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Review

Exploring BoP Generations through Business Model Innovation Lens: A Review and Framing

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Abstract: The evolution of base/bottom of the pyramid (BoP) literature from BoP 1.0 to 3.0 prompted the need for fresh theoretical perspectives to address complex and persistent social issues. This article investigates BoP through the lens of business model innovation, using a literature review along with bibliometric, network, and content analyses, to map the intellectual and conceptual structure and understand the key variables relating to BoP business models. The research encompasses 161 articles extracted from the Web of Science and Scopus databases. Documents were screened manually and with the assistance of VOS Viewer 1.6.18, Biblioshiny 4.0, IBM SPSS 20, UCINET6, and NVivo12, using abductive and deductive coding techniques. The findings reveal a prevailing focus on the exploratory phase among the articles, with a predominant utilization of qualitative research methods, particularly centered on case studies. Interviews and public data sources constitute the primary sources for supporting empirical evidence. Notably, the majority of these cases pertain to emerging economies situated across Asia, Africa, and Latin America, with India emerging as the most frequently cited country in the literature. Sectors, such as energy, healthcare, agrifood, finance, and telecommunications are studied, emphasizing themes of innovation, entrepreneurship, and corporate social responsibility (CSR). Emerging themes include social entrepreneurship, frugal innovation, and inclusive business models. The research panorama encompasses a categorization of BoP enterprises based on their origin (top-down or bottom-up), their typology (commercial, assistance, or collaboration), and their interactions with BoP communities (either as customers or entrepreneurs). From an innovation standpoint, certain concepts emerged, notably frugal innovation and bricolage, accompanied by the incorporation of ecosystem theory and sustainability perspectives. The research also outlines a BoP business model framework, providing insights into key components favored by entrepreneurs in this realm.

Keywords: base of pyramid; bottom of pyramid; BoP; business model

Citation: Voros Fregolente, M.; Carvalho, M.M. Exploring BoP Generations through Business Model Innovation Lens: A Review and Framing. *Sustainability* **2023**, *15*, 12817. https://doi.org/10.3390/su151712817

Academic Editor: Grigorios L. Kyriakopoulos

Received: 18 July 2023
Revised: 10 August 2023
Accepted: 17 August 2023
Published: 24 August 2023

1. Introduction

Society is witnessing a significant global shift towards social and sustainable development aspirations, garnering attention from governments and companies worldwide. This transformation has been driven by the United Nations Sustainable Development Goals (UN SDGs), which have become a focal point for international leaders and policymakers [1].

Amidst this backdrop, the Bottom of the Pyramid (BoP), encompassing more than half of the world's population, emerges as a crucial group that demands inclusion in policies and research agendas [2]. Over the past two decades, the BoP has been the subject of extensive research, leading to the development of three distinct waves of approaches, namely BoP 1.0, BoP 2.0, and BoP 3.0, each aimed at poverty alleviation through market-based strategies. However, these waves have introduced various perspectives and criticisms, giving rise to complex challenges and opportunities for enterprises operating in this domain.

Despite the advancements made in incorporating the poor as co-creators in value-creation processes in BoP 2.0 [3–7] and recognizing the multidimensionality of poverty in

BoP 3.0 [8], there remains a lack of clarity regarding how companies have configured their BoP business models to address these concerns effectively. This study seeks to bridge this knowledge gap by undertaking a comprehensive bibliographic analysis of the academic literature surrounding BoP business models. Through this analysis, we aim to provide a comprehensive overview of the state of BoP business model research, identify potential research gaps, and unearth opportunities for future investigations. Our primary objective is to unravel the innovative mechanisms and solutions adopted by enterprises to navigate the contextual challenges of BoP markets while simultaneously maintaining profitability and creating social value.

To achieve our research goals, we have formulated two key research questions that delve into different dimensions of BoP business models, while also understanding the structure of the academic work already executed:

RQ1: What is the literature landscape surrounding BMs for BoP? (Section 4.1)

RQ1.1: What is the distribution of papers over time? (Section 4.1.1)
RQ1.2: What is the conceptual structure on BMs for BoP? (Section 4.1.2)
RQ1.3: What is the intellectual structure on BMs for BoP? (Section 4.1.3)
RQ1.4: Which research methods have predominantly been employed? (Section 4.1.4)
RQ1.5: Which geographical regions and economic sectors have been the primary focus of re-search? (Section 4.1.5)
RQ1.6: What categorization schemes can be applied to classify BoP enterprises? (Section 4.1.6)

RQ2: What are the configurations adopted by BoP BMs? (Section 4.2)

RQ2.1: What are the pivotal BM components of BoP? (Section 4.2.1)
RQ2.2: What is the conceptual structure on BMs for BoP? (Section 4.2.2)

To address the research questions, we proceeded with a bibliographic analysis of the academic literature surrounding BoP business models, using WoS and Scopus databases, and keywords related to "Base/Bottom of the pyramid" and "business model". This method allowed us to systematically examine and analyze a wide range of academic publications related to BoP business models, covering various aspects of BoP markets and business configurations.

The publications were screened both manually and with the assistance of MS Excel, VOS Viewer 1.6.18, Biblioshiny 4.0, and NVivo12. Additional analysis used IBM SPSS 20 and UCINET6.

Throughout the research process, MS Excel served as a fundamental data management and analysis tool, enabling the organization, cleaning, and aggregation of bibliographic data from diverse sources. Additionally, MS Excel facilitated the generation of essential summary statistics, including the distribution of papers over time, supporting data preparation for visualization in other software tools. Specifically, it played a pivotal role in addressing research questions such as RQ 1.1, which focused on understanding the temporal distribution of publications.

VOSviewer was employed for keyword co-occurrence analysis, contributing to the exploration of trend topics as outlined in RQ 1.2. By employing VOSviewer, we gained valuable insights into the interconnectedness of keywords within the literature, aiding in identifying prominent themes. Moreover, VOSviewer was utilized for cocitation analysis, a critical component of RQ 1.3, allowing for a comprehensive understanding of the intellectual structure of published papers.

Biblioshiny also made substantial contributions to answering RQ 1.2 and RQ 1.3 by providing a thematic map and organizing top authors' production over time, respectively. It allowed for effective visualization and organization of data, further enhancing our understanding of the thematic structure and authorship trends in the BoP business model literature.

NVivo12, a qualitative data analysis software, was instrumental in handling unstructured data, particularly textual information derived from academic articles and other

textual sources. Employing NVivo12 facilitated content analysis of the academic literature on BoP business models, enabling efficient coding and categorization of research themes. By employing this software, we attained a rigorous approach to comprehending the intellectual structure of the field.

Lastly, IBM SPSS played a crucial role in exploring the relationships among codes through cross-tabulation, contributing to our investigation of specific research themes. In parallel, UCINET6 contributed valuable insights through core-periphery and network analysis, enhancing our understanding of network relationships within the BoP Business Models literature.

By offering an intellectual map and understanding of the evolution of BoP business models, we provide a foundation for informed decision-making and policy development to address poverty and foster sustainable development. Moreover, our examination of innovation strategies, such as frugal innovation and bricolage, and their integration with different structural frames, business ecosystems, and sustainability approaches, presents valuable insights for enterprises seeking to operate successfully in BoP markets. Ultimately, this study aims to inspire further research and advancements in the field, fostering inclusive and sustainable solutions to address poverty-related challenges.

This paper is divided into five sections. Section 1 introduces BoP and provides an overview of research trends. Section 2 develops the BoP and BM concepts, presents a historical background, and discusses the contextual challenges posed by those serving this market. Section 3 describes the methodology adopted. Results are presented and discussed in Section 4, which also incorporates suggestions for future research. Finally, Section 5 concludes the paper with a summary of the findings and limitations.

2. Literature Review

2.1. Bottom/Base of the Pyramid (BoP)

The acronym BoP refers to the lower echelon of the global income pyramid, comprising individuals living in either extreme or moderate poverty [3,9,10], characterized by income levels ranging from 8 USD per person per day to less than 1.25 USD pppd [11]. These individuals span across developed and developing nations, predominantly residing in urban slums, semiurban, and rural regions. Their livelihoods revolve around informal economies, lacking access to fundamental necessities such as nutrition, sanitation, healthcare, education, energy, and housing [12,13].

Prahalad and Hart are credited with initially articulating the BoP concept in 1999 through a working paper targeted at practitioners [14]. However, the seminal contribution to the discourse is often attributed to "The Fortune at the Bottom of the Pyramid" [15], as it serves as the foundational work for the conceptual evolution of BoP [16]. Subsequently, starting in 2007, there was a noticeable surge in academic articles on the subject [17], and the concept underwent multiple phases of refinement.

The first generation, BoP 1.0, accentuated the potential profits attainable in this relatively untapped market. It rallied the private sector to deliver underserved products and services to the impoverished, transforming them into consumers. This not only contributed to local economic growth, but also aimed to address associated societal issues [3,13,18,19]. Nonetheless, confining the BoP to a consumer role garnered criticism, with scholars asserting that organizations could exploit their vulnerabilities and information asymmetry [20].

This criticism paved the way for the subsequent wave, BoP 2.0, which transcended the consumption-centric approach to encompass co-creation [5] and business co-venturing or partnerships. These approaches involved underrepresented communities in the value-creation process [3,4,7]. This shift signaled a transition from seeking fortunes within the BoP to co-creating fortunes with the BoP, and from tapping existing markets to engendering new ones [21].

Advancing further, BoP 3.0, delineated in a publication in 2015 [22], advocates the overhaul of the socio-economic system around the BoP [21], encompassing the entire value chain. This phase recognizes poverty as a multifaceted and intricate challenge [8],

emphasizes environmental sustainability, and underscores the necessity of cross-sector partnerships and service ecosystems to surmount poverty [23]. The BoP transitioned from being business partners to business owners, employees, consumers, and cocreators of inclusive innovations [21,24]. Recently, the linkage between informal enterprises and multinational corporations through ICT-enabled innovations has been termed BoP 4.0 [25].

Irrespective of the research wave, the design of business endeavors targeting the BoP adheres to a perspective of mutual value creation. This perspective posits that generating profitability can coexist with providing social value and contributing to poverty alleviation. A crucial feature that distinguishes BoP approaches from philanthropy is the emphasis on profit, which not only sustains the enterprise but also ensures independence from external interests and long-term continuity. However, the challenge of profitability remains unresolved, prompting efforts to configure appropriate business models.

