Sustainable Supply Chain Management at the Base of the Pyramid – Assessing Projects from the Food Industry

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Introduction

Since the first seminal papers on business at the Base of the Pyramid (BoP) (especially Prahalad and Hart, 2002) a sound stream of literature has emerged on businesses for and with the poor of the world. Thereby, the BoP refers to the bottom-tier of the world income pyramid and represents the large share of people living in extreme and moderate poverty (often described as those who live with less than 2.5 US-$ per-day-income). While in the beginning the focus was mainly on the provision of tailored goods to poor communities, in the meantime a more holistic view, including also the involvement of these communities into productive processes and supply chains, has developed (e.g., Simanis et al., 2008; Hahn, 2009). Despite offering some promising opportunities for the economic development of the poor, the sustainability of such business models in terms of the economic, social and ecological development has been questioned (see e.g., Hahn, 2009). This includes the fear that a positive impact on the welfare of substantial numbers of the so far underprivileged parts of the worldwide population might endanger especially ecological sustainability. It is feared that a substantially rising income at the BoP could lead to dire consequences for the natural resource base, the world climate or other ecological dimensions and could thus have negative consequences for future generations. Thus, a major challenge of such business models is to facilitate sustainable value creation within frequently resource-poor socio-ecological environments.

Sustainable Supply Chain Management (SSCM) as the intersection of Supply Chain Management (SCM) and sustainability is a rather new research stream that has developed strongly in recent years (for literature reviews of this field see e.g., Seuring and Müller, 2008). These conceptualizations respond to increasing stakeholder pressures (mainly from governmental bodies, customers, NGOs) on focal companies (Gold et al., 2010) to ensure simultaneous performance of the entire supply chain on a triple bottom line (economic, ecological, social) (cf. Dyllick and Hockerts, 2002). Seuring and Müller (2008) define SSCM as "the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements" (Seuring and Müller, 2008, p. 2). Gold et al. (2010) found that the social dimension is neglected within SSCM research and practice so far, while the focus is predominantly on environmental aspects. This indeed makes the application of SSCM to BoP projects even more intriguing since the latter inherently carry their potential rather regarding social and human improvements while tending to neglect ecological sustainability. SSCM concepts offer promising ideas for integrating poor communities as value-creating actors into supply chains, for adequately designing, managing and operating these supply chains, and for achieving high performance on all three sustainability dimensions (Hall and Matos, 2010). Against this background our main research question is as follows: How can supply chain management concepts be applied to appropriately integrate the BoP into sustainable value creation? Although it seems rather obvious to integrate these two lines of thinking, there is only limited related research integrating supply chain issues rather as a kind of side-line into BoP business approaches, as will be discussed in the following chapter. By means of three case studies of BoP projects in the food sector, we explore in how far SSCM can be a catalyst for sustainability goals both for the focal (multi-national) companies and for the supply chain as one entity, i.e. for all the supply chain actors involved.

The paper is structured as follows: First, we outline the methodology of the multi-case study research design. Subsequently, the state of the art of BoP research is succinctly outlined and linked to SSCM issues. Then the pattern of analytic constructs derived from SSCM theory is presented. After presenting the findings, we discuss them against the background of SSCM as facilitator for sustainably integrating poor communities into value creation, thereby contribution to the further theoretical substantiation of BoP literature.

Methodology

The case study method was used for the empirical research presented here. Case studies allow investigating current issues in complex environments. Stuart et al. (2002) suggest a five stage research process for case studies, from which we derive five steps for presenting the research design of the extant paper.

(1) Theory-based definition of the research objective: The extant study applies SSCM theory to BoP projects in the food sector. Main research objective is to investigate how supply chain management concepts can be applied to appropriately integrate the BoP into sustainable value creation.

