

2 Insights from theory

The present study builds on insights from two streams of research: innovation research – in particular open innovation and customer integration – and research on low-income or “base of the pyramid” (BoP) markets. Of these two areas, innovation research provides the main theoretical background of this study.

BoP markets are a rather new research area. However, BOP literature offers a valuable contribution by drawing research interest towards low-income contexts and markets (see, for example, Prahalad and Hammond 2002; Prahalad 2004; Hart and London 2005; Brugmann and Prahalad 2007). Recently, more and more academic studies are being published based on empirical data and in connection with existing literature streams and methodologies (see, e.g., London and Hart 2004; Sánchez et al. 2007; Seelos and Mair 2007; London et al. 2009; Badry 2009; Webb et al. 2009; Halme et al. 2012; Herrndorf 2013). However, the majority of BoP articles are still conceptual in nature and lack empirical analysis and theoretical grounding (see also section 3.1.1).

This study argues that research on low-income markets (or “BoP” research) could more explicitly build on innovation research, particularly in the area of open innovation and consumer integration. In turn, applying theoretical insights from innovation research to low-income markets can create new insights.

Consequently, this chapter is structured as follows:

- The first section of each of the following three main sections (2.1, 2.2 and 2.3) introduces key concepts from innovation literature (2.1.1, 2.2.1, and 2.3.1–2.3.4).
- The subsequent sections discuss the relevance of these insights for low-income or BoP markets by reviewing BoP literature (2.1.2, 2.2.2, and 2.3.5).
- The chapter then identifies and characterizes research gaps. They are discussed at the end of each section as part of an intermediate conclusion (2.1.3, 2.2.3, and 2.3.6).

2.1 Underlying concepts of open innovation and consumer integration

The first part of this section provides an overview of the state of the art in open innovation and consumer integration. It explains why companies increasingly open up their innovation processes and why consumers may have particularly relevant input for these processes. After clarifying the “why” questions, the “how” dimensions are discussed, providing an overview of the methods to integrate consumers. Finally, the approach is critically evaluated.

The second part discusses the relevance of the insights from innovation research for low-income markets. For that purpose, the relevance of innovating for these markets is explained. Furthermore, this section elaborates on how innovating for low-income markets can be approached and what role consumers can play in this endeavor. The section concludes with a brief summary of the similarities between both research streams as well as a discussion of shortcomings and research gaps.

2.1.1 State of the art in open innovation and consumer integration

The Latin origin of the word “innovation” (*innovare*) denotes the renewal or change of existing solutions (Tidd et al. 2005, 10). These new solutions not only build on novel ideas for products, processes, or any other aspect of a firm’s activity, but also imply improvement in efficiency or usefulness. Josef Schumpeter, one of the earliest researchers to draw attention to the importance of innovation, was also the first to point out that in contrast to invention, innovation involves a commercial transaction (Schumpeter 1912; see Freeman and Soete 1997, 6). To find market success, innovations must be met by a market demand.

Innovations create benefits on an individual and societal level: They help manage resource constraints or increase productivity, thus creating value. Innumerable types of innovations are distinguished in the literature. For the purpose of this study, these types can be organized along two questions: (1) What is new? and (2) How new is it?¹⁴

¹⁴ Hauschildt and Salomo (2007, 3) further distinguish the subjective dimensions of innovations – that is, the question, “For whom is it new?” Here, they refer to the fact that innovations can be new to a geographical area (a region or the world), a sector, a market, a market segment, an organization, or an individual.

Answering the question “What is new?” clarifies the object of innovation. Generally, three types of innovations are distinguished:¹⁵

- **Process innovations** change the way in which products and services are produced and delivered (e.g., a change in the manufacturing methods and equipment to process food). This includes significant changes in techniques, equipment, and/or software (Tidd et al. 2005, 10; OECD 2005; Reichwald and Piller 2006, 99; Hauschildt and Salomo 2007, 9).
- **Product and service innovations** refer to changes in products and services offered by an organization. These include significant improvements in components and materials, technical specifications, incorporated software, user friendliness, or other functional characteristics. (e.g., functional food enriched with selected vitamins and minerals) (OECD 2005; Tidd et al. 2005, 10; Reichwald and Piller 2006, 99; Hauschildt and Salomo 2007, 9).
- **Business model innovations** can be defined as changes in the way a “business creates value in its products and services and captures that value in the form of revenue from its customers” (Chesbrough 2007, 16).