2.2. Business Models (BMs) in BoP Markets

The concept of the business model is frequently employed, although it often lacks a precise definition. Generally, it encompasses the strategic framework of a business [26]. This framework outlines the architecture of value creation, delineates the method of product or service delivery, and elucidates the mechanisms deployed for revenue generation [27,28]. It also serves as a tool to analyze the implementation of organizational strategies [29]. The discourse on business model innovation's impact on competitiveness has further contributed to the prominence of this literature [30].

While conventional business models are crafted for well-established environments, those oriented toward the bottom of the pyramid (BoP) must navigate distinct circumstances [31]. They operate within uncertainties stemming from limited market information, which inhibits anticipatory problem-solving and strategic formulation. The configuration of BoP business models is significantly influenced by contextual conditions such as institutional voids, the absence of formal market institutions, high transactional and agency costs, inadequate intellectual property protection, information asymmetries, and the potential for opportunistic behavior [5,32].

Physical presence within a BoP area can introduce challenges related to raw material scarcity or poor quality, energy and water shortages, deficient infrastructure (including subpar roads), logistical constraints, and difficulties in distribution to customers [33]. The availability of skilled labor, business acumen, and technological access remains limited. Investments aimed at mitigating these challenges might experience prolonged payback periods due to the constrained purchasing power of customers, further exacerbated by insufficient entrepreneurial capital.

Furthermore, business models for BoP markets exhibit numerous strategic and operational distinctions in comparison to non-BoP markets. They are designed with the intent of providing benefits to customers and low-income communities [27], and offering products and solutions infused with social values. The inclusivity and collaborative goals endorsed by the 2.0 and 3.0 research waves necessitate the incorporation of culturally specific knowledge pertinent to BoP consumers [34], as well as considering the requirements of BoP employees, suppliers, partners, entrepreneurs, and innovators.

Consequently, fostering engagement with local communities across the value chain is imperative, entailing ongoing efforts to cultivate local skills and ecosystems to facilitate their active participation in these business endeavors [11]. Going beyond the mere provision of affordable products and services, BoP business models must adopt revenue structures that equitably distribute costs and benefits, promoting the cultivation of equitable relationships [27,35].

This endeavor necessitates the ability to devise contextually tailored solutions in conditions where cost escalation is likely, and scalability is constrained. Managing BoP businesses becomes an iterative learning process, involving adaptive refinements of various business components [5]. Given that configuring BoP business models entails decisions

across diverse components, it has emerged as a valuable unit of analysis to enhance comprehension of firms operating within BoP markets.

2.3. Business Model Representation

Representing business models (BMs) holds paramount importance for analysis and evaluation, as underscored by Sánchez and Ricart (2010). Numerous BM frameworks have been elucidated in the literature, each delineating a distinct set of components [36]. Among these, certain frameworks have garnered heightened attention and widespread utilization, as exemplified by the models articulated by Teece [28], Amit and Zott [37], Richardson [36], and the Canvas BM [26].

In order to accommodate the unique context of the bottom of the pyramid (BoP), certain scholars have endeavored to adapt existing frameworks [34,38,39]. These adaptations have primarily centered on the fundamental BM building blocks, encompassing elements such as key activities, key partners, key resources, value proposition, customer relationships, customers, channels, revenue, and costs. Similar adaptation has extended to the value stream, as exemplified by the model proposed by Richardson (value proposition, value creation/delivery, and value capture). Furthermore, novel perspectives have also emerged, including the delivering-sourcing-reorganizing model [40] and the 4As models, which encapsulate aspects of availability, affordability, acceptability, and awareness [41].

Drawing upon the amalgamation of these key constructs, a comprehensive conceptual framework has been devised to guide the trajectory of research, as depicted in Figure 1.

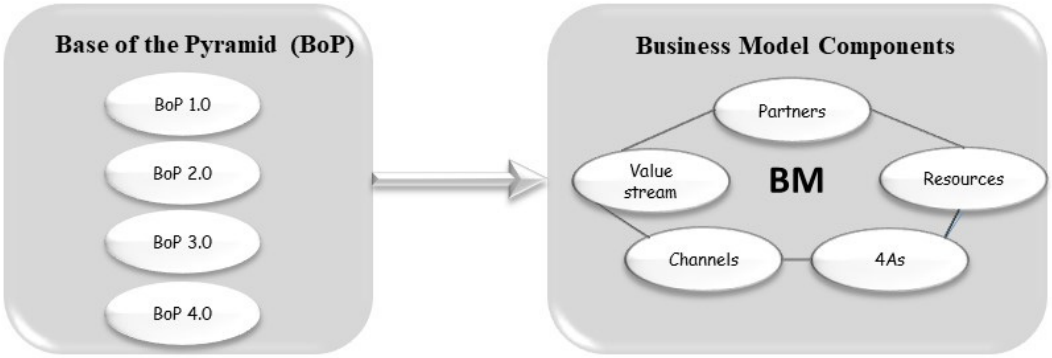


Figure 1. Conceptual framework.

The framework has two dimensions. The first dimension represents the evolutionary progression of the BoP literature, which is categorized into four generations: BoP 1.0, BoP 2.0, BoP 3.0, and BoP 4.0. These generations represent distinct phases of research and conceptualization concerning the BoP phenomenon.

The second dimension of the framework pertains to the body of knowledge on business models (BM) and its adaptation to the BoP context [38–40,42]. This dimension encompasses how the concept of business models has been applied and modified to address the unique challenges and opportunities presented by the BoP segment.

The arrow connecting the two dimensions indicates the dynamic and evolving relationship between the different waves of BoP literature and the configuration of business model components, since each successive BoP wave has exerted a distinct influence on the way business models are conceptualized and designed for the BoP context. The arrow highlights the potential for reciprocal influence, where advancements in BoP literature may lead to adaptations and innovations in the understanding and application of business models for BoP ventures.

3. Research Methodology

The methodological design proposed to answer the research questions is a literature review that combines bibliometric and content analysis.

3.1. Sampling Process

The sampling process was conducted using the Web of Science (WoS) and Scopus electronic databases, following the PRISMA protocol [43]. WoS contains all journals with an impact factor in the Journal Citation Report (JCR) base, and Scopus consolidates an extensive base [44]. The research string specified the keywords "base of the pyramid" OR "bottom of the pyramid" OR "base of pyramid" OR "bottom of pyramid", AND "Business Model*". The fields researched in the databases were: title, abstract, author keywords, and keywords plus. The document types selected to remain in the sample were "articles", "reviews", and "early access", because of the selective peer review process. No date filters were applied, and all texts published until 12 June 2022 were included.

The search returned 125 papers from WoS, and 142 from Scopus. The merging of the results left the sample with 179 papers, of which 88 were duplicates. The titles and abstracts were analyzed, determining the paper's alignment with the research goals. No software was applied for sample screening and exclusion, and the main author was responsible for the manual screening of all papers. Table 1 indicates the number of articles removed, and the exclusion criteria.

Table 1. Number of papers excluded by exclusion criteria.

Criteria	Number of Papers Excluded
Not written in English	5
Not aligned with research goal	13

During the refinement process, 18 papers were excluded, leaving the sample with 161 articles. A backward snowballing process was also executed, and the articles found in the process, although included in our literature review, were not accounted for in the systematic bibliographic review. Figure 2 represents the sampling process, described according to the PRISMA protocol.

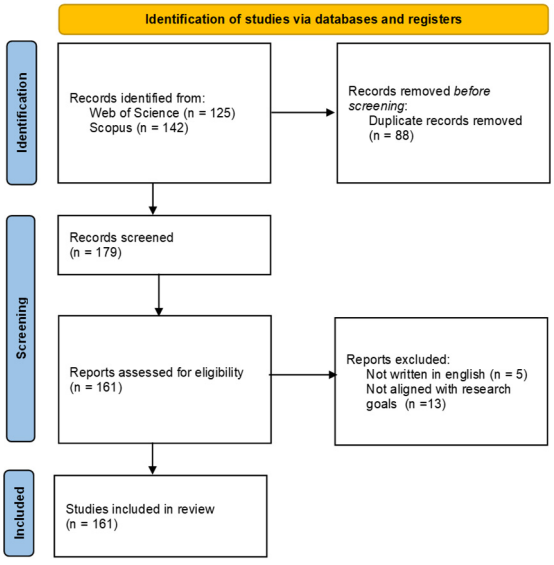


Figure 2. Systematic literature review workflow following the PRISMA protocol.

3.2. Data Analysis

To address RQ#1, we employed bibliometric analysis aided by VOS Viewer 1.6.18 [45] and Biblioshiny [46] software. The dataset extracted from the Scopus and Web of Science (WoS) databases underwent pre-processing and integration within RStudio. This step facilitated the refinement of metadata involving keywords and references. Instances such as the variation in the term "Bottom/Base of the Pyramid," which was standardized to

"BoP," as well as variations in references like Prahalad and Hammond (2002) were rectified for uniformity.

Utilizing VOS Viewer, we generated networks illustrating keyword co-occurrence and reference co-citation patterns. The co-occurrence network delineates the interconnection of keywords frequently encountered within the sampled articles, denoting their combined usage by authors or editors. On the other hand, the co-citation network illustrates papers that have been collectively referenced, thus contributing to the comprehension of the intellectual landscape of the field.

With the assistance of Biblioshiny, we created a thematic map to delve into the centrality and density of the network. Centrality gauges the significance of a theme, while density assesses its level of development. Subsequently, this software identified the most prolific authors and locally cited documents and references.

To augment the response to RQ#1 and subsequently address RQ#2, the researchers executed a manual screening of the chosen paper sample, applying codes using MS Excel and NVivo12 [47]. Content analysis was carried out by importing all articles' PDF files into the NVIVO software. The software facilitated the generation of code categories, organized in a hierarchical structure through the process of axial coding, aimed at investigating associations between predetermined and emergent categories, as depicted in Figure 3.

