UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

Matching Innovation

Introducing new innovations on the BoP market

Jesper Johansson

Graduate School
Master of Science in Management
Master Degree Project No. 2012:68
Supervisor: Kajsa Lindberg

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Innovation is the art of interesting an increasing number of allies who will make you stronger and stronger. - Akrich et al. 2002a: 205

Abstract

In recent years increasing attention has been directed towards the reasonably untapped markets at the Bottom of the Pyramid (BoP). These emerging markets infer great opportunities for business and the lack of technical development intensifies the interest of innovative companies. However, penetrating the BoP market implies difficulties and not all companies succeed in this endeavor. This study emphasizes the importance of matching an innovation in to the desired context, in this case in the BoP market. By examining three products developed by the Indian company Greenway Grameen Infra, and adopting the translation model and the art of interessement, the author illustrate how a company can accomplish this matching. The result of this study accentuates the importance of co-creation i.e. the significance of a close relation to the prospective users through extensive actor involvement in the development of a product. Moreover, the study shows that there is a difference in how to legitimize a product depending on the context, and that this is correlated with the level of awareness in the context where you wish to attain legitimacy.

Keywords: Innovation, matching, translation, interessement, co-creation

Introduction

Today between 4 and 5 billion people in the world lives in developing countries with an annual income of less than 1500 USD (WHO, 2006). These people are referred to as the Bottom of the Pyramid (BoP). The BoP have been underserved by multinational firms, and overlooked by the private sector for decades. Lately however, more attention has been drawn to these markets as companies realize that there is an opportunity for trade and success here (Prahalad, 2002/2010). Targeting these new markets and consumers is nonetheless a challenge to most companies and will compel them to adapt to new settings, new cultures and people who might be unfamiliar with most technical innovations introduced.

Reaching out to the consumers on the BoP market is also a great challenge in terms of awareness and availability. However, increasing awareness and availability is difficult in the BoP market due to the inaccessibility of social media and advertising. For example, in 2007 only 41 per cent of poor rural households in India had access to a television. In combination with a population spread over a vast area accessible only through poorly maintained roads the spreading of awareness becomes a great challenge (Anderson, 2007). However, as elucidated by Rosenberg (1976), even though we find an optimal path for the development of technology, it is not certain that the same path is ideal for every different context, and we cannot just adapt a technology to one context just because it is successful in another one. Rosenberg explains that replication associated with economic growth has rarely been a success story; poor countries, as he puts it, do not necessarily have to follow on the same path as previously evolving countries. Also, if a country relies on "borrowed" technology it can cause inertia in the development process of the country, but also a state of dependency and passivity (ibid). However, where there is a great wealth of ideas they are prone to emerge, and these ideas are often spread to places where there is less wealth of ideas (Czarniawska, 2005) – oftentimes this transfer appears to less developed countries. That does not mean that the technology transfer is unwelcomed, but that the transfer has to be treated with vigilance. The travel of ideas from one place to another is a process preeminently realized collectively (Czarniawska & Sevón, 1996). As ideas convert in to an innovation they do not travel single-handedly but are transformed along the way with each involved actor. The translation theory, which is pivotal in this paper, suggests that there is a friction along the way and that each participant involved in the translation process can add to the idea and enriches it, but possibly also distorts or depletes the idea (Latour, 1986). This theory deviates from the diffusion theory, that instead suggest that ideas travel in a vacuum and hence they are not altered along

the way (Rogers, 1962). This paper will follow along the line with the translation of ideas, and specifically concerning the process of translating an idea in to a technical innovation. More importantly, the process of matching this technical innovation in to an entirely new context will be illuminated.

Background to the study and Purpose

The main focus of this study is directed to the Indian company Greenway Grameen Infra (GGI) with primary emphasis on their approach to the innovation process and the matching of innovations in to a new context; between innovator and user. In 2011 GGI received funding from the Swedish governmental organization Sida and their project Innovations Against Poverty (IAP) for the development of a waste heat to electricity converter. IAP is a business for development program with the intention of providing financial and advisory aid to companies with innovative ideas that will contribute to increasing the standard of living for people living in poverty (IAP FactSheet, 2011).

GGI's waste heat to electricity converter is the company's third product and was preceded by a cooking stove, which will be the main focus of this study, and a "roofing" product. GGI's first product; the roof, was however not a success but has nonetheless aided GGI in the development of their two succeeding products since it provided them with valuable knowledge about how to go about the innovation process. Previous research has elucidated other cases of failure in technology transfer, cases where the relationship between supply and demand is not matched to the extent desired. Akrich (1992) focus her study on the poorly matched relation between technological innovation and technology transfer, or the relation between the producer and the user. She illuminates the importance of the co-creation process; conversations and negotiations with the end-user in the innovation process. In her study she describes the failure of French industrialists in their attempt to implement photovoltaic kits on to the African market (Akrich, 1992; Akrich et al., 2002a). The background to the project was the need for individual household lightning, but also the wish of a governmental agency to help the French photoelectric cell industry to create a market (Akrich, 1992). The prototypes were created in France and tested by the promoters of the project. The main focus was on the technical functionality of the kit, instead of adaptation to the prospective user. Consequently, the kit was not successfully matched between the producer and the end-user. Akrich (1992) describes the failure quite eloquently by pointing out that in the confrontation between the real user and the projected user the real differences come in to light (ibid). The example shows that matching a product like this one in to a new context is hard to do in a laboratory or

a workshop far away from the prospective users; instead it is a process that demands interaction and awareness of the user and the market which one attempts to penetrate.

This introduction and background raises the question about the interaction between different actors that are a part of the development process of an innovation. Moving in to a new setting, often lined with high economic and social inequalities, cultural disparity, and oftentimes great hierarchical differences demands patience, perseverance, and an immense knowledge about the market and the potential users. The purpose of this study is to describe and analyze how new products are introduced on the BoP market. The research questions in focus are: How are the interests of the producer (GGI) and the end-users matched? How are different actors connected? And why is this important for the innovation process? Finally, how do companies acquire legitimacy for their work in this extensive network of involved actors?

The study demonstrates that a close relation to the end-user is of importance for the success of an innovation on the BoP market together with a reciprocal awareness between innovator and user. The process of matching an innovation enables this close relation through actor involvement and co-creation with the end-users. Moreover, legitimacy has been brought up as important factor, and it becomes evident that how you legitimize your innovation depends on the level of awareness and interest in the particular context where you wish to legitimize it. Hence there might be a difference in how companies legitimize their products depending on the context.