The question “How new is it?” refers to the degree of novelty. Three types can be classified:

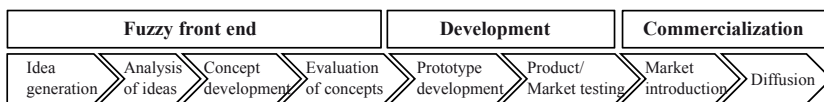
- **Incremental** innovations mean small-scale improvements of an existing product or service through value-adding attributes. So called “me-too” products or extensions of product lines count as incremental innovations – they only imitate or slightly improve existing products (Verworn and Herstatt 2007, 115). Incremental innovations generally are associated with lower risk and better short-term profitability (Magnusson and Kristensson 2010, 150).
- **Radical** innovations differ significantly from former solutions and mostly imply revolutionary changes. “These innovations incorporate technology that is substantially different from existing products and fulfills customer needs either significantly better than existing products or addresses different types of needs [...]” (Bucherer and Eisert 2012, 186). They are generally regarded as more risky, but they also promise high profitability when they succeed in the marketplace (Verworn and Herstatt 2007, 115).

¹⁵ Other researchers distinguish further types of innovations, for example, marketing innovations. As they are not relevant for the focus of this study, they were not defined or explored further. For additional insights, please see: Tidd et al. 2005 or the OECD Guidelines for Collecting and Interpreting Innovation (2005).

- **Disruptive innovations** are products or services that take root in simple applications (Hart and Christensen 2002, 52). They usually perform worse than an established, mainstream product. However, they have new characteristics such as portability, simplicity, ease of use or a lower price (Ahlstrom 2010, 18). Disruptive innovations thus enable market entry for completely new users who were previously unable to use the established product due to its complexity or price (Christensen et al. 2001; Ahlstrom 2010, 18). These innovations thus often compete against non-consumption (Hart and Christensen 2002, 52). Moreover, disruptive innovations have the potential to move up in the market, eventually displacing established competitors.

The **innovation process** can be divided in three major stages: the fuzzy front end, development, and commercialization. In practice, these stages encompass a variety of steps, as seen in figure 3 (see, e.g., Herstatt 1999; Cooper et al. 2004; Kotler and Armstrong 2004).¹⁶ These steps, however, cannot be seen as a linear, step-by-step process. Rather, several feedback loops between technological alternatives and customer needs are necessary (Bucherer and Eisert 2012, 185).

Figure 3: Stages of the innovation process



Source: created by author.

This study focuses on the first stage – the “fuzzy front end.” It is defined as the period between the generation of an idea and its approval for development (Kim and Wilemon 2002, 269; Verworn et al. 2008, 1). As the name indicates, the fuzzy front end has been found to be the most chaotic stage, as it is where most “setbacks and surprises” happen (Bucherer and Eisert 2012, 185). Researchers describe the fuzzy front end as “intrinsically non-routine, dynamic and uncertain” (Kim and Wilemon 2002, 270). Uncertainty may come from either market forces or technological conditions (Lynn and Akgun 1998). Thus, during the fuzzy front end, information

¹⁶ There are two reasons to include the diffusion of new products in the innovation process: Many inventions might seem great in a research lab but fail to see the light of the day. Thus, successful diffusion is vital to the economic success of inventions (Rogers 1995). Second, consumer information and feedback during the diffusion process eventually leads to new incremental or radical innovations.

needs to be gathered to reduce uncertainty. Indeed, it can be empirically shown that the quality of execution of pre-development activities directly relates to the success of innovation projects (Cooper and Kleinschmidt 1994). Companies with excellent records of successfully introducing new products conduct more analyses during the fuzzy front end (Cooper 1988, 243) or pre-development phase. They also invest in their idea and in concept generation and conduct more rigorous screening and evaluation of the ideas generated (Booz et al. 1982, 26). Nonetheless, this phase often receives less attention than the later stages and is thus considered the greatest weakness in product innovation (Khurana and Rosenthal 1997). In particular, little attention has been devoted to understanding and managing the phase of idea creation (Magnusson 2009, 581; see also Dahl and Moreau, 2002).