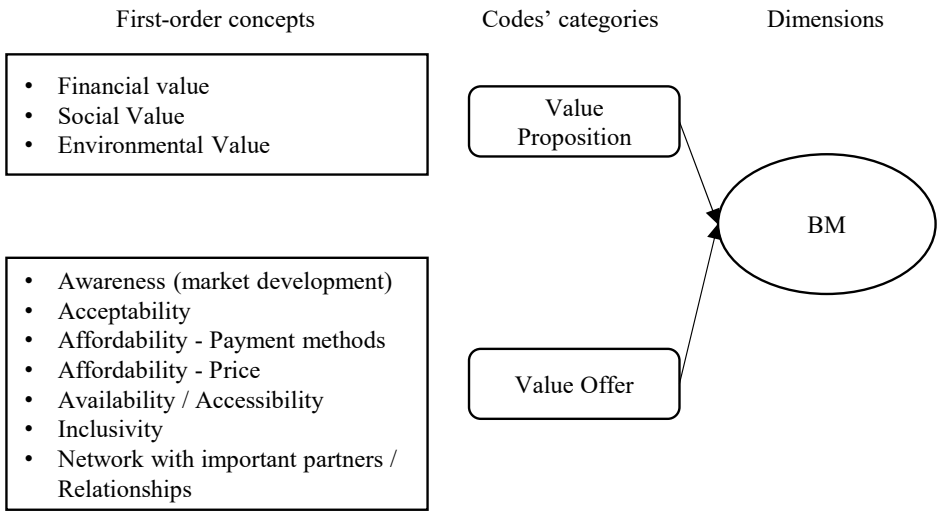


Figure 3. Tree code' structure example.

The manual coding process adhered to the coding cycles elucidated by Skjott Linneberg and Korsgaard (2019) [48], entailing a fusion of deductive and abductive techniques. Deductive coding was applied to research method, methodological approach, and sources of evidence. Abductive codes stemmed from the literature review and evolved as the analysis progressed, leading to the formulation of fresh codes. This iterative process entailed multiple iterations of article re-evaluation to affirm and complete the coding, ultimately generating an inventory of code labels, aligning them with the conceptual framework (Figure 1), and establishing connections between first-order codes, categories, and dimensions, as demonstrated in Figure 3.

Lastly, the interrelation among codes was explored through cross-tabulation using IBM SPSS 20 software, in conjunction with core-periphery analysis and network analysis using UCINET6—NetDraw software [49].

4. Results and Discussion

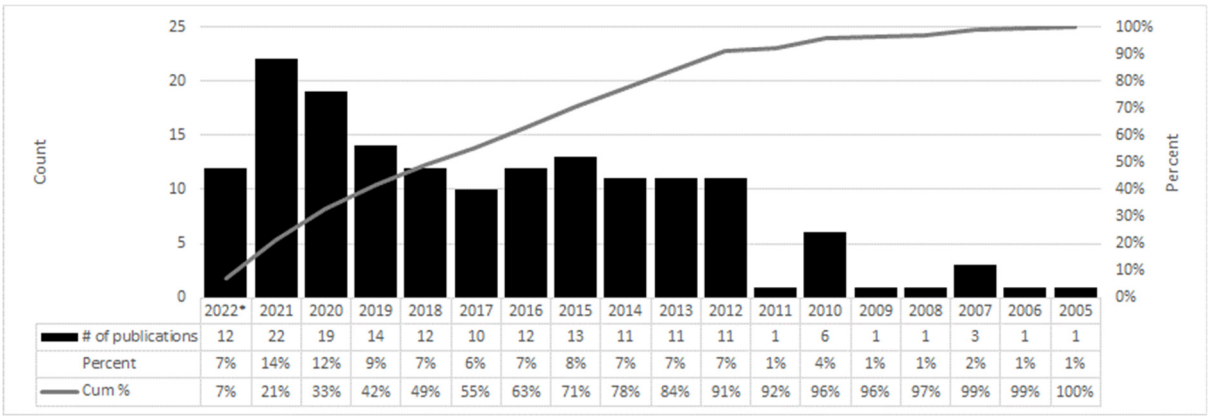
The results will be presented in three sections. The first two sections are organized to answer the main research questions. In answering RQ1, we will use Sections 4.1.1– 4.1.6 to discuss sample demographics, trend topics, intellectual structure, research methods, geographies and economic sectors, and BoP enterprise categorization, respectively. In

answering RQ2, we will use Sections 4.2.1–4.2.8 to discuss themes related to the following BoP aspects: value stream, partnerships, resources, innovation, types of innovation, structural frames, ecosystems and sustainability. Finally, future research agenda is presented in Section 4.3.

4.1. Literature Landscape

4.1.1. Evolution over Time

The temporal progression of publications, as depicted in Figure 4, illustrates a increase in the number of publications centered around BoP BMs in recent years. Specifically, the most recent five-year span (2018 to 2022) constitutes 49% of the total publications within this domain. These contributions are disseminated across a diverse array of journals. At the forefront is the Journal of Cleaner Production, boasting twelve published articles (7%), trailed by Business and Society with seven publications (4%). International Business Review, Journal of Business Ethics, and Sustainability trail behind, each with five articles (3%), while several other journals have made more modest contributions in terms of published articles.



	2022*	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
# of publications	12	22	19	14	12	10	12	13	11	11	11	1	6	1	1	3	1	1
Percent	7%	14%	12%	9%	7%	6%	7%	8%	7%	7%	7%	1%	4%	1%	1%	2%	1%	1%
Cum %	7%	21%	33%	42%	49%	55%	63%	71%	78%	84%	91%	92%	96%	96%	97%	99%	99%	100%

Figure 4. Evolution of publications over time. * The year of 2022 includes papers published until 12 June.

4.1.2. Conceptual Structure

The conceptual structure analyses were performed on VosViewer for cooccurrence network and biblioshiny for thematic map and thematic evolution.

The keywords co-occurrence analysis, as depicted in Figure 5, encompasses six distinct clusters. The most prominent cluster (colored in red) incorporates the research-centric keywords—"base/bottom of the pyramid" and "business model"—a direct consequence of the employed search string. The inclusion of 'sustainability' within this cluster signifies the incorporation of the 2.0 and 3.0 approaches within BoP-BM discourse, underlining the significance of this concern during enterprise configuration. The presence of 'poverty alleviation' and 'poverty' reaffirms the poverty-centric objectives inherent in these business models. 'Emerging markets' and 'entrepreneurship' emerge as a reflection of the prevailing economic perspectives. Additionally, we emphasize the appearance of 'literature review', a method extensively employed in the sample, signifying persistent efforts to structure the research landscape.

Conversely, the remaining five clusters are relatively smaller in size. The 'business model innovation' theme (light blue) stands alone, indicating a comparatively less developed theme within the sample. The 'sustainable business model' and 'decision making' (purple cluster), though isolated, unveil the interplay between these aspects, offering insights into their mutual influence. The 'energy access', 'commerce', and 'developing countries' cluster (dark blue) showcases the notable presence of energy-related business models in case studies centered on developing nations. The 'social entrepreneurship' cluster (green), frequently associated with BoP, aligns with 'private sector' and 'business', signify-

ing the inclusion of business-oriented strategies. This cluster also incorporates 'India', a country featuring prominently in numerous case studies from the inception of BoP research.

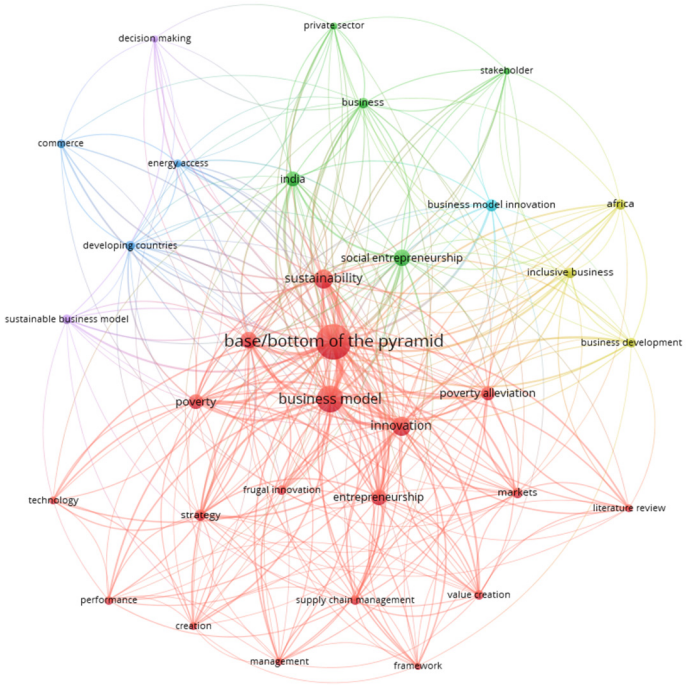


Figure 5. Keyword cooccurrence analysis. Note: VosViewer 1.6.18 software uses sample metadata.

Lastly, the yellow cluster encompasses 'business development', 'inclusive business', and 'Africa'. The co-occurrence of India and Africa within this network stems from the extensive inclusion of case studies within these continents, whereas Latin America, despite its potential for BoP research, remains largely underexplored. It is noteworthy, however, that India and Africa connect to distinct keywords (India with 'social entrepreneurship'; Africa with 'inclusive business'), suggesting either divergent approaches within each context or variations in terminology utilized by research groups to delineate similar strategies.

Figure 6 illustrates the thematic map, delineating distinct clusters of themes. Situated in the upper-right quadrant, the motor themes display robust centrality and high density. These themes bridge BoP with innovation, corporate social responsibility (CSR), and emerging economies. Innovation, a well-explored research domain, often incorporates BoP-BM innovation as a pivotal success factor within this market context. In this sample, the term "innovation" predominantly signifies adaptations or modifications relative to BMs operating in other markets [30,34,42,50–58].

Corporate social responsibility (CSR), while established as a research field, still lacks comprehensive exploration within the context of BoP-BM [16,59,60]. Emerging economies, serving as synonymous terms for emerging markets and developing countries in this context, underscore the regions where the BoP populace resides [61,62]. This term frequently emerges in the context of multinational corporations' expansion operations [53,63,64].

Found within the upper left quadrant, the niche themes display heightened development (high density) but exist as isolated topics (low centrality). "Marketing at the BoP" represents a niche topic within this sample, yet garners widespread attention throughout the BoP landscape. It predominantly addresses marketing strategies, delving into areas such as marketing mix, market entry and exchange mechanisms, value creation, and business models [65].

