

Sustainable innovation and inclusive business in Latin America

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Abstract

Purpose – This exploratory research aims to analyze sustainable innovation in the context of inclusive business in Latin America.

Design/methodology/approach – The study performs a summative content analysis of 22 inclusive businesses (IBs) of current Business Call to Action (BCtA) members in Latin America. Codes were created to identify the modification or introduction of sustainable products/services/processes. Data were analyzed using NVivo 12.

Findings – Results show a prevalence of Colombian examples within Latin American inclusive business, and a more significant proportion in the agricultural sector, consistent with reports found in the literature. The authors found that sustainable innovation takes place when introducing new products/services/processes that respond to the needs of the bottom of the pyramid (BoP) population, or modifying existing processes and services to make them more sustainable.

Originality/value – As most sustainable innovation literature is product-oriented and technically dominated, these results contribute to the newer works adopting a more comprehensive conception of innovation, providing empirical evidence at the product, service and process levels. The results provide insights on how inclusive businesses make adaptations to improve the sustainability of their supply chains to bring their products/services within reach of isolated and disadvantaged communities. The findings also suggest that sustainable product innovation in an inclusive business goes beyond a cost reduction objective. Tailored design reveals a hybrid socioeconomic goal with a high degree of local context embeddedness and precise attention to nascent specialized demand. The results could be of practical use for organizations that want to operate an inclusive business in BoP markets.

Keywords Base of the pyramid, BoP, Inclusive business, Sustainable innovation, Latin America, Content analysis

Paper type Research paper

1. Introduction

Several of current technologies are allegedly wasteful, resource-intensive and fossil fuel dependent, contributing to multiple environmental and social problems (Chataway, Hanlin, & Kaplinsky, 2014). Experts have been questioning traditional innovation for neglecting informal economies, disregarding marginalized communities and contributing to rising inequality (Heeks, Foster, & Nugroho, 2014; Organisation for Economic Cooperation and Development [OECD], 2013). Therefore, new forms of innovation, such as sustainable innovation (SI), have appeared intending to drive development that is socially inclusive and environmentally innocuous (World Entrepreneurs Investment Forum [WEIF], 2017).

As defined by The United Nations Conference on Trade and Development [UNCTAD] (2017), innovations are “new forms of social practice and organization, as well as new or



improved technological products and processes” (p. 1). Aligned with that view, this paper follows the definition proposed by [Bos-Brouwers \(2010\)](#) understanding SI as “innovations in which the renewal or improvement of products, services, technological or organizational processes not only delivers an improved economical performance, but also an enhanced environmental and social performance, both in the short and long term” (p. 419). This understanding builds on [Elkington’s \(1997\)](#) triple bottom line approach and is aligned with the general conceptual understanding found in current SI literature ([Adams, Jeanrenaud, Bessant, Denyer, & Overy, 2016](#); [Cillo, Petruzzelli, Ardito, & Del Giudice, 2019](#); [Yoon & Tello, 2009](#)).

The way innovation is practiced sustainably in contexts of poverty and resource scarcity has gained increased attention across the world. [Prahalad and Hart \(2002\)](#) coined the bottom of the pyramid (BoP) concept in the early 2000s in their seminal work, “The Fortune at the BoP.” The study of innovation as a subtopic of the BoP discourse has grown quickly, with a rising number of publications and special issues dedicated to this debate ([Hall, Matos, & Martin, 2014](#); [Nakata, 2012](#)). Due to the constraints and particularities of the BoP, it is necessary to rethink and refine the focus, processes and sources of innovation ([Prahalad, 2012](#)). The challenge resides in delivering value-sensitive innovations that are also rightly compatible with the unique circumstances of the BoP ([Nakata & Weidner, 2012](#)).

BoP businesses respond to the needs and opportunities of people living in relative or extreme poverty, a demographic group considered to be accounting for approximately two-thirds of humanity ([Casado Cañeque, 2015](#); [Hammond, Kramer, Katz, & Tran, 2007](#)). The idea of actively engaging poorer communities in markets’ demand or supply is known as inclusive business (IB). Experts define IB as a “profitable, as well as environmentally and socially responsible business initiative that, while creating value for the company, contributes to improving the quality of life for low-income communities through their participation in the value chain of a business” ([Inter-American Development Bank \[IADB\], 2015](#), p. 13).