The paper is organized as follows: First the theoretical aspects underlying the study are presented: matching innovation; translation vis-à-vis diffusion; Callon's four modes of translation, with particular focus on the concept of interessement. Succeeding this is an account for the methodological procedure practiced in the study. This is followed by the empirical findings in the study which provides an account for the studied company and their products, together with an introduction of Sida's role and the IAP. Subsequently, in the final section the empirical findings are discussed and analyzed by applying the designated theories, this is hence followed a concluding summary.

Theoretical framework

Studying the process of introducing technical innovations in to new contexts and matching them accordingly accentuates several interesting theoretical concerns. Primarily, the purpose of this study draws attention to issues of innovation and matching innovation with a new context, and hence the first part is devoted to these subjects. This is followed by an account

for the notion of translation of innovation in contrast to diffusion, and why the translation model is of significance in this particular study. Also, legitimacy and justification of innovation is briefly discussed here. The succeeding part introduces Michel Callon's four moments of translation and emphasizes one that is of particular interest for this study; interessement.

Innovation and markets

Innovation implies the introduction of something new, and oftentimes infers the induction of new technological products. Innovation is considered to be contingent with economic development, as well as with societal advancement and prosperity (Lavén, 2008). In order to successfully introduce new innovations however, it is of course important to know your customers, and to know what the customers want. To innovate is also to change the consumer, to shape and to create a desire for one's products. To achieve this stage is important in every market, but when moving in to uncharted territory, such as the BoP market, it becomes crucial. It is vital to create a good and solid relationship with the end-user and to discuss potential problems and expectations with them in order to match the innovation with their requirements (Akrich et al., 2002a). However, sometimes companies have to realize that there is no market to tap in to, and instead the first step in the process is market creation. Without any products against which to benchmark, no frames of reference or data about a local context companies face a great challenge, thus all of the ideas about consumer needs and wants are merely guesswork and predictions (London & Hart, 2011). Whether entering an existing BoP market or creating a market, there is a paramount need for consumer and competitor research. In fact, the process is somewhat like that of extending one's business in to a new country – it requires arduous research; getting on the ground and realizing the needs and demands of the consumers through participatory investigation in order to tailor the product to match the local context (ibid). Matching brings attention to the integration of different interests, desires and needs among different actors. The market functions as the place where this matching can occur, and the theory attends chiefly to the labor market and the matching of work and workforce (Walter, 2005; Jovanovic, 1984). It infers that actions do not necessarily have to occur within the realm of one context or necessarily at the same time, but instead through different actors in different settings (Walter, 2005).

Akrich et al. (2002a) applies a fifty year old maxim to describe how innovation has been depicted throughout the years; "Science discovers, industry applies and man follows" (Akrich et al., 2002a:202). Moreover, the authors suggest that something we often hear is; "Solve the

technical problem first, and then we'll deal with the market" (Akrich et al., 2002b:207). The reason for the accentuation of these quotes is that the authors use them to show that practice rarely looks like this; in fact it is almost the other way around. In practice innovation is not comprised in this way but by adaptation, trial and error as well as numerous encounters and discussions amongst social actors (Akrich et al., 2002b). The innovation needs to be transformed and adjusted to the context where it is supposed to be implemented. An innovation created in one context and then implemented in another context needs to be matched accordingly. This attempt to match innovations has projected different results with the passing of years, both success and failure. Companies such as Proctor & Gamble, Coca-Cola and Phillips have all tried to address the apparently imposing needs of the BoP market, but more often than not the consumer interest have been remote and the projects unsuccessful (London & Hart, 2011). Another example of failure was, as presented in the introduction, elucidated by Akrich (1992) in her observation of French industrialists in their attempt to implement photovoltaic kits on to the African market (Akrich, 1992; Akrich et al., 2002a). This case provides us with a good example of an attempt to comply with the abovementioned maxim "science discovers, industry applies and man follows" (Akrich et al., 2002a:202). However, that is not always the case; man does not always follow (Akrich et al., 2002a). The structure of the lightning kit was simple and consisted of three main parts; a panel for producing electricity, a storage battery, and a lamp that consumed the electricity (Akrich, 1992). However, in practice it was not that easy, things had gone completely wrong in the translation of the product in to the African market, it was not matched to fit in to this context at all. The users encountered several problems which made it difficult for them to commit to the product. Apart from the technical and design failures, the most noteworthy mistake was that in case of break-down the users were forbidden to turn to a local electrician in order to repair it, instead the contractor would visit twice a year and take care of potential break downs (ibid). Akrich et al. (2002a) explains the significance of interacting and co-creating accurately by asserting that "…failure, like success, rests on the mutual adaptation of a well-defined product and a clearly identified public" (Akrich et al., 2002a:203). Instead of connecting to the eventual supporters of the kit the French industrialists isolated themselves from them and instead of attaining trust and respect they experienced distrust which ultimately led to failure (Akrich et al., 2002a).

Translation vs. diffusion of innovation

The two concepts of diffusion and translation of ideas has been subject of discussion for many years, and it has attracted the attention of several scholars (e.g. Callon, 1986; Latour, 1986; Czarniawska, 2005; Czarniawska & Sevón, 1996). Translation is a central concept in the Actor-Network Theory (Callon, 1986) which draws attention to networks and relational links within these. The theory of diffusion was popularized by Everett Rogers in his book Diffusion of Innovations published in 1962. Rogers (1962) explains the diffusion process as one where innovations are communicated via actors and different channels over a period of time, the innovation encounters different members of a social system. In the diffusion model the ideas travel in what is referred to as a vacuum, and they are avoiding unnecessary resistance or friction in order to keep with the original plan. The original idea is not to be altered or changed, but if necessary this change need to be properly explained (Rogers, 1962; Czarniawska & Sevón, 1996). Moreover, in the diffusion model the majority of the actors are inactive and adaptation is rarely encouraged, instead an innovation is either taken up or left (Akrich et al., 2002b). However, Latour (1986; 1998) argued that transfer according to the diffusion model is rare. There is almost inevitably a friction occurring as a consequence of the chain of actors that are involved. Latour applies the analogy of rugby players and a rugby ball where there is a chain of actors affecting the artifact along the way, without knowing in beforehand what the exact alterations will be. Instead, there is a translation going on where, in the hands of people an artifact is modified, deflected, betrayed, added to or appropriated (Latour, 1986; Latour, 1998). Only if the ball is received and passed on to the next one in line can the process continue, the artifact is now given a new shape and provided with new directions in order to best correspond to the new context (Rottenburg, 1996). Whether this is explained with the metaphor of a ball or something else does not matter, the main idea is still the same – it is the actors who give energy to the idea, it is the actors who translate the artifact to match their own needs as well as the next actor in the chain.

