysis it turns out that this benefit desire is particularly pronounced for the older and lower educated customers.

In addition, following a situation-contingent cognitive fit perspective (Goodhue and Thompson, 1995; Hong *et al.*, 2004; Vessey, 1991), our study provides valuable insight into the mechanism behind communication channel consideration by customers. More specifically, we hypothesized that customers will consider a specific channel for use when the channel's perceived benefits match those desired for the specific in-home service production task at hand. Indeed, the fit between what customers expect from a communication channel, given the service task they confront, and what a specific channel has to offer turns out to be a crucial mechanism that may determine the success of a multichannel service marketing strategy. In addition, communication channels which have already been used in the past are

also more likely to be considered for future use. Specifically, evidence is found for communication channel preference being dependent on customers' level of technology-orientation; 'traditional' communicators (i.e. preferring channels such as info desks or regular mail) show a lower preference for technology-based communication modes (i.e. websites, e-mail, or virtual agents), and vice versa.

More generally, our findings reveal that telephone and e-mail have the highest probability of being considered as communication channel, regardless of the participative in-home service production context. In contrast, customers consider virtual agents and websites to a lesser extent. Therefore, across service format types, it seems that customers value interpersonal contact and feedback from organizations, such as the ability to speak to someone without having to leave home or work or receive an instant reply to an e-mail. Customers are most likely to consider the website for high participation in service production but least likely to consider information desks and telephone contacts. Apparently, when they must perform a specific service task autonomously, customers perceive the Internet as appropriate as an informational source and do not necessarily desire interpersonal contact. Nevertheless, firms should be careful before they assume that the advent of modern technology has made personal contact less important as a service benefit. On the contrary, of all benefits investigated, we find that personal contact offers the most influential benefit for determining communication channel consideration when customers actually desire or value that benefit during a specific service format.

6.2. Managerial Implications

Our study has several managerial implications. First, our findings support Van Birgelen *et al.*'s notion (2006) that a careful orchestration of multiple (service) channels across the various services that a company delivers is crucial. As also suggested by Ansari *et al.* (2008),

managers should be aware that not all communication channels are equally effective when providing in-home services to their customers, especially when different levels of customer participation in producing the desired service are involved. Thorough knowledge of which benefits customers want and what a specific communication channel can deliver is necessary, something which requires constant dialogue with customers and up-to-date information about multichannel and technological possibilities. The Service Experience Blueprint (SEB) method recently introduced by Patricio *et al.* (2008) provides insights for better designing and managing multi-interface service experiences and may be very useful in this respect.

Second, our results may help managers to optimize their communication channel mix usage if they are able to combine customer preference data with channel cost and effectiveness data. More specifically, across situations with different levels of customer participation in producing the in-home service and driven by situation-specific benefit desires and perceptions, as well as firm profits, managers can make more informed trade-offs between which communication channels to use according to how their decisions on channel configuration may affect important outcomes such as customer satisfaction and loyalty.

Third, the type of benefit desire data that our study provides can be used as input for managers who are looking to develop new communication channel usage and service ideas. For example, knowing that a specific communication channel benefit is important for low customer participation services, managers may start to look for more innovative ways to offer this benefit to customers either in their existing or a new communication channel mix. Recent communication channel developments such as blogs, twitter, or social networking sites may be interesting to explore in this respect.

Fourth, customer heterogeneity in terms of desired communication channel benefits and communication channel consideration implies that a segmentation strategy may be useful to pursue. In particular, being able to save money by using a certain channel is particularly

relevant to stress to older and lower educated customers. Furthermore, due to seemingly stable communication channel preferences across time, attempting to make to make customers switch from more traditional ways of communicating with the organization to channels such as e-mail, websites, or virtual agents may require specific tactics such as making technology-based communication channels more attractive, accessible, fun, and easy-to-use.

Finally, our research enables managers to choose a more appropriate communication channel or channel configuration when they know that they have limited capacity or capability in the type of in-home service they want to provide. For instance, some organizations may want to operate in more traditional ways, with little room for customer participation in service production. In contrast, other organizations may choose to stimulate customers to get more actively involved in service production. The results will help managers to determine which communication channels and channel-related features should be used best and why so.