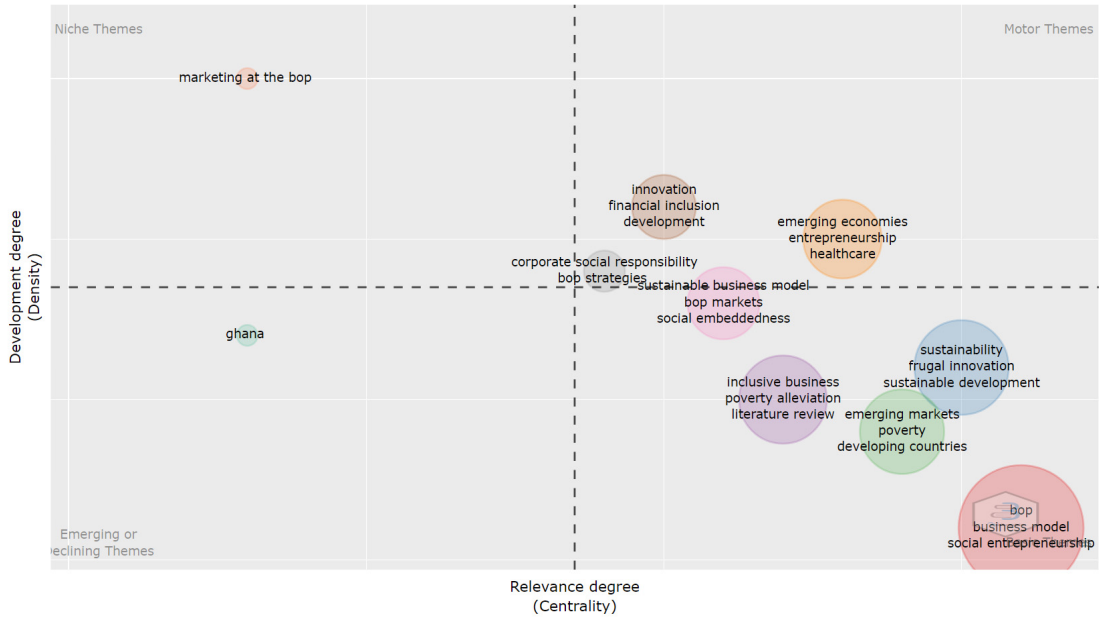


Figure 6. Thematic mapping. Note: Biblioshiny software uses sample metadata.

In the lower-left quadrant, less-developed and peripheral themes are situated (low density and centrality). These themes signify emerging or waning areas. Ghana, positioned within this quadrant, features as the home country for several case studies [66–69]. Despite hosting a limited number of cases in the sample, Ghana's inclusion underscores the significance of such cases.

Finally, the lower-right quadrant showcases high centrality and low density, which characterize fundamental themes. "Social entrepreneurship" and "frugal innovation" are concepts with dedicated research streams, their interfaces with BoP stemming from their shared commitment to devising strategies for poverty alleviation. Social entrepreneurship holds a preeminent position within this quadrant. Integrating economic and social value creation entails offering innovative solutions to entrenched social issues and exploiting opportunities for social enrichment through novel ventures or innovative management [70–72]. Although closely intertwined with BoP, especially in its 3.0 manifestation, social entrepreneurship extends beyond economically vulnerable individuals to encompass sources of social vulnerability, such as advanced age and physical disabilities.

Frugal innovation embodies a paradigm that challenges traditional innovation pathways, spotlighting resource frugality and the inclusion of low-income actors [73]. In this sample, its prominence chiefly pertains to process concerns [74], affordable product and service provision within resource-constrained environments [75–77], and sustainability considerations [78,79].

Inclusive and sustainable business models encompass investigations into value creation that transcend conventional economic boundaries by redistributing value or expanding its scope. Inclusive business models embody environmental considerations [80], linked to either enterprises [27,81] or BMs embracing a diverse array of social agents, including BoP participants [32,59,82–84], aligning closely with BoP 3.0 principles. Similarly, "sustainable business" may encompass environmental, social, and socio-economic dimensions [8,40,55,85–87].

Hence, while the demographic composition of the sample showcases a surging publication count, particularly in the last five years (2018–2022), indicating growing scholarly interest in BoP business models across various journals, the thematic trends mirror diverse aspects of BoP BMs. These facets encompass sustainability, poverty alleviation, innovation, CSR, emerging economies, marketing, and social entrepreneurship. Vital concepts include frugal innovation and inclusive, sustainable business models. The thematic map

underscores the centrality of innovation, CSR, and emerging economies, with marketing as a specialized area. Notably, social entrepreneurship, frugal innovation, and inclusive, sustainable business models emerge as critical pillars in addressing multifaceted BoP challenges.

4.1.3. Intellectual Structure

For understanding the intellectual structure, the cocitation network was performed on VosViewer and top-authors' production over time on Biblioshiny.

The cocitation analysis depicted in Figure 7 classifies 29 articles into five distinct clusters. With merely six exceptions, the network excludes papers sampled from WoS and Scopus. The predominant red cluster encompasses nearly 70% of the network's nodes, comprising 20 articles, among which four are highly cited articles. These include a discourse on organizing BoP operations using illustrative case studies [88], a case study spotlighting the potential of BoP innovations through a biomass stove project in India [31], examinations of internal challenges posed to BoP innovation within MNCs [27], and a literature review elucidating the evolution of the BoP concept [17].

The considerable size of the red cluster, along with the diverse themes explored in these articles, presents a synthesis challenge. This paragraph endeavors to organize them chronologically: challenges confronted by MNCs due to disparities between developed and BoP markets [89], the role of nongovernmental organizations [90,91], critiques of 1.0 approaches and the introduction of 2.0 ideas [4], accessibility of BoP markets for entrepreneurs and consumers [13], examination of local constraints [7], business networks [92,93], a broader definition of poverty encompassing more than just income deficiency [94], enhancement of new product adoption [95], prolonged engagements between companies and BoP producers [96], MNCs' market entry processes in BoP markets [97], partnership structures and governance mechanisms [93,98], an ethical critique of BoP [99], and the application of sustainable supply chain management to BoP [9].

The green and blue clusters encompass papers published in the past decade, representing the 1.0 generation. The former includes analyses of products and services viable for BoP's potentially extensive market [100] and strategies to surmount the challenges posed by these consumers [41]. The latter involves an analysis of institutional voids [101], a frequently discussed subject in BoP case studies. Both clusters encompass seminal papers by Prahalad, published in practitioner-focused journals, urging MNCs to explore BoP markets: the green cluster includes 'The fortune at the bottom of the pyramid' [15], while the blue cluster features 'Serving the world's poor, profitably' [15].

The yellow cluster comprises two articles employing a market-driven approach and strategies for capturing BoP markets. The upper article in the network discusses the role of industrial clusters in the success of BoP enterprises in developing markets [102]. The lower article compares strategies required for developing and developed countries, delving into the recommended approaches for expanding market share in BoP markets [103].

The standalone purple cluster features an article investigating how MNCs can devise viable BoP operations, particularly addressing the challenges posed by institutional voids across different supply chain stages [104]. This article initially adopts a 1.0 approach—treating BoP as customers—but subsequently proposes solutions for institutional voids akin to those advocated by the 2.0 generation: involving BoP as suppliers and business partners.

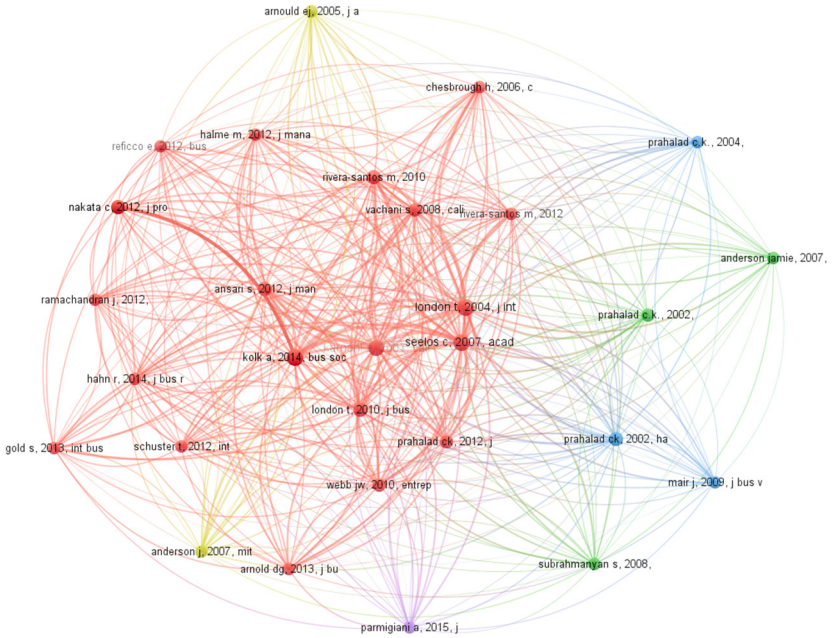


Figure 7. Cocitation reference network. Note: VosViewer 1.6.18 software uses sample metadata and fractionalization methods; references: [4,7,9,15,17,27,31,41,88–102,104–108].

Figure 8 illustrates the production of top authors over time, displaying author timelines as lines, the number of documents produced as bubble size, and the intensity of color indicating the number of citations.

