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Engaging symbiotic ecosystems to build community centred business models for the BoP: Evidence from small social enterprises in East Africa

Abstract

This article examines how small social enterprises (SSEs) in East Africa build business models for base of the pyramid (BoP) markets, through engaging symbiotic ecosystems. Through in-depth qualitative research, a three-stage process is identified. First, SSEs learn and become *sensitised* to the manifold challenges of building business models for BoP markets. Second, SSEs identify and connect with key BoP actors, *weaving* them together to create a *symbiotic ecosystem* and to overcome the aforementioned challenges. Third, SSEs *harness* this symbiotic ecosystem to deliver community-centred business models for the BoP. This research contributes to social entrepreneurship, small business, and BoP literatures, by shedding light on the challenges faced by SSEs working in the BoP, and through novel elaboration of how SSEs develop and interact with symbiotic ecosystems to surmount these challenges. It also provides important practical insights, for social entrepreneurs and social enterprise managers in Africa and elsewhere.

Keywords

Social entrepreneurship, ecosystems, business models, Africa

Introduction

The base of the economic pyramid (hereafter BoP) comprises more than half the world's population. Between 4 and 4.5 billion people globally live in the BoP, on incomes below US$ 3000 per annum, or less than US$ 8 per day (Srivastava et al., 2020). Policymakers, practitioners, and scholars have long sought ways to meet the needs of this low-income population, but with only mixed success (Dembek et al., 2020). Recently, attention has turned to social entrepreneurship and social enterprises as mechanisms for addressing the sustainable development challenges faced by the BoP (Gupta et al., 2020; Littlewood and Holt, 2018a). Social enterprises are organisations that pursue a social mission whilst being financially

sustainable through business activity (Luke and Chu, 2013; Saebi et al., 2019). Social entrepreneurship describes the process through which this occurs.

The global proliferation of social entrepreneurship and enterprises has been accompanied by increasing academic interest. Indeed, articles examining social entrepreneurship phenomena are now regularly published in top entrepreneurship and small business journals (Hu et al., 2020; Kimmitt and Muñoz, 2018). Nevertheless, there remains much scope for further enquiry. One topic that requires additional attention is how social enterprises can build business models to effectively operate in the BoP, overcoming manifold challenges to contribute to sustainable development (Chmielewski et al., 2020; Ciambotti, et al., 2020). This article contributes towards addressing this gap in the literature, by examining how small social enterprises (SSEs) in East Africa overcome constraints, through engaging with what we term *symbiotic ecosystems*, to build sustainable community-centred business models for the BoP. We define a *symbiotic ecosystem* as: *an interconnected group of actors in a local geographic community which depend on each other to provide the conditions necessary for organisations to create value for themselves and others.*

Extant literature has identified that organisations aiming to serve BoP markets and constituencies (whether large corporations, NGOs, cross-sector partnerships, or social enterprises), face various challenges. These include, for example, the low purchasing-power of BoP customers (Viswanathan et al., 2021); cultural and religious norms that may create resistance to new products, services and providers (Zoogah et al., 2015); frequently poor infrastructure; and limitations in wider market architecture (Anderson and Billou, 2007). These challenges are amplified for SSEs. First, due to their hybrid nature that can make their business models more complex and potentially unstable (Ciambotti and Pedrini, 2021). Second, their small size means they are often resource constrained (Lashitew et al., 2020; Saebi et al., 2019). Undoubtedly, more work is needed on the nature of these challenges, especially for SSEs. However, we know that to surmount them organisations frequently collaborate with other local actors in ecosystems (Bowey and Easton, 2007; Dembek et al., 2020; Jain and Koch, 2020) – albeit these ecosystems may be immature in developing economies (Lashitew et al., 2020), and wider institutional support may be limited (Ahsan et al., 2021; Sydow et al., 2020; Zoogah et al., 2015).

Social entrepreneurship scholars have begun to investigate how social enterprises work with ecosystem actors to achieve their social missions (Bacq et al., 2020; De Bruin, Shaw, and Lewis,

2017; Reficco and Márquez, 2012). They have also begun to examine social enterprises and entrepreneurs efforts to craft new ecosystems (Jain and Koch, 2020; Mason et al., 2017; Sanchez and Ricart, 2010). Nevertheless, and as argued by McMullen (2018: 576), '*social enterprise, and its relationship with the entrepreneurial ecosystem, remains poorly understood'*. This is particularly the case for relationships between social enterprises and the nascent ecosystems often found in developing economies. Further study is therefore, needed on the challenges SSEs face when building business models for the BoP, but also how SSEs can collaborate with ecosystem actors to overcome these challenges (Jain and Koch, 2020; Lashitew et al., 2020; Stott et al., 2019). Such calls and limitations motivate our study and underpin our research question: *how do SSEs interact with their ecosystems to overcome challenges and build business models to serve BoP markets?* To address this question, this article reports the findings of inductive qualitative research with 10 SSEs in East Africa. Data collection primarily entailed key informant interviews, conducted in 2018/2019, supplemented with secondary data (e.g. business plans). The data was analysed using the Gioia et al. (2013) methodology.

Our findings reveal a three-stage process describing how East African SSEs build business models to serve BoP markets. First, there is a *sensitising* stage, in which SSEs approach BoP markets, learn their complexities, and gain greater appreciation of the social issues they aim to address. Second, SSEs identify and begin connecting with local actors. These actors, who are often part of and already serving BoP communities – but frequently independently – become part of a *symbiotic ecosystem* which is *woven* together by SSEs. This ecosystem is vital in the realisation of SSE business models, and in helping SSEs overcome challenges of serving BoP markets. Finally, SSEs *harness* this symbiotic ecosystem – its collective knowledge, resources, and capabilities – to hone and deliver their community-centred business models to serve BoP customers.

This article contributes to social entrepreneurship, BoP, and small business scholarship. We shed light on the particular challenges SSEs in East Africa face when building business models for the BoP offering rich empirical, and novel theoretical, insights on these challenges. We further explain how SSEs may overcome them, learning from, and weaving together different actors in symbiotic ecosystems. The notion of a *symbiotic ecosystem* is new, and we think usefully captures how SSEs in developing economies, under challenging and institutionally complex conditions (Jain and Koch, 2020; Lashitew et al., 2020; Lingens et al., 2020; Stott et

al., 2019), collaborate with others to build and deliver their business models. These insights on how SSEs in the BoP work with others, contributes to addressing the gap in our understanding of relationships between social enterprises and ecosystems identified by McMullen (2018). We add further to understanding of the nascent and fragmented 'entrepreneurial ecosystems' prevalent in developing economies, and around BoP markets, and how actors like SSEs may bind elements of these ecosystems together. In addition, a new theoretical process model is introduced. It describes how SSEs engage ecosystems to build business models for BoP markets, encompassing stages of *sensitising*, *weaving,* and *harnessing*. These activities are unpacked and different elements identified. This theorising of how SSEs interact with their ecosystems to build business models for the BoP complements recent efforts by De Bruin et al. (2017) and McMullen (2018) amongst others. The findings further show how SSE business models may be shaped by the input of ecosystem actors, including BoP customers and recipient communities (Bacq et al., 2020; Chmielewski et al., 2020), adding to recent work (Dembek et al., 2020; Smith et al., 2014), and understanding of relationships in entrepreneurial ecosystems as multidirectional (De Bruin et al., 2017; Jain and Koch, 2020; Lashitew et al., 2021; Thompson et al., 2018).

Finally, we contribute to rebalancing efforts in social entrepreneurship, BoP, and small business literatures. Africa remains underrepresented in social entrepreneurship research, with scholars suggesting that as a context it offers rich avenues for further enquiry and novel theorising (Littlewood and Holt, 2018b; Rivera-Santos et al., 2015). BoP researchers have similarly identified a need for more work on Africa. Kolk et al. (2014: 360), for instance, argue that a *'broadening of the empirical base, particularly to Africa, seems necessary, paralleling recent calls for more research on this continent'*. Authors have also called for more research on BoP actors other than multinationals, and especially social enterprises (Chmielewski et al., 2020). Lastly, social enterprises are less studied in small business literature, particularly SSEs in non-western contexts like the setting for this work.

The article proceeds as follows. Initially, we introduce the theoretical background. The research methodology is then explained including data collection and analysis. The findings are then presented, and process model introduced. Finally, we discuss the findings in light of the literature, before returning to our contributions and considering the implications of our research for practice.

Theoretical background

Challenges for SSEs in BoP markets

Early writing on doing business in the BoP was often optimistic (Gupta et al., 2020; Prahalad and Hart, 2002). It suggested that there was a fortune awaiting firms that could tailor their products and services to meet the needs of billions of low-income BoP customers, and in so doing, they would contribute to development and poverty alleviation (Bruton et al., 2021). In the intervening years, the complexities of doing business in and with the BoP have become more apparent. BoP approaches have also evolved through various iterations, so-called BoP 2.0, 3.0, and beyond (Chmielewski et al., 2020). It is unsurprising, therefore, that the topic of challenges of doing business in the BoP has received considerable scholarly attention (Anderson and Billou, 2007; Lashitew et al., 2021). Nevertheless, further examination and theorising is needed, especially for SSEs contexts.