(2) Instrument development: As research design we apply multiple case studies. Case studies are a suitable tool for scientific exploration, i.e. for gaining first insights into the phenomenon studied (Yin, 2003). Hence it is appropriate for our purpose of looking at the interface of SSCM and BoP, since work covering this overlap is very scant. Opting for a multi-case design allows generalizing beyond the single case while still allowing in-depth insight into the individual case (Eisenhardt, 1989). For case selection we followed a theoretical sampling approach (Eisenhardt and Graebner, 2007). We focused on BoP projects in the food industry since food is a basic human need and malnutrition represents one key challenge in vast parts of the developing world (FAO, 2006). Hence, extended provision of the population with

good-quality or even fortified (by adding nutrients or vitamins) food produce provides opportunities to enhance their living conditions. On the other hand, a large part of rural poor people belonging to the BoP make their living from smallholder subsistence farming (e.g., Nonclercq et al., 2009) so that integrating these farmers into larger supply chains could enhance their productivity and income and can thus substantially upgrade already existing resources in these countries. The research design embraces three case studies (Grameen Danone Foods, BASF Micronutrition Initiative, Nestlé Milk Districts) which is on the lower margin but still well in line with various suggestions on the number of cases to process (e.g., Eisenhardt, 1998). For successfully dealing with the abundance of data case study research produces, Siggelkow (2007) highlights the necessity of a strong theoretical background that helps consistently filtering data according to conceptual arguments. We responded to this call by deducing a pattern of analytic categories from theory (as described in the subsequent chapter) to be used for analyzing the contents of transcribed interviews.

(3) Data gathering: Data gathering for all three cases comprehends altogether 11 semi-structured interviews in English and German language of an average length of 60 minutes: Danone (three), BASF (four), and Nestlé (four). These interviews were conducted partly telephonically, partly face-to-face, mainly with managers of the focal companies, but also with NGOs and development aid organizations that act as facilitators for the respective BoP projects. This diversification of key informants allows for a differentiated perspective on the subject. Data collection took place in the period from November 2008 to February 2009 in the course of a project about contributions of multi-national corporations to sustainable development in BoP markets (Schrader, 2010). Accordingly, the interview guidelines were not focused specifically on SSCM theory but covered the broader topic of how to do business for and with the BoP.

(4) Data analysis: Data was analyzed by means of qualitative content analysis (see Mayring, 2000) based on the pattern of analytic categories that had been deductively developed beforehand as outlined below. After one third of data analysis some categories have been further specified (in terms of their definitions) in an inductive approach from the interview material under examination (collected through eleven semi-structured interviews), iteratively passing through category building, testing and revising by constantly comparing categories and data (Eisenhardt, 1989; Mayring, 2000). This means that the technique of structuring interview data according to conceptual constructs (i.e. deductive data analysis) was complemented by summarizing data to a certain abstraction level (i.e. inductive category building) (Mayring, 2000).

(5) Quality of overall process: Replicability of the research design is ensured by a comprehensive and detailed documentation of the whole research process. Moreover, high level of reliability is achieved by thoughtful selection of key informants, as well as careful transcription and multi-coder analysis of the interviews. Different judgments between the coders were individually assessed and resolved through discussions, thus gradually aligning differences regarding the mental schemes of the coders. While internal validity was enhanced by repeatedly checking each case against the source data (the single interviews) and by intensive discussions within the research team, de-contextualization and theory-led abstraction allows claiming a certain degree of generalization for the findings and hence external validity (Avenier, 2010).