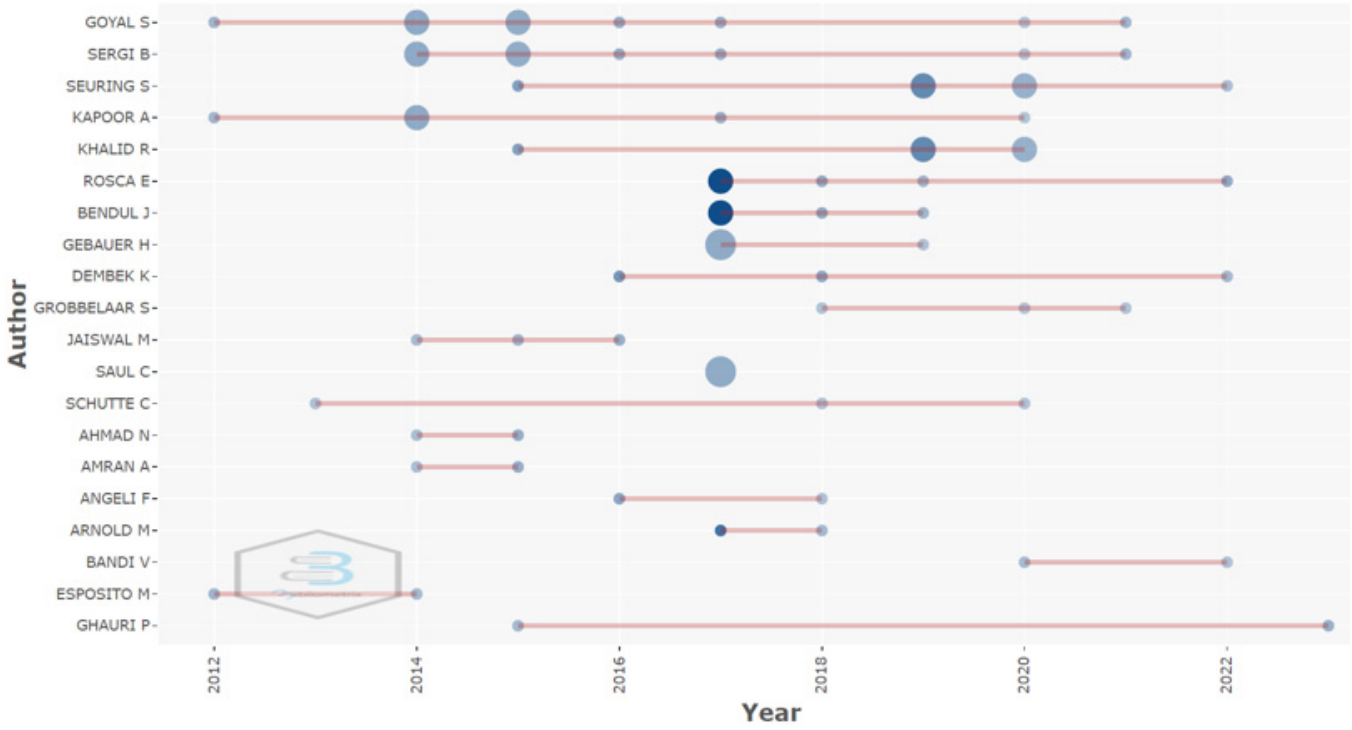


Figure 8. Top authors' production over time. Note: Biblioshiny software uses sample metadata.

Sandeep Goyal, Bruno Sergi, and Amit Kapoor have collaborated on multiple occasions, primarily focusing on qualitative case studies in India. Their recent publications have integrated BoP with social entrepreneurship [85,109,110], as well as inclusive business

models [11], social business models [83], market ecosystems [111], and shared value [12] in earlier works.

Stefan Seuring's research is centered around sustainable supply chains. He has contributed four literature reviews [112–115], a case study [19], and a survey [116]. Notably, the case study and the survey were coauthored with Raja Khalid.

Eugenia Rosca and Julia Bendul have also collaborated in the field of BoP research. They have jointly published a case study on sustainable supply chains [117] that has garnered 53 citations, another case study on business models for sustainable innovation [79], and a survey exploring drivers and performance in value chain integration [118].

Table 2 presents an examination of the most frequently cited documents and references. Christian Seelos and Johanna Mair [88] delve into co-creation strategies for MNCs entering BoP markets, positing that these companies can harness resources already developed by local pioneers. Ans Kolk, Miguel Rivera-Santos, and Carlos Rufin [17] contribute a literature review on the evolutionary trajectory of the BoP concept. In another work, Rivera-Santos and Rufin [93] explore the contrasts between business networks in the BoP and those in well-developed markets.

Table 2. Most frequently cited documents and references.

Document	Local Citations	Cited References	Local Citations
[88]	27	[89]	69
[17]	19	[15]	68
[106]	18	[88]	61
[90]	11	[105]	54
[27]	10	[4]	53
[119]	8	[17]	46
[117]	8	[7]	38
[35]	7	[91]	31
[114]	7	[94]	29
[87]	7	[106,107]	27

Note: Biblioshiny software uses sample metadata. In descending order of local document citation.

In summary, the cocitation analysis classifies articles into five distinct clusters, with the predominant cluster comprising highly cited articles that address subjects including BoP operations, challenges in innovation, obstacles faced by MNCs, and the evolutionary trajectory of the BoP concept. Despite the presence of a diverse array of authors, several contributors concentrate on different facets of BoP business models. While the number of authors is not overwhelming, a considerable group of scholars have made substantial contributions spanning various themes within the context of the BoP.

4.1.4. Research Methods

The examined papers predominantly employed qualitative approaches (86%), wherein case studies emerged as the most favored research method (71%), followed by surveys and literature reviews (9% each). Interviews and public data constituted the preferred sources of evidence (48% and 24%, respectively). The comprehensive outcomes of the deductive coding process are provided in Table 3.

The notable prevalence of qualitative research, manifested through a multitude of case studies and literature reviews, underscores a notable challenge in consolidating the research field under consideration. Despite the enduring pursuit of the Bottom of the Pyramid (BoP) concept over several decades, the approaches employed have exhibited dynamism and evolution, lacking a coherent and systematic framework, elucidating the configuration of specialized business models within this domain.

Table 3. Results obtained with the deductive coding processes.

Research Method	Number of Articles
Case study	115
Survey	15
Literature review	15
Theoretical-conceptual	12
Action-research	2
Modeling	1
Experimental	1
Approach	**Number of Articles**
Qualitative	139
Quantitative	12
Mixed	10
Sources of Evidence	**Number of Articles**
Interviews	77
Public data	38
Bibliography	26
Questionnaire	14
Direct observation	3
Document analysis	3

4.1.5. Geography and Economic Sector

Numerous codes surfaced during the abductive coding process. Initially, the substantial quantity of case studies in the sample provided an opportunity to discern researchers' favored countries for acquiring BoP cases, as well as the economic sectors that piqued their interest. Each article was considered once, signifying that the label "several" encompasses a multitude of countries, continents, or sectors under consideration.

The outcomes concerning geographical distribution are outlined in Table 4. Asia emerges as the primary preference, followed by the designation "several," and subsequently by Africa and Latin America. Notably, India emerges as the prominent choice for case studies. However, it is essential to emphasize that certain cases were recurrently employed by various authors, drawing on public data as their principal source of evidence. Other Asian countries, along with Africa and Latin America, remain relatively underexplored.

The outcomes regarding the economic sector are detailed in Table 5. Predominantly, articles amalgamate various economic sectors, yet within the realm of single-sector investigations, the energy sector emerges as dominant, notably within the context of augmenting energy availability in rural areas. Notably, cases pertaining to off-grids [69,120–123] and minigrids [124,125], fueled by renewable resources, are presented as viable alternatives to the predominant central grids in our existing energy distribution networks. The discourse within this sector's business models primarily revolves around BoP communities as customers. However, it is crucial to acknowledge that energy's presence bears significance for both economic prosperity and the potential for BoP to evolve as entrepreneurs.

Healthcare, agrifood, financial services, and telecommunications are also recurrent themes within the sample. Healthcare instances center around BoP as patients (consumers), with the core concern being access to affordable and high-quality services. In contrast, the agrifood sector diverges from this trend, with numerous business models involving BoP as suppliers in companies' supply chains or as business partners.

Within financial services, the focal point rests on business models capable of extending financial resources to both BoP consumers and entrepreneurs. Such services

hold paramount importance for market development. Microfinance [126] and digital finance [6,76,127] emerge as potential solutions in this realm, alongside critical proposals that also find representation within this group [128].

The prevalence of telecommunications can be attributed to the critical role played by connectivity and digitization in contemporary businesses and society at large. The commercialization of mobile devices targeted at BoP consumers stands as a direct catalyst for most cases [53,64,68,129–132], while others opt for entrepreneurial approaches [133].

Table 4. Results obtained with the abductive coding processes for cases' geographic location.

Geographic Region	Country	Number of Articles	% of Articles
Asia (38%)	India	41	25.5%
	China	5	3.1%
	Indonesia	4	2.5%
	Several	4	2.5%
	Bangladesh	2	1.2%
	Thailand	1	0.6%
	Vietnam	1	0.6%
	Pakistan	1	0.6%
	Philippines	1	0.6%
	Malaysia	1	0.6%
Africa (16%)	Several	8	5.0%
	Kenya	7	4.3%
	Ghana	4	2.5%
	South Africa	3	1.9%
	Nigeria	2	1.2%
	Uganda	1	0.6%
	Burkina Faso	1	0.6%
Latin America (9%)	Brazil	7	4.3%
	Mexico	4	2.5%
	Guatemala	1	0.6%
	Argentina	1	0.6%
	Colombia	1	0.6%
North America	Haiti	2	1.2%
Several	Several	31	19.3%
NA	NA	27	16.8%

Table 5. Results obtained with the abductive coding processes for cases' economic sectors.

Industry	Number of Articles	% of Articles
Energy	23	14.3%
Healthcare	11	6.8%
Agricultural and food (Agri-food)	10	6.2%
Financial services	9	5.6%
Telecommunications	9	5.6%
Water supply	4	2.5%

Table 5. *Cont.*

Industry	Number of Articles	% of Articles
Consumer goods	4	2.5%
Housing	2	1.2%
Tourism	2	1.2%
Digital services	2	1.2%
Basic Sanitation	2	1.2%
Others	9	5.6%
Several	51	31.7%
Not Applicable	23	14.3%

4.1.6. BoP Enterprises

The analysis of BoP enterprises' descriptions led to the emergence of related codes from the sample: 'enterprise origin', categorized as top-down or bottom-up; 'enterprise type', identified as commercial, assistance, or collaboration; and 'relationship with BoP', distinguished between consumers or entrepreneurs. The findings are presented in Table 6.

Table 6. Results obtained with the abductive coding processes for enterprise origin.