SI is the innovation that aims at delivering products, processes and services with improved environmental, economic and social performance. IB aims at including low-income communities into business value chains in a profitable, environmentally and socially responsible way. This exploratory study will address the research question considering both concepts and their interrelation: How does sustainable innovation occur in the context of inclusive business in Latin America? The study performs a summative content analysis of 22 IB of current Business Call to Action (BCtA) members in Latin America. As stated by BCtA, their member companies are market leaders and innovators implementing IB, with scalable, profitable and successful businesses that reach poor communities and contribute to global development. Thus, BCtA members are a fitting sample for this research.

This study contributes to SI and IB research by providing insights into how organizations with an IB adapt to improve their supply chains sustainability and reach isolated and disadvantaged communities. [Section 2](#) continues with a literature review on SI. [Section 3](#) explains the methodology and sample, and [Section 4](#) discusses the results. [Section 5](#) finalizes with conclusions and future research remarks.

2. Literature review

2.1 Sustainable innovation

Until the late 1980s, experts perceived innovation as a linear process originating from a scientific inquiry through research, development and commercialization. Multinational corporations prevailed in carrying out those innovations due to their capacity to fund and exploit such processes ([Schot & Steinmueller, 2016](#)). This linear conception has evolved beyond pure scientific novelty when including or improving existing technologies, techniques and practices, which has led to the recognition of several forms of innovation in organizations and social practice ([UNCTAD, 2017](#)).

Along with the conceptual evolution, novel approaches to innovation have emerged, questioning conventional innovation due to the increased pressure to deliver environmentally friendly and socially inclusive products and services (Heeks *et al.*, 2014; OECD, 2013). There is no consensus in the literature regarding a typology of new models or approaches to innovation, as it is still a subject of current debate (UNCTAD, 2017). This lack of consensus is also applicable to the idea of SI. As Cillo *et al.* (2019) point out, it is possible to have different SI formulation and implementation approaches due to its multidisciplinary nature and the heterogeneity of topics, factors and perspectives associated with the concept in theoretical and practical terms. Despite this, experts have limited SI evolution to sustainability's environmental dimension. They have also equalized SI to the notions of "green" (Chen, Lai, & Wen, 2006; Song & Yu, 2018), "environmental" (Liao, 2018; Oltra & Jean, 2009) and "eco" (Berkhout, 2011; Hojnik & Ruzzier, 2016) innovation. Most scholars have been using the terms synonymously (Schiederig, Tietze, & Herstatt, 2012). Schiederig *et al.* (2012) notice, however, that the notion of SI broadens the concept, including a social dimension. What sets SI apart from conventional innovation is implementing a triple bottom line approach, integrating economic, ecological and social aspects (Bos-Brouwers, 2010).

Aside from SI, scholars have proposed multiple associated terms in management literature, such as CSR-driven innovation, sustainability-oriented innovation, sustainability-related innovation and sustainability-driven innovation (Gao, Xu, Ruan, & Lu, 2017). In this paper, we will prefer the term SI. Table 1 summarizes a selection of definitions found in current literature. As stated in the introduction, this study follows the definition proposed by Bos-Brouwers (2010).

At an organizational level, scholars associate SI implementation with practices such as circular economy, new forms of sustainability management systems or business model innovation. Experts see the circular economy as an alternative to the take-make-waste approach of the linear economy (Bocken, Olivetti, Cullen, Potting, & Lifset, 2017). The base of its implementation is the circular material flows that include repair and maintenance, reuse and redistribution, refurbishment and remanufacturing, recycling, cascading, repurposing and organic feedstock (Lüdeke-Freund, Gold, & Bocken, 2019). Similarly, as experts base the