Deriving analytical categories by bridging BoP research to SSCM theory

There is an existing body of knowledge on BoP ventures and strategies as well as SSCM. Initially BoP literature focused mainly on seeing the poor as a substantial and formerly largely ignored group of customers. As a consequence, a major emphasis has so far been placed on

the poor as consumers and related marketing activities. Research has been conducted on the size and characteristics of this potential customer group (e.g., Banerjee and Duflo, 2007) and on the related questions how these customers can be reached as well as how successful (distribution) business models need to be configured (e.g., Vachani and Smith, 2008). The idea of selling to the poor has, however, received a broad scope of fierce criticism by some scholars ranging from the reproach of overestimation of the market size at the BoP to the possibly deteriorating effects of such business models on the welfare of the poor (e.g., Seelos and Mair, 2007). In the wake of this criticism, research has gradually involved into viewing the BoP not only as customers at the end of corporate value chains but also as integral part of value creation as producers, distributors or service providers, with a few papers distinctly connecting these issues (e.g., Kirchgeorg and Winn, 2006). While the earlier customer-focused conceptions of BoP strategies have been labeled as "BoP 1.0" these new inclusive strategies are often called "BoP 2.0" (Simanis et al., 2008) or "integrative BoP" (Hahn, 2009). Apart from the BoP 2.0 idea, the concept of "social business" (e.g., Seelos and Mair, 2005) similarly aims at such an inclusion with an explicit view on supply chains at the BoP. The main distinguishing factor is that social business specifically refers to companies addressing social objectives in a profitable way while reinvesting any profits to extend or improve its reach (i.e. having a distinct focus on the social aims) while BoP approaches usually focus on the inherent and prospective business opportunities which rest with the world's poor (i.e. having a sharper focus on possible profits). However, proponents of the BoP approach also frequently refer to the benefits the poor population might gain from adapted business models. Consequentially, we will refer to both approaches when later turning to the case studies.

Social aspects of human development have been discussed in the BoP literature from the very beginning (see already Prahalad and Hart, 2002) while aspects of environmental sustainability came to the fore more recently (e.g., Hahn, 2009). When integrating these views, the link to

concepts of SSCM (see e.g., Seuring and Müller, 2008) is not far and emerges as a field requiring further explanation. However, both streams of research have rarely been combined in a comprehensive way. This seems surprising since, for example, ensuring that environmental and social standards are met throughout the entire supply chain, including the pre-fabrication stages in developing and transition countries, is one of the core issues when striving for sustainable products and provides a close link to a decent work agenda (see Hall and Matos, 2010). In our study of three cases from the food sector we will thus integrate both streams of research by applying constructs of SSCM to BoP ventures. As indicated above, our analysis focuses on the food sector since it fits well the BoP 2.0 paradigm that aims for gaining poor communities both as consumers and producers.

We will begin our study by deriving analytical constructs from SSCM and BoP literature as well as from our case analysis (see methodology above) which will then be applied in the content analysis of the cases. These constructs are eventually summarized (with abbreviations and definitions) in s.

Table 1. As mental starting point and guiding framework for developing the pattern of analytic categories, we used the model of SSCM practices of Pagell and Wu (2009).

With the above mentioned inclusive BoP strategies and an integrated view on value creation at the BoP, the more recent BoP research distinctly includes modern supply chain issues such as business and supply networks and innovative partnerships (e.g., Choi and Wu, 2009; Rivera-Santos and Ruffin, 2010). As well, the core facilitating function of innovation when aiming for overall sustainable business models at the BoP is acknowledged in BoP literature (Mahajan and Banga, 2006) (construct RIN).

Moreover, related questions of sustainable consumption and the provision of green and fair products were, until recently, mainly connected with western customers while poor people can reap substantial profits from the value creation both as producers gaining income and as

consumers of these products (Hall and Matos, 2010). One difference between conventional sustainable supply chains and BoP projects might touch upon the overall mindset of focal companies towards doing business with the poor: the latter often seem to deliberately head for poor communities as supply chain members or consumers looking for win-wins while the former rather aim for reducing reputational risks and ensuring performance by supplier monitoring and integration. Risk reduction and quality requirements are often pursued by standards and certificates (see Courville, 2003 for ecological standards and Graafland, 2002 for social standards) (construct SCE).