Enterprise Origin	Enterprise Type	Relationship w/BoP	Number of Articles	% of Articles
Top down	Commercial	Consumers	102	63.4%
		Entrepreneurs	21	13.7%
	Assistance	Entrepreneurs	1	0.6%
Top down—Total			125	77.6%
Bottom up	Commercial	Entrepreneurs	14	8.7%
		Consumers	2	1.2%
	Collaboration	Entrepreneurs	3	1.9%
Bottom up—Total			19	11.8%
NA	NA	NA	17	10.6%

The classification of 'enterprise origin' as 'top-down' pertains to cases where MNCs or externally owned national companies were involved, whereas 'bottom-up' signifies enterprises within the BoP community. The 'top-down' classification also encompasses BoP-owned enterprises stemming from MNC market entry, a phenomenon widely documented in the literature, wherein the supply chains and distribution networks of MNC subsidiaries stimulate local entrepreneurship [61]. This 'top-down' classification underscores the direct relationship and dependency formed between MNCs and BoP-owned businesses.

The prevalence of top-down enterprises in this sample (comprising more than 75%) could be attributed to the dominance of the energy, healthcare, and agri-food sectors, which typically offer essential products and services directly to communities rather than cocreating or coproducing with them. This trend is also a direct outcome of the prevailing BoP mindset, which advocates market opportunities for well-established companies.

The 'enterprise type' encompasses distinct macro purposes: if centered around product or service sales (including as suppliers), it signifies a commercial relationship with the BoP; if geared towards non-profit activities, it falls under assistance; and if community-centered, it pertains to a collaboration enterprise. The commercial type prevails not only in the overall sample (87%) but also in both subgroups: 99% of top-down and 84% of bottom-up.

Although assistance and collaboration represent a minority, they propose alternative approaches to meeting BoP's needs. The assistance scenario includes training en-

trepreneurial competencies for potential future clients [133], thus positioning it as a market development strategy. The collaboration subset involves cooperatives organized for revenue optimization and knowledge sharing [84], alternative employment approaches [134], and community-owned social enterprises [1].

Lastly, the articles in the sample were categorized based on their predominant depiction of BoP. If the focus primarily revolved around operationalizing sales, BoP would be portrayed as consumers. BoP, as entrepreneurs, encompasses descriptions involving them as producers, suppliers, distributors, business partners, innovators, creators, or enterprise owners. Articles that did not explicitly mention BoP as consumers or entrepreneurs, but rather revolved around discussions related to market development, market dynamics, or market-entry strategies, were grouped under the 'consumers' relationship. This categorization was based on the underlying assumption that businesses targeting BoP would inevitably sell to BoP customers. The findings reveal that the prevailing BM concern remains concentrated on market development, considering BoP communities primarily as consumers (65%).

4.2. BoP BM's Configurations

4.2.1. BoP BM's Components

The level of detail within the cases' descriptions has facilitated the consolidation of diverse business model solutions implemented by BoP enterprises. The delineation of BM-components, as gleaned from the content analysis, is presented in Table 7. This table also encompasses the various sources in which these components were referenced. In addition, examples of the structures employed within each BM component across different BoP contexts are provided.

4.2.2. BoP Value Stream

During the content analysis, a set of 22 business model components related to the value stream were identified and systematically coded. The hierarchical structure of these codes is presented in Table 7. Additionally, a core-periphery analysis, graphically represented in Figure 9, was conducted to discern the central and most prominent codes pertaining to the value stream in the examined literature. At the core of this analysis stands the primary code known as value offer (VO), encompassing various facets, such as value offer through network/relationship with significant partners (VO_NET), affordability through payment methods (VO_APM), accessibility and availability (VO_AA), and acceptability (VO_AC). Moreover, two codes associated with value creation (VCr) and value delivery channel stores (VDC_S) constitute the core code members, with a coefficient of agreement of 0.77.

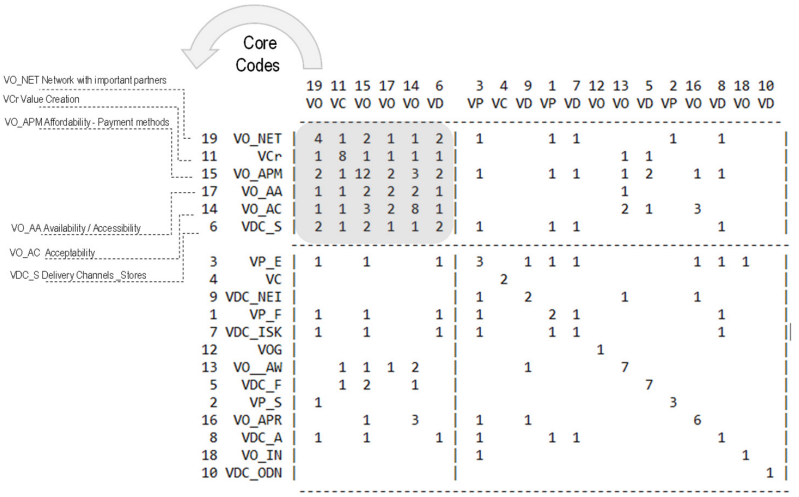


Figure 9. Core-periphery analysis for value stream codes. Note: Based on content analysis data using the UCINET software.

Table 7. Results obtained with the abductive coding processes for the business model component related to the value stream.

Business Model Component Level 1	Business Model Component Level 2	Code ID	References	Examples | Discussions
Value Proposition (VP)	Financial value	VP_F	[135] [136]	Reinvest profit as part of social commitment Shareholder value distribution
	Social Value	VP_S	[6] [8] [40]	Changing time frames and planning horizons Family and work relationships; quality work
	Environmental Value	VP_E	[135,137] [138]	Climate-smart value
Value Capture (VC)	General	VCG	[139]	
	Revenue_Donations of resources and services	VCR	[140]	
Value Delivery (VD)	General	VDG	[83]	
	Channels_Franchising	VDC_F	[27,32,42,141–144]	
	Channels_Stores	VDC_S	[135,145]	
	Channels_Independent shop keepers	VDC_ISK	[135]	
	Channels_Associations	VDC_A	[135]	
	Channels_Networking with established institutions (NGOs, dealerships, other companies)	VDC_NEI	[123,137]	
	Channels_Optimizing the distribution network with several products	VDC_ODN	[110]	
Value Creation (VCr)	General	VCrG	[63,146]	
	Operational or cost efficiency	VCr_OCE	[117] [145,147] [145] [52] [148] [27,148] [117] [63]	Volume (scale) gains Leverage price/performance ratio Outsourcing non-core operations Specialization Standardization Modular design Optimize transactional costs

Table 7. *Cont.*

Business Model Component Level 1	Business Model Component Level 2	Code ID	References	Examples | Discussions
Value offer (VO)	General	VOG	[83]	
	Awareness (market development)	VO_AW	[117,130] [33,123,149] [123,150] [150] [133]	Word of mouth Demonstrations, door-to-door campaigns, product trials, Field-based experimentations Social media campaign Training
	Acceptability	VO_AC	[130] [151] [32,152] [68] [132] [145] [150]	Total product solution Product Quality Product Design Adapt the offer to customer's habits and/or preferences Allow customer test before purchase Experimentation - Field-pilots & Prototyping
	Affordability—Payment methods	VO_APM	[130,153] [46,144,145,151,154] [145] [135,155] [135] [142] [156] [38]	Microfinancing Simplified credit Consignments Time payments "Pay as you go" (pre-pay + recharge) Renting Exchanging (accepting products for payment)
	Affordability—Price	VO_APR	[151] [151] [68,137,152,157,158]	Shared use Tiered pricing Scale down or adapt a technology imported from developed markets
	Availability/Accessibility	VO_AA	[130] [145]	Make the 'shopping together' model available to customers
	Inclusivity	VO_IN	[138]	
	Network with important partners/Relationships	VO_NET	[29,40,109,145]	

The value proposition component (VP) is fundamentally the firm's central delivery and its fundamental approach to gaining a competitive advantage [36]. Although traditional approaches often focus on the value proposition tailored to customers, within the context of BoP 3.0, this code is centered on the values created for the BoP community, as well as for broader society and the environment.

Value capture (VC) encompasses revenue sources and encapsulates the economic foundations of the business. Since selling products and services is at the core of this component, only different sources were coded. Value delivery (VD) encompasses the channels and supply chain configurations utilized to reach the end customer during the product/service delivery process. Value creation (VCr) delves into strategies employed to optimize profits, often revolving around production strategies. This component may include the broader activity system, business processes, and position within the value network, which encompasses links with suppliers, partners, and customers [36].

The value offer (VO) articulates the instruments used to turn the product or service into 'consumable' offers to the customer. This encompasses strategies aligned with the 4As framework [41]: communicating the existence of the product/service through available communication channels to generate awareness and market development; presenting a solution that customers find worthy of purchase (acceptability); addressing affordability through appropriate pricing or payment methods; and ensuring physical product availability and accessibility to customers, particularly in challenging infrastructural contexts.

To enhance comprehension of the interrelationships among the various value stream components, we have constructed a network using cross-tabulation data in Netdraw software, as illustrated in Figure 10. The thickness of the lines within the network corresponds to the strength of the connections between components. Notably, the robust connections between value offer (VO), value delivery (VD), and value proposition (VP) emphasize the significance of addressing these components in a cohesive manner to ensure a harmonious business model.

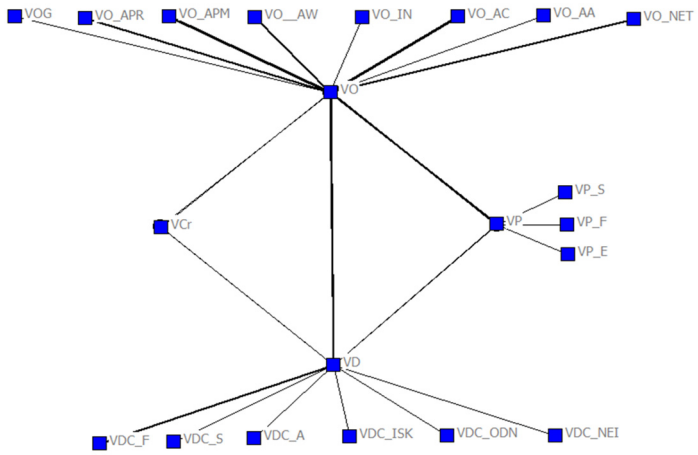


Figure 10. Relationship between value stream codes. Note: Based on content analysis data using the UCINET-Netdraw software.

This coherence can be further bolstered through well-defined objectives and the application of suitable key performance indicators (KPIs) for their assessment [112]. Setting clear goals is pivotal in establishing a definitive trajectory toward the envisioned objectives [27]. These objectives should encompass economic, social, environmental, and ethical dimensions, all underpinned by a long-term vision [1].