Extant literature identifies common challenges faced by those serving the BoP. The first relates to the economic circumstances of BoP customers. People living in the BoP not only have limited incomes, but may also have unstable household cash-flows, and lack secure assets for credit (Goyal et al., 2017). This can make them unreliable and vulnerable customers. In response to these issues, those venturing in the BoP may implement subsidy business models whereby products sold in the BoP are subsidised by sales outside of it. Other approaches used include soft loans and/or long-term product rental (Bacq et al., 2020; Chmielewski et al., 2020). The generally low literacy levels of BoP customers and their relative 'unsophistication' represent further challenges (Viswanathan et al., 2021). This can make raising awareness of and marketing new products and services to them difficult. Substantial effort and resources may be needed to explain new products and services and their suggested benefits, with BoP customers also frequently mistrustful and risk averse reflecting their precarious circumstances. Cultural and religious dimensions must also be considered when venturing in the BoP (Anderson and Billou, 2007). Products and services offered, and indeed wider business models, must respect and align with cultural and religious institutions, and associated norms and beliefs. The BoP is heterogeneous, as are the needs and preferences of individuals in it. Scholars have begun to explore contextualised strategies for entering BoP markets, for example, using local dialects in advertising (as employed by M-Pesa in Kenya). Nevertheless, this remains a significant practical challenge that requires further study. Those serving BoP markets furthermore face challenges of geography and infrastructure. Many BoP customers reside in remote rural areas or urban slums making them 'hard to reach' – and frequently, mean sales

are expensive (Anderson and Billou, 2007). They may also lack the basic infrastructure necessary to access and use products and services. For example, millions across Africa remain off-grid. This can undermine the rollout and impact of digital offerings (Manning et al., 2017). Small firms venturing in the BoP, and SSEs more specifically, may find the above challenges especially difficult to surmount as they may lack the resources of larger ventures (Korsgaard et al., 2021), whether in terms of financial, physical, human, or other resource forms. Linked to this, SSEs and other small firms may struggle to innovate and invest sufficiently in research and development (R&D) to satisfy evolving and contextualised BoP community needs (Acheampong and Esposito, 2014). They may further lack the production capabilities needed to achieve economies of scale and make products sufficiently affordable for the BoP (Obeng et al., 2014) and may also struggle to fully research and keep pace with market trends (Hart, 2017). Moreover, SSEs as hybrid organisations must manage multiple objectives and potentially competing demands for social, economic and environmental value creation (Ciambotti and Pedrini, 2021).

There is growing recognition that to overcome the multifaceted challenges of serving BoP markets, ventures need to collaborate with wider actors in their ecosystems, including communities (Bacq et al., 2020; Bowey and Easton, 2007). It has even been suggested that firms should adopt a 'community logic' in their interactions with the BoP; for instance, Sanchez and Ricart (2010) note that enterprises should create relationships with local and fringe actors to gain the capabilities and resources necessary to grasp and/or create new business opportunities. Likewise, Stott et al. (2019) highlight that local community buyers can be central to sustaining sales in the BoP. Jain and Koch (2020), furthermore, use the case of a social enterprise delivering an affordable financial service offering and document its efforts to serve BoP markets, integrating input from local communities which allows them to shape products for local consumption practices, expectations, and needs. Finally, much existing work has focused on partnerships between social enterprises and one, or a limited number of actors, and how these partnerships are established and evolve (Dembek, et al., 2020; Lashitew et al., 2021; Sanchez and Ricart, 2010). To our knowledge, few studies adopt a more holistic ecosystem perspective to the actions of SSEs in the BoP. This perspective is explained further below and allows us to explore the interplay between SSEs and a wider constellation of actors.

Ecosystems and community-oriented enterprises

Borrowed from biology, the term 'ecosystem' refers to a group of loosely interconnected entities that mutually depend on each other for survival (McMullen, 2018). Ecosystems have been the subject of growing academic attention from scholars in various fields, including innovation (Dattée, Alexy and Autio, 2018), organisation studies (Davis, 2016), regional science (Cooke, 2007), and entrepreneurship (particularly work on 'entrepreneurial ecosystems', see Wurth et al., 2021). These authors have identified a plethora of actors who may form part of ecosystems, including entrepreneurial ventures, NGOs, universities, government, and communities, amongst others. The basic assumption is that these entities contribute to the functioning of the ecosystem by sharing resources, knowledge, and competences (London, 2020). In this view, the ecosystem enables the creation of more value than single parties alone might generate. Working in ecosystems, organisations may also decide to prioritise local community development and prosperity (Murphy et al., 2020; Smulowitz et al., 2020), including in developing economies (Lumpkin and Bacq, 2019; Roundy, 2017).

It has been identified that ecosystems do not emerge spontaneously, and their development is led and propagated by central actors. However, in some contexts, the presence and persistence of institutional voids, defined as a lack of the formal *'institutions that are necessary to support basic business operations'* (Khanna and Palepu, 1997: 41), may create structural holes that impede ecosystem establishment (Reficco and Márquez, 2012). Institutional voids are prevalent in sub-Saharan Africa (George et al., 2016; Sydow et al., 2020), and especially in and around BoP markets (Dembek et al., 2020). Such voids come in various forms, including voids in product markets, labour market voids, capital market voids, regulatory voids, and contracting voids. Whatever their nature, such voids need to be overcome or 'bridged' by those aiming to serve BoP markets (Bhatt et al., 2021; Calton et al., 2013). However, wider institutional complexities can also impede these efforts. These include those associated with kinship ties and obligations, ethnicity, and tribal identity, which may reduce organisational flexibility, inhibit resource exchange, and bring additional costs for those doing business in the BoP (Al-Dajani and Marlow, 2010; Manning et al., 2017).

The role of (social) entrepreneurs as agents in building and sustaining ecosystems has increasingly been recognised (Lashitew et al., 2021; Lumpkin and Bacq, 2019). For example, Goyal et al. (2017) examine how a social enterprise working with rural banks created an ecosystem to provide loans to households and make their products affordable (McMullen, 2018). Lingens et al. (2020), meanwhile, investigated start-ups enterprises and documented the

creation of an ecosystem of actors and their alignment towards a joint value proposition. Nevertheless, and as highlighted by these scholars, more work in this area is needed. Including to better understand how *'ecosystems, and engagement through cross-sector partnership networks can be developed'* by social enterprises and entrepreneurs, with the goal of *'the achievement of greater levels of well-being in BoP markets'* (Mason et al., 2017: 267).

This study aims to contribute to addressing the gaps in our understanding of how SSEs interact with their ecosystems, including the role of SSEs in ecosystem development. We also aim to shed light on how interaction with ecosystems supports SSEs in overcoming institutional voids, and wider challenges, to serve BoP markets. In studying this phenomenon, the business model is deployed as a theoretical lens, which is explained in further detail in the next section.

Building business models for BoP markets

When venturing in the BoP, creating a financially viable business model that addresses community needs is difficult (Acheampong and Esposito, 2014). To study how this can occur, scholars have applied process perspectives. Simanis and Hart (2008), for example, introduced their 'Base of the Pyramid Protocol' to explain how inclusive business models can be developed through co-venturing (Kolk and Rivera-Santos, 2018). More recently, Chmielewski et al. (2020) shed light on the process to develop market-based solutions to poverty alleviation in the BoP, emphasising the adoption of community-centric approaches (Sutter et al., 2019). Despite these works, research questions remain (Lashitew et al., 2020).

In simple terms, a business model has three key components: value proposition, value delivery, and value capture (Yunus et al., 2010). Through a lens of BoP business models, the first component defines the venture (SSE's) product and/or service offering, through which it addresses community needs (London et al., 2010). The second value delivery component refers to how that value is realised and may depend on a wider value network (Johnson et al., 2008) or ecosystem. The third component concerns the financial equation between value proposition and value delivery. How the venture (in this case the SSE) captures value as revenues from BoP customers to cover value delivery costs and make surpluses or even profits – depending on the nature of the SSE (Yunus et al., 2010).

It has been found that for SSEs, and wider ventures, designing and realising all three business model components in BoP markets may require collaboration with diverse ecosystem actors (Dembek and York, 2020; Jain and Koch, 2020; Sanchez and Ricart, 2010; Stott et al., 2019).

However, despite widespread acknowledgement of the importance of collaborative approaches in the development and implementation of BoP business models, closer examination of how this occurs is needed – particularly in SSEs (Dembek et al., 2020). There is also a need to better understand how SSEs can effectively enrol local communities in BoP business model development (Stott et al., 2019) and how they can *'seek innovation processes that are socially inclusive towards local communities in terms of the knowledge, processes and outcomes involved'* (Smith et al., 2014: 114).