As an idea travel through time and space we can "observe a process of translation – not of reception, rejection, resistance or acceptance" as advocated by Latour (1991:116). The human interest is the prime source of the travel of ideas, just like the travel of innovations depends on actor participation and interest (Czarniawska, 2005). Latour (1996) suggests that there is *no transportation without transformation* (p. 119). This line of thought proposes that the very perfection that the diffusion model claims to have sustained from the beginning is instead a process of refinement occurring through the participation of every involved actor. The

original idea is transformed only if there is an interest from an additional cluster of people, i.e. other actors. This magnitude of interest is of course difficult to predict, and also which actors that will show interest and involvement. Besides, different actors have different premises and might be situated in different contexts. But through the process of translation the interest of all actors is allowed to be comprised and a technology transfer can hence be successful (Latour, 1996). Closely related to the translation process is the way that this interaction with several actors can help the innovator to create legitimacy for a product in the context of interest, especially with the end-users.

Drawing upon March and Olsen's ideas (1989) organizational action attend to the logic of appropriateness, i.e. companies are driven by rules of appropriate behavior and follow these in order to be regarded as lawful and legitimate. They act in accordance with the situation at hand – depending on the circumstances organizations take appropriate action. Czarniawska and Sevón (1996) argues that the appropriate action is based on comparison, or matching, with others. Organizations might imitate the actions of others in order to acquire knowledge about how to act, but also to save time and resources, and to be considered legitimate. A concept closely related to that of legitimacy is justification, and although it is a notion sought after primarily by disciples of the fields of philosophy, political science and law, and adheres primarily to justification of the state (Simmons, 2001) it is undoubtedly relatable to organizations. "Justifying an act, a strategy, a practice, an arrangement, or an institution typically involves showing it to be prudentially rational, morally acceptable, or both (depending on the kind of justification at issue)." (Simmons, 2001: 123). Hence, we have a need to justify our actions, as a shield against possible objections or discontentment with our activities, and as a way to respond to skepticism (Simmons, 2001). Also, this implies that an act needs to be justified in a specific way depending on the context, or who is being targeted. Patriotta et al. (2011) argues that in their institutional environments organizations are subject to what the authors refer to as legitimacy tests where the status quo needs to be justified. Also, as opposed to the logic of appropriateness discussed above, March and Olsen (1989) introduces the logic of consequentiality – or as interpreted by Czarniawska – the logic of justification which assert that people justify their action when they are challenged by an observer (Czarniawska, 1996).

Interessement in innovation

Michel Callon (1986) accentuates four moments of translation; *problematization*: concerning identification of project objectives, but also concerning the involvement of interested actors in

a project; *enrolment*: where roles are defined and accredited to compliant actors, different interests are negotiated and adjusted in relation to others; *mobilization*: concerning who is representing who, and how to involve actors with different interests; finally *interessement* covers the importance of an active involvement and participation of all the actors in the innovation process (Callon, 1986; Akrich et al., 2002a; Bergström & Diedrich, 2011). The art of interessement, as referred to by Akrich et al. (2002a), is present in order to understand how an innovation is adopted, the journey that it takes through every involved actor and how it eventually is transformed in to something that can be introduced and matched successfully. Furthermore, Akrich et al. (2002a; 2002b) explains that interessement elucidates how an innovation needs to be modified in accordance with the specific location or context in which it is sought to be used, and can be perceived to comprise much of what is included in the translation model. Furthermore, it is explained in the interessement concept how the evaluation of disadvantages and advantages of an innovation lies in the eyes of the beholder. It is the interest of the users that is crucial to the survival of the innovation, why they are important in the innovation process (Akrich et al. 2002a). In reference to the diffusion theory discussed above the two concepts of interessement and diffusion are distinguished in a well-defined manner by Akrich et al. (2002b) where the diffusion model is explained to be restricting the process of refinement to one particular group of responsible designers and thereby exclude external involvement. The concept of interessement on the other hand embraces this cooperative dimension of innovation. Pohl et al. (2009) discusses the concept of interessement and how it contributes to a more refined understanding of the innovation process. In their study of a Hybrid Electric Vehicle project at Volvo Cars the authors enunciate how a dispersed interest by several actors influences the decision-making in an innovation process. Furthermore, the authors stress the importance of interessement as it captures not only the technological dimensions of an innovation but also the social dimension. Additionally, they suggest that it is "the collective processes that often drive innovation forward" (Pohl et al., 2009:60). Pohl et al. subtly summarizes the interessement concept by emphasizing the importance of an active set of allies surrounding a prospective innovation, and in the center of this networking process is the innovator.

Theoretical encapsulation

Matching an innovation with a new context brings forth several important aspects which have been previously deliberated in theory, as depicted above. The translation process is of substantial importance for the process of matching a product since it includes the importance

of interessement which encapsulates the active involvement of the concerned actors. But also the mobilization of a significant amount of actors in the development process of an innovation. Moreover, in order to be successful in the pursuit of penetrating a market such as the BoP market which hitherto is relatively untapped there is a need for widespread legitimation comprising not only the market but also other concerned actors such as e.g. funders and investors. Furthermore, market knowledge and awareness is emphasized to manifest the importance of knowing the market and the customer for which a product is created, and through this awareness be able to successfully match a product.

Methodology of the study

In studying the matching of innovation the author conformed to qualitative methods for the collection of the primary data. The reason for this was the desire to obtain more profound knowledge about how a company acts when attempting to match an innovation in to a new context. Hence, the focus is directed to one particular company's (GGI's) attempt to achieve this matching. GGI have three products which will be discussed in this case, however, the main focus will be on GGI's second product, the cooking stove. The best way to acquire information about the selected company and to obtain knowledge about their mode of operation was to conduct in-depth interviews with the involved employees. On top of the interviews a vast amount of documents and previous interviews with the company has been reviewed. Also, the author benefited from informal conversations and studied application forms, as well as other interviews previously performed with relation to this study. The research questions that have been central in this study are, as stated above: How are the interests of the producer (GGI) and the end-users matched? How are different actors connected together? And why is this important for the innovation process? Finally, how do companies acquire legitimacy for their work in this extensive network of involved actors?