Source	Definition
Yoon and Tello (2009)	"the development of new products, processes, services and technologies that contribute to the development and well-being of human needs and institutions while respecting the worlds' natural resources and regenerative capacity" (p. 88)
Bos-Brouwers (2010)	"innovations in which the renewal or improvement of products, services, technological or organizational processes not only delivers an improved economical performance, but also an enhanced environmental and social performance, both in the short and long term" (p. 419)
Adams <i>et al.</i> (2016)	"making intentional changes to an organization's philosophy and values, as well as to its products, processes or practices to serve the specific purpose of creating and realising social and environmental value in addition to economic returns" (p. 181)
Bag and Gupta (2017)	"a complex process where sustainability parameters are integrated with the firm's system from the initial stage of generation of ideas to the final product and component development after various researches and finally boil down to commercialization" (p. 233)
Rosca, Arnold, & Bendul (2017)	"inventions that provide fundamental progress in matters of economic, social and ecological concern" (p. S133)
Kusi-Sarpong, Gupta, & Sarkis (2018)	"new or modified processes, techniques, practices, systems and products to reduce social and environmental harm" (p. 1992)

Table 1.
Definitions of
sustainable innovation

Source(s): Own elaboration based on cited sources

SI implementation on improvements for companies' activities and broader systems, it may require a reformulation of an organization's business model, due to the insertion of intrinsic changes toward sustainable practices (Kneipp, Gomes, Kruglianskas, Motke, & Frizzo, 2021). As noticed by Obal, Morgan, and Joseph (2020), practical sustainability orientation is contingent on the role of cohesive organizational leadership, capable of integrating sustainability into corporate culture and strategy, and of achieving long-term commitment and buy-in from its workforce.

2.2 SI and BoP discourse

A growing body of literature focused on SI has emerged under the BoP banner (Boons & Lüdeke-Freund, 2013). Within BoP literature, scholars sometimes relate innovation to developing products/services/systems and business models for poor populations at a low cost but presenting decent quality. Such an innovation often overlaps other research streams like disruptive innovation (Hart & Christensen, 2002), *jugaad* innovation (Radjou, Prabhu, & Ahuja, 2012), inclusive innovation (Chataway *et al.*, 2014) and frugal innovation (Soni & Krishnan, 2014). BoP innovation claims that given the constraints, scarcities, and adverse conditions faced by poor communities, innovations for the BoP should focus on awareness, accessibility, affordability and availability of the proposed solution (Prahallad, 2012). In these types of innovations, lower-income communities not only are the target recipients but can also be the very source of innovation. Grassroots innovation in BoP markets derives from novel combinations of existing technologies and local knowledge to solve local problems (Govindarajan & Ramamurti, 2011).

Subject-matter experts raised some concerns regarding the environmental sustainability of BoP solutions. Given the intense poverty, the objectives to alleviate it and protect the environment may seem to oppose one another (Khavul & Bruton, 2013). The aim for social inclusivity might lead to higher and larger pollution or to inefficient use and overexploitation of resources (Krämer & Herrndorf, 2012). If BoP business follows the same unsustainable pattern as mainstream innovation, a more significant economic activity at the BoP may result in an adverse environmental impact, which could endanger those living at the BoP (Arnold & Williams, 2012; Pineda-Escobar, 2013). With these concerns in mind, scholars propose new concepts such as green leap innovation (Hart, Sharma, & Halme, 2016). SI targeting BoP markets should be co-created and designed with sensitivity to local circumstances, networks and business ecosystems (Khavul & Bruton, 2013). A high degree of organizational openness, flexibility and learning is required for innovations to succeed in the BoP. Firms need to accept and capitalize multiple types and sources of knowledge to develop products, services and business models that can respond to conflicting economic, environmental and social needs arising in poverty contexts (Hart *et al.*, 2016; Nkurunziza, Munene, Ntayi, & Kaberuka, 2019).

3. Methodology

The researcher conducted a summative content analysis (Hsieh & Shannon, 2005) to investigate SI in Latin American companies implementing IB. As a research technique, content analysis can be especially useful at early research stages, when the aim is exploratory. Content analysis with exploratory purposes can be found in sustainability-related studies, such as the analysis of urban planning sustainability (Landorf, 2009; Säynäjoki, Inkeri, Heinonen, & Junnila, 2014) or large-scale mining sustainability (Arthur, Wu, Yago, & Zhang, 2017). Scholars have used the specific approach of summative content analysis to explore sustainability in retailing (Wiese, Kellner, Lietke, Toporowski, & Zielke, 2012), sustainability and strategy in the agri-food sector (Ross, Pandey, & Ross, 2015), SDG implementation at the country level (Pineda-Escobar, 2019) or conflict management strategies in corporate environments (Alok, Raveendran, & Shaheen, 2014).