Methodology

This research provides insights on how SSEs overcome challenges of doing business in BoP markets, to build community-centred business models, through interaction with their ecosystems. Guided by our research question, qualitative case study research was undertaken in East Africa, and more specifically Kenya and Uganda. The research was conducted in East Africa for several reasons. First, SSEs are abundant, but also important development actors in East Africa (British Council, 2020). This facilitated ease of access for our research and shows its practical significance. Second, the operating environment for SSEs in East Africa, including those targeting the BoP, is challenging. Such ventures confront institutional complexity and wider constraints including financial and labour market voids (Sydow et al., 2020), widespread poor infrastructure (Holt and Littlewood, 2017; Zoogah et al., 2015), and limits to available technology, machinery, and wider raw materials (Lashitew et al., 2020). Our research reveals these challenges and provides novel empirical and theoretical insights on how they can be overcome. Finally, at a country level Kenya and Uganda face substantial sustainable development problems. For instance, they are placed 147th and 159th, respectively, on the UN's Inequality-adjusted Human Development Index (UN, 2020). Better understanding of the potential for SSEs to enhance welfare in Kenya and Uganda through building sustainable community-centred business models is, therefore, societally important.

A grounded theory approach was adopted, drawing upon the guidance of Gioia et al. (2013). This approach is particularly suited for answering 'why' and 'how' research questions, of the kind driving this study (Gehman et al., 2018). It is also useful for investigating under-studied and under-theorised phenomena, and when collecting data in complex and challenging environments, like the setting for this research (Eisenhardt and Graebner, 2007).

Case selection and data collection

Theoretical sampling was used to connect data analysis with theoretical saturation, that is, where additional cases provide no new information or ideas (Glaser and Strauss, 1967; Strauss and Corbin, 1998). Starting with no priori hypothesis, we looked for cases rich in data and highly committed to data sharing, as suggested by Eisenhardt (1989), and also because of the difficulties of conducting research with small organisations in our research setting (Sydow et al., 2020). In selecting the cases, we used the following criteria: (1) it was a social enterprise, as per our definition (*pursues a social mission whilst being financially sustainable through business activity*); (2) it was targeting BoP markets with products and services to alleviate poverty; (3) it had created profits/surpluses; (4) it was based in either Kenya or Uganda; (5) it was small, with 10–49 staff members and at an early stage of venturing; and (6) SSEs were selected operating in different industries to enhance the validity of findings and theorising. Of the 10 SSEs examined, three were working in renewable energy offering solar solutions to rural and low-income households; three were in ICT; for instance, providing sanitary information through an SMS platform to pregnant mothers in poor areas, or providing agriculture information to rural farmers; two were in agriculture; one in water offering pumping systems to poor individuals in slums; and one was in micro-credit. The participating SSEs were found through a combination of desk research, online platforms (e.g. Venture Capital 4 Africa), and our connections with organisations operating in the local contexts (e.g. E4Impact Foundation, Growth Africa, etc.).

Once SSEs were identified and had agreed to participate, secondary data was collected about them from public sources and directly, for example, from website materials, business plans, marketing plans, and financial reports (data collection is documented in Table 1).

Table 1. Data collection.

Data source	Type of data	Quantity	Use in analysis
A. Documents and reports	Reports from NGOs, banks, development agencies, governments, corporates	Multiple	To understand local ecosystem and wider economies in Uganda and Kenya
B. Interviews	Three rounds of semi-structured interviews: November 2018 (x5); February 2019 (x8); April 2019 (x5)	18 interviews; 8 HQs visited; 6 production plants visited; 13 h of recording	Key source of data. Interviews recorded, transcribed and analysed. Cross case analysis occurred
C. Social enterprises secondary data	Business models Business plans Marketing plans Financial models Annual reports	114 pages (.ppt) 80 pages (.pdf) 40 pages (.pdf) 30 pages (.xls) 30 pages (.pdf)	Used to support and triangulate evidence from interviews

These documents were scrutinised intensively (Gehman et al., 2018), and then followed with semi-structured key informant interviews. In November 2018, the first five interviews occurred in Nairobi (Kenya). This was followed by a second round of eight interviews in February 2019. Following this initial data collection, preliminary analysis was carried out with the findings compared to extant literature. The interview questions were then adapted as required before further fieldwork was undertaken in April and May 2019 in Kampala, Uganda, with five more interviews conducted. Field visits were also used to validate the information captured through the interviews and secondary data. In this way, we engaged in *'deep immersion in multiple kinds of data'* (Gehman et al., 2018: 288), and Table 2 outlines the case-studies and data collected for each.

Table 2. Social enterprise case studies and data collected.

SSE	Industry	Firm description	Location	Role	No. interviews	Documents
1	Renewable energy	SSE providing cook-stoves to urban and peri-urban communities living in the BoP	Uganda	CEO	#1 April 19	BM
2	ICT	SSE that helps youth and women gain capital to start-up businesses through a mobile app and web application	Uganda	CEO	#2 Feb 19, Apr 19	BM, BP
3	Micro-credit	SSE providing micro-credit to disadvantaged groups of people living in rural areas	Uganda	CEO	#2 Feb 19, Apr 19	BM
4	Water	SSE manufacturing and selling solar pump systems and boreholes to rural communities	Kenya	CEO	#2 Nov 18, Feb 19	BM, BP
5	ICT	SSE using a mobile technology platform to deliver health information to pregnant women and mothers	Uganda	CEO, GM	#2 Feb 19, Apr 19	BM
6	Agri-business/ renewable energy	SSE offering durable consumer goods to improve lives and livelihoods, e.g., solar panels and agriculture tools	Kenya	GM	#2 Feb 19, Apr 19	BM, AR
7	Agri-business	SSE which produces and distributes high quality, new and improved seed to farmers	Kenya	CEO	#2 Nov 18, Feb 19	BM, BP, MP, FP, AR
8	ICT	Utilises block chain, big data and artificial intelligence to collect farmer's data and process payments to farmers	Kenya	CEO	#1 Nov 18	BM, MP
9	Renewable energy	Produces and sells integrated photovoltaic roofing materials to produce sustainable clean energy	Kenya	CEO	#2 Nov 18, Feb 19	BM, BP, MP, FP
10	Renewable energy	SSE manufacturer of solar irrigation water pumps for small farms in the tropics	Kenya	CEO	#2 Nov 18, Feb 19	BM, BP

AR: annual report; BM: business model; BP: business plan; MP: marketing plan; FM: financial model.

After the initial interviews, we revised and updated the interview protocol, as per guidance provided by Glaser and Strauss (1967). Protocol reviews are important for delving deeper into critical topics, for instance, the weaving together of ecosystem actors, and the consequence of this for the development of BoP business models. Data collection continued until it yielded no additional explications of a given category or theme, in so doing we assured theoretical saturation (Gehman et al., 2018). In total, 18 semi-structured interviews were undertaken, either with the CEO, managing director, and/or general manager of SSEs. All the interviews were conducted by at least two members of the research team and lasted more than 1 hour on average. Interviews were recorded and subsequently transcribed verbatim.

Data analysis

Following Gioia et al. (2013), data analysis entailed an iterative process moving between raw data and the theoretical background. It comprised three steps.