The point of departure for the data collection in this study was the author's participation in a preceding research about innovations for underserved markets completed in association with the IAP (see empirical section) (Brännvall & Johansson, 2011). In that study 19 companies that had applied for funding from the IAP was interviewed. One of these companies was GGI, and hence the interview with GGI from the IAP has been of particular interest for this study. The other interviews from that study have also been of value for the thought process and hence also they are included. Moreover, additional in-depth interviews have been conducted with the two founders of the GGI, but also with one of the engineers at the company. The reason for focusing on these three individuals is that they have been with the company from

the beginning and are most knowledgeable about the company's products and innovation processes. Succeeding these introductory interviews follow-up interviews with the aforementioned members of GGI has also been performed. The author has apart from this also reviewed several interviews previously performed, by other media, with GGI to get a wider perspective of the company and their products. In addition to these interviews GGI's application to the IAP has been reviewed, and thereby complementing material about the company and specifically the objective with one of their products - the waste to heat electricity converter (see empirical section) – has been obtained. Additionally, Johan Åkerblom, Head of Corporate Cooperation at Sida has been interviewed to get Sida's perspective on the application process. Finally, informal conversations with Ruth Bränvall at Njord Consulting both during and after the research about underserved markets have benefited the research.

The interviews were transcribed, and documents and applications were thoroughly studied, together with previously made interviews both from the pre-study and from other media. The model of translation, with particular focus on one of Michel Callon's (1986) four moments of translation - interessement, was used as a theoretical foundation with which the findings could be analyzed. Based on the interviews and the readings some important aspects of the innovation process were identified: co-creation, awareness and feedback. Those themes are discussed in relation to the frame of reference including the processes of matching and interessement.

Empirical section

In this section the studied company GGI is introduced together with a presentation of their innovations. Moreover, this section explains the role of the governmental organization Sida and how their project Innovations Against Poverty can benefit the development process of innovative companies such as GGI. Furthermore, this section covers the development process of GGI's innovations and illustrates how they approached the BoP market. Also, it accentuates the importance of co-creation as a way of involving the end-user in the development of an innovation.

Greenway Grameen Infra (GGI)

GGI was founded by Neha Juneja and Ankit Mathur in 2010 in India. Their offices are located in Mumbai and Delhi, and the number of employees has increased from two to eight during the past two years. GGI is as mentioned an ecosystems services company with focus on the development of sustainable rural infrastructure. The two founders both have vast

experience within the several fields of e.g. climate change mitigation, energy, supply chain development, and technology costing. Furthermore, a large part of the team has a background within combustions design (boilers, engines etc.) providing an explanation for the development of the company's first prevalent product; a cooking stove intended to replace traditional mud stoves which are posing grave health and environmental risks. Moreover, most of the employees grew up and have lived in India, and consequently they have seen the problems faced by a large part of the inhabitants of India. Neha Juneja argues that the lack of proper options and products helps exacerbating poverty, because with the use of substandard products development and progress is difficult. Furthermore, she remarks that only 2-3% of the products that comes out on the market today are designed for the rural customer even though this segment constitute approximately 70% of the entire population. This also contributed to the company's ambition – to help the largest part of the country in solving some of their problems with simple solutions (Greenway, 2012). Ankit Mathur describes how the company focus is on 'high immediate impact' solutions directed towards fulfilling rural infrastructure needs (Mathur, Businessworld, 2011). The uncertainty on the BoP market, along with the slow processes oftentimes makes investors reluctant to invest in these social enterprises. GGI initially received financial aid from one angel investor, but apart from that they have invested a lot of their own money in to the projects. However, the retail sales from the cooking stove provides the company with profits that are converted in to their projects. Moreover, in 2011 GGI received a grant from Sida to help finance their third project; the waste to heat electricity converter.

Sida is a governmental organization that administers roughly half of Sweden's budget for development aid. Sida is under the Swedish Foreign Ministry and they are the initiators of the IAP project (Sida, 2012). IAP is a financial and advisory program governed with the objective of making way for innovative business ideas which will contribute to enhancing the standard of life for people living in poverty. Rather than helping a single company to achieve higher standards and profit the program functions as a facilitator in order to develop products, services and markets for the benefit of people in poverty and the environment. Companies can apply for either a small grant of 20000 Euro or a large grant with financial aid all the way up to 200000 Euro in order to travel and do pre-feasibility studies, concept development, scale up, scoping or implementing the innovation (IAP Fact Sheet, 2011). The program primarily promotes applications from smaller organizations with a wealth of ideas and great potential, but a lack of available funds to turn their business strategy in to reality. Larger companies

might also be supported in the IAP, as long as they aim to engage the poor as employees, suppliers, distributors or consumers. The business areas are in essence unrestrained, except for companies involved in arms, tobacco and gambling industries (IAP Fact Sheet, 2011). The IAP Program is a part of Sida's Business for Development (B4D), which basically is a way of finding collaboration with industry in the strive for reducing poverty and environmental impact, create jobs and inspire growth (B4D, 2011). The application to IAP is followed by a thorough assessment process carried out by a project team set up by Sida, and managed by Pricewaterhouse-Cooper, including NJORD Consulting and ORGUT Consulting (IAP Fact Sheet, 2011). In this assessment process the companies are evaluated on five different factors: commercial possibility; development effects; cost sharing commitments; innovation and additionality (which basically have to do with what the IAP funding changes in the chances for the company to obtain commercial viability and positively impact the development). The companies are then rated on a score ranging from 0 to 85 where 85 is the top score. (IAP Grant cycle dashboard; IAP Assessment Criteria Guidelines, 2012; IAP FactSheet 2011; Interview, Åkerblom 2012). The funding from Sida have helped GGI to further their understanding of the end-users, and have aided them in their development of the most recent product; the electricity converter.

Greenway Grameen Infra's products

In the remainder of this empirical section I intend to provide the reader with sufficient details for continuing the reading by accounting for the different products that GGI have developed, and are in the process of developing. Following this is a description of how GGI approaches the BoP market with their products in order to succeed in implementing them. Three products are presented; however, as previously mentioned the main focus will be on the cooking stove.