Content analysis is useful to systematically collect and analyze messages in any type of communication and to construct objective inferences about specific subjects (Kondracki, Wellman, & Amundson, 2002). It provides ample analytical flexibility between quantitative and qualitative methods (Duriau, Reger, & Pfarrer, 2007). The researcher may choose first to resort to diverse text statistics, such as word frequency counts, to capture the text manifest content quantitatively. She/he would then move to a more profound qualitative interpretation of the latent meanings (Duriau *et al.*, 2007; Hsieh & Shannon, 2005).

We used summative content analysis to study the business profile of 22 Latin American member companies BCtA and analyzed the data with NVivo 12. We started by determining the most frequently used words and identifying trends in the text. Then an individual in-depth scanning of every description took place, providing a greater understanding of the underlying meanings in the content. We created codes to identify the modification or introduction of new products/services/processes in each of the analyzed companies, as summarized in Table 2.

3.1 Sample selection

We selected the sample via purposeful sampling (Creswell & Plano Clark, 2011; Palinkas *et al.*, 2015), considering the members of BCtA in Latin America. BCtA members are perceived as market leaders and innovators in IB implementation worldwide, providing an adequate population to select cases. Latin America is among the regions with the most significant IB proportion globally (Golja & Požega, 2012; IADB, 2015), making it an appropriate research location. In June 2019, BCtA’s website reported 230 members, 34 of which were active with operations in Latin America. Out of these 34, 12 companies were excluded from the sample because they operate in multiple world regions and not exclusively in Latin America. The final sample included the remaining 22 companies, as summarized in Table 3.

4. Results and discussion

4.1 Manifest content analysis

We ran word frequency queries to identify the 30 most frequently used words in the description material of the 22 IB studied. We used NVivo’s standard English language stop word list and grouped stemmed words for word selection. Irrelevant results were added to the stop list for accuracy.

As shown in the word cloud in Figure 1, the most commonly used word is *farmers*, with a frequency of 71; *products* and *income* complete the top three. With lower occurrence, the word cloud also highlights other words directly linked with the agricultural sector, such as *food*, *coffee* and *rural*.

These results elucidate a trend in the sample composition in which 9 of the 22 (40.91%) companies operate in the agriculture, food and beverage sector. This higher proportion of IB in the agricultural sector is consistent with reports we have found in the literature. Examples

Code category	Sub codes
Sustainable modification of	Product Service Process
Introduction of new sustainable	Product Service Process

Table 2.
Codes used in this
research

Source(s): Own elaboration

#	Company name	Country of origin	Sector	Short description
1	Acceso	El Salvador	Agriculture, food and beverage	Linking smallholder farmers to high-value markets in El Salvador
2	AccuHealth	Chile	Health	Improving lives and livelihoods with better healthcare management in Chile
3	Bancalimentos	Colombia	Agriculture, food and beverage	Breaking the cycle of poverty in rural Colombia by exchanging recyclable waste for essential household goods like food, medicine and agricultural inputs
4	Bive	Colombia	Health	Providing low-income families with access to timely, high-quality and affordable healthcare
5	CEMEX	Mexico	Manufacturing, construction and housing	Improving housing opportunities for low-income families in Mexico and the Caribbean
6	Contigo	Mexico	Financial services	Helping women in Mexico to build better lives
7	Corpocampo	Colombia	Agriculture, food and beverage	Sustainable harvests strengthening communities in Colombia
8	Credifamilia	Colombia	Financial services	Increasing access to mortgage financing for lower-income customers in Colombia
9	Crepes and Waffles	Colombia	Agriculture, food and beverage	Boosting farmers' income while strengthening climate resilience in Colombia
10	Crezcamos	Colombia	Financial services	Expanding access to financial services for rural micro-entrepreneurs in Colombia
11	Fruandes	Colombia	Agriculture, food and beverage	Empowering a new generation of farmers
12	Hábvita	Mexico	Manufacturing, construction and housing	Expanding affordable housing solutions and basic services to the BoP households in rural Mexico
13	Iluméxico	Mexico	Energy and utilities	Expanding solar energy solutions in off-grid rural communities in Mexico
14	Kaiho Sangyo	Brazil	Transport and logistics	Establishing an eco-friendly auto recycling value chain and training local businesses in Brazil
15	Nathalie's Direct Trade	Colombia	Agriculture, food and beverage	Levels the playing field for vulnerable Colombians
16	Postobon	Colombia	Agriculture, food and beverage	Building a business ecosystem on the strength of farmers
17	Pronaca	Ecuador	Agriculture, food and beverage	Streamlining the farm-to-buyer process to improve the livelihoods of Ecuador's corn farmers
18	Pupa	Brazil	Education	Serving Brazilian preschoolers with stimulating educational training
19	Salauno	Mexico	Health	Improving eye care and transforming lives in Mexico
20	Sanofi	Colombia	Health	Improved diabetes care for healthier lives in Colombia
21	Supracafé	Colombia	Agriculture, food and beverage	Empowering women coffee farmers in Colombia through inclusive business
22	Échale! a Tu Casa	Mexico	Manufacturing, construction and housing	Building affordable homes to empower communities