Step 1: Developing first-order categories

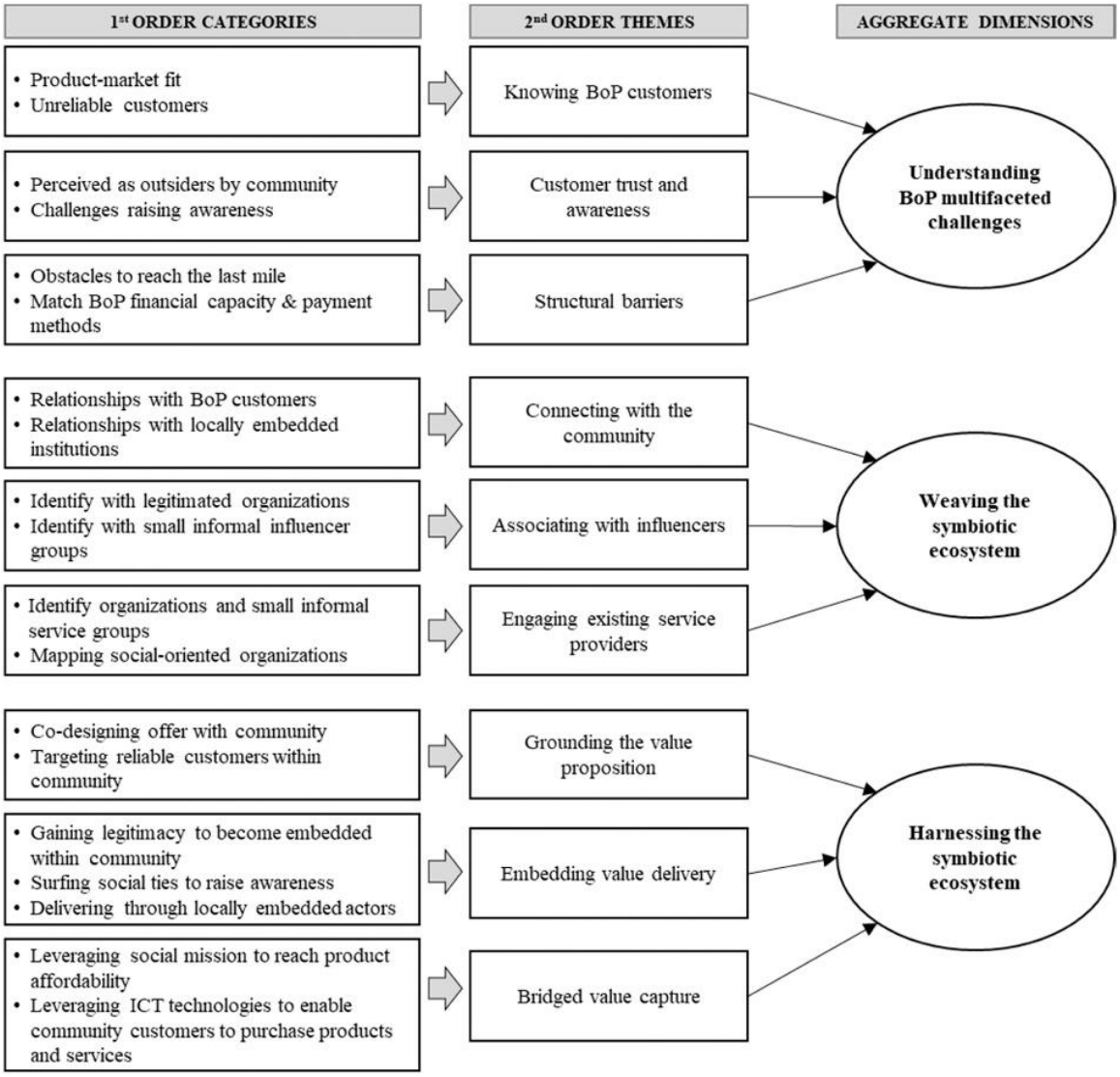
This step began by annotating and ascribing preliminary labels to sections of the transcribed interview data, relating to: challenges faced by SSEs in the BoP (e.g. challenge of *'Knowing BoP customers')*; activities to engage ecosystem actors; and actions to build business models. In parallel, wider data was considered (e.g. business and marketing plans) to validate initial impressions. Secondary data analysis was approached with the intent of critically validating the information provided by SSEs. Gradually, labels were combined into preliminary categories. Two members of the research team independently analysed the data before merging their work and searching for agreement to enhance reliability.

Step 2: Creating second-order themes and aggregate dimensions

First-order categories were gathered and collapsed into second-order themes using an axial coding process (Glaser and Strauss, 1967). Systematic comparison of emerging constructs with existing concepts in the literature also occurred, with labels adjusted accordingly (Gioia et al., 2013). Finally, second-order themes were collapsed into three large aggregate dimensions: *'sensitising to multifaceted challenges'*, *'weaving together the symbiotic ecosystem'*, and *'harnessing the symbiotic ecosystem'*. The data structure is illustrated in Figure 1 and shows the first-order categories, second-order themes, and aggregate dimensions.

Step 3: Developing a grounded theoretical process model

In the third step, our understandings of the challenges SSEs face when building business models for the BoP, and of how they engage ecosystem actors – including in business model development – to surmount them, were combined, leading to the development of the process model. This process model comprises the three stages of *sensitising*, *weaving,* and *harnessing* which is presented in the next section.



Findings

Through data analysis, a process model was developed of how SSEs can overcome challenges and build business models for the BoP through engaging with their ecosystems. This model, illustrated in Figure 2, comprises three stages: *sensitising*, *weaving*, and *harnessing,* whose identification was informed by the three aggregate dimensions: (1) *sensitising to multifaceted challenges*, (2) *weaving together the symbiotic ecosystem,* and (3) *harnessing the symbiotic ecosystem*.

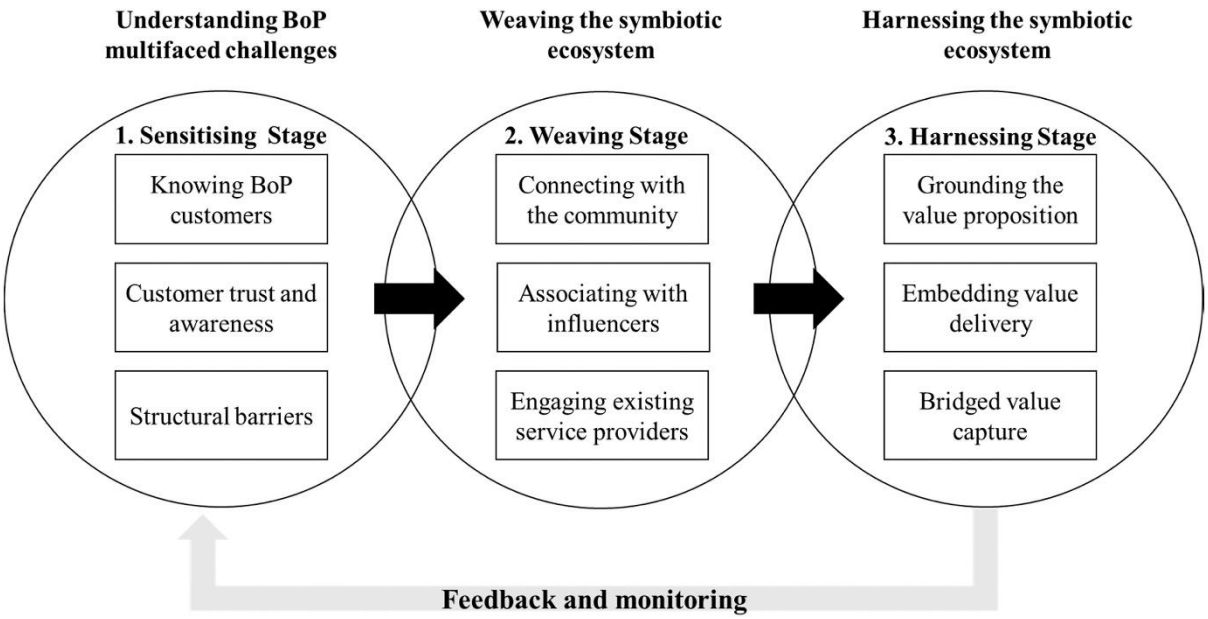


Figure 2. Process model of SSE creating symbiotic ecosystems.

Table 3 summarises the findings and illustrates how each first-order category collapses into second-order themes and aggregate dimensions, with indicative interview quotations provided. Findings in relation to each aggregate dimension are now elaborated.

Sensitising to multifaceted challenges

The findings reveal that when building business models for the BoP, SSEs go through a *sensitising* process, whereby they develop a better understanding of BoP markets, and come to appreciate the various challenges and complexities of serving them. Key challenges and aspects of this sensitising are captured in the second-order themes (1) *knowing BoP customers*; (2) *trust and awareness*; and (3) *structural barriers*.

Knowing BoP customers

When SSEs begin targeting BoP markets, they may have limited understanding of their customers' needs. SSEs are socially oriented organisations, which also informs how they approach and prioritise BoP customers' needs. Accordingly, they often target basic needs, like access to clean water, electricity for off-grid communities, and gaps in primary healthcare provision. However, whilst these needs may appear simple, our cases identified that they experienced knowledge barriers in understanding and addressing them. For instance, one case suggested that when they started, they: '*didn't know the needs of farmers, the different crops they cultivate, and even which farmers are into dairy'* (Interview SSE#7).

Table 3. Data table.