"Roofing product"

The origin of GGI's first product which they refer to as a roofing product derived from the lack of resources in large parts of rural India to afford a proper roof. When constructing a house it is not particularly expensive to construct the walls as well as the ground but the roof is rather expensive and oftentimes demands a qualified mason in order to get the job done properly. Hence GGI developed a roof comprised of plastic and clay, with the clay on the top to prevent the plastic from heating up. GGI performed several technical measurements and studies on how much load the walls could bare, and subsequently they were ready to create the product. The prototypes were installed on to numerous households, but when GGI returned to check up on the households the users had removed the roof. The reason for this

was according to Neha that the users found the roof to be too “plastiqy”, and that they rather save money to buy a proper roof. Consequently the first product that was created by the company rendered unsuccessful.

Greenway Smart Stove

The cooking stove is a replacement for traditional mud chulhas (mud stoves) which pose serious threats to both personal health and the environment. Every year 1.6 million people die (WHO, 2006) as a consequence of indoor air pollution caused by firewood based cooking; Greenway Smart Stove aims to mitigate these numbers by minimizing harmful emissions of CO, CO2 and Particulate Matter. Moreover, the stove conveys convenient cooking without altering the cooking habits, and most importantly, it functions without any prerequisite of fuel processing. The burning process is ideal for cow dung, agro-waste, wood, charcoal, and biomass based fuels. In addition, it is faster than the traditional stove, easier to light and conceal flame for increased safety. Also, the traditional mud stove generates recurring costs in terms of the cost of firewood and loss of time, something that is lowered by the use of the cooking stove (Interview, Rediff, 2011). In addition the cooking stove is portable which enables users to cook both indoors and outdoors based on their preferences.

Waste Heat to Electricity Converter

The third product currently being developed by GGI, and it was for the scoping of this product that the company applied to the IAP. This thermoelectric generator intents to convert waste heat from cooking to DC power with the output of 1 to 5 Watts, a large improvement for households that earlier was lacking access to reliable power and consequently remained in darkness post sunset. Succeeding the stove this waste heat to electricity generator is a perfect follow-up. The objective is not only environmentally appointed but also aims to improve the quality of life of the BoP. With this generator the users will be able to connect other devices that can be charged throughout a 25-40 minute period, providing an energy output of 4-6 hours. Furthermore, the pricing of the product is intended to be half of similar output solar power systems (GGI, Application)

Marketing and education

In order for companies to be successful in matching their products with a new context there is an need for them to create awareness about their product; the purpose of the product and why it is of value to the consumer. In areas where awareness is already present it is understandably much easier to induct a product. In some parts of India, for example in Kanartaka in the southwest parts of the country, another company has already established an awareness of a

similar product as GGI. Envirofit (Envirofit, 2012) is a company focused on manufacturing cooking stoves on the same premises as GGI. Since they have been on the market longer than GGI they have already made an impact and consequently made it easier for succeeding companies like GGI to establish the stove. However, where awareness is not present marketing and creation of awareness becomes more complicated and the need for education is indispensable before it is possible to inaugurate a product.

It might be treacherous to move in to these markets being that they may look attractive due to the lack of competitors, but without a reference point it is hard for the customers to evaluate a product. Moreover, in developing markets, in this case particularly referring to rural India, there is a scarce presence of early adopters, and instead these markets rely more on word of mouth. Compared to technology markets there is a huge difference since people on those markets have the possibility to try something even if they don't like it and then just dispose of it. Due to differences primarily in economical standards this kind of wear and tear behavior is not possible in the same way in the BoP market. A consequence of the low economical standards is obviously that people are more cautious about making new purchases. Also, people living on the BoP market are very group oriented and faithful to the group. Therefore, diverging behavior is not so common since it might compromise the existence of the group. This aggravates the introduction of new products even further in to these markets.

Moreover, in large parts of India people are unaware of the dangers of using e.g. a traditional mud stove compared to more technically advanced equivalents. "They don't have any knowledge about the hazards, they are just uncomfortable in cooking, that is the problem that they have. It is very difficult to explain the hazards to them since many of them are illiterate and lack basic education. We just have to convince them that the stove is not blackening the walls and that they won't be coughing that much. Everything is on a more basic level of information." (Interview, Kazi, 2012). Hence, the major selling points for GGI, in terms of the cooking stove, are not the savings of wood or time, and the mitigation of emissions; it is more about the ease-of-use; the portability; the fact that the product has an appealing design; and that it prevents the walls in the house from turning black. Education about these matters are apparently important, but it is not something that is done overnight, instead it is rather a long and ongoing process of demonstration and conversation. GGI are aware of how much easier the implementation of a product is when awareness is present; "Whenever we go for demonstrations or market during exhibitions we try to make people understand about the products and the benefits compared to traditional products – we try to create awareness. When

awareness is present the process becomes much easier, marketing etc." (Interview, Kazi, 2012).

In rural India it is often the men who are in charge of the economy and the women taking care of the household and thereby also the cooking. Hence, it is the women who have to endure the fumes produced by the mud stove. Oftentimes the men are thus not aware of the suffering that their women have to bear and consequently a new purchase of this kind is not a priority. However, GGI indicates that by procuring the cooking stove the users can save between 300 to 1800 rupees per month in wood savings etc. Nevertheless, since people in rural India earn somewhere around 40-50 rupees per day it is a tough decision to invest 1250 rupees on a new cooking stove, particularly when the awareness of cost-savings and the mitigation of emissions are rather low. Consequently, the issue of education becomes increasingly important in order to raise awareness of both health and environmental improvements, as well as to apprise the notion of cost-saving. The lack of knowledge and education consequently has an effect on the way that GGI justify and legitimize their products. To the consumers in these markets legitimation of the products involves matters of convenience and a boost in their lifestyle, whereas grant organizations, like Sida, are more mission driven and follows a pitch. To them the focus is on aspects such as gender equality, development and environmental aspects. Moreover, when it comes to investors it is almost strictly about financials, commercial viability and how to justify one's products in terms of profitability.

Even though education and the creation of awareness about potential hazards are important, GGI emphasizes the importance of not trying to educate the potential users in a way that would alternate their current behavior too much. Instead, to justify the introduction of new products it is vital to identify the needs of the people that the product intends to benefit. GGI are consistent with this and they advocate that there should not be any adaptation when moving in to the market; "the users should not have to adapt – and they probably are not willing to either" (Interview, Mathur 2012). In order to avoid this adaptation issue GGI highlights a cornerstone in their development process; the co-creation process which was vital for them when developing the cooking stove and the Electricity Converter.

The importance of co-creation

"When it comes to e.g. the design of a car you basically know what the customer wants. But when it comes to rural customers we don't really know what their problems are until we are in their position – primarily, we need to know what kind of problem we are trying to solve.

