# The identification of innovative customer groups for collaborative design activities

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## Abstract

This paper integrates relevant concepts from the literature to identify innovative customer groups for collaborative service design activities. It is proposed that the central concepts characterizing an innovative customer are innovation-related benefit, ahead of trend, use experience, and knowledge of the field. Measures are provided that underpin the integrated concepts and thus allow for the future testing and refinement of the proposed framework towards a more standardized customer screening approach. The need for open innovation platforms is identified to enhance customer participation beyond customer engagement behaviour. The paper contributes to the growing knowledge of the requirement to systematically select and involve specific customer groups in service design.

KEYWORDS: service design, user innovation, lead user theory

## Introduction

Innovation and design theories and practices are constantly moving towards a more open process that allows firm-external stakeholders to contribute actively. This refers specifically to customers because it is increasingly recognized that they should be defined as informed, networked and empowered value (co-)creators rather than as passive recipients of value. Thus, recent concepts including 'co-design' (Sanders & Stappers, 2008), 'open-innovation' (Chesbrough, 2003), 'co-creation' (Prahalad & Ramaswamy, 2004), 'user innovation' (Lüthje, 2004), and 'democratized innovation' (von Hippel, 2005) share a common theme namely that of using customers more actively in innovation and design activities.

However, despite the increasing recognition of the value of active customer involvement, there remains a lack of understanding of what kinds of customers should be selected and systematically involved in service design activities. Specifically, research findings suggest that depending on the design task to be addressed, firms should clearly identify defined user groups rather than to randomly select customers as potential co-designers or co-innovators (von Hippel, 1988; Lüthje, 2004; Matthing *et al.*, 2006; Lettl, 2007; Magnusson, 2009; Schuhmacher & Kuester, 2012). Most studies have applied the lead user concept developed by von Hippel (1977; 1986) to identify innovative users (e.g. Lilien *et al.*, 2002; Franke *et al.*, 2006; Lettl *et al.*, 2006; Matthing *et al.*, 2006; Lettl, 2007; Oliveira & von Hippel, 2011). However, research findings suggest that the lead user concept does not apply in all contexts and is not exhaustive in defining the characteristics and measures of innovative users (Lüthje, 2004; Kristensson & Magnusson, 2010; Skiba, 2010; Schuhmacher & Kuester, 2012). Hence,

by integrating relevant concepts across disciplines we identify innovative customer groups for collaborative service design activities. This can assist firms to identify and subsequently to involve specific customer groups in service design projects.

The remainder of this paper is structured as follows. First, by drawing upon the user innovation, customer involvement, and relationship marketing literatures, relevant concepts are identified and discussed. This section additionally includes potential questionnaire items that can be used to measure the integrated concepts. Then, tools necessary for enhancing customer participation that will go beyond customer engagement behaviour are discussed. The paper concludes by highlighting limitations and providing directions for testing and refining the proposed concepts towards the development of a more generalized framework.

## The importance of customer involvement in service design

Although earlier service design processes were based on particular perspectives, later developments have usually drawn on a service and marketing perspective as defined by service-dominant logic and the Nordic School of Services (e.g. Ostrom *et al.*, 2010; Stickdorn & Schneider, 2010; Meroni & Sangiorgi, 2011; Patricio *et al.*, 2011). A central assumption of these researchers is that the production and consumption of a service occurs in an open system in which the customer takes an active standpoint rather than in a closed production process where the customer perceives goods or services as outcomes (Gummesson, 2006; Maglio & Spohrer, 2008). Grönroos (2006; 2011; 2011) goes further by claiming that it is the customer who decides if value is created or not and that the firm can either take a supportive role as a value facilitator or an interactive role as a value co-creator. This means that the central aspect of value creation lies within the customer's sphere (Prahalad & Ramaswamy, 2004; Prahalad & Ramaswamy, 2004; Lusch *et al.*, 2008; Payne *et al.*, 2008), and customer information consequently should be a central aspect in the design of new services.