Aggregate Dimensions Second-order themes	No. of Quotations	Representative Quotations
Sensitising to multifaceted challenges		
Knowing BoP customers	6	"In the beginning we didn't know what the other people think, usually people are in their own confront zone so basically don't know the needs of poor" (SSE#5) "In the beginning we didn't find customers willing to pay for our products despite we thoughts that were impactful for them" (SSE#9)
Trust and awareness	6	"If you suppose that they accept you because you are a social enterprise you are wrong, it is a long process to get in the community" (SSE#7) "We tried to make convince customers that our service for important for them, but they wouldn't believe it" (SSE#4) "Sometimes you feel that customers are not aware of the advantages that may benefit if they purchase the product" (SSE#10)
Structural barriers	9	"Poor communities have not a smartphone to access to the service […] someone has not internet […] customers would move to our office to do transactions, but it is too expensive for them and it is time expensive" (SSE#2) "We can't go home to home to meet farmers and make them aware about of offer, indeed, they live too far each-others" (SSE#2) "When it is raining the roads become inaccessible because in areas there are dirty roads and the rain make them worse" (SSE#4) "We got obstacles to sell products because BoP people have basically limited spending power, so even if they want the stoves, they can't buy them" (SSE#1) "It is difficult to provide them a loan or credit, this is a big challenge, because they don't have any security asset" (SSE#3) "It is a critical balance when you want to achieve an impact as well as to sustain yourself. It is critical to decide a price when you work in the Bottom of the Pyramid" (SSE #9)
Weaving together the symbiotic ecosystem		
Connecting with the community	11	"I get to interact with people that live in slums, so we get to know what they need to improve their lives. For instance, After interacting with a street-vendor, he told me "I make a lot of money with this business […] but I don't have time to go to the bank" so I understood their needs" (SSE#2) "We engaged communities to understand what exactly needs from nursey. The community help us to better understand what they need shaping our service. We engaged them through a "Mobility Activation" programme where we talk with people asking what they need and get to know how much they would pay, and they expect to get" (SSE#5) "We starting to interact with farmers to understand their needs and learning from them" (SSE#10) "Speaking with community we got that big corporates have trust by people because they are huge and notorious" (SSE#2) "We map and establish relationships with local cooperatives and with NGOs because they have already network with farmers. They have many information of the local market" (SSE#8)
Associating with influencers	9	"We met the president of Uganda. It is relevant and important person in the country and has high legitimacy" (SSE#2) "Governmental Agency Authorities gives licences to operate to entrepreneurs, so they certificate the reliability of companies" (SSE#3) "We noticed that customers advertise products to other people whether they are satisfied of service and understood the value of it. They become like ambassadors. Mostly of them are women, because of the major attachment of the family is from the woman" (SSE#3) "We understood that Development Agencies create marketing campaign that brings people from the base of the pyramid to promote products useful for the community" (SSE#1)
Engaging existing service providers	6	"Pegasus Technology, it's local company, has a software to send and receive money. It facilitates the money transfer for people who live in rural community. We identify Boda Boda as organisations which deliver products within huge areas" (SSE#3) "We have worked with Google Launch Pad to get a mentoring programme going about customer financial limitations and designing a proper payment strategy" (SSE#5)
Harnessing the symbiotic ecosystem		
Grounded value proposition	7	"Customers have priority for us and observing them we could better figure out our product suited on their needs" (SSE#1) "I got aware that those people don't have any bank account, no credit, no skills and it helped me to design and launch our app in the market which could address their need" (SSE#2) "Google Launch Pad, really help us to learn more about who our customers is, and it really help us to focus on one thing, they help us to really understand what person we want to target and what we want to give them" (SSE#5)
Embedded value delivery	12	"Through Churches we get legitimacy and trust, because once they accept your product the people will easily accept it, because they have high legitimacy" (SSE#4) "To have more legitimacy of our product, we partner with different organisations in order to have a strong brand, so it would be easy for your customer to take your product. For example, big partners such as big bank give to our clients the confidence, […] when you have a big company behind you the customers rely" (SSE#2) "The Uganda Microfinance Legitimate Authority (UMLA) which gave us the licence to operate. So, they give us even the legitimacy to work and so you're accepted by the community" (SSE#3) "In order to get the social recognition, we had to engage so many communities which slowly trusted in our brand" (SSE#8) "Local cooperatives are important to make sensibilisation because they are able to bridge with more farmers and engage more farmers of our products. […] We organise activation session or seminar in the cooperatives' centres to collect farmers who come from remote areas. Through these centres is easier to deliver messages, because farmers that are in the centres than deliver the message to other farmers. So, if you get the first farmer than is easy to reach the other farmers" (SSE#8) "Local small business, because they live with our communities' target and so they help us to get closer with our end-users" (SSE#1)
Bridged value capture	8	"We exploit Village Saving Groups to give micro-credit to unsafe customers. We lend the money to a sub-group, and they repay on weekly basis (after two weeks they should payed back). Once the first sub-group payed back the money, we lend to the second sub-group" (SSE#1) "Our product became affordable thanks to NGOs which offer credit to BoP communities. They buy the products from us and then they sell to the community financing the purchasing" (SSE#1) "We came up with a saving programme when we were through the Google Lunch Pad. We have put strategy where someone can save a little amount on money over the 9 months of pregnancy, and by that time they deliver, they have the money to pay the nursery" (SSE#5) "Pegasus Technology makes it easy for customers. It is very easy to make the payment" (SSE#3) "Outbox helped us to introduce a technology in our business (app), so we became Heath-Tech Company. During the Outbox period, the app was just connecting young parents and nursey. Before to develop the app, people called me to ask for the service. Thus, it changed the value delivery. Now customers request the service through app. […] We are able to implement USDE platform for whom has not a smartphone can still access to the service. Google Lunch Pad makes us aware that someone has not internet or smartphone, for this reason we deliver the service even through SMS" (SSE#5) "We outsourced the delivery to local organisations, such as Boda Boda and Tuk Tuk which are fast and reach customers in rural areas" (SSE#6)

Some of our case studies approached BoP markets with products and services from developed economies. However, on market entry found that their offerings were insufficiently grounded in the particular needs and expectations of BoP customers, leading some to underperform, as illustrated below:

'*We thought we were very clever, we created these products from a university in the Western World and thought that this technology is so great that everyone would buy a container of these products. Obviously, it didn't happen. So, I realised that the value at the end of the value chain has been neglected*'. (Interview SSE#6)

A key area of learning for SSEs was that BoP markets are variegated – globally, regionally, and locally. However, learning also occurred for SSEs when rolling out their wider business models. For instance, SSE representatives discussed how after introducing their solution to BoP customers, they found that those customers were not always willing/able to pay for what was being offered. This is exemplified in this quotation by a representative of SSE#2: *'In the beginning we provided loans to individual persons, so we relied on the capacity of a single individual to save money, but some just didn't pay back'*.

Similarly, our cases discovered that some BoP customers may try to limit the spread of a solution throughout their community for personal benefit, as documented below:

'*When we go to the community, we understood it is difficult to find reliable customers…. someone may also want the project close to his house, or in a particular place where there is more advantage for him, thus, we lose the opportunity to impact more people. It is a challenge to find reliable beneficiaries within the community'.* (Interview SSE#4)

This suggests that SSEs need to spend time identifying *'reliable'* customers/beneficiaries in BoP communities through close interaction and learning.

Overall, our findings suggest that SSEs experience challenges in *'product market fit, because it is difficult to know what customers really need and how they expect us to address such needs.'* (Interview SSE#10). They also struggle initially to know whether their business models will work, and who are reliable customers/beneficiaries to work with. It follows that SSEs need to better understand the BoP and work with trusted ecosystem actors in it if they are to be successful.

Customer trust and awareness

SSEs may be perceived as outsiders by the BoP communities they aim to serve. This can mean BoP customers do not trust SSEs and their products compared to well-known, larger, but perhaps less socially oriented brands. For instance, a representative of SSE#6 highlighted how

BoP communities tended to trust large corporations, stating that: *'There are only two brands they recognise: Safaricom, Coca-Cola'.* This was a challenge raised in various interviews, for instance: *'Being recognised by the community as a brand that helps the community is important. When we didn't have a strong brand, it wouldn't be easy to take your product to them because they don't trust us'* (Interview SSE#8).

Our findings further revealed branding issues may affect the community's confidence in an SSE's offering, as illustrated by this statement by a representative of SSE#2: *'We are a small company, we need to give our clients confidence, because we are facing big challenges to explain our saving scheme'.*

Lack of trust is a barrier to acceptance for SSEs and their products in BoP markets, but so is limited customer awareness – which we found to have multiple dimensions. It encompasses individuals in the BoP being unaware of SSEs and their products and services, including how and where to purchase them. But also, customers being unaware and sceptical of the wider solution offered – and thus ignoring it. For example, SSE#8 struggled to convince farmers to buy its specialised seeds because they were either unaware, or did not believe, its claims about the potential of its seeds to increase farm productivity. Similarly, SSE#6 sought to promote solar panels to rural BoP communities through early adopters. However, after a while it found that BoP customers were still not conscious of its solution, as illustrated below:

'When we started, we found an early adopter, and he had respect in the community. But it didn't work. Indeed, we expected that when X (the early adopter) *was the only* one *to have electricity at home, everyone would want to have it too. I don't know how long it takes the mass market to join the early adopters'.* (Interview SSE#6)

Our findings suggest that SSEs initially assumed that strong products and services, and in some instances working with early adopters, would be enough for them to gain acceptance from BoP customers and penetrate BoP markets. However, over time they learnt that it would not be so straightforward, that they needed to build trust with communities, whilst also spreading awareness of their products and services if they were to be successful. This suggests that sensitising – to challenges in BoP markets – is not only something for SSEs, but that customers must also become sensitised to an SSE and its offering.

Structural barriers

When entering BoP markets, SSEs often encounter severe, and frequently unanticipated, structural barriers to providing their products and services. For instance, SSEs may learn that travel between villages takes longer and is more difficult than anticipated. Even if communities

are geographically proximate, the condition of roads – bumpy and rough – may delay and even prevent delivery, especially during rainy seasons, as discussed by a representative of SSE#6: *'In rural areas we face difficulties distributing products, everything is further by ten times than in the city, because the road doesn't exist'.* An extensive and resilient logistics network is therefore important when serving the rural BoP, but not straightforward to establish. Serving BoP communities in slums presents similar challenges. Usually, slums are close to urban areas but are frequently overcrowded, have limited planning, and poor roads which can inhibit delivery. This is explained by a representative of SSE#1: *'We have core challenges in transporting our products to the last mile, some customers also do not have access to public transportation'* (Interview SSE#1).