As low-income markets remain rather unexplored, high market uncertainty can be expected, the degree of which is determined through “knowledge about customers’ needs and wants” amongst other factors (Verworn et al. 2006, 4). To gain access to this knowledge in the early phases of the innovation process, scholars have advocated for opening up innovation processes (von Hippel 1988/2005; Chesbrough 2003/2006; Reichwald and Piller 2006). The following sections provide a brief introduction of the benefits of opening up these processes, the methods for doing so, and the risks.

Open versus closed innovation

The idea that new products and services should be exclusively developed within a firm’s boundaries has long dominated the thinking of both practitioners and researchers. Following this approach – often referred to as “**closed innovation**” – companies mainly rely on internal resources to develop new products and services (Chesbrough 2003, 21ff.). Consequently, they create their own research and development units, which are important drivers for large-scale industries such as the chemical industry. To ensure state-of-the-art research, a highly qualified workforce is often bound to the company through incentives. Where closed innovation prevails, the scientific landscape often consists of isolated “knowledge islands” (Chesbrough 2007, 21–24). Technologies that are developed outside of the firm’s boundaries are often rejected (Chesbrough 2007, 30) – a phenomenon referred to as the “not invented here (NIH) syndrome,” first documented by Katz and Allen (1982).¹⁷

¹⁷ Katz and Allen (1982, 7) define it as “the tendency of a project group of stable composition to believe that it possesses a monopoly of knowledge in its field, which leads it to reject new ideas

In opposition to this rather traditional view, researchers and practitioners today reason that resources outside a company can be vital for new product development – or, as Henry Chesbrough puts it: “Not all the smart people work for you” (2006, 34). As useful knowledge can be widely distributed, companies should tap the knowledge and creative potential of external sources. These may be suppliers, customers, business partners, competitors, start-ups, universities, other research institutions, or even governments (von Hippel 1988). Chesbrough names this model “**open innovation**” as opposed to “closed innovation” (Chesbrough 2003 21ff.; see figure 4)¹⁸. He defines open innovation as “the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively” (Chesbrough et al. 2008, 1).

Chesbrough recognizes that the idea of opening up innovation processes is not new: “Many models have [already] been developed to explain how firms can exploit external knowledge” (Chesbrough et al. 2008, 7). For example, they can imitate a competitor, consult with their customers, tap the knowledge of start-ups, consult public sources, fund university research or form strategic alliances with other companies.

While there is a wealth of antecedents in academic literature on the use of external knowledge, the open innovation paradigm elevates external knowledge from playing a supplementary to a primary role:

*In open innovation, external knowledge plays an equal role to that afforded to internal knowledge in earlier conception. [...] In the proprietary model of innovation, useful knowledge is scarce, hard to find, hazardous to rely upon (a root cause of the NIH syndrome). In open innovation, useful knowledge is generally believed to be widely distributed, and of general high quality. Even the most sophisticated R&D organizations need to be well connected to these external sources of knowledge.*¹⁹ (Chesbrough et al. 2008, 8–9)

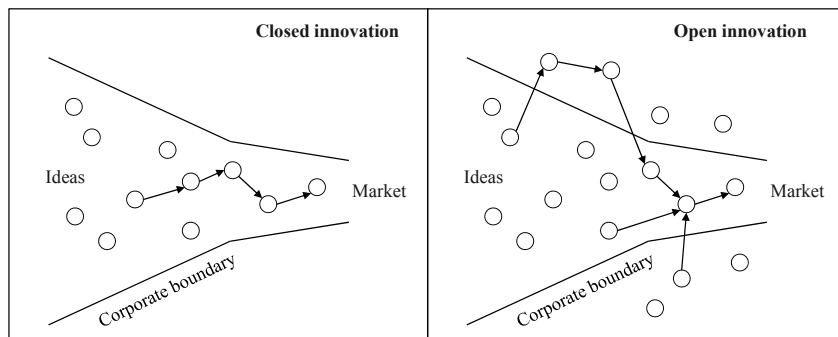
from outsiders to the detriment of its performance.” Katz and Allen investigate the NIH syndrome between company units (i.e., opposition to input from marketing departments). However, it can be assumed that the rejection of external knowledge is even bigger (Reichwald and Piller 2006, 89).

¹⁸ Chesbrough argues that companies “should organize their innovation process to become more open to external knowledge and ideas” – a process he terms as the “outside-in” process. In addition, he suggests that companies take “unused internal ideas to the outside” – referred to as the “inside-out” process (Chesbrough 2006, 21).