Noting the central position of the customer within the service system, service design and innovation are increasingly discussed as collaborative activities with customers rather than as firm-internal research and closed development processes that produce offers for customers (MacGregor, 2008; Ostrom *et al.*, 2010; Zomerdijk & Voss, 2010; Bogers & West, 2012). In this context, Ostrom et al. (2010, p.17), have defined service design as *"… a collaborative, cross-disciplinary activity"* and the required approach to it as *"… the orchestration of clues, places, processes, and interactions that together create holistic service experiences for customers, clients, employees, business partners, or citizens"*.

The focus on the orchestration of clues, places, processes, and interactions highlights that although customers are actively integrated within the service system, it is only a personal pathway or a so-called 'customer journey' through the service system rather than the whole system itself that is experienced by them. Still, service design requires that a user-centred design view be taken because customers can be active players in the value-creation process and can thus influence where, when and how value is generated (Wikström, 2008; Helkkula & Kelleher, 2010). The challenge for service design therefore is 1) to identify interactions through which customers can participate in value co-creation in different forms and different intensities (Morelli, 2009), and 2) to arrange the multiple interactions towards a holistic service experience without there being a separation from the overall service system (Gummesson, 2002; Gummesson, 2008).

Furthermore, taking a user-centred design view means that service design needs to begin with an understanding of the customer's value-creating processes (Payne et al., 2008). Yet, new innovations have often been suggested to fail due to so-called 'sticky knowledge', which refers to the argument that the information as to what the customer wants resides with the customer while the information that leads to a solution as to how to satisfy those needs lies with the firm (Thomke & von Hippel, 2002). It is for this reason that active customer involvement in the form of 'co-designers' or 'co-creators' is increasingly discussed as a critical factor for the effective design of services (Prahalad & Ramaswamy, 2004; Ramaswamy, 2008; Sanders & Stappers, 2008; Ojasalo, 2009; Steen *et al.*, 2011; Szebeko, 2011).

## Concepts that underpin innovative customer groups

Despite the recognition that customer involvement can be an effective approach in service design projects, little guidance is given as to the specific groups of customers that should be targeted for such projects. Specifically, the question that arises is who is to be involved in design processes, since firms usually have access to a large and diversified customer base. This is an important question because research findings indicate that only certain users are able to develop and/or are willing to share new service or product ideas (Lüthje, 2004; Lettl, 2007; Witell et al., 2011). Addressing this gap in knowledge, we identify and integrate relevant concepts from the literature that can be used to systematically identifying and subsequently involving selected customer groups for service design purposes. In the following, we discuss the integrated concepts in detail and provide measures that underpin these concepts.

## Lead user characteristics

The arguably most popular approach for identifying specific customer groups for innovation purposes is the lead user concept. Lead users are *"… users whose present strong needs will become general in a market-place months or years in the future"* (von Hippel, 1986, p. 791). Two central characteristics distinguish lead users from other customer groups, namely being ahead of trends and expecting high benefits from innovation (Schreier & Prügl, 2008). These characteristics typically refer to a small group of users, who have a strong ability and a need to identify novel product attributes and should thus be identified, supported, and integrated into innovation practices (von Hippel, 1986; von Hippel, 1988; von Hippel, 2001).

A number of studies tested lead user theory quantitatively and provided strong empirical support for the commercial attractiveness of innovations developed by lead users (Franke *et al.*, 2006; Schreier & Prügl, 2008; Schuhmacher & Kuester, 2012). Specifically, the high innovation-related benefit characteristic was found to be positively associated with innovation likelihood, while being ahead of trends was found to be positively associated with innovation attractiveness (Morrison *et al.*, 2000; Franke & Shah, 2003; Lüthje, 2004; Franke *et al.*, 2006; Schreier & Prügl, 2008). These findings hold true across different settings and markets, including diverse consumer goods (Lüthje, 2004; Franke *et al.*, 2006; Nishikawa *et al.*, 2013), information systems (Morrison *et al.*, 2000), software industry (Urban & Von Hippel, 1988), and technology services (Matthing *et al.*, 2006). Thus, particularly within unmanageably large user populations, the systematic identification and integration of lead users can be an effective approach, because this type of users typically have a strong ability to contribute to innovations that are commercially attractive as well as are driven by strong

intrinsic motivation in the form of a high expected benefits from their investment in an innovation activity.