A different structural barrier SSEs face relates to pricing. Often SSEs learn, belatedly, that their initial product price does not match the financial resources of BoP customers. This is explained by a representative of SSE#8:
'In our case we've got a well-known high-quality product but it's too expensive for much of our target market. So that is one of our biggest challenges, trying to overcome the gap in affordability […] It is a challenge to find a way to register a price and to make it fit with the expectations of customers'. (Interview SSE#8)

This issue was similarly highlighted by SSE #3, which experienced difficulties in matching pricing and interest rates in its micro-credit loan scheme with target customers' incomes. In both instances, on the basis of this learning, adaptations were made to pricing.

BoP customers' incomes are not, however, only limited, they are also often unstable, and can fluctuate seasonally. This has implications for SSEs, with sales potentially restricted to certain times of the year, as discussed by a representative of SSE#8*: 'The financial capacity of customers is quite flexible because of seasons. So, there is a season when farmers have more harvest and (…) in other season, farmers maybe don't have so much money'.* Accordingly, SSEs learn that their payback approach and periods need to be sensitive to income instability. Our findings suggest that SSEs develop a fuller appreciation and become more *sensitised*, to the complex income status of individuals in the BoP over time.

To conclude, we have discussed some of the challenges SSEs face when building business models for the BoP. We have also shown how SSEs become sensitised to the nature of these challenges before learning how to overcome them –as will be discussed in later sections. It is

often not possible for SSEs to foresee these challenges in advance. The *sensitising* process elaborated in this section also often leads SSEs to realise they cannot address these challenges alone, and that collaboration with other actors – in ecosystems – is necessary.

Weaving the symbiotic ecosystem

In the first stage, SSEs become sensitised to the multifaceted challenges of serving BoP markets. Understanding these challenges, our cases began to interact with actors playing different roles in the BoP in order to overcome them. We found that SSEs learn which actors they need to work with and seek to build productive relationships with them. We describe this as SSEs *weaving* together an ecosystem, in order to achieve their goals whilst also generating benefits for other actors, in a *symbiotic* way. Through this weaving SSEs develop new and intensify existing relationships between ecosystem members that would otherwise not occur. This weaving and symbiosis are illustrated in the following quotation:

'If we work with all members of the ecosystem to benefit our end-users then our goals will be meet in terms of achieving the larger access to clean water by the majority. (…) It is a symbiotic ecosystem, because the community benefit from our products through the contribution of each partner'. (Interview SSE#4)

To elaborate how SSEs weave together the *symbiotic ecosystem*, three second-order themes were identified: (1) *connecting with the community;* (2) *associating with influencers;* and (3) *engage existing service providers*. These themes are explored in the next sections.

Connecting with the community

In the sensitising stage, SSEs learn that they need to better understand BoP customers and their needs. To address this challenge, SSEs build connections with BoP customers/communities. To do this, it was found that representatives of SSEs may immerse themselves in BoP communities, observing and communicating with them. For instance, representatives of SSEs #5, #10, and #2 discussed the importance of early and ongoing interaction with communities, and making connections with other local organisations. This was similarly documented by SSE#1, which provides cook-stoves to low-income customers in slums and peri-urban areas, with staff living close to customers to understand their habits, as suggested by the following quotation: *'We observe them, we see what they are doing, what they need'.* Participants identified that they sought to share in their customers' moments of daily life, to better understand the '*habits and needs'* of the BoP. This is further illustrated by the following quotation from a representative of SSE#3 (which offers micro-credit to disadvantaged groups):

'I spent three years visiting communities and giving them questionnaires asking what they need […] You have to be close to the community. […] You have to eat with them, live with them. Thus, we understood their habits and needs. The closer you are, the more you understand what they want, what they value, what they need'. (Interview SSE#3)

SSEs learn through direct interaction with BoP customers/community members. However, they also learn through relationship building with key actors and institutions in BoP communities. We found that SSEs often sought to connect with, but also build connections between, important local actors, including governmental offices, traditional authorities, indigenous NGOs, and churches. These actors have long standing influence in BoP communities and (especially together) possess substantial local knowledge. This latter point is illustrated by the following quotation from a representative of SSE#4: *'We talk with churches… they have a general overview of community issues […] what communities most need and the way they need it'*. The significance of building relationships with these embedded representatives was highlighted in multiple interviews and is nicely illustrated by the quotation below from an interview with representatives of SSE#10 (that provides solar irrigation water pumps to rural farmers):

'*We mapped local organisations, such as NGOs, because they have the experience in the local market to understand more how to do business, they have the local information'*. (Interview SSE#10)

In summary, connecting directly with the community, and weaving relationships with and between embedded local actors to achieve shared objectives were found to be important actions for SSEs as they begin to understand the needs of BoP customers to serve them more successfully.

Associating with influencers

As identified earlier in the article, SSEs experience challenges in developing awareness of their products and services amongst BoP customers, and in gaining their trust. We found that this challenge motivated them to develop relationships with, and between, actors already influential and trusted in BoP communities. For instance, SSE#8 experienced difficulty promoting its blockchain technology payment service directly to BoP customers, so it decided to partner with highly legitimate local actors:

'We have identified partners, like local NGOs, or some organisations that work with government in this area (…) those people are really influential and respected'. (Interview SSE#8)

In this case, the SSE also intensified existing relationships between government and NGO actors, and created new opportunities for them to interact with the community. SSE#1 provides a further example of this associating with legitimated actors, as described below:

'*We perceived that development agencies have high legitimacy being linked with the community […] and helping them for a long time'.* (Interview SSE#1)

Finally, SSE#4 discusses this in terms of its engagement with local churches: *'We realised that people of the community respect and trust in churches because their decisions are toward economic and social improvement'*. (Interview SSE#4)

The above associations were beneficial for SSEs, but also for developing wider ecosystems. Actors became aware of and were able to deepen relationships with each other through the SSEs acting as intermediaries. In developing these relationships, and weaving together ecosystems, SSEs were motivated to achieve their dual social and economic objectives. The organisations that our cases were developing relationships with and between were in many instances similarly motivated, recognising that working with the SSE could help them reach more beneficiaries, reinforce their legitimacy, support shared objectives of community development, etc. For instance, SSE#10 suggested that local churches, by connecting with it and its sale of solar panels, had the opportunity to intensify linkages with low-income people through educating them about alternative sources of energy, as highlighted in this quotation: *'If you put a solar panel there* [churches, author's note], *they educate people about it, so they have a lot of interest to promote it… to help them in adopting alternative energy sources'*.

Further responding to the challenge of limited awareness of their products amongst the BoP, some SSEs connected with community influencers and, in some instances, sought to connect with and even create informal influencer groups, for instance, groups of women motivated to promote socially influential products and services. In the case of SSE#6, it was suggested that such women's groups were able to help their community, whilst also gaining social status and expanding their capabilities, as highlighted in the following quotation:

'*Ladies do the marketing themselves […] because of social recognition they get in promoting products to the communities. The reason is that they benefit from it. It improves their image,*

because they want to help people, so they will have more opportunities in the future'. (Interview SSE #6)

In a similar vein, SSE#2 highlighted how its products and services pulled together women and young people in communities, with this often formalised through the setting up of savings and credit cooperative societies (SACCOs). It was suggested that engagement with such SACCOs had personal benefits in terms of raising individual's self-esteem, as illustrated in the following quotation: *'Once they are members of a SACCO, they feel helpful to society, they feel engaged in something, they are inspired'*. The SACCOs then also became vehicles for further development work.

To conclude, SSEs associate with trusted actors and influencers in the BoP to overcome issues of trust and awareness. They also bring these actors together, weaving wider symbiotic relationships, and providing benefits for other ecosystem members, including legitimacy, social recognition, mission fulfilment, further development opportunities, etc.

Engaging existing service providers

We found that structural barriers in BoP markets further stimulate SSEs to build relationships with and between existing service providers. In line with previous discussions, SSEs may particularly look to work with socially oriented organisations with complementary values. Through such collaborations, ecosystem partners may advance their social purposes by supporting SSEs in serving BoP communities. An example of this is provided by SSE#4 which sells and distributes solar pump systems. To achieve its objectives, SSE#4 built relationships with a socially oriented solar pump supplier to serve hard-to-reach customers. Meanwhile, the partner pursued its own mission with the help of the SSE, as explained in the following quotation:

'We looked for more socially-oriented providers […] we found WILO, a German company, they have a presence in Kenya. We recognise organisations that are trying to do something good for the community, and we want to ensure that such organisations have success'. (Interview SSE#4)

Likewise, SSE#2 (which helps young people and women gain capital in Uganda) established relationships with a social enterprise named True African to facilitate financial transactions for their customers. Through this tie, True African was also able to extend its connections with other local organisations and gain new BoP customers, as documented in the following quotation:

'We partnered with True African and connected it to our clients who opened accounts […] so we integrated our system with their system, integrating the Mobile Money System in our software, and we share revenues with them'. (Interview SSE#2)

To overcome challenges in physically reaching beneficiaries, SSEs also connect with small informal service groups such as local riders, so-called *'boda boda'*, with the capacity to serve *'hard to reach'* BoP communities, that is, those in remote rural and slum areas. Through such relationships local riders gain additional income, as explained by a representative of SSE#6: *'We partner with them, they are very good at reaching customers in any corner of the villages, they do it as work, so they are happy to gain more income from us'* and are positioned to access further opportunities, for example, with other ecosystem actors.