The delineation of appropriate KPIs plays a crucial role in steering the desired outcomes by aligning objectives with incentives. Conventional incentive structures tend to shy away from uncertainty [27], a disposition that could prove counterproductive for enterprises operating within underserved communities [159]. Such structures might impede or divert the implementation of businesses with social objectives. Hence, meticulous

consideration of KPIs and the associated incentive framework is imperative within the context of BoP business models.

Within the context of VO, the most prominent connections are observed in payment methods (VO_APM) and acceptability (VO_AC), marked by the thickest lines. The issue of acceptability has persisted since the inception of BoP 1.0, lying at the core of the BoP paradigm, where the balance between quality and price is crucial. The evolution from BoP 1.0 to 2.0 introduced cocreation techniques and product development, which remain pertinent to BoP 3.0. Nonetheless, other components of business models have also gained significance. This is notably exemplified by payment methods, which are deeply integrated into the current trajectory of financial services research.

Turning to VR, a noteworthy connection is observed in value delivery through franchising (VDC_F). The term "social franchising" garners significant attention in the literature, as depicted in Figure 11. This particular channel configuration offers a swift dissemination of social marketing efforts, enabling the achievement of commercial, operational, and social objectives. Social franchising is categorized into three primary formats: employment-based, price recovery-focused, and donor-funded strategies [141].

In relation to the Value Creation (VC) component, it appears to stand somewhat isolated from the other components: lacking a connection to VP and featuring thin connections to both VD and VO. This phenomenon could be attributed to the nature of the discussions centered around operational efficiency, which tend to lean more towards technical considerations rather than managerial aspects. Consequently, articles delving into VCr often draw from a distinct set of theoretical papers.

A recurring driving factor for discussions on VCr is the challenge of scalability. While the primary aim is to attain economies of scale [145]—a necessity for unhindered business expansion—it is equally effecting substantial positive change within the BoP [85,147] by addressing the urgent social needs accompanying the projected global population growth [159]. To tackle this quandary, authors propose leveraging innovative, low-cost technologies to tackle delivery-related matters (last-mile logistics, distribution), sales channels, and customer relationship cultivation [109]. Other strategies include employing micro-franchising to penetrate markets [160] and adopting phased approaches contingent on the business stage and contextual variables [147].

Furthermore, noteworthy emphasis should be placed on the adaptability of the BM, regardless of the specific component involved, as a prerequisite for sustained enterprise viability. Beyond merely modifying conventional BMs, adaptability necessitates readiness to address unexpected shifts that may arise during the process of business expansion or internationalization and to navigate economic, social, and environmental influences [161]. It is also pivotal in anticipation of industry disruptions [138].

Given that interactions with the BoP community tend to induce transformation, ongoing BM modifications become imperative to uphold the 4As [162], constituting a continuous and interactive design process [163]. However, this evolution must be grounded in fostering an entrepreneurial mindset within the embedded BoP community. Lacking this foundation, inclusivity could be compromised, leading to disruptions in trust and potential conflicts [138].

Inclusivity emerges as a core principle in BoPs 2.0 and 3.0, integral to the co-creation efforts involving diverse stakeholders [66] that have been incorporated as responses to critiques of treating the impoverished solely as consumers. This trend is evident in Figure 12, and it can be integrated into the BM as a value offer.

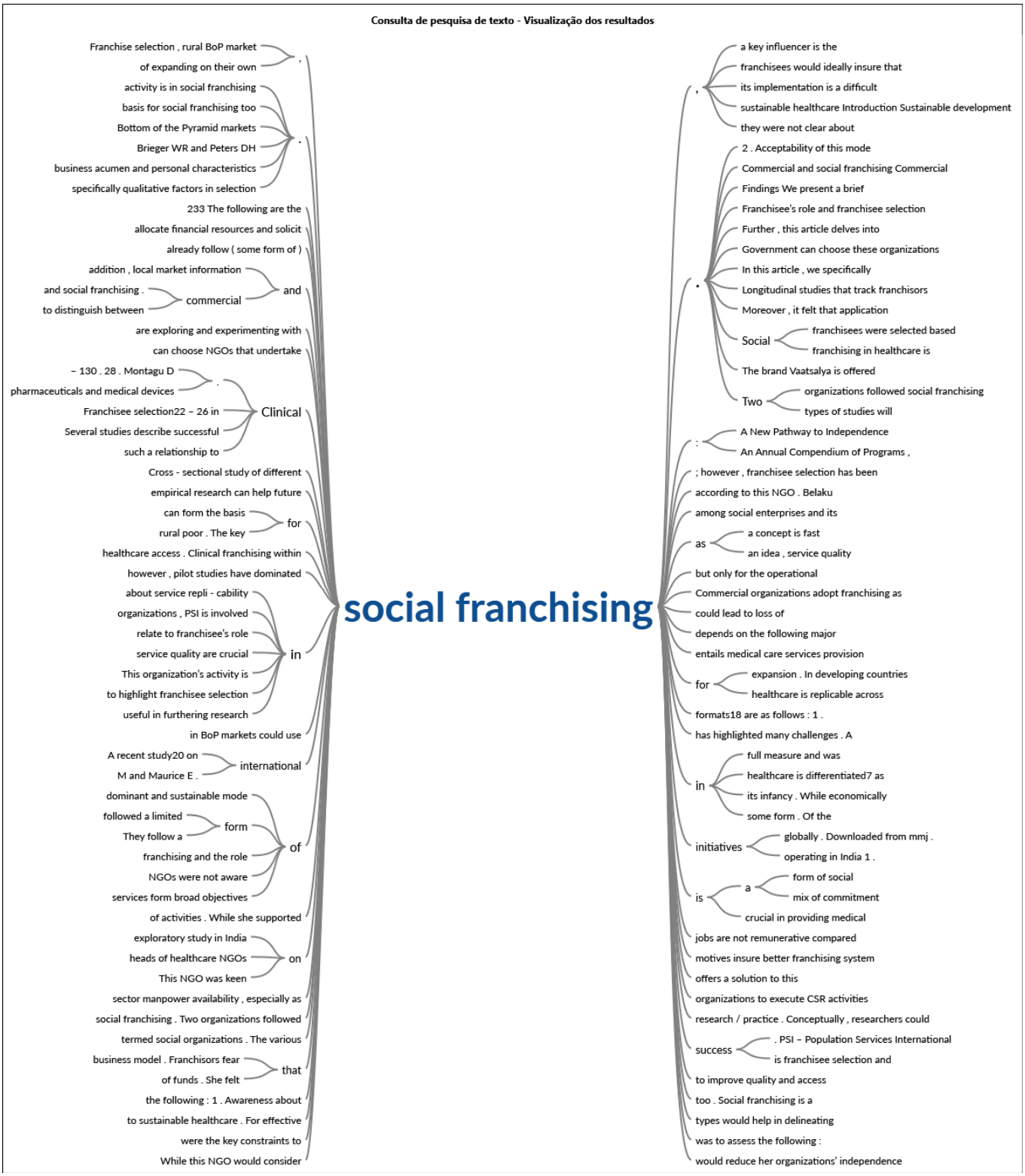


Figure 11. Word tree showing the main connections of the expression 'social franchising.' Note: NVIVO software uses the texts in the sample.

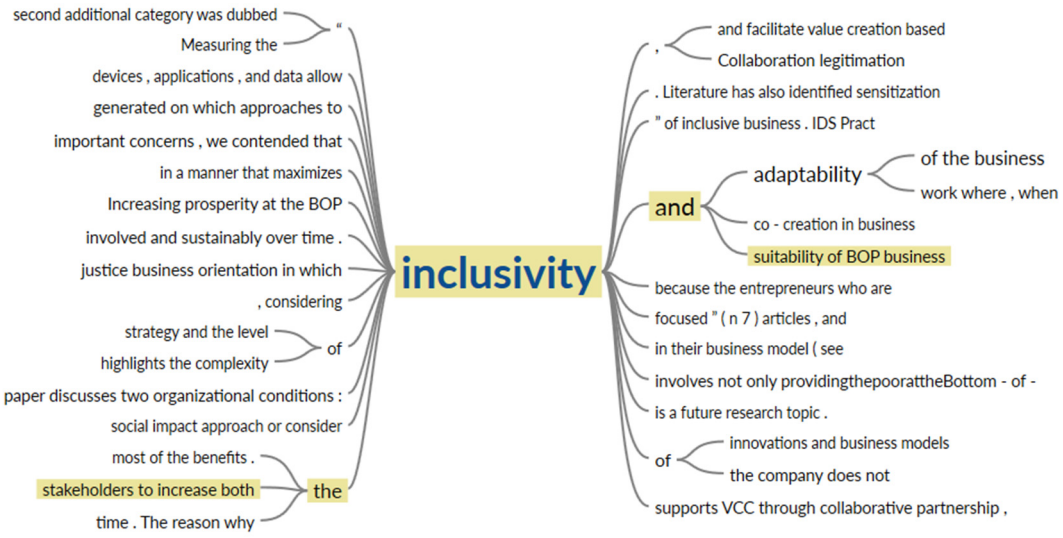


Figure 12. Word tree showing the main connections of the word 'inclusivity'. Note: NVIVO software uses the texts in the sample.

4.2.3. BoP BM Partnerships

Partnerships (PT) are presented in Table 8. In BoP markets, they are recognized by scholars as pivotal for the success of BoP-BMs, constituting the bedrock of true BM innovations—transcending conventional strategies of product adaptation and strategic adjustments. These collaborations are crucial for accessing essential knowledge and resources and for establishing credibility and legitimacy, enabling companies to overcome contextual challenges [164].

Business-to-business (B2B) partnerships, categorized here as 'other companies' (PT_OC), represent the conventional approach. These encompass affiliations with suppliers, customers, and financial institutions, which offer the potential to procure complementary or integrated solutions, yielding synergistic outcomes. The symbiotic model also falls under this purview, wherein one company contributes to the other's achievements, although not necessarily through direct partnership [88].

However, conventional partnerships, even if present in BoP markets, are deemed insufficient due to their inability to provide the cultural insights necessary for market entry. Cross-sector partnerships (PT_CS), involving government bodies, civil entities, and NGOs, have demonstrated effectiveness in facilitating access to the BoP populace. Thus, they offer crucial support in establishing the required credibility and legitimacy within the community.