However, no clear measurements that underpin lead user characteristics have been provided. For example, while Gruner and Homburg (2000) used a two-item measure for determining lead user characteristics, namely "customers' benefits provided by the new product" and "customers' recency of need for the new product", Lüthje (2004) used a two-item measure for 'innovation related core benefit' and a four-item measure for 'commitment to product field'. With the purpose of developing a more robust measurement, this paper distinguishes between users' expectations of innovation-related benefits and the users being ahead of trends.

Firstly, innovation-related benefits is measured by modifying the items that were used and validated by Franke *et al.* (2006). As a result, the following five-item measure is proposed as a measure of lead users' innovation-related benefits:

**Table 1: Innovation-related benefits***

| Construct items: | Direction of items |
|---|---|
| User is dissatisfied with the existing services or aspects of existing services. | Reflective |
| User has needs which are not covered by the existing services. | Reflective |
| User has approached the firm with ideas for improving existing services. | Reflective |
| User is dependent on the use of the services. | Reflective |
| User would benefit significantly from any improved or new service. | Reflective |

*All items are measured with a five-point Likert item scales with "strongly disagree" (1) and "strongly agree" (5) as anchors.

Secondly, to identify users that are ahead of trends, a number of studies suggested the use of the technology readiness index (TRI) (Matthing et al., 2006; Skiba, 2010). Noting that the number of technology-based products and services have grown substantively (IfM & IBM, 2008; Ostrom *et al.*, 2010), Parasuraman (2000, p.308) defined technology-readiness as *"… people's propensity to embrace and use new technologies for accomplishing goals in home life and at work"* and developed a refined multiple-item technology readiness index (TRI) to measure people's readiness to embrace new technologies.

In the context of technology-based services, Matthing et al. (2006) used the TRI and found that technological readiness was positively correlated with propensity to actively seek new technologies and to solve problems related to them as well as a willingness to participate in the process of new technology-based service development. Following these findings and considering that service innovation requires users to be increasingly technology-advanced (IfM & IBM, 2008; Ostrom *et al.*, 2010), it is proposed that the TRI can be an effective measure for identifying service users that are ahead of trends also in services that go beyond technology-based services (see also Skiba, 2010). Hence, the following four-item measure derived from Parasuraman and Colby (2001) is suggested for the identification of users that are ahead of trends:

**Table 2: Ahead of trend***

| Construct items: | Direction of items |
|---|---|
| User enjoys thinking about novel technology-based ideas and solutions. | Reflective |
| User comes up with new solutions to problems he/she experiences with new technologies. | Reflective |
| User enjoys finding solutions to problems that accompany new technologies. | Reflective |

| User actively searches for updates and launches of new technology-based services and products. | Reflective |
|---|---|

*All items are measured with a five-point Likert item scales with "strongly disagree" (1) and "strongly agree" (5) as anchors.