In another example, SSEs face the challenge of the low and fluctuating incomes of individuals in the BoP, and so may build relationships with those providing warranties or grants to extend the financial capacities of BoP customers. It was found that some SSEs worked with socially oriented organisations, for example, NGOs *'which provide some grants to farmers helping them to purchase products'* (SSE#8). By doing this, SSEs create opportunities for NGOs to extend their relationships with beneficiaries and to reach out to more community members and wider communities with their services. This also occurred drawing in informal actors; for instance, some SSEs established connections with small informal village savings groups. In these cases, the connected groups provide and/or guarantee individual's loans. This peer support helped individuals access loans through providing greater security of repayment, as explained below by a representative of SSE#2:

'*We mapped village* saving *groups that are composed of members of communities who guarantee loans for each other, when one needs a loan, the other acts as a guarantee because they know that in the future, they would need a loan too, and the groups will guarantee for them'.* (Interview SSE#2)

These findings show how SSEs build relationships with, and weave together disparate formal and informal actors, and the community, to overcome challenges of serving BoP markets. By doing this, they are able to achieve their objectives, but also generate benefits for ecosystem members, including communities. A final illustration of this is the following quotation from SSE#3:

'*We are working with local entrepreneurs, we make sure that other organisations can source from those people for all the items they use like uniforms, business cards, etc. […] It is good for the community, because it gives back value to the community'.* (Interview SSE #3)

We describe this process as developing a *symbiotic ecosystem*, with actors (formal and informal) contributing and gaining from these interactions, including SSEs serving BoP markets with their products and services.

Harnessing the symbiotic ecosystem

In the third stage, SSEs harness the *symbiotic ecosystem* to realise their community-centred business models. We identify three key elements of this stage relating to the different business model components. These are expressed in the second-order themes: (1) g*rounded value proposition;* (2) *embedded value delivery;* and (3) *bridged value capture*.

Grounded value proposition

Through processes of *sensitising* and *weaving* together, SSEs come to understand challenges of serving BoP markets, and draw upon the knowledge, resources and capabilities of community organisations, local influencers, service providers, etc. and their own interactions with and legitimacy in communities, to advance a strong grounded value proposition. This value proposition is grounded in real local needs, it addresses the challenges revealed in the first stage, and it is built on connections with the *symbiotic ecosystem*.

The notion of a grounded value proposition and basis for it is described in the following quotation by a representative of SSE#3: *'So, after living with them we came out with a product that suits their needs. […] With my colleagues, we started to give micro-credit loans, and have come up with a credit model'*. It is further evident in the following quotation from an interview with a representative of SSE#5: *'better figured out the services we were going to deliver, because we understood their pains. It impacted the value proposition'*. In these examples, the value proposition is effectively shaped by interactions between SSEs and the BoP community. A further, somewhat different illustration of this grounded value proposition is provided by SSE#4 which found customers interested in its water solar pump systems and boreholes through connecting with local government representatives. This is explained in the quotation below:

'We went together with the member of the county assembly to identify the best beneficiaries of our projects. […] they suggested us to focus on groups in informal sectors, and not deal with

individuals but rather with groups, because they know each other and so they know who is reliable'. (Interview SSE#4)

Through knowledge sharing and wider interaction with local government representatives, who also enabled SSE#4 to connect with the community, its value proposition was adapted to fit target customers' needs.

In summary, through *harnessing* the *symbiotic ecosystem* SSEs are able to advance a grounded value proposition in their business models, which is tailored to the needs of BoP communities, groups, and individuals, increasing the likelihood of SSEs' success.

Embedded value delivery

SSEs can also embed value delivery in the *symbiotic ecosystem*, and the relationships that have been woven together. As discussed earlier in the article, association with local highly legitimate actors helps SSEs gain the confidence and trust of BoP communities. For instance, SSE#1, SSE#2 and SSE#3 gained trust in their respective communities through relationships with cooperatives and development agencies, as illustrated in the following quotation: *'Development agencies being linked with the community gave us legitimacy at the community level'* (SSE#1). However, such relationships can move beyond association, and be more formally activated and integrated in value delivery. An example of this is provided by SSE#5 which partnered with the Ugandan Midwifes and Nursery Association to ensure its recruits were certified by the Nursery Council and had appropriate qualifications. In another example, SSE#1 in its marketing utilised communication channels already established by various local institutions, as explained below:

'Development Agencies helped us with the market access, making people aware about the stoves, doing activations and selling products' and also *'University engaged the communities to sell the stoves. They bought our stoves, they show to people how to use it, they train them as agents, and then agents sell the stoves. Basically, the University connect us with the community'.* (Interview SSE#1)

SSEs may draw upon relationships with community leaders and influencers in their value delivery. However, they may also work with less prominent individuals, for instance, groups of women in communities, as shown by the following quotation: *'By exploiting the existing social status of ladies in communities and their need to gain social recognition, we convinced many people through 'word of mouth'* (Interview SSE#6). To conclude, our findings reveal

that SSEs may harness symbiotic relationships with organisations and individuals in the community for embedded value delivery.

Bridged value capture

Our findings reveal that SSEs may harness the *symbiotic ecosystem* to enact *bridged value capture*. This bridging comes in different forms. One entails SSEs connecting suppliers with target BoP customers, bridging the gap, and in so doing capturing value. When employing this approach, SSEs may utilise their social mission and positioning to gain cost advantages from suppliers, which in turn allows them to make their offering affordable for low-income BoP communities. SSE#4 is an example of this, it is able to purchase products at a substantial discount because of its supplier's desire for social impact, as illustrated below:

'*We decided to buy products from WILO because it gave us products with a relevant discount, this allowed us to sell product at a better price becoming more affordable and help more the community scaling of our projects*'. (Interview SSE#4)

SSEs may also capture value through bridging infrastructure gaps by harnessing the technologies of service providers. In so doing, they link BoP communities with ICT providers, enabling customers to transact and use their products. For example, SSE#5 uses Telematic Bank's integrated mobile payment technologies which allow customers in rural areas to make payments.

The above examples show how SSEs may operate as a bridge or *'intermediary'* between external providers and low-income communities. This enables, on the one side customers to use and purchase products, and on the other side SSEs and the external provider to capture value.

To conclude, our findings reveal that to build business models for the BoP, SSEs may go through a three-stage process of (1) *sensitising* to the multifaceted challenges of doing business in the BoP; (2) *weaving* together a *symbiotic ecosystem*; and (3) *harnessing* the resources and capabilities of actors in the *symbiotic ecosystem* to implement business models and achieve their objectives.

Discussion

This article aims to improve understanding of how SSEs in East Africa develop business models to serve BoP markets, exploring the research question: *how do SSEs interact with their ecosystems to overcome challenges and build business models to serve BoP markets?* Inductive

qualitative research was undertaken to address this question, informed by the Gioia et al. (2013) methodology. This methodology enabled the construction of a conceptual model, grounded in the data, describing the process of interactions between SSEs and their ecosystems in the development of business models for the BoP. This model comprises three stages of *sensitising*, *weaving,* and *harnessing,* with different components of these stages further elaborated.

Our model reveals that in the first stage SSEs gradually become *sensitised* to the multifaceted challenges of serving BoP markets. Three challenges were found to be especially salient for SSEs. First, those related to understanding the needs of BoP communities. Second, difficulties in building trust with communities, and raising awareness of SSEs and their offerings. Customer awareness and trust are highlighted in the literature as important for successful venturing in the BoP (Acheampong and Esposito, 2014; Anderson and Billou, 2007). Third, SSEs must overcome limited institutional support and institutional voids, as well as often physically poor infrastructure. We note that these challenges are often more acute for small organisations like SSEs (Ahsan et al., 2021; Lashitew et al., 2021; Mair and Marti, 2009).
These three key challenges create particular organisational needs that SSEs may address through working with other actors (Calton et al., 2013; Mason et al., 2017; McMullen, 2018). We describe the first stage of this engagement as *weaving*. SSEs identify relevant actors with whom they can work, before connecting with them, and linking these actors together in development of a *symbiotic ecosystem*. Recent work has begun to explore the role of ecosystems in venture success; see Lumpkin and Bacq (2019), Mason et al. (2017), and Wurth et al. (2021). However, these studies mainly focus on relationships within already existing ecosystems. Our study provides a different perspective, showing the work SSEs in East Africa may need to undertake to develop nascent ecosystems, initiating connections with and between actors. Within this process, we describe SSEs engaging with varied entities, including: the community, important institutional actors – government, traditional authorities, domestic NGOs, etc. – influencers, community groups, service providers, etc.