¹⁹ While the open innovation model developed by Chesbrough encompasses cooperation with start-ups or independent research institutions, the present study focuses on innovation processes that the company engages in with its users or consumers.

The model reflects the increased mobility of people and knowledge in the twentieth century (Chesbrough 2007, 34–41). “Knowledge islands” have dissolved more and more.

Figure 4: Open vs. closed innovation



Source: Chesbrough 2003, xxii.

However, Chesbrough himself reckons that external validity of the open innovation approach has yet to be proven, as the evidence for this model mostly looks at high-tech industries (such as IT or pharmaceuticals) and the research has been largely focused on US-based companies. Thus, it remains an open question whether the concept applies to low-tech industries as well as to industries outside the US or the industrialized world (Chesbrough 2003, 5).

Active versus passive consumers

Companies have an incentive to rethink their innovation approach: Empirical studies show that – depending on the sector – up to 90% of inventions do not succeed in the marketplace (Reichwald and Piller 2006, 106; see also Crawford 1987; Cooper 1999). Studies in innovation management have long tried to explain why some inventions fail and others succeed (Ernst 2002, 1). Broadly speaking, external and internal success factors are distinguished (Reichwald and Piller 2006, 106–107). External factors that influence innovation success may lie in the regulatory environment – for example, the protection of intellectual property rights – or in the company’s infrastructure or location – for example, its closeness to scientific hotspots (Reichwald and Piller 2006, 106; see also: Cooper and Kleinschmidt 1987; Cooper 1988; Cooper 1999; Ernst 2002). Internal factors could be an innovation-friendly corporate culture, corporate strategy, organizational factors, the commitment of senior management, the design and

proficiency of activities carried out in the individual phases of the innovation process – particularly the early phases – and the use of market information throughout (“market orientation”) (ibid.).

Market orientation involves “consultations with the customer, leading to her/his inclusion into the new product development process” (Ernst 2002, 8). Some studies provide evidence that this interaction with customers or consumers is associated with product success (Rothwell et al. 1974; Shaw 1985; Urban and von Hippel 1988; von Hippel 1988; Gruner and Homburg 2000, 3; Ernst 2002, 14). For example, Gruner and Homburg (2000) find that the intensity of active consumer involvement during certain stages of the innovation process is the main distinguishing factor between successful innovations and “flops.” Consumer involvement creates competitive advantages for the company. Through this interaction, companies get access to a strategic resource – namely, the information inherent in users, which would otherwise be unavailable to the firm (von Hippel 1988; Campbell and Cooper 1999, 508ff.; Gruner and Homburg 2000, 2). This information enables companies to better anticipate market changes (Sawhney and Prandelli 2000, 258) and increase the market acceptance of new products or services by making them “fit to market” (Reichwald and Piller 2006, 152), thus minimizing risks (Soll 2006, 18).

However, other studies show contrary results. For example, Cooper (1986) finds that intense concentration on a few customers (“customness”) has a negative influence on innovation success (see also Ernst 2002, 8). Campbell and Cooper (1999, 507) find that partnerships with customers during the innovation process were no more successful than in-house projects. This difference in findings is largely due to the two following aspects.

(1) **The “who”:** First, success depends on the **type of consumers** involved. Campbell and Cooper (1999, 517) themselves point out that “empirical evidence [...] exists that partner selection is critical to achieving benefits from closer customer interaction.” Indeed, a variety of studies show that selecting the right consumers for innovation makes a significant difference, since some consumers are simply more capable of making relevant contributions to innovation processes. In particular, “lead users” are said to enhance the outcome of innovation processes significantly.²⁰ They are a special

²⁰ Lilien et al. (2002, 1043) find that annual sales of lead-user product ideas generated at 3M are conservatively projected to be 146 million USD after five years – more than eight times higher than

type of consumer who senses needs earlier than others, and thus benefits greatly from the advent of new products or services that address these needs (von Hippel 1986/2005). Furthermore, they have the ability to transform their need-related information into solutions – that is, to engage in innovative activities (Reichwald and Piller 2006, 108). They either modify existing products or develop entirely new ones (Lüthje and Herstatt 2004, 554). Herstatt and von Hippel (1992, 213–214) argue that due to the high expected benefit, lead users “can provide the richest need and solution data to inquiring market researchers.”