The potential effects of the lead user characteristics are depicted in Figure 1. Whereas users with higher expectations of innovation-related benefit are more likely to innovate, users that are ahead of trend tend to contribute to the development of ideas that are more attractive (Franke *et al.*, 2006). Users that follow the trend (instead of being ahead of trend), on the other hand, might not lead to innovation attractiveness. These users can be referred to as 'ordinary users'. Finally, users that are far ahead of trends but have hardly any benefit from innovating might be successfully integrated through incentive-related benefits such as idea contests or design competitions (cf. Füller *et al.*, 2007; Schuhmacher & Kuester, 2012).
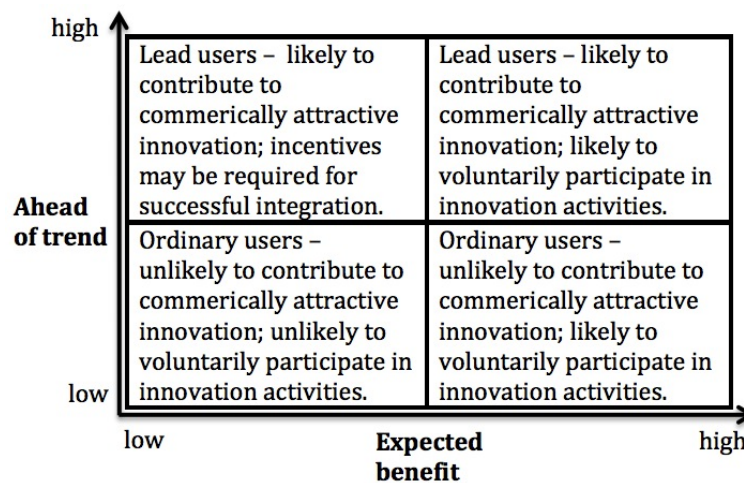


**Figure 1: Potential effects of lead user characteristics; source adapted from Franke *et al.* (2006, p.311).**

## Use experience and knowledge of the field

In addition to lead user characteristics, use experience is seen as a critical component to be used to distinguish innovative users from non-innovative users (e.g. Gruner & Homburg, 2000; Lüthje, 2004; Matthing *et al.*, 2006; Lettl, 2007) because experience is essential in establishing a knowledge platform for mutual learning and innovation (Lundvall, 1993; Wikström, 1996; Ojasalo, 2009). This suggestion is supported by Grönroos & Ojasalo (2004), who proposed that through on-going interactions during a relationship the customer can gain more knowledge of the service provider and service processes, and the service provider can learn more about the customers' competences as well as the customers' specific needs. Hence, on-going interactions and relationship continuity between a customer and the firm can create an important source of collaborative knowledge and innovation.

Noting the importance of use experience, Lüthje (2004) included the item "intensity of use" into the construct 'commitment to product field', while Gruner and Homburg (2000) used a 'closeness of relationship' measure including the items "frequency of interaction with customers outside new product development project" and "duration of business relationship with customers". This paper adopts the measure suggested by Gruner and Homburg (2000) because it allows the determination of both the intensity and duration of use. Thus, 'relationship duration' and 'interaction frequency' are included as measures for determining users with high use experience:

**Table 3: Use experience***

| Frequency of service use |
| Total period of service usage |

*Frequency of service use is measured with a scale ranging from "daily" (1) to "never" (5).
  Total period of service usage is measured by the total use duration of services in years.

An additional factor that needs to be considered when customers are to be involved in service design and innovation practices is knowledge of the field. Schreier and Prügl (2008) showed that consumer knowledge and use experience are only moderately correlated and thus should be seen as two independent concepts. While use experience refers to learning from experience and product/service usage, knowledge of the field stems from various sources beyond product/service usage (Schreier & Prügl, 2008).

Further, both concepts seem to impact the quality of the developed ideas differently. The positive impact of high use experience on idea quality has been empirically supported by a number of studies (e.g. Gruner & Homburg, 2000; Lüthje, 2004; Matthing *et al.*, 2006; Schuhmacher & Kuester, 2012). A high level of knowledge of the field, on the other hand, was found to negatively influence the novelty/originality of a developed idea (Matthing *et al.*, 2006; Magnusson, 2009; Schuhmacher & Kuester, 2012). This is because the development of radical ideas can be constrained by too much knowledge about technology restrictions and potential feasibility (Matthing *et al.*, 2006; Magnusson, 2009; Kristensson & Magnusson, 2010).