Source(s): Own elaboration based on BCtA website as of April 2019

Table 3.
BCtA members from
Latin America 2019

Figure 1.
Word cloud for the 30
most commonly
used words



of this literature are the studies by [Hammond *et al.* \(2007\)](#), [Golja and Požega \(2012\)](#), [Ashley, Harrison, and Schramm \(2014\)](#), the [IADB \(2015\)](#) and the [Food and Agriculture Organization \[FAO\] \(2015\)](#). They all identify a greater concentration of BoP business models in a few economic sectors, agriculture being a salient one. This prevalence of agriculture has been particularly present in Latin American IB ([Golja & Požega, 2012](#); [IADB, 2015](#)). Other relevant economic sectors found in the sample include health (18.18%), financial services (13.64%), manufacturing, and construction and housing (13.64%).

The word *Colombia* appeared 47 times, consistent with the fact that 12 of the 22 BCtA members in Latin America correspond to Colombian IB. The remaining ten companies are from Mexico (6), Brazil (2), Chile (1) and El Salvador (1). Scholars have also reported a considerable proportion of Colombian examples within Latin American IB in previous studies performing a case study analysis in the region ([Golja & Požega, 2012](#)).

Other words with a higher occurrence, such as *social*, *people*, *families*, *communities*, *low*, *income* and *development*, indicate the relevance of issues related to poverty and development. While *sustainable* occurs 30 times, *innovation* is not among the most frequent words used to describe their IB operations. It is worth noticing that the word *new* also has a high frequency of occurrence, appearing 32 times. [Table 4](#) shows detailed frequencies and weighted percentages.

4.2 Qualitative content analysis

The second stage of this research delved into understanding the latent meaning in the text to gain greater insight into the characteristics of SI in these IBs. As shown in [Figure 2](#), we found that IBs in Latin America are carrying out SI by introducing new products/services/processes that respond to BoP needs and modifying existing processes and services. We have not found any cases to implement SI by modifying an existing product. These findings are relevant, as SI literature has been dominated by product-oriented and technically focused origins, with subsequent evolution to adopt a more comprehensive conception of innovation ([Adams *et al.*, 2016](#)). Thus, by providing empirical evidence of more diverse innovation at the product level and as services or processes, these results contribute to the SI research evolution aiming at including a broader view of how the ones in charge implement innovation in different organizational contexts.

4.3 SI via product/process/service modification

SI occurs by modifying a product/process/service to better respond to the BoP populations needs. In this research, most SI occurs through modifying specific companies' processes to