This is where the co-creation process helps a lot; we not only get input from the actual users but also use the design team to adopt the problem. No one in our design team is from a rural background, everybody is city born – so in order to learn we have to be on "the field" to learn and capture knowledge." – Neha Juneja, 2012

When the problem is identified the process of developing the innovation begins. In order to ensure that the product satisfies the needs of the end-user the team from GGI traveled across the country to live with the users and try prototypes. Understanding the rural market is not easy and hence a close cooperation with the customers is an accommodating part of the process. Primarily, this way of getting close to the end-user provides the innovator with appreciated feedback useful in the further development of the product or service. When GGI produced their second product - the cooking stove - the most essential part of the development process was what they refer to as the co-creation with customers. The identification of the problem is one part but to create a product that can solve a problem and fulfill the needs of the end-user can be a difficult process, especially when the potential user is inexperienced with technical innovations and concurrently to some extent unaware of the potential hazards with using a traditional mud stove.

The first prototype of the cooking stove received negative feedback from the testing group of potential users, mainly due to concerns with the design. Apparently, the size of the cooking stove did not match the expectations of the rural women. The women are habituated to a particular way of cooking that they perform sitting down, so the height of the prototyped stove was not corresponding with the desires of the users. Consequently, by modifying the stove to match with the habits of the rural women satisfaction could be attained. Furthermore, the stove was considered to be too heavy, weighing 10-12 kg which caused another problem for the users. During the rainy season most people in these areas cook indoors while they cook outdoors during summer and winter. Hence, they have one mud stove indoors and one outdoors. Also, people who work in farms for example want to be able to move their stove. Accordingly, the stove had to be easier to carry; it had to be made portable. Moreover, the "mouth" of the stove, the place where the firewood is inserted was not large enough, and did not match what the users were used to with their traditional mud stoves. They are accustomed to insert a piece of wood without cutting it up in to smaller pieces or splinters, why the team had to increase the size of the opening. After adjusting in agreement with the received feedback the stove was made smaller, about one foot and weighing not more than 4 kg. The same co-creation process is adapted in GGI's development of the Electricity Converter even

though there are some limitations to it due to the technicality of this product; “When it comes to the innovation process, the co-creation process is almost identical but there is lesser scope for co-creation in the Electricity Converter because it is a more technical product and the user can only see its output and cannot really comment on the design, size etc.”(Interview, Juneja, 2012)

GGI accentuates the importance of respect towards the end users, and the significance in realizing that they are rational and logical enough to provide good suggestions on the development of a product. Hence, rather than prototyping in a laboratory GGI put emphasis on doing this together with the people who eventually will use the product. “We never asked questions about what they liked in the stove or not but rather simply let people come up with suggestions and found that they (the womenfolk especially) had some brilliant suggestions to offer” (Mathur, Rediff 2011). One of the explanations to why GGI are so thorough in their process, and why they know that the co-creation process is so substantial has to do with experience. The Company’s first product; the roof, provided them with much knowledge of how to approach the rural inhabitants of India, and how to be able to succeed in this market. The problem with the development of this product, which led to failure, was that GGI never cared to ask the end user what they actually wanted, “we just came with our product, which is a mistake we did not make again” (Interview, Juneja 2012).

There is a market research aspect in this as well; in urban India, as well as in any western country, there is an awareness of what people spend their money on and what to produce for the consumers. However, in the rural areas of India this knowledge is close to absent. For this reason the co-creation process is material in order not to invest in the wrong product or the wrong design. Hence, GGI emphasizes the importance of having something tangible when going out to the consumers, because without that it will be difficult to get any proper response to your inquiries. This was one of the most crucial mistakes that GGI made in the roofing project. Consequently, with the experience gained from the failure of the roofing product and subsequently with the development of the cooking stove GGI underscores the importance of prototyping in the co-creation process as a way to acquire valuable feedback, and consequently be able to match the product with the needs and wants of people in the desired context.

GGI started with an abstract prototype and members of the team travelled across five different states in India with different cooking habits, and collected as much knowledge and feedback

as possible from the rural women (and occasionally men) about how this product would match their needs. Cooking is closely related to culture, religion and identity why it is not easy to change a traditional behavior. Hence companies involved in creating these types of products have to create together with the users; they have to work both for, and together with, the prospective users. However, this process can bring about further difficulties that are important to be aware of. In general in India people have a tendency not to give negative feedback, particularly to outsiders who are treated as guests. Thus, In order to successfully gain knowledge and feedback GGI conducted what they refer to as "false sales", which means that they designed prototypes that they sold to the local women. If they are willing to pay for it this means that they actually want it. However, afterwards GGI returned the money to the customer and told them that this prototype was for them to keep. The company had some ten different designs and through the "false sales" and discussions with the end-users they managed to understand what they desired.

Acquiring feedback from the end-users is an important step in the development process of and innovation for GGI. With the knowledge acquired from this feedback they can consequently create products more tailored for the end-user. This co-creation process is hence an important trait for GGI in the development of their products. The knowledge acquired about this co-creation obtained from the roofing product and the cooking stove is important for GGI in the development of the Electricity Converter. The experience from these products has provided GGI with knowledge about how to efficiently approach the BoP market through the process of co-creation.

Discussion

In the case three different products have been presented, with particular focus on the second product; the cooking stove. These products have portrayed different approaches to the innovation process, and GGI have shown how they, through the development of these products, have advanced their understanding of the market and how to best approach it. The case has displayed different ways, and hence different results, of introducing new innovations on the BoP market. The roofing product was deemed unsuccessful due to the lack of accepting external involvement from the end-users in the innovation process. The cooking stove on the other hand was successful, and even though there is a market demand for both of these products only one of them prospered. One underlying factor to the success of the cooking stove was the close interaction with the end users, the co-creation process, where the producers received feedback on their prototypes, increased awareness of the end-users and

their habits and demands, but also provided awareness in introducing new, cleaner, ways of cooking. Through this they managed to innovate together with the end-user instead of innovating for them. The innovation process for GGI's most recent product – the waste to heat electricity converter – followed on the same line as the cooking stove, and through this comprehensive approach GGI received funding from Sida. Several interesting aspects come in to mind when contemplating GGI's co-creation process. First, it brings attention to interessement since co-creation encapsulates a lot of what the concept of interessement implies. Mostly concerning an active involvement and participation of all the actors in the innovation process and also it brings forward both the technological and social dimension of an innovation (Pohl et al., 2009; Callon, 1986). Second, it incorporates the involvement of interested actors in a project, and different interests are negotiated and adjusted in relation to others why problematization, mobilization and enrolment (Callon, 1986) also are of interest. Third, matching an innovation to a new context becomes more plausible through the co-creation process since it helps to increase understanding of the end-user's needs. Finally, through this inclusive approach they can more easily justify their products and acquire legitimacy among the end-users and other concerned actors.