Knowledge of the field is measured by expanding Lüthje's (2004) four-item measure for 'commitment to product field' through the integration of additional items suggested by Skiba (2010). As a result, the following eight-item measure is proposed as measure of knowledge of the field:
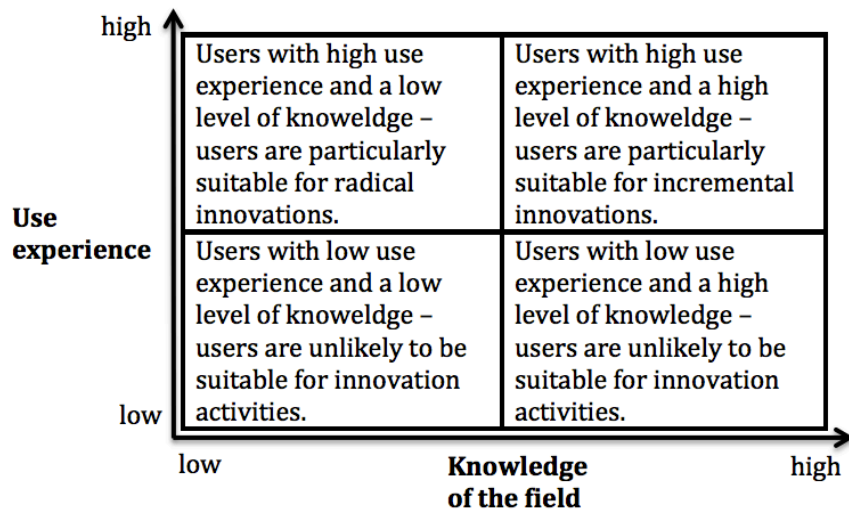
**Table 4: Knowledge of the field***

| Construct items: | Direction of items |
|---|---|
| User knows how services and requests are processed. | Reflective |
| User has profound knowledge of the used key-technologies. | Reflective |
| User knows about all details/facets/aspects of the offered services. | Reflective |
| User has a good understanding of which elements make up a good service. | Reflective |
| User knows about required resources to deliver a service. | Reflective |
| User has profound knowledge of the services and facilities that can be used. | Reflective |
| User knows how the existing services could be improved. | Reflective |
| User is well informed about the latest services. | Reflective |

*All items are measured with a five-point Likert item scales with "strongly disagree" (1) and "strongly agree" (5) as anchors.

Similarly to the lead user characteristics, the potential effects of use experience and knowledge of the field are illustrated in Figure 2. First, a high level of use experience is suggested as an important selection criterion when customers are to be involved in service design and innovation activities (cf. Matthing *et al.*, 2006; Schreier & Prügl, 2008). Further, users that obtain high levels of knowledge of the field might be not be suitable for radical innovations but rather for incremental innovations such as service improvements or service line extensions. This is because radical innovations are unlikely to be developed by users with high knowledge of the field as they may be restricted in their innovative thinking by what it is that they know (Kristensson & Magnusson, 2010). Thus, the involvement of users with

high knowledge levels may result in more incremental ideas while the involvement of users with low knowledge levels may result in more radical ideas.

| | | |
|---|---|---|
| | Users with high use experience and a low level of knoweldge – users are particularly suitable for radical innovations. | Users with high use experience and a high level of knoweldge – users are particularly suitable for incremental innovations. |
| | Users with low use experience and a low level of knoweldge – users are unlikely to be suitable for innovation activities. | Users with low use experience and a high level of knoweldge – users are unlikely to be suitable for innovation activities. |

**Use experience** — high / low axis; **Knowledge of the field** — low / high axis.

**Figure 2: Potential effects of use experience and knowledge of the field; source adapted from (Kristensson & Magnusson, 2010, p.156).**