On the other hand, the pro-active BoP approach is rather in line with Halldórsson et al. (2009) arguing for the need of a radical change in the mindset if supply chains are "really" being operated in a sustainable manner, so that economic goals are equitably integrated with environmental and social ones (constructs GVO and ESE). This change in the mindset is to take place both among top managers and all employees across the organization (Pagell and Wu, 2009) (constructs PAM and ECO). For this end, employees' intrinsic commitment to sustainability goals may be complemented by (extrinsic) "measurement and reward systems that link employee behaviors to sustainability outcomes" (Pagell and Wu, 2009, p. 53) (construct RIE).

The arguments continue into the question how such supply chains achieve transparency (in terms of the profitability of all supply chain actors) and traceability (in terms of compliance with environmental and social standards) (constructs TRP and TRB). In total, transparency and traceability would imply a decommodization of products and their supply chains (construct DCO) (Pagell and Wu, 2009).

Many of the prominent examples combining production and consumption at the BoP deal with agricultural products such as Grameen Danone in Bangladesh (Goving, 2007) which provides nutritionally fortified and affordable yoghurt based on local milk sources. A further

example mainly aiming at the supply side is the Nestlé Milk Districts in India and Pakistan (Goldberg and Herman, 2007). While the need for "better" supply chain management is emphasized, there is no existing research exploring why and how such supply chains at the BoP would be different in terms of performance objectives (Dyllick and Hockerts, 2002) (constructs EVB, TBL, DBL, PSI, PEI), product features and product positioning (Pagell and Wu, 2009) (construct PPO), supply chain design (Pagell and Wu, 2009) as well as supply chain governance and operation (Yu et al., 2006) (constructs RSD and RSF). It is not clear, which tools from "conventional" SSCM could still be applied. Aiming for flexible supply chain design and operation (able to adapt to specific BoP conditions) requires tighter integration along the supply chain (Seuring and Müller, 2008), which ask for lean and green supply chain (Simpson and Power, 2005), but also better quality management along the supply chain and openness of all actors towards learning (Pagell and Wu, 2009) (construct LTL).

Table 1 outlines the comprehensive pattern of analytic categories.

Table 1: Categories, their abbreviations and definitions

Category	Definition
Product and process design and innovation	
1.1 Lean, TQM & learning (LTL)	Aiming for incremental sustainability improvements through lean manufacturing, TQM and learning processes.
1.2 Radical innovation (RIN)	Keeping an open mind for the necessity of radical innovations for becoming truly sustainable.
1.3 Product positioning (PPO)	Emphatically positioning products as sustainable and expanding the range of products by changes in the product design that allow for safer (for people and the environment) manufacturing and use.
Corporate orientation towards sustainability	
2.1 Guardrail value (GVO)	Generally defines what sustainability means to the organization, is tightly tied to the business model, protects the brand, and is used to guide decision making.
2.2 Alignment of environmental, social and economic goals (ESE)	Environmental and/or social goals and activities have to be aligned to the economic activities of the organization, so that non-economic performance is a critical factor for financial performance.
2.3 Pro-active top management (PAM)	Pro-active top management provides key support for the implementation of sustainability goals within the organization.
2.4 Employee commitment (ECO)	Responsibility for social and environmental concerns being shared across the organization and respective goals being pro-actively pursued by the entire organization.
Features of supply chain design and operation	
3.1 Reconceptualizing supply chain design (RSD)	Reconceptualizing the supply chain to include (and thus leverage) the skills and abilities of a broad scope of non-traditional actors such as NGOs, local communities or competitors.
3.2 Reconceptualizing supply chain functioning (RSF)	Reconceptualizing (organizational and process) design and functioning of the supply chain in order to aim for sustainability.
3.3 Transparency (TRP)	Focal firm is demanding to know the profitability of every actor (supplier) in the chain in order to safeguard that chain members make enough profit to do more than just subsist.