Translation of innovation

GGI's case suggests, in agreement with the translation model and the art of interessement (Callon, 1986; Akrich, 1992; Akrich et al., 2002a) that in order for an innovation to successfully collect attention and fruitfully spread on the BoP market there is a need for a widespread interest and involvement of several actors ranging from the innovator to the end-users. Creating and obtaining awareness about the new context helps the innovator to involve all of these actors and include them in the development of the product. Even though these actors have different background and interests creating awareness and welcoming feedback from the end-users enables the producer and the end-user to cooperate and hence co-create a product. Co-creation is a way of enrolling and mobilizing (Callon, 1986) all involved actors in discussions about the merits and demerits of a product and to comply with each other's needs. Through this inclusive process the innovator is allowed to involve all actors, and hence gain valuable knowledge from their opinions. Also, different actors will likely have different thoughts and opinions which hence need to be merged when creating the product. As argued by Akrich (2002) innovating includes interesting a vast amount of allies in order to help the innovation succeed and make the innovator more durable in the desired context. The concept of interessement focus predominantly on obtaining knowledge concerning the context in

which you are to implement your product (Akrich et al., 2002a); it is a research process which will lead up to the workshop where the knowledge is put in to practice. This is one of the aspects where GGI stumbled when creating the roofing product, and as demonstrated by Akrich (1992) this process, which in theory can be denoted a process of diffusion, accounts for inelasticity and demonstrates failure as the innovation travels in a vacuum, without sufficient external involvement.

The unsuccessful development of the roofing product led GGI to acquire valuable knowledge on how to more accurately approach the rural market of India. This example portrays a failure with interessement since GGI had a non-inclusive approach in the development of this product. They did not gain sufficient feedback and awareness of the needs and desires of the end-users, and hence instead of co-creating the roofing product they completed it without external involvement from the end-users. GGI harnessed the knowledge that they acquired from this misstep and by connecting with the rural inhabitants they successfully managed to co-create the cooking stove. In contrast to the roofing product the creation of the stove passed through several actors, primarily those who eventually would use it and gave them the opportunity to influence the design to fulfill their requirements. It is possible that GGI could have suffered additional setback would they not have listened to the end-users when developing the cooking stove. Instead, the act of prototyping a set of stoves in order to find out which design the users approved of most provided GGI with the information needed to produce an appealing product. This successful approach could hence be used in the development of GGI's third product; the Electricity Converter.

As suggested in the translation model the innovation is modified and added to in the hands of all the involved actors (Latour, 1986; Latour 1998), and this re-shaping of the product allows for it to be harmonized with the new context. The cooking stove in a good way portrays what in theory appropriately could be referred to as the translation of an innovation in to a new context, whereas the roofing product sheds light on a more abortive attempt – in what most accurately could be referred to as a diffusion process. It is important to recall that both of these models involve several actors. However, in the diffusion model the actors are inactive (Akrich et al., 2002b), as in the roofing product, while in the translation model they are active (ibid), as in development of the cooking stove. The third product currently being developed by GGI sheds additional light to this interessement process, even though it is somewhat different from the two previous products since it is more technically advanced. The technicality of the Electricity Converter complicates the co-creation a bit. The users are

unaware of how it actually works, just like most people probably are about the functionality of a technically advanced product, and therefore have not got much to supplement on in this matter. However, it is still a question of co-creating to fit their desires, in terms of e.g. design and conventionality, and this is what will determine if the product is successful or unsuccessful. All of GGI's products, with primary focus on the first two have successively increased GGI's knowledge about the BoP market and how to innovate with the prospective users instead of for them. Different actors are connected together through the co-creation process. This process demands receptivity from the innovator in the shape of accepting that involvement from the end-users enriches the development process of the innovation and through prototyping and obtaining feedback that is realized. Again, the interest of the users is crucial to the survival of the innovation, why they are so important in the innovation process (Akrich et al. 2002a). The case has clearly described how the involvement of several actors helps to improve the innovation process through this co-creation. Hence, the connection between innovator and end-user is very important.

Matching the innovation and acquiring legitimacy

The effort to match a product with a desired context, in this case the BoP market, is as previously indicated depending on the participation of a larger set of actors, and hence compels the innovator to engage in a close relationship with the prospective user (Akrich et al. 2002a). Innovating for the BoP market has significant effect on the amount of actors involved. The innovator has to accommodate to the interest of the end-user; potential aid organizations; investors; media and the surrounding world. All of these actors have different interests which consequently need to be attended to. However, to be successful on the BoP market, as in any market, the most important interest to attend to is that of the prospective user. It is crucial that the innovation is matched to the context where it is supposed to be introduced, and through the co-creation process this becomes conceivable. Succeeding with matching an innovation to a new context is as indicated in the GGI case a process which demands close collaboration with the prospective user. As previously indicated matching can concern actions occurring through different actors in different settings (Walter, 2005). The process for GGI involves prototyping and receiving feedback in order to obtain knowledge about the customers and their desires, and in this way they involve a larger set of actors but without pertaining to one specific context. The importance of this co-creation becomes even clearer when contrasting it to the abovementioned, more non-inclusive, attempt studied by Akrich (1992). In that case it was the lack of collaboration with the end-users which

consequently led the project to failure. Instead, co-creating allows for a match of interests between producer and user, and drawing upon Rottenburg (1996); through this close collaboration the innovation is allowed to be given a new form so that it can be matched in accordance with the new context.