Word	Count	Weighted percentage (%)	Similar words
Farmers	71	1.21	Farmer, farmers, farmers'
Products	70	1.19	Product, production, productive, productivity, products
Income	50	0.85	Income, incomes
Provide	49	0.83	Provide, provided, provider, providers, provides, providing
Colombia	47	0.80	Colombia
Services	44	0.75	Service, services
Families	42	0.71	Families, family
Low	41	0.70	Low
Access	40	0.68	Access, accessing
Health	35	0.59	Health
Improve	35	0.59	Improve, improved, improvement, improves, improving
Local	35	0.59	Local, locally
Quality	35	0.59	Quality
New	32	0.54	New
People	32	0.54	People
Communities	32	0.54	Communities, community
Model	31	0.53	Model, modelling, models
Rural	31	0.53	Rural
Produce	31	0.53	Produce, produced, producer, producers, produces
Market	30	0.51	Market, marketing, markets
Sustainable	30	0.51	Sustainability, sustainable, sustainably, sustaining
Development	29	0.49	Develop, developed, developing, development, develops
Coffee	28	0.48	Coffee
Housing	28	0.48	House, houses, housing
Social	28	0.48	Social, socially
Years	28	0.48	Year, years
Country	26	0.44	Countries, country
Food	26	0.44	Food, foods
Increase	26	0.44	Increase, increased, increases, increasing
Areas	25	0.42	Area, areas

Source(s): Own elaboration

Table 4.
Thirty most frequently
used words

implement their IB. These findings correspond with what [Adams et al. \(2016\)](#) label as organizational transformation in their conceptual framework on SI practices and processes. The authors characterized organizational transformations through redefining internal and external relationships toward sustainability, where the social dimension emerges more strongly and not only as an environmental “greening” focus. They are evident in business activities and processes, becoming more people-oriented, extending intra-firm linkages by engaging with immediate stakeholders and adopting new values, new platforms or new practices.

In our sample, the most frequent process modification was at the value chain level, making adaptations to improve their supply chains sustainability. These results corroborate the observations presented by [Adams et al. \(2016\)](#) who found evidence that developing strong and long-term linkages with stakeholders, particularly in supply chains, is vital for organizational transformers’ pursuit of sustainability. Supply chain literature focused on SI also shows that collaborating and developing close and tight relationships downstream and upstream in the supply chain can positively influence the SI in supplier networks ([Bag & Gupta, 2017](#); [Gao et al., 2017](#)). In this research, process modifications to improve supply chain sustainability were particularly present in the agri-food sector. The most straightforward modification was the elimination of intermediaries by establishing a direct link between the small farmer and the buyer, highlighting a supply chain management practice documented in