Furthermore, governments play a vital regulatory role by formulating and enforcing policies, guidelines, and regulations [11,38,165–167]. They contribute by fostering collaborative policymaking [82] and adapting regulations to foster innovative solutions [168].

While partnerships with the BoP community (PT_BoPC) could have been classified as partnerships with other businesses, a distinction arises in the localized impact achieved when partnering with a local supplier versus an external one. Emphasizing the inclusion of BoP enterprises in the value chain gains prominence in the context of BoP 3.0. Such inclusivity not only enhances legitimacy, but also fosters local economic development.

The structural dynamics of these partnerships are also significant. Given potential power asymmetries between MNCs or large national companies and BoP enterprises, collaborative partnerships should ensure BoP representation in decision-making processes and provide BoP with access to resources [138].

Lastly, financial sponsors or investors (PT_FSI) constitute a distinct partnership category where a specific resource—namely, financial capital—is exchanged. Given the resource constraints in challenging markets, securing financial partners who can provide the necessary resources to initiate ventures is paramount for business development in BoP contexts.

However, the chosen investors must share a belief in social impact and align with the company's mission [11].

Table 8. Results obtained with the abductive coding processes for the business model component related to partnerships.

Business Model Component	Business Model Component	Code ID	References	Examples | Discussions
Level 1	**Level 2**			
Partnerships (PT)	General	PT_G	[164]	
	Other companies	PT_OC	[20,119,157]	
			[2,66,88]	Symbiotic, complementary, or are they integrated models
	BoP Community	PT_BoPC	[151]	
			[88,145]	Have executives been allocated or living in communities
			[135]	Create local partnerships to improve the local economy and gain legitimacy
			[11,135]	BOP as suppliers or business partners
			[135]	BOP as employees
			[145]	BOP as solution cocreators
	Cross sector	PT_CS	[11,164]	
			[12,32,90,111,135,151,158,169]	With NGOs
			[111]	With civil society/social organizations
			[11,35,38,69,82,111,123,151,170]	With the government (public-private partnership—PPP)
	Financial sponsor/Investors	PT_FSI	[11,135]	

4.2.4. BoP BM Resources

Resources (RS) encompass both tangible and intangible assets crucial for the operation of enterprises, categorized into human (RS_H), physical (RS_P), and technological (RS_T) domains, as outlined in Table 9.

Human resources encompass a spectrum beyond formal employees like managers and team leaders [135], extending to unpaid and part-time paid assistance as well as support from family and friends [169]. The imperative of continuous human resource development via diversified education and training holds significance [1], irrespective of context. This importance is amplified in BoP environments, where skill scarcity is a prevalent challenge, rendering training a pivotal resource not only for entrepreneurs [169] but also for the local operations of multinational corporations (MNCs).

Social capital realized through social networks is also acknowledged as a resource [33]. Alternative work organization models harness the value inherent in such networks by utilizing them to cultivate a workforce, converting human resources into social capital through membership models [134]. However, some critical viewpoints raise concerns about certain work arrangements potentially transferring risks from MNCs to the BoP, assigning to "self-reliant and resourceful sellers and wholesalers" the duty of absorbing the inherent uncertainties of BoP markets [25].

Physical resources encompass raw materials, workspaces, machinery, tools, and other essential elements for production or service provision [169]. Examples detailed in Table 10 illustrate instances where specific contexts shaped solutions for physical resources, spotlighting the utilization of locally available resources such as unused land and water [33,157]

to address societal and environmental concerns while generating revenue. This category also encompasses resource pooling among stakeholders as a strategy to mitigate the risks posed by supply shortages.

Table 9. Results obtained with the abductive coding processes for the business model component related to resources.

Business Model Component	Business Model Component	Code	References	Examples | Discussions
Level 1	**Level 2**			
Resources (RS)	Human	RS_H	[169]	
			[1,25,29]	Direct labor
			[33,134]	Social network
	Physical	RS_P	[142,169]	
			[33,157]	Raw material—relying on locally available resources and/or waste resources
			[33,157]	Land and energy—use locally available and neglected resources. e.g., vacant land, local sources of energy
			[57]	Resource pooling between stakeholders
	Technological	RS_T	[32,68,77,109,151,168,171]	Technological innovation/digitalization
			[132,145,149]	Product technologies
			[145]	Process technologies
			[76]	Payment technologies
			[51]	Technology as a service
			[52,172]	E-commerce

Table 10. Results obtained with the abductive coding processes for innovation.

Innovation Categories	First-Order Concept	Code	References
Types of Innovation	Frugal innovation	FI	[59,74,77,79,80,161,173]
	Bricolage	BRI	[27,60,174,175]
Structural frame	Project based	PRbBoP	[11,23,40]
	Platform-based	PbBoP	[6,40,51,55,56,176]
Ecosystem	Business Ecosystem	BE	[6,32,51,56,60,84,171,174,177]
	Digital ecosystem	DE	[109]
	Innovation ecosystem	IE	[178]
Sustainability	Circular economy	CE	[77,109]
	Sustainable Development Goals	SDGs	[6,78,79,82,109]

Resource sharing or pooling represents an alternative consumption model where the market operates with no ownership transfer: the consumer buys a consumption time at a cost that is being transferred to the service provider [57]. Although typically employed to ensure consumption accessibility for financially constrained customers, a showcased case employed this approach to pool 'farming' capacity, warranting its inclusion as a physical resource component.

Technological resources act as enablers, capable of influencing any BM component. Digital technologies wield transformative potential in spurring development and alleviating poverty by enhancing connectivity, reducing transaction costs, boosting efficiency, facilitating convenience, and expanding access to products and services [51]. Their ap-

plication can engender novel business models and optimize existing ones by bestowing agility through digital commerce and services [68,171], while refining processes [145] and products [132,145,149] at any stage of the value chain, including sales [52,172] and payment methods [76].

4.2.5. BoP and BM Innovation

Innovation contributes to enterprises' success and growth and enables the successful exploitation of new ideas for products and services [158]. It can also be applied to BM components or even to the BM itself—and is especially relevant to overcome BoP challenges. Considering the influence exerted by innovation in all aspects of BoP-BMs, the framework initially used to guide the coding process was adapted and is presented in Figure 13.

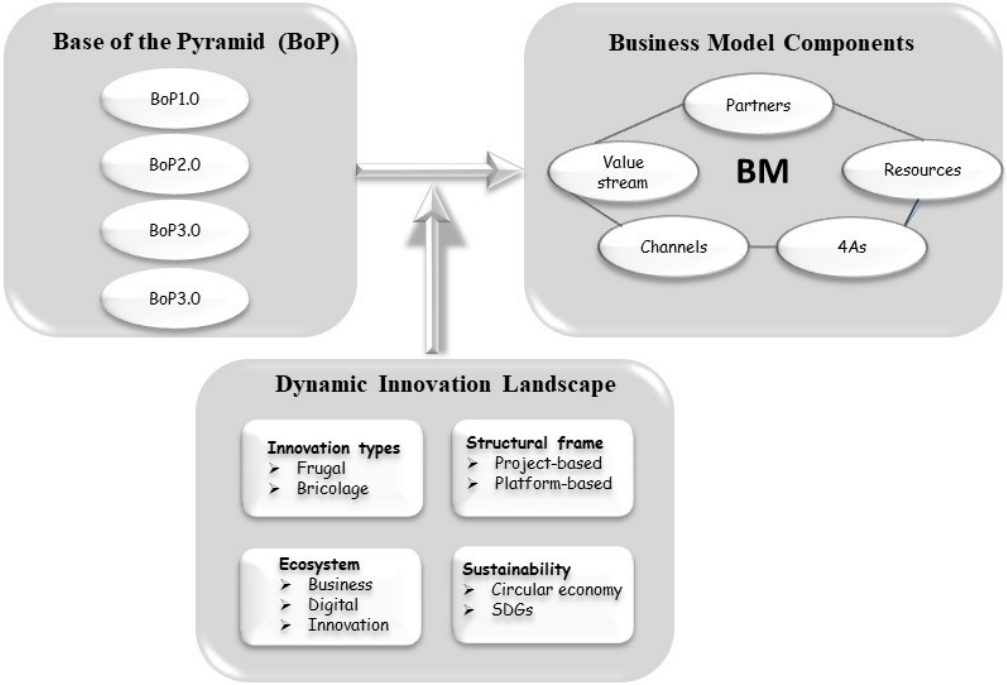


Figure 13. Coding framework adapted to include BM innovations.

The extended framework now includes a third dimension, comprised of four subcategories: innovation type, structural frame, ecosystem, and sustainability. Each of these subcategories represent unique approaches and perspectives that influence the configuration of the business model components in the context of the BoP.

The three arrows in the framework symbolize the dynamic and interrelated relationships between the BoP wave, business model components, and the ideas depicted in this new dimension. Each arrow highlights the potential influence of one dimension on the others, emphasizing the iterative and adaptive nature of the BoP business model evolution. The third arrow, newly introduced in the extended framework, signifies that the new dimension also exerts an influence on the configuration of business model components in combination with the BoP wave. This arrow underscores the intricate interplay between the evolving BoP literature and the dynamic landscape of innovation, ecosystems, structural frames, and sustainability practices.

By integrating this third dimension, the framework emphasizes the importance of considering multiple factors beyond the BoP wave alone in the design and adaptation of business models for the BoP context. The extended framework thus provides a holistic view of the complex and multifaceted nature of the BoP business models. It invites researchers and practitioners to investigate the intricate relationships between the BoP wave, business model components, and the various elements of innovation, ecosystems, and sustainability

to create more inclusive, effective, and socially impactful solutions for the bottom of the pyramid.

Additionally, Table 10 organizes these innovation aspects encountered in the literature with their respective references.

4.2.6. Types of Innovation

Frugal innovation constitutes a mindset that advocates the simplification of products and processes, redesigning them to enhance efficiency and cost-effectiveness [76]. This approach holds relevance for achieving business success in resource-constrained environments, such as the BoP [59]. For instance, it should be taken into account when implementing manufacturing systems in factories to meet the requirements of price-sensitive customers while maintaining quality [173].

Recent literature has extended this logic to innovation across all stages of the supply chain, from design to delivery, as well as to the