Moreover, the process of matching demands awareness, both from the innovator and the prospective user in terms of e.g. behaviors, cultural deviations, and education. These aspects might differ depending on the context and possibly can have a large impact on the design and structure of a product as depicted in the case in terms of e.g. cooking habits and behaviors related to this. With an existing awareness there is not such an extensive need for marketing and educating, but it does however provide excessive opportunities in terms of a sense of market privacy and the prospect of obtaining a first mover advantage. As declared by GGI they faced both market situations where a company had already spread awareness, but also where no particular recognition of their products were present. It is obvious that there is a difference in how to approach these markets, and many times replicating successful ideas might be the easiest way to approach a market where awareness is already distributed. However, in markets where you have to create awareness the situation is different. First of all there is of course a difference compared to more technically developed markets which applies more to the s-curve of innovation being that there is a substantial presence of early adopters to help spreading the innovation. This is not the case in the BoP market though, why companies have to go about these markets in a different way, focusing on spreading knowledge rather than to profit from already existing knowledge. As indicated by London and Hart (2011) this implies great challenges for companies. Thus, a close relation to the prospective users is of great significance in order to share knowledge, but also to acquire knowledge in the shape of feedback about tendencies, habits and demands.

As previously discussed we are depending on the environment in which we act to legitimize our actions (Simmons, 2001). As indicated in the GGI case there is most likely a difference in how to obtain legitimacy through the work that companies are doing depending on who they are targeting. Our actions correspond with the way we want to be perceived in the environment that we act in, and just as with legitimacy it is the environment which justifies the work that the organization is doing (Simmons, 2001). This can be interpreted through the co-creation process since involving the end-users in the creation of the innovation shows an interest in their habits and demands and indicate that their needs are given priority and hence the product is justified and the company can attain legitimacy for their work. On the contrary,

not conforming to the needs of the end-users can make a product more difficult to justify to the end-user and possibly might lead to failure, as in the case with the roofing product.

Drawing on the logic of appropriateness (March and Olsen, 1989) companies act in accordance with the specific context in which they are presently acting. Appropriate action is taken to legitimize the work that the company is doing, and depending on who they are targeting they might justify their actions in different ways. Hence, since companies that are acting on the BoP market are under constant observation from several directions (NGOs, Aid agencies, media, the market where they act, investors etc.) they have a need to justify the work that they are doing diversely to be considered legitimate. This has been depicted in the case where the level of awareness on the market and the interests of grant organizations and investors, as well as attention from the surrounding world have an effect on the way that GGI justifies their products. Thus, the logic of consequentiality and the logic of appropriateness are not to be considered mutually exclusive in this case. Following this line of thought it is not strange, or particularly wrong, to manifest different objectives for the sake of justifying the implementation of a product. We have, as argued by Simmons (2001), a need to justify our actions, as a shield against possible objections or discontentment with our activities. Nevertheless, this does not indicate that it is alright to delude observers, but instead that one might use the particular facts that are most applicable to the specific context where a product needs to be legitimized. GGI passed the assessment from Sida and the Electricity Converter was considered legitimate from several aspects, such as e.g. environmental and economic aspects. The cooking stove has publicly been justified primarily for the mitigation of indoor air pollution and hence to the global audience GGI has reached the status of a do-gooder, and consequently can be considered legitimate. The focus for the users on the other hand concerns more the reduction of smoke that is blackening the walls, the ease-of-use and the design. To investors the main concern is of quite obvious reasons the profitability of the product. The roofing product, however, never reached the status of being considered legitimate, due to the unsuccessful approach to the market. The premises of the end-users were never really considered, and consequently this "diffusion" process led to failure. All of the involved actors have different premises which need to be directed in order to be considered legitimate, why a more inclusive process is preferable when moving in to the BoP market. Consequently there is a connection between the induction of a product to a market, in this case the BoP market, and the acquiring of legitimacy.

Most likely the ambiguousness present here is a way for GGI to control the different contexts where they are subject for investigation. This, however, is an action preeminently exercised due to discrepancies in the level of awareness between the involved actors and stakeholders. Consequently, the introduction of GGI's products on these markets raises the question of education and how to increase awareness of the actual dangers of e.g. a traditional mud stove. This must surely be seen as a good opportunity to combine the introduction of a new product with the educational aspect, and thereby try to raise knowledge and awareness about the health and environmental hazards related to the use of a traditional mud stove, or conventional sources of energy. Successively, the ambiguousness might diminish and the process of justifying one's products differently depending on the context might dissolve on behalf of a more homogenous approach.

The co-creation of the cooking stove - through prototyping, actor involvement, feedback and creation and attainment of awareness - allowed for GGI to succeed in their endeavors to match this product with the desired context. Also, it has provided them with vital knowledge about how to most accurately approach the BoP market henceforth, which has been of great use for them in the development of the Electricity Converter. Consequently, this co-creation process has allowed GGI to match their interests with the interest of the end-user. Furthermore, involving the end-users in the development and creation of the innovation and hence pertaining to their needs is a way for the company to justify their work to the end-users, and through this they can obtain legitimacy for their innovation among all concerned actors.

Conclusion

Lately, instead of innovating *for* the BoP market, attention has been drawn towards innovating *together* with the people on the BoP market. The innovation process has been displayed as further successful through the involvement of a large set of actors who can help the innovator in the development process. Through this inclusive process attention is focused on the needs and desires of the actual users of the products, and through prototyping and feedback the innovator is given the chance to adapt the product to the end-user instead of compelling the user to adapt to the product. This paper has shown that a company by prototyping, obtaining feedback, creating and procuring awareness have been able to co-create products for the BoP market. The study elucidates the importance of accepting external involvement in the development process of an innovation instead of denying it. The concept of interessement accentuates that it is crucial to have an active participation from all actors ranging from the innovator to the end-users. Mobilizing these different actors through the co-

creation process allows for the innovator to succeed in the endeavor to match a product in to a new context. The GGI case cogently illustrates why the concept of interessement, with all its implications, is of importance for a positive outcome of an innovation on the BoP market.

Moreover, this study draws attention to the notion of legitimacy and how companies that are acting on the BoP market attract attention from several directions and hence have to legitimize the work that they are doing in many ways, and occasionally in different ways depending on the level of awareness and the interest of the targeted actor. This study contributes to previous studies of innovation transfer as it sheds light to the importance of engaging a larger set of actors, primarily the end users, in the development of a product for the BoP market. From a managerial point of view the GGI case portrays a workable way to act and provides valuable knowledge pertinent to any company who wishes to engage in developing innovations for the BoP market.

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Appendix

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Shoeb Kazi (GGI)	2
Ankit Mathur (GGI)	2
Johan Åkerblom (Sida)	1
Preceding interviews:	
Previous study (Innovation in Underserved Markets, 2011)	19
Business world	1
Rediff	1
Informal conversations:	
Ruth Brännvall (NJORD Consulting)	Several occasions during and after the study of Innovation in Underserved Markets.