3.4 Traceability (TRB)	Demanding information on all materials used in a supplier's product (even those the supplier bought) to ensure that all inputs meet the buying firm's standards and/or requiring that suppliers provide evidence that working conditions were acceptable.
3.5 Supplier certification (SCE)	Certification of suppliers on social and/or environmental actions and outcome.
3.6 Decommodization (DCO)	The focal company moves its suppliers out of the commodity supplier status by granting above-market prices, offering long-term relationships, and engaging into (also not directly beneficially fed back) supplier development.
Supply chain performance	
4.1 Economical viability (EVB)	Being sustainable from a traditional economic standpoint.
4.2 Rewards & incentives (intrinsic & extrinsic) (RIE)	Employees' intrinsic commitment to sustainability goals have to be complemented by (extrinsic) measurement and reward systems that link employee behavior to sustainability outcomes.
4.3 Sustainability performance on the triple bottom line (TBL)	Striving simultaneously and equally for performance on all three sustainability dimensions: social, ecological, and economic.
4.4 Sustainability performance on a double bottom line (DBL)	Striving simultaneously and equally for performance on two sustainability dimensions: social & ecological, social & economic, ecological & economic.
4.5 Performance on social/human issues (PSI)	Striving for performance regarding social/human issues.
4.6 Performance on environmental issues (PEI)	Striving for performance regarding environmental issues.

Source: Own adaptation based on Pagell and Wu (2009)

Findings

Main elements of the three case studies under examination are briefly introduced in Table 2.

Table 2: Overview of the main elements of the investigated case studies

	Danone	BASF	Nestlé
Project	Grameen Danone Foods	Micronutrition Initiative	Milk Districts
Business Model	The designated aim of the joint venture is to provide the poor population in Bangladesh with affordable and nutritious dairy products. It cooperates exclusively with local farmers as suppliers for raw materials and employs solely local small and micro entrepreneurs as distributors.	The initiative provides food producers with stable and cost effective encapsulated vitamins to enrich their products which reach the BoP and have a positive health effect on the consumer. BASF also offers its business partners know-how on the cost-effective fortification of food products which are affordable at the BoP.	Local sourcing of dairy products (milk) via decentralized collecting points which are equipped with "cooling centers". The milk is cooled down and transported in insulated tanks to ensure freshness. Backup cooling stations add to supply chain security and administrative centers ensure fast payment to farmers.
Innovative Aspects	Local production of dairy products by way of small "micro-factories".	B2B business model targeting local food producers with products benefiting the end consumer.	Improving local supply chains and overcoming infrastructural deficits by innovative processing of raw materials.
BoP-Focus	BoP as customers and as suppliers / producers.	Indirect BoP connection via B2B relationships with local businesses.	BoP as suppliers of raw material.
Sustainability Focus "Economic"	Finding a viable business model.	Focus on cost effectiveness of food fortification to avoid jeopardizing affordability of end product.	Sourcing is economically viable and adds to Nestlé's economic bottom line.
Sustainability Focus "Social"	Providing healthy and affordable dairy products to local population while improving income of local population.	Enriching local food ingredients with vitamins to achieve positive impacts on the health at the BoP.	Focus on local procurement of milk adds to generating income at the BoP.
Sustainability Focus "Ecological"	No distinct focus. Local procurement and distribution minimize transport; ecological	No distinct focus. Local procurement and distribution minimize	No distinct focus. Local procurement reduces transport.

In the following, the findings of the three case studies will be summarized as a cross case analysis. The way how analytic categories derived from SSCM theory (and BoP literature) could be used for analyzing these three case studies may be classified into: (1) Categories were not or nearly not reflected by our data, and (2) categories were useful for structuring BoP ventures.

(Ad 1) Categories which could not be found at all within the interviews were supplier certification (SCE), referring to the certification of suppliers in terms of their social and/or environmental impacts, and rewards and incentives (intrinsic & extrinsic) (RIE), meaning that employees' natural motivation towards sustainability goals is complemented by adequate reward systems explicitly remunerating sustainability-friendly behavior. Additionally, there are some categories – namely transparency (TRP), traceability (TRB), sustainability performance on the triple bottom line (TPL), and performance on environmental issues (PEI) – that have been merely marginally touched upon by one to three of the interviewees.

In terms of transparency, only the Nestlé case provides evidence of locally implemented supply chain internal measurements systems (regarding profit margins, free cash flow etc.) that evaluate the ability of supply chain members to keep up operations, invest and grow. Furthermore, Nestlé ensures traceability of its produce and thus high quality standards of milk as live product through a serial of quality tests from the farm and collection centers to the final product. Furthermore, the analysis shows that TBL considerations do not play a substantial role in the BoP cases.

(Ad 2) Instead, the examined BoP projects focus very strongly on social and economic outcomes thus following a shortened double bottom line (DBL). Interviewees in all three cases confirmed the striving for social gains (PSI), mainly in terms of income generation and capacity building at the BoP, while the cases of Danone and BASF additionally include improved health through better nutrition as further social aim. Moreover, all three projects

head simultaneously for economic sustainability (EVB). In the Nestlé Milk Districts, sourcing raw materials in developing countries is already part of Nestlé's core business, while BASF and Danone are in the earlier stages of developing a sound business model so that the economic viability is still somewhat uncertain. Interviewees from BASF and Danone confirm the importance of the aim of keeping the BoP projects self-sustaining in the long run; nonetheless profitability expectations are limited (and not comparable to normal business segments of these corporations) since the projects head simultaneously for social benefits. Here it should be stressed that company representatives in both cases highlight additional economic benefits (e.g. gaining experience in new markets, with new partners and new products or enhancing employee commitment) which could already be achieved before the projects could finally prove their profitability.

Other benefits such as learning opportunities stem directly from the need to adapt (or even reinvent) business models to (for) BoP environments. Here, our analysis contributes some interesting findings. Pagell and Wu (2009) assess that "continuous improvement focused operational philosophies may be most useful for making an existing supply chain more sustainable. However, the same operational philosophy may become a hindrance when the organization needs to radically change what they do to become truly sustainable." Interestingly, we simultaneously found both approaches throughout the case studies, sometimes even within the same interviews. It seems that the different partners in the supply chain learn extensively from each other which leads to both continuous improvements within the supply chain (e.g., in terms of leaner supply chains or on how to reach customers at the BoP) (LTL) as well as to radical innovations in the business models (e.g., revolutionizing the thinking of how to conduct business at the BoP) (RIN).

Deliberately designing products that have additional social value and explicitly positioning them as sustainable on the market place (PPO) is of relevance for two BoP projects (Danone

and BASF). Here, good-quality and fortified food products are specially targeted to low income consumer groups. Hereby, affordability is ensured through keeping the margins down and through offering small package sizes. Moreover, the product design is adapted to the specific living conditions of people at the BoP, who, for example, lack fridges or sometimes spoons. Multi-stakeholder driven social marketing and information campaigns make sure that consumers appreciate the added value in comparison to conventional products. The Nestlé project aims at integrating the poor into the supply chain but mainly targets urban populations with higher purchasing power as consumers so that product positioning at the BoP is less important here.

It is acknowledged that managerial orientation towards sustainability is of great importance for running BoP projects. All cases confirm that guardrail sustainability values (GVO) pervading the mission, strategies and culture of the focal companies is a prerequisite for engaging in BoP business venturing. In addition, the Danone case emphasizes the close interconnectedness of social (and to a lesser extent environmental) and business goals (ESE). On the one hand, various social goals – embracing nutrition, employment and localized consumption and production patterns – are complemented by efficient and cost-effective operations. On the other hand, business at the BoP in developing and transition countries helps the entire Danone corporation to develop agile and responsive supply chains and manufacturing; being thus able to deliver more competitive products in the Western markets, too.

SSCM theory additionally suggests a pro-active stance and organizational commitment as enabling factor. Here again, we found supporting evidence in the cases. Interviewees identify pro-active top management (PAM) as crucial for the initial impetus to implement BoP projects in the first place as well as for a long-term managerial support. Moreover, commitment of the employees (ECO) was regarded important since it also helps with a

successful and enduring realization throughout all cases, while especially at Danone and BASF the BoP ventures were also considered to be highly emotional projects which in turn would help motivating employees.

Concerning the reconceptualization of supply chain design and functioning, our analysis indicates that the former aspect (RSD) focusing on new partners is closely linked to mutual learning experiences while the latter (RSF) is often connected to innovative approaches on how to conduct business at the BoP. We found that both issues are in the middle of thinking in all three cases. In all projects, the focal company extensively relies on the help and input from external partners. They comprise a plethora of different actors including business partners (especially in the business-to-business segment of the BASF project), development agencies from developed countries (esp. BASF), governmental agencies from the developing countries (esp. Nestlé), national as well as international NGOs (all projects) and academic partners (esp. Danone). In terms of how the supply chain operates, all projects rely on a strongly localized approach. The most advanced form of localization can be found in the Danone case where the whole supply chain is located at the BoP which, in addition, represents the consumer target group. The procurement of raw materials (mainly milk) is done via farmers in the proximity of the particularly small (and lean) micro factories where the production of goods (yogurt) for the BoP is done. The yogurt is then sold to the local population. Similarly, the fortification project of BASF also aims at the production of food in the respective developing countries. However, this production might still be centralized while the vitamins for the fortification are produced abroad. In the Nestlé Milk Districts the main emphasis is on a localized procurement of milk which is then transported to centralized production sites.

Recent SSCM literature (Pagell and Wu, 2009) underlines that focal companies strive for supply base continuity by moving suppliers out of the commodity supplier status by offering

long-term privileged relationships and by engaging in supplier development (DCO). There is ample evidence in all three cases that in BoP supply chains the focus of decommodization is on providing training, education, and technical assistance to the suppliers. The Danone case reports that management and technical trainings and educational programs are provided to women as distributing workforce, to the local farmers and to dairy employees, in order to tackle the challenges that arise from general low levels of education. Furthermore, micro-finance should empower rural communities. Since BASF cooperates with local food producers in fortifying food products, this case refers to capacity building and technical assistance provided to these firms in order to ensure compliance with international food fortification standards.

Discussions and conclusions

Although already Prahalad and Hart (2002) briefly touch upon sustainability issues at the BoP, research (and projects) in the following years mostly neglect the triple bottom line thinking (TPL) and rather focus on economic and social prosperity at focal firms as well as at the BoP itself. Consequentially, a lacking holistic perspective on sustainability as well as the ignoring of possible trade-offs between the different sustainability dimensions and ecologically deteriorating effects of BoP ventures have been criticized (e.g., Hahn, 2009). Our findings confirm a lacking simultaneous consideration of triple bottom line issues. Instead, the rather strong focus on the shortened double bottom line (DBL) in terms of economic and social performance is in line with numerous other BoP ventures which put economic viability (EVB) and social goals (PSI) in the middle of thinking. This observation goes hand in hand with the results from the construct reconceptualizing supply chain design (RSD). In all three cases a strong focus on collaboration with external partners was on NGOs or governmental agencies concerned with infrastructural or social issues. Questions involved in these

partnerships were mainly about how to reach the BoP as consumers and/or how to integrate the BoP into value creating activities and eventually how to measure the impact of the projects.

When considering classical SSCM cases and literature, in contrast, one clearly finds a focus on the implementation of ecological in comparison to social standards (Gold et al., 2010). This means that collaboration predominantly includes advocacy groups and third-party bodies for auditing and certification which refer to the ecological pillar of the triple bottom line (e.g., Courville, 2003). Social standards like SA 8000 (Social Accountability 8000) (Graafland, 2002) still have not reached equal consideration yet. Our analysis of the constructs double bottom line (DBL) and reconceptualizing supply chain functioning (RSF) point to opportunities of a further integration of the ecological dimension of SSCM into BoP supply chains. In turn, BoP supply chains emphasizing the social dimension may show viable paths to integrate more evenly social and humane issues into SSCM practice and theory. For this end, further research has to distil which characteristics of BoP supply chains generating social performance may be transferred to supply chains worldwide.

In this respect, the localized multi-stakeholder approach implemented in BoP projects may be one promising way to ensure social standards that might be transferable to broader application. Multi-stakeholder initiatives embrace many actors controlling each other. Furthermore, local production (and consumption) systems make third-party certification redundant, since social performance is directly controlled by the focal company and other stakeholders. Therefore it is little astonishing that the construct supplier certification (SCE) could not be found in our case studies. Similarly, transparency (TRP) and traceability (TRB) are considered no big issues because the focal companies and other stakeholders are locally involved and can easily implement systems to ensure product quality, fair prices and wages, and decent working conditions.

Furthermore, it is not surprising that we found a distinct focus on localized approaches when analyzing the construct of reconceptualizing supply chain functioning (RSF) since approaching the local population is at the core of all BoP concepts. It therefore is rather obvious to include the local BoP into the value chain of the analyzed projects either as consumers, as producers or as distributors since otherwise they would not have been selected as BoP cases in the frame of this study. What is interesting is the degree of inclusion of local communities. The Grameen Danone project follows an integrated BoP 2.0 approach. The same can be assessed for the BASF project although with the restriction that the initiating company (i.e. BASF) itself does not produce the vitamins at the BoP. BASF thus engages as facilitator contributing only a minor share to the final product (the fortified vitamins account for roughly 1% of the costs of the end product). Its technical know-how, however, adds significantly to the specific added-value of the product at the BoP. The Nestlé project seems to be the least integrated since it concentrates on procurement issues. While there is no distinct focus on further processing the products at the BoP, capacity building for farmers is still a central aspect which goes far beyond simple customer-centered BoP 1.0 strategies.

Halldórsson et al. (2009) raise an interesting point in this context when arguing that the uncompromising implementation of the concept of SCM may be in itself contradictory to sustainability. Therefore they suggest the need of a paradigm shift in order to truly integrate sustainability into SCM. “Instead of continuing to squeeze every penny out of the total costs of products, firms have to reconsider, *how* and *where* they produce their products, and customers have to reconsider their decision criteria for buying the products and the way they dispose them after use. […] One possible consequence might be a local-to-local approach instead of the current global-to-local approach.” (Halldórsson at al., 2009, p. 90) In this respect, localized business with and for the BoP may show one avenue of how to design such a radical change in mindset. With regards to holistic sustainability approaches, various

scholars call for a distinct focus on innovation to meet the needs of the BoP while simultaneously recognizing ecological boundaries (e.g., Mahajan and Banga, 2006). A leapfrogging to sustainable consumption and production patterns might be especially viable at the BoP which presents favorable conditions for innovative approaches since a mere adaptation of Western business models and/or products often proved to be insufficient at the BoP. Our analysis underlines the need of BoP projects to leave the path of incremental developments (LTL) and to simultaneously delve into radical innovation (RIN). The point here is to leave mental legacies and to reconceptualize business goals and models as well as supply chain design, organization and operation through thinking out of the box.

In conclusion, our analysis suggests that the interface of SSCM and BoP business models represent a fertile ground for further-reaching research. Follow-up studies may consolidate the current findings by taking up other conceptualizations of SSCM as analytic tools, by extending the investigations to other industry sectors, and by zooming in on individual constructs. On the basis of further theory-framed empirical studies the conceptual integration of SSCM and BoP may be advanced and placed on increasingly solid grounds.

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