(2) **The “how”:** Second, **the role of the consumer** during the innovation process is crucial. The consumer’s passive involvement only gives access to explicit information, while their active cooperation reveals implicit, solution-related information vital for innovation (see section 2.3.4).

Traditional market research mostly views consumers in this passive role, as “demanders” (Ernst 2002, 9) who “speak only when spoken to” (von Hippel 1978, 243). The manufacturer’s role, in this view, is to hear and incorporate “the voice of the customer” (Griffin and Hauser 1993) – that is, to capture the needs and preferences of consumers and develop appropriate solutions. For this approach, von Hippel coins the term “**manufacture-active paradigm**” (von Hippel 1978, 40ff.). However, from such a passive role, few insights for innovation can be expected. Moreover, studies show that the customers themselves are slowly “stepping out of their traditional roles” to become “active players” and “co-creators of value” (Prahalad and Ramaswamy 2000, 80). According to Sawhney and Prandelli (2000, 258), a shift from a perspective of exploiting customer knowledge by the firm to a perspective of knowledge co-creation with customers can be observed. Von Hippel finds that users develop or modify products for their own use in 10 to 40% of cases (von Hippel 2005, 19–20).^{21,22} In his

forecast sales for the average contemporaneously conducted traditional project. They also found that each lead-user project is projected to create a new major product line for a 3M division.

²¹ Through numerous studies, von Hippel investigates innovative users (see, e.g., von Hippel 1976/1978/1986/1988/2005) and finds evidence that dates back to the 18th century. For example, Adam Smith reports that “a great part of the machines made use of in [...] manufactures [...] were originally the invention of common workmen, who [...] naturally turned their thoughts towards finding out easier and readier methods of performing it” (Smith 1776; see von Hippel 2005, 21). In this example, the workmen can be regarded as users of the product. Acquiring a wealth of implicit information or use information when handling the machines, they were well suited to coming up with a better solution.

²² However, von Hippel rightly notes that all studies were probably affected by a response bias, as users might be more inclined to say “yes” when asked if they innovate or not.

pioneering work on user innovation beginning in the '80s and '90s, von Hippel has coined the term “**customer-active paradigm**” (von Hippel 1978, 40ff.) for this phenomenon. It credits consumers with the capacity to solve problems on their own and even to initiate problem-solving processes.

Reichwald and Piller (2006, 131) go a step further. They coin the term “**interactive value creation**,”²³ which sees the customer as a crucial partner for creating value. Building on the work of Chesbrough and von Hippel, they stress that users and manufacturers can engage in cooperative problem-solving processes, which can be activated either by the customer or the company (Reichwald and Piller 2006, 134). Accordingly, Reichwald et al. (2007) distinguish two ways of creating value with customers: (1) Companies can either screen the market for user innovations (2) or they can actively integrate consumers into the innovation process.²⁴

The first way is referred to as “**reactive customer integration**,” as the customer takes the initiative to innovate (Reichwald et al. 2007, 64–65; Walcher 2007, 28ff.). In that case, the customer has the required “solution information” to adapt or create a product that serves his needs better than the existing offers. User innovations make implicit or sticky information explicit. Kristensson et al. (2004, 6) conclude that “ideas generated by a user in the user’s own environment seem more likely to contain those unique features that companies seek but which are difficult to detect. Needs and requirements are likely to be [...] automatically built into the ideas generated” (Kristensson et al. 2004, 6; see also Thomke and von Hippel 2002).

In Reichwald and Piller’s classification, the second way of tapping inherent user information and capabilities is to pursue “**active customer integration**” (Reichwald et al. 2007, 65; Walcher 2007, 28ff.). Here, the company takes the initiative to innovate and invites the consumer or customer to contribute. This interaction between the customer and the manufacturer results in a reciprocal learning process: The company learns how consumers use products or what their unfulfilled needs are. The consumer, in turn, learns about new technologies and the opportunities and limitations they provide. In Magnusson’s words, “Taken together, such reciprocal learning has the

²³ This term was translated by the author from the German “Interaktive Wertschöpfung.”

²⁴ The different terminology of von Hippel and Reichwald and Piller is due to the fact that the latter look at customer integration from the perspective of the company, who remains “reactive” when users innovate – while von Hippel’s “manufacturer-active” versus “consumer active paradigm” looks at who initiates the activity.

Low-Income Consumers as a Source of Innovation
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