6.3. Limitations and Directions for Future Research

Our study has several limitations which provide ample directions for further research. First, service contextual contingencies other than level of customer participation in service production are not taken into account but may be at work in determining communication channel consideration. For example, our research focuses on private household-based service situations and it can be argued that for this group of customers the service situations investigated (e.g., installing and setting up Internet) are likely to score lower on situational involvement than for instance would be the case for companies. Although an Internet connection temporarily being down or a short electricity failure may be inconvenient to a private customer, for a company such failures certainly will have more dramatic consequences and thus result in higher anxiety levels. Future research may replicate our conceptual

framework using similar channels but in service settings that provoke greater involvement also for private customers, for instance because prices to be paid for the service are higher or the service is perceived as more important (think of services such as investment banking, filing for a mortgage, or taking out life insurance). Shifts in commitment may influence which communication channels customers are likely to consider and the specific benefit-related reasons for doing so. In addition, our study pertains to participative service situations for already existing customers and thus the post-purchase stage. However, the drivers of communication channel preference may be different across pre-purchase, purchase, and post-purchase situations (Frambach *et al.*, 2007; Verhoef *et al.*, 2007). Future research could explicitly focus on how benefit desires and communication channel consideration in the context of in-home service provision may be different across stages in the purchasing process.

Second, the benefits considered in our research were classified into four fixed categories. Although this was done based on a small-scale qualitative follow-up study, future research could more extensively investigate potential heterogeneity in the way in which different persons classify different benefits. For example, if consumers differ in terms of their cognitive classification of benefits (e.g., functionally versus economically-oriented), noise may occur in our estimates. A more individually-modeled classification of consumer benefit desires could help overcome this restriction in our data.

Third, the core of this investigation is in the domain of benefit desires for in home services and how they are affected by customer participation. Nevertheless, benefit perceptions of one channel may influence channel considerations for another channel, and this influence may differ across participative in-home service delivery situations. The analysis of channel cross effects represents a promising area for future research.

Fourth, our sample of respondents seems to be slightly biased towards male (65%), lower educated persons (about 30%) with lower income (about 65%). Although response analysis

shows that our sample does not differ significantly from the customer database on these parameters, the idiosyncratic nature of the customer base may partly explain why a more traditional communication channel such as the telephone has a high probability of consideration. Future research should attempt to validate or nuance our findings using a more balanced sample.

Fifth, channel-specific considerations were not investigated in this study as determinants of communication channel consideration. For instance, although the qualitative focus group interviews with customers and the discussions with marketing managers did not indicate so, we cannot quantitatively estimate the probability that telephone and e-mail have the greatest likelihood of being considered as communication channel due to perceptions of low website quality or a poorly designed virtual agent functionality. Future research may include perceptions of communication channel quality as control variable. Furthermore, although implicitly acknowledged when developing our hypotheses, in the quantitative study we focus on desired channel benefits, not on the costs involved when using a certain channel. Channel consideration effects of the desire to receive certain benefits and to avoid specific costs may be jointly investigated in future research. Conjoint analysis combining various levels on potentially relevant attributes may be a useful technique to do so.

Finally, customer-based characteristics were not investigated as determinants of communication channel consideration. Nevertheless, our study raises segmentation issues. For example, traits such as self-efficacy, need for interaction, technology readiness and anxiety, as well as demographics are likely to play a role as well (e.g., Dabholkar and Bagozzi, 2002; Meuter *et al.*, 2003; Parasuraman, 2000). Furthermore, consumers may be more or less sensitive to economically-oriented benefits such as saving time or money, which could also generate noise when we estimate the potential shifts in the impact of this benefit on communication channel considerations across different in-home service settings. Future

research should further develop the understanding of how benefits desired and perceived may differ between groups of customers beyond the effect of high versus low participation in in-home service production and why so.