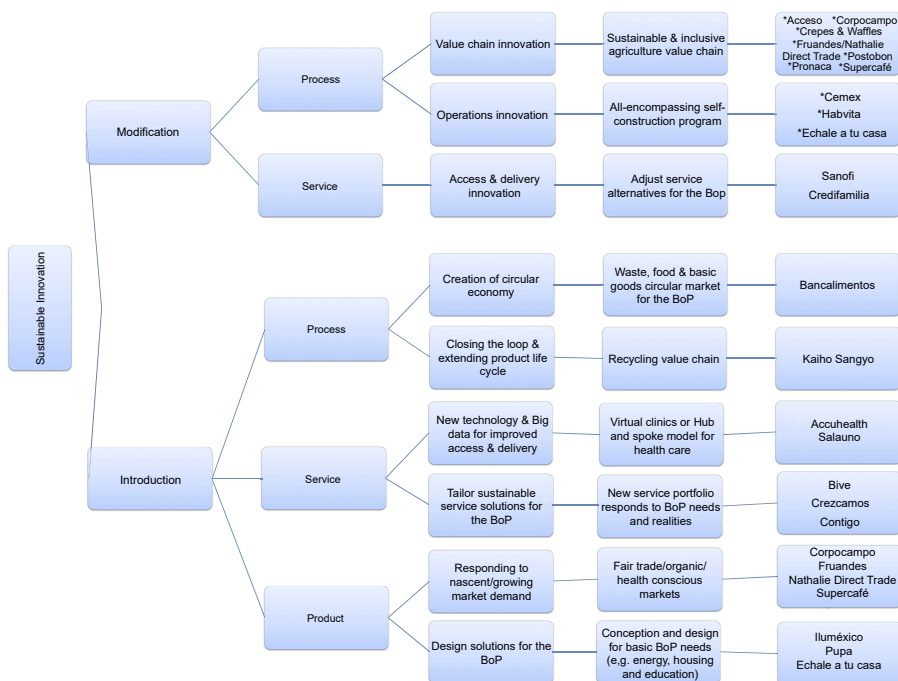


Figure 2. Types of sustainable innovation in inclusive business in Latin America

earlier BoP and IB literature (Casado Cañequé & Hart, 2015; FAO, 2015; London, Anupindi, & Sheth, 2010; SNV & World Business Council for Sustainable Development [WBCSD], 2011). This business practice also includes a long-term commitment to buy the harvested product at a fair price. Such long-term commercial relation is expected to bring much-needed stability to the smallholder. We found this practice in the operations of Acceso, Corpocampo, Crepes and Waffles, Fruandes, Nathalie Direct Trade, Pronaca, Postobón and Supracafé.

Furthermore, smallholders may experience lower yields due to inefficient farming techniques, deficient technology or irregular cash flows. An IB should build a sustainable value chain that provides access to markets, and other relevant aspects such as training, technical assistance and logistics (Casado Cañequé & Hart, 2015; FAO, 2015; London *et al.*, 2010; SNV & WBCSD, 2011). The cases of Corpocampo, Fruandes and Pronaca are examples of processes that include:

- (1) providing technical assistance to farmers in good agricultural practices,
- (2) training smallholders in business processes,
- (3) offering financial support or
- (4) facilitating access to adequate transport logistics to connect with traditional markets.

These process transformations generate improved crop quality, productivity and sustainability that are beneficial to the small farmer and to the company's operation. Low-income communities improve their capabilities, access to markets and income, while companies gain in their response to market demands (IADB, 2015).

Results in the construction, health and financial sectors also align with the observations by Adams *et al.* (2016). The authors revealed that organizational transformations happen when making products/services available to disadvantaged communities isolated for geographic, infrastructural or economic reasons. In the IBs studied in this research, Sanofi modified its business model adapting their selling practices to facilitate access to diabetes healthcare services, and Credifamilia adapted its financial portfolio to offer mortgage services to the BoP. In the construction sector, companies like Cemex, Habvita and Échale a tu Casa are offering innovative, all-encompassing self-construction programs to improve the vulnerable households' conditions. Frequently, constraints go beyond the availability or affordability of housing and include the impossibility of obtaining funding or having limited cash flow to pay for building materials or labor. Business models offering self-construction programs can respond to these challenges and benefit low-income communities. At the same time, companies can enter new market segments, develop brand recognition and generate new revenue schemes (IADB, 2015; London, 2012). People in charge can enhance the sustainability of these business solutions by considering their social dimension and paying attention to their environmental impact to either minimize or compensate the environmental footprint of construction activities (Arnold & Williams, 2012).

4.4 SI via product/process/service introduction

The introduction of sustainable product innovation occurs by delivering products tailored to the BoP basic needs. An example is the range of solar systems designed and manufactured by Iluméxico to tackle the unmet needs of electrification in rural Mexico. The tailored product design reveals a high degree of embeddedness in the local context and a mission-driven identity with a clear hybrid goal of financial and social impact, both of which are crucial factors for IB sustainability (Lashitew, Bals, & van Tulder, 2020).

Responding to nascent demand in specialized markets, such as fair trade and health-conscious markets, is another way to introduce sustainable product innovation. This result conforms with the literature on business models for sustainability. Scholars have identified that companies may differentiate and become niche market players by offering a unique selling proposition that responds to the demands of a specific clientele, filling a sustainability niche that has not entirely or sufficiently been served (Hahn, Spieth, & Ince, 2018; Schaltegger, Lüdeke-Freund, & Hansen, 2016). In this sample, IBs like Corpocampo, Fruandes and Supercafé seize this opportunity by offering socially and environmentally sustainable food products in specialized global markets. Overall, these findings complement the work presented by Borchardt *et al.* (2018), which claims that local producers at the BoP introduce product innovation to reduce production costs. However, from the findings obtained in this research, the motivations behind the introduction of product innovation are manifold, as SI made at the product level appears to go beyond the cost reduction objective and include a broader analysis of the BoP populations needs and opportunities.