# Enhancing customer involvement through open innovation platforms

Apart from systematically identifying suitable customers, firms additionally need to enhance customer participation through the provision of open innovation platforms. For example, Füller et al. (2007) identified that within online communities not only the need for product improvement but also excitement seems to drive collaborative innovation. The authors found that a compelling co-creation experience, determined through a feeling of task enjoyment, competence and autonomy, is important for enhancing innovation as these factors can have a positive impact on the quality and amount of participants' contributed content and interest in future participation in online innovation platforms (Füller et al., 2011). Hence, firms might foster customer involvement by developing online platforms such as My Starbucks Idea, Dell IdeaStorm, and Ideasbrewery or by launching design competitions such as OpenIdeo and Challenge.gov.

On the other hand, Lüthje (2004) found that even when customers have ideas for innovations, typically only a marginal fraction share their innovation-related knowledge. This finding can be explained by customer engagement behaviour which suggests that customers who are voluntarily and actively participating in innovation and design activities are highly engaged in the firm's activities because they at times spend a large amount of time, effort and even money in their engagement behaviours (Birkinshaw et al., 2007; Van Doorn et al., 2010). As stated by Van Doorn *et al.* (2010, p.260) *"… [h]ighly engaged customers can be a crucial source of knowledge, helping firms in a variety of activities ranging from ideas for design and development of new products, suggestions for modifying existing brands, and engaging in trial of beta products."* This means that firms need to recognize that customers' willingness to voluntarily participate in service design does not merely include innovation-related or potential financial benefits but is additionally driven by consumer engagement, which may emerge at different levels of

intensity over time (Brodie et al., 2011). This underscores the necessity for developing open innovation platforms and within these platforms to actively identify and integrate the innovative users for design purposes (Lüthje, 2004; Birkinshaw et al., 2007).

## Limitations and directions for future research

This paper discusses relevant concepts that can assist in identifying innovative customers for collaborative service design and innovation activities. However, it should be underscored that this paper is purely conceptual in its approach and thus our proposed framework needs to be tested, refined, and validated within different settings. User innovation research and specifically the identification of innovative customers are still underdeveloped in services research and largely lack theoretical underpinnings (Bogers *et al.*, 2010; Ostrom *et al.*, 2010). Thus, this paper takes an early step by conceptualising relevant customer characteristics that can for example be used in the future development of a standardized customer screening approach.

In addition, the proposed measures might not be applicable for all types of service design. It has been demonstrated that within unmanageably large user populations of a B2C setting particularly lead users are the most effective users to be incorporated in innovation and design activities (e.g. Matthing *et al.*, 2006; Schreier *et al.*, 2012; Schuhmacher & Kuester, 2012; Mahr *et al.*, 2013; Nishikawa *et al.*, 2013). Nonetheless, it should be noted that these studies predominantly examined lead users from a firm-external user innovation perspective. Therefore, apart from testing the proposed concepts, future research should additionally examine the relevance of the current framework for use in hybrid design modes where lead users work collaboratively with in-house designers (e.g. Schreier *et al.*, 2012) to assess whether the effects identified here also emerge in collaborative design activities.

Further, the effects of user characteristics or the impact of user integration into design might be different with increasing complexity of the design tasks. Although lead users are frequently observed to come up with attractive user innovations in more complex fields (e.g. Lettl *et al.*, 2006; Lettl, 2007), the benefit of actively integrating users into the design process is likely to diminish as the need for design expertise that is inherent to complex design becomes more central in achieving design success (Schreier *et al.*, 2007; Schreier *et al.*, 2012). Thus, alongside with the examination different forms of user involvement, future research should additionally investigate the influence of the design task complexity on innovation outcomes.

## Conclusion

This paper adds to the current service design literature by discussing different concepts to identify innovative customer groups. It is suggested that future development of this framework can result in a standardized screening approach that will assist firms in identifying and subsequently involving specific customer groups in collaborative service design projects. As such this paper recognizes that design practices should include the identification of clearly defined user groups rather than the random selection of customers as potential co-designers.

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