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FIGURE 1: CONCEPTUAL FRAMEWORK

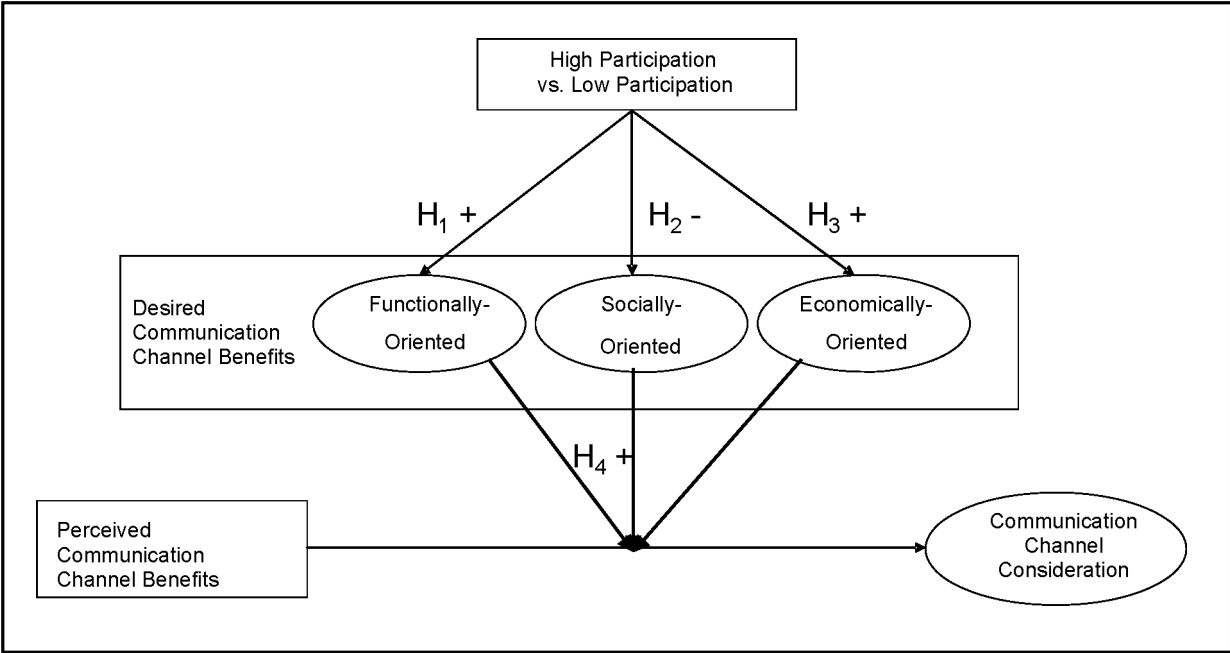


FIGURE 2: OVERVIEW OF APT-RESPONSE TABLES

APT-Table 1 (Communication Channel x *Perceived Benefit*)

<i>Benefit/ Channel</i>	Benefit 1	Benefit 9
Channel 1	Yes/No	Yes/No	Yes/No	Yes/No
.....	Yes/No	Yes/No	Yes/No	Yes/No
.....	Yes/No	Yes/No	Yes/No	Yes/No
Channel 6	Yes/No	Yes/No	Yes/No	Yes/No

APT-Table 2 (Service Situation x *Desired Benefit*)

<i>Benefit/ Service Situation</i>	Benefit 1	Benefit 9
Situation 1	Yes/No	Yes/No	Yes/No	Yes/No
.....	Yes/No	Yes/No	Yes/No	Yes/No
.....	Yes/No	Yes/No	Yes/No	Yes/No
Situation 6	Yes/No	Yes/No	Yes/No	Yes/No

APT-Table 3 (Service Situation x *Considered Communication Channel*)

<i>Channel/ Service Situation</i>	Channel 1	Channel 6
Situation 1	Yes/No	Yes/No	Yes/No	Yes/No
.....	Yes/No	Yes/No	Yes/No	Yes/No
.....	Yes/No	Yes/No	Yes/No	Yes/No
Situation 6	Yes/No	Yes/No	Yes/No	Yes/No

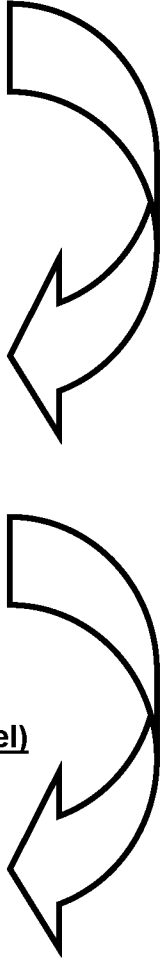


TABLE 1: COMMUNICATION CHANNEL BENEFITS DESIRED^a

<i>Service format and benefit type effects</i>	<i>Par.</i>	<i>Significance</i>
Service format type	-17	$p < .05$
<i>Benefit type</i>		
<i>Functionally-oriented^b</i>		
Information availability	-1.55	$p < .01$
Information reliability	-.44	$p < .01$
24/7 availability	-1.04	$p < .01$
<i>Socially-oriented^b</i>		
Personal contact	-.07	n.s.
<i>Economically-oriented^b</i>		
Saving time	-1.08	$p < .01$
Saving money	-1.57	$p < .01$
<i>Other/Response efficiency-oriented^b</i>		
Immediate help from right source	.70	$p < .01$
Direct follow-up	-.46	$p < .01$
<i>Service format-benefit interactions</i>		
<i>Functionally-oriented^c (H₁)</i>		
Information availability x service format	1.15	$p < .01$
Information reliability x service format	.21	$p < .05$
24/7 availability x service format	.11	n.s.
<i>Socially-oriented^c (H₂)</i>		
Personal contact x service format	-.50	$p < .01$
<i>Economically-oriented^c (H₃)</i>		
Saving time x service format	.55	$p < .01$
Saving money x service format	.64	$p < .01$
<i>Other/Response efficiency-oriented^c</i>		
Immediate help from right source x service format	-.58	$p < .01$
Direct follow-up x service format	-.36	$p < .01$

^a Binary random effects probit model on benefit desired (yes/no); N = 383; McFadden R²: .09.

^b Reference category: Socially-oriented benefit “customer friendliness”.

^c Reference category: Interaction “customer friendliness” x service format.

TABLE 2: COMMUNICATION CHANNEL CONSIDERATION^a

<i>Service format, communication channel, and benefit type effects</i>	<i>Par.</i>	<i>Significance</i>
Service format type	.58	$p < .01$
<i>Communication channel^b</i>		
Telephone	2.70	$p < .01$
Information desk	.37	$p < .01$
E-mail	.55	$p < .01$
Website	-.45	$p < .01$
Virtual agent	-.43	$p < .01$
<i>Channel-service format interactions^c</i>		
Telephone x service format	-1.85	$p < .01$
Information desk x service format	-.42	$p < .01$
E-mail x service format	-.15	n.s.
Website x service format	.56	$p < .01$
Virtual agent x service format	-.30	$p < .05$
<i>Perceived channel benefits^d</i>		
<i>Functionally-oriented</i>		
Information availability	.91	$p < .01$
Information reliability	-.01	n.s.
24/7 availability	.30	$p < .01$
<i>Socially-oriented</i>		
Personal contact	-.11	$p < .05$
Customer friendliness	.07	n.s.
<i>Economically-oriented</i>		
Saving time	.26	$p < .01$
Saving money	.22	$p < .01$
<i>Other/Response efficiency-oriented</i>		
Immediate help from right source	.08	n.s.
Direct follow-up	-.02	n.s.
<i>Desired-perceived benefit interactions (H₄)</i>		
<i>Functionally-oriented</i>		
Information availability (des. x perc.)	.28	$p < .01$
Information reliability (des. x perc.)	.02	n.s.
24/7 availability (des. x perc.)	.11	$p < .05$
<i>Socially-oriented</i>		
Personal contact (des. x perc.)	.44	$p < .01$
Customer friendliness (des. x perc.)	.19	$p < .01$
<i>Economically-oriented</i>		
Saving time (des. x perc.)	.01	n.s.
Saving money (des. x perc.)	.07	n.s.
<i>Other/Response efficiency-oriented</i>		
Immediate help from right source (des. x perc.)	.18	$p < .01$
Direct follow-up (des. x perc.)	.10	n.s.

^a Binary random effects probit model on channel considered (yes/no); N = 383; McFadden R²: .27.

^b Reference category: Mail.

^c Reference category: Interaction mail x service format.

^d Since all perceived benefits may co-occur, no reference category is needed.

APPENDIX: OVERVIEW OF SELECTED PREVIOUS RESEARCH

Author(s)	Focus	Premise	Conceptual/empirical	Main finding(s)
Ansari <i>et al.</i> (2008)	Customer channel migration	Channel migration is determined by a set of key phenomena	Empirical	Online purchasing associates with lower future purchases, marketing efforts influence channel usage and purchasing, and ways of communication interact to determine multichannel customer behavior
Bass and Noelker (1987)	The influence of family caregivers on elder's use of in-home services	Characteristics of family caregivers influence the elder's use of in-home nursing and aide services	Empirical	Caregiver need characteristics account for significant variation in in-home services use. Family enabling factors predict the amount of services used.
Bendapudi and Leone (2003)	Psychological implications of customer participation in co-production	Customer participation in goods and services production triggers psychological responses which influence customer satisfaction	Empirical	Given an identical outcome, satisfaction differs when customers participate in production or not. Providing customers a choice to participate mitigates the self-serving bias if the outcome is below expectations.
Bitner <i>et al.</i> (1997)	The roles of customers in creating quality and productivity in service experiences	Customers play a vital role in creating service outcomes, satisfaction, and value	Conceptual/empirical	Customer participation in service delivery raises highly relevant and complex questions for both management practice and research
Curran <i>et al.</i> (2003)	How multiple attitudes determine intentions to use self-service technologies (SSTs)	A hierarchy of consumer attitudes toward the interpersonal and technological aspects is at work in the formation of intentions to use SSTs	Empirical	Besides the direct effects of attitudes toward specific SSTs and individual employees, higher order global attitudes toward service technologies influence intentions to use SSTs
Dabholkar (1996)	Consumer evaluations of technology-based self-service options	Technology-based self-service quality evaluations can be explained using an attribute-based model and an overall affect model	Empirical	The attribute-based model in forming evaluations of service quality for technology-based self-service options seems to be favored by consumers
Dabholkar and Bagozzi (2002)	Investigating the acceptance of technology-based self-service	Consumer traits and situational factors play a moderating role in an attitudinal model of technology-based self-service	Empirical	Perceived waiting time, social anxiety, novelty seeking, technological self-efficacy, self-consciousness, and need for interpersonal interaction were found to moderate within the core attitudinal model
Frambach <i>et al.</i> (2007)	How internet experience influences multichannel preferences across the buying process	Consumer preference and usage intentions for online vs. offline channels across different buying process stages is determined by internet experience	Empirical	Offline channel is generally preferred over the online channel and Internet experience moderates channel usage intention in a specific stage. Differences between desired channel benefits and capabilities offered determine channel preference.
Gwinner <i>et al.</i> (1998)	Relational benefits in services	For a long-term relationship, both the service firm and the customer must perceive relational benefit to exist	Empirical	Consumer relational benefits in services can be categorized into three distinct benefit types: confidence, social, and special treatment benefits
Joung <i>et al.</i> (2011)	Evaluating recipients' perception of service quality, satisfaction, and behavioral intention in home delivered meals program	Food quality, volunteer issues, and responsiveness determine satisfaction and behavioral intention in in home food programs	Empirical	Food quality and responsiveness significantly predict positive satisfaction. Satisfied recipients have positive behavioral intention toward in home delivered meals program
Konus <i>et al.</i> (2008)	Multichannel shopper segments and their covariates	Shopping is a dynamic process consisting of search and purchase phases, where consumer characteristics drive perceived utility toward channel use	Empirical	Three shopper segments are identified – multichannel enthusiasts, uninvolved shoppers, and store-focused consumers. Shopping enjoyment, loyalty, and innovativeness predict segment membership
Meuter <i>et al.</i> (2005)	Investigating customer trial of self-service technologies (SSTs)	Consumer readiness mediates the effect of innovation characteristics and individual differences on trial of SST	Empirical	Role clarity, motivation, and ability are key mediators between established adoption constructs and SST trial likelihood
Mills and Morris (1986)	Clients as "partial" employees of service organizations	Clients of service organizations have important roles to perform in the service creation process	Conceptual	A model of client involvement stages is proposed, role definition and client control are discussed, and attention to emerging issues is encouraged

APPENDIX: OVERVIEW OF SELECTED PREVIOUS RESEARCH (CONT.)

Author(s)	Focus	Premise	Conceptual/empirical	Main finding(s)
Neslin <i>et al.</i> (2006)	Identifying challenges and opportunities in multichannel customer management	Although multichannel customer management has experienced significant research growth, challenges and opportunities still exist	Conceptual	Issues pertaining to five major challenges in multichannel management are identified to be further addressed by practitioners and researchers
Patricio <i>et al.</i> (2003)	Measuring the contribution of service delivery channels	In a multi-channel setting, it is important to understand customer evaluations of e-service as integrated into the overall service offering	Empirical	Performance evaluation is a key determinant of channel of use. Customers use service delivery systems in a complementary way while assessing advantages and disadvantages. Customer characteristics and situational differences play an important role as well.
Patricio <i>et al.</i> (2008)	Designing multi-interface service experiences	The Service Experience Blueprint (SEB) is a multidisciplinary method for designing technology-enabled multi-interface service experiences	Empirical	The SEB method addresses challenges in the service environment created by the infusion of technology and emerging new service paradigms
Van Birgelen <i>et al.</i> (2002)	How national culture plays a role in determining customer evaluations of after-sales service contact modes	National culture moderates the perceived quality-satisfaction relationship particularly for technology-based after-sales service contact modes	Empirical	Hofstede's cultural dimensions differentially moderate the perceived after-sales service quality-overall customer satisfaction relationship for technology-based after-sales services
Van Birgelen <i>et al.</i> (2006)	Investigating the effects of multi-channel performance satisfaction on behavioral intentions	The understanding of the relationship between customer satisfaction with multi-channel servicing and behavioral intentions should be refined by taking levels of aggregation and differences in customer characteristics and service types into account	Empirical	Satisfaction with office- and service employee-related performance differentially influences behavioral intentions depending on the routine vs. nonroutine nature of the service. Interaction effects between traditional and technology-mediated channel performance satisfaction levels are found, varying across service types.
Van Raaij and Pruyn (1998)	The role of customer control for evaluating service validity and reliability	Customers' and service providers' control of service specification and realization can be conceptually related to customers' causal attributions of the service outcome	Conceptual	Managerial implications to improve service performance are given. Propositions to serve future research are forwarded.
Verhoef <i>et al.</i> (2007)	Understanding the research-shopper phenomenon	Research shopping (using one channel for search, another for purchase) is caused by attribute-based decision-making, lack of channel lock-in, and cross-channel synergy	Empirical	The three identified mechanisms make the Internet search → store purchase pattern the most popular manifestation of research shopping
Wendel and Dellaert (2005)	Situational variation in consumers' media channel consideration	Consumers' media channel consideration is a function of perceived channel benefits. Usage situation influences media channel consideration and situation-based benefit requirements moderate benefit effects on channel consideration	Empirical	Media channel consideration is determined by channel benefits and usage situation. Situation determines media channel benefit requirements, which in turn moderate the media channel benefit-consideration relationship.
<i>This paper</i>	How customer participation determines communication channel consideration for in-home services	Depending on the level of customer participation in in-home service provision, customers require different communication channel benefits. The match between required and perceived communication channel benefits determines channel consideration.	Empirical	Customers focus more on functionally- and economically-oriented communication channel benefits in high customer participation in-home service formats. Socially-oriented communication channel benefits seem more appropriate for low customer participation. The match between benefits desired by the customer and benefits provided by a communication channel is the central mechanism behind communication channel consideration for in-home services.