The introduction of SI also occurs in the service sector. Service innovation may occur by designing a new service portfolio that responds to BoP's needs and realities. In the health sector, the Colombian social business Bive has created a business model that offers access to high-quality and affordable private health services for rural communities through a low-cost membership. Microfinance institutions like Contigo and Crezcamos have developed a financial portfolio that is affordable and appropriate for the BoPs' needs, providing financial education to mitigate the risk of over-indebtedness. These findings align with previous literature on innovation for BoP segments in emerging markets. Scholars have documented microfinance or affordable health services as examples of business innovations that respond to the needs and particularities of the poor (Varadarajan & Kaul, 2018). Cited cases include Aravind Eye Care System in India or the platform MedAfrica, which seeks to improve the

health of communities in Africa by increasing access to healthcare information and services (Sivaprakasam & Srinivasan, 2015). Entrepreneurs can also use innovative technologies and big data to introduce SI in the service sector. In our sample, Salauno and Accuhealth have leveraged cost efficiencies of innovation and improved access and delivery of services by creating virtual clinics with telemonitoring services and implementing a hub and spoke model at affordable cost. Scholars and practitioners see these mobile health innovations as promising, inexpensive and practical solutions to deliver health services in resource-constraint settings (Lundin & Dumont, 2017). However, there are examples of failed mobile health projects. It was the case of HealthKeepers, a Ghana-based organization that failed due to its inability to attract external funding; or Mwana, from Zambia, which failed when scaling the project, as the computing power needed by its servers was underestimated (Lundin & Dumont, 2017). There is a clear need to study further the potential and pitfalls of mobile health innovations to understand better how they could be sustainable.

Creating new processes is a third way IB can introduce SI into their value chain. Kaiho Sangyo in Brazil introduced a process innovation into its recycling value chain by closing the loop and extending the life cycle of vehicles. Kaiho Sangyo started recovering, repairing and reusing spare parts and recyclable materials such as aluminum, copper and steel, implementing a circular economy approach (Bocken *et al.*, 2017; Lüdeke-Freund *et al.*, 2019). In rural Colombia, Bancalimentos has created an innovative circular economy by buying household waste from affiliated families and selling it to the local recycling industry. In exchange for household waste, rural families can buy essential goods such as food and medicines at affordable prices from Bancalimentos. These process innovations are of particular relevance for improving formal collection, treatment and final disposal of waste in BoP contexts in emerging and developing countries, where authors have noticed that the mismanagement of solid waste is more acute and causes a series of environmental and social problems (Ferronato & Torretta, 2019).

5. Conclusion

This paper has identified and studied 22 IB examples in the context of BoP markets in Latin America, tracing their sustainability innovations. We have selected the summative content analysis as the methodological approach due to the exploratory nature of the research. Consistent with previous literature, we have found a higher IB proportion in the agriculture, food and beverage sectors. We have identified that SI occurs by either modifying an existing service/process to make it more sustainable or introducing a new product/service/process that can be sustainable. We have found that most SI modified specific processes within companies to implement their IB. The most frequent process modification was at the value chain level, making adaptations to improve the supply chain sustainability. SI introduction occurs in three ways:

- (1) devising and designing products or services tailored to the BoP basic needs,
- (2) responding to nascent demand in specialized markets or
- (3) creating new processes that incorporate sustainability criteria

As SI literature has been product-oriented and technically dominated, these results contribute to newer works adopting a more comprehensive conception of innovation. The analytical approach implemented, and the variety of economic sectors included in the sample, provide empirical evidence of more diverse innovations at the product level, and as services or processes. In line with the proposal by Adams *et al.* (2016), we share these results, interpreting sustainability in innovation as a dynamic, unfolding process achieved over time, rather than a

dichotomy of sustainable/not sustainable. The cases documented in this paper provide examples of how IB traverses the SI journey.

Being a qualitative content analysis, the generalizability of the research findings is limited. Thus, researchers should consider these exploratory results setting directions for future research. The study considered company claims using self-reported texts describing their business models. BCtA acts as an auditor and guarantees the accuracy of the information reported. However, further studies should go deeper in the analysis and collect primary field data to perform more detailed SI studies in an IB sample. Further research could expand the sample to study other world regions, allowing for in-depth comparative analysis. More profound quantitative and longitudinal studies with survey data from companies and consumers are necessary to increase and improve our understanding of how SI is taking place along the IB value chains in short and long term.

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