The *symbiotic ecosystem* supports SSEs in acquiring resources, gaining knowledge, developing social ties, and a positive reputation in communities, in ways that are important to address challenges of serving the BoP (Bacq et al., 2020; Bhatt et al., 2021; Lashitew et al., 2020). For instance, interactions with BoP communities enable SSEs to better understand customer needs (Manning et al., 2017), working with influencers raises awareness and trust of SSEs in

communities (Viswanathan et al., 2021), whilst engaging existing service providers allows SSEs to overcome structural barriers, such as in delivery to remote rural and slum areas (Anderson and Billou, 2007).

SSEs weave together different actors that were often already working in the BoP, but on an individual basis. They do this favouring symbiotic exchange that creates benefits for all. Drawing upon this understanding, and building on the work of Goyal et al. (2017), Lingens et al. (2020), McMullen (2018), and Sanchez and Ricart (2010), we assert the following definition of a symbiotic ecosystem as: *an interconnected group of actors in a local geographic community which depend on each other to provide the conditions necessary for organisations to create value for themselves and others.* We contend that it is necessary for SSEs to *weave* such an interconnected ecosystem, which includes BoP communities (Jain and Koch, 2020), to create the conditions for higher value creation for BoP customers (Bowey and Easton, 2007).

The development of a *symbiotic ecosystem* brings us to the third stage, where SSEs harness these relationships, across the business models components of their value proposition, value delivery, and value capture. Our findings here extend the work and theorising of Yunus et al. (2010) and Sanchez and Ricart (2010). For instance, we show how communities support SSEs to design value propositions that align with the real needs of the poor (Bacq et al., 2020; Chmielewski et al., 2020). Likewise, relationships with local government enable SSEs to achieve legitimacy in communities and so penetrate markets with effective marketing campaigns despite their smallness (Roundy, 2017). Finally, connecting with local service providers allows value delivery for, and value capture from isolated BoP communities (Chmielewski et al., 2020; Lashitew et al., 2021).

Our model comprises three broad stages. These stages interact, overlap, and the overall process is iterative with feedback. The *symbiotic ecosystem* plays an important role throughout and across different stages, for example, linking challenges with business model development. Ecosystem actors influence the design of business model components and make it possible for SSEs to address the multifaceted challenges uncovered in the first stage (Lashitew et al., 2021; McMullen, 2018). To conclude, our model illustrates how SSEs can build community-centred business models to effectively operate in BoP markets, through creating and harnessing a *symbiotic ecosystem*.

Contributions to social entrepreneurship, BoP, and small business literature

This article contributes to social entrepreneurship, BoP, and small business literature. It first sheds light on the particular challenges SSEs face when serving BoP markets. Various studies have documented operational challenges in BoP environments (Dembek et al., 2020; Obeng et al., 2014), and strategies to overcome them, including partnerships with local communities (Anderson and Billou, 2007; Ciambotti and Pedrini, 2021). We extend such work by revealing how this plays out specifically for SSEs, including the interplay between challenges in the external environment and internal tensions linked to the nature of SSEs. We further elaborate how SSEs may overcome multifaceted challenges of serving the BoP, by forming relationships with and *weaving* together local actors into a *symbiotic ecosystem* (Dattée et al., 2018; Lashitew et al., 2020; Saebi et al., 2019; Stott et al., 2019). Our theorising of a *symbiotic ecosystem* is novel. It also contrasts with existing work in this area which has focussed more on the one-to-one collaborations of those venturing in the BoP (Amoako and Lyon, 2014; De Bruin et al., 2017; Wurth et al., 2021). We argue the notion of a *symbiotic ecosystem* is conceptually useful for describing the more holistic constellational approach to relationships with external actors adopted by SSEs when serving BoP markets. More generally, our study extends knowledge and theorising about the nature and dynamics of the relationships established by SSEs when operating in challenging BoP market contexts, characterised by institutional complexity, voids, and limited support, which can otherwise constrain the actions of such small organisations (George et al., 2016; Reficco and Márquez, 2012; Sanchez and Ricart, 2010). In showing how SSEs *weave* together ecosystems, we also contribute to understanding and theorising of the antecedents and formation of 'entrepreneurial' ecosystems (Lingens et al., 2020; Wurth et al., 2021), in developing economies and around BoP markets (Dattée et al., 2018; Lashitew et al., 2021; Mason et al., 2017).

Our second key contribution is the overall introduction of a new theoretical process model, which describes how SSEs engage ecosystems to build business models for BoP markets. This model encompasses stages of *sensitising*, *weaving,* and *harnessing*, key elements of which are elaborated. The development of this model complements recent efforts to theorise relationships between social enterprises and ecosystems by De Bruin et al. (2017), McMullen (2018), and Wurth et al. (2021) amongst others. In devising this model, we further contribute to literature on the design of business models for the BoP (Chmielewski et al., 2020; Ciambotti et al., 2020; Lashitew et al., 2020; Sanchez and Ricart, 2010; Yunus et al., 2010). Adding to previous work, we reveal how interactions with the ecosystem, and particular actors in it,

influence the design of SSE business model components. Our work especially identifies a key role for the community in business model design, particularly for SSEs, complementing work by Dattée et al. (2018) and Smulowitz et al. (2020) amongst others. Through engaging the *symbiotic ecosystem* we argue SSEs can develop community-centred business models. We see this as a new business model pattern (Bacq et al., 2020; Chmielewski et al., 2020). This new pattern enables social entrepreneurs to address the genuine needs of BoP customers/communities through harnessing the contributions of ecosystem actors (Sutter et al., 2019).

The third contribution of our work is that despite recent additions (Ciambotti and Pedrini, 2021; Littlewood and Holt, 2018b; Obeng et al., 2014; Rivera-Santos et al., 2015), Africa remains underrepresented in social entrepreneurship scholarship. Our work contributes to addressing this limitation, whilst also showcasing the empirical and theoretical insights Africa focused research can provide for the social and wider entrepreneurship field. BoP scholars have similarly called for more research on Africa and for an expansion of the empirical base of BoP studies to better include Africa, and small firms (Dembek et al., 2020). Our article contributes to this project. Finally, our work responds to the need for more small business research on Africa, in conditions of institutional complexity, as well as of small hybrid firms with multiple objectives (Bruton et al., 2021).

Implications for practice

This article has implications for social entrepreneurs, managers of small social enterprises, and other individuals and businesses venturing in the BoP. First, it may help them to understand the multifaceted challenges of serving BoP markets, as well as those actors in the *symbiotic ecosystem* who possess useful resources and capabilities to help overcome them (Rivera-Santos and Rufin, 2010; Sanchez and Ricart, 2010). Second, it showcases strategies for building business models in the BoP through creation and interaction with such ecosystems.

This research also has implications for policymakers. In particular, our work suggests the value of supporting the development of symbiotic ecosystems, for example, through events, funding, policy and legislation, etc. and fostering relationships between social enterprises, entrepreneurs, and other actors in and working with the BoP – including communities.

Limitations and future research

This research contributes to social entrepreneurship, small business, and BoP literatures and has practical implications. Nevertheless, it has limitations, which also offer avenues for further

enquiry. First, given the inductive and exploratory nature of the study, our sample is relatively small, and somewhat narrow. The former suggests a need for further validation of our findings, whilst the latter may influence our understanding of the ecosystem actors SSEs engage with and how this occurs. Future research may thus examine more SSEs, or micro, medium, or large social enterprises to extend our findings. Other factors influencing how SSEs interact with their ecosystems might also be considered, for example, sector and the nature of the social need addressed, social entrepreneur/leader characteristics, legal status, etc. To elaborate on the concept of *weaving* a symbiotic ecosystem, future studies might also further investigate collaborations between multiple social enterprises in symbiotic ecosystems and indeed go beyond SSEs as the focus of the analysis to consider and collect data from wider ecosystem actors. Similarly, more research is needed exploring the benefits and overall value generated in symbiotic ecosystems, how this is distributed, and identifying variations and providing explanations on the nature and intensity of such ecosystem symbiosis.

Our study focused on East Africa. However, BoP markets are heterogeneous (Dembek et al., 2020; Obeng et al., 2014; Sanchez and Ricart, 2010), with country level institutional characteristics also varying considerably (e.g. levels of corruption, economic situation, formal and informal institutions, etc.) (Lashitew et al., 2021; Sydow et al., 2020). Accordingly, further work is needed examining SSEs and ecosystems in other country contexts. Finally, our work frames SSEs' interactions with their ecosystems quite positively – grounded in our findings – but is this always the case? Further work exploring potentially more negative engagements between SSE and ecosystems is needed.

Conclusions

This article has examined how SSEs engage ecosystems to overcome multifaceted challenges and build community-centred business models for BoP markets. A three-stage model – comprising *sensitising*, *weaving,* and *harnessing* – has been introduced describing this process. This process results in the development of a symbiotic ecosystem of actors that depend on and support each other, and through which SSEs are able to create value for themselves and others. To conclude, this research aims to spur further interest in interactions between SSEs and their ecosystems, providing new insights on how SSEs learn, how they weave together, and harness symbiotic ecosystems to build business models to serve BoP markets. There remains much about these processes that we do not know. Nevertheless, our study constitutes an early

contribution to the field, that we hope it encourages further research for the benefit of the billions globally who continue to live and work in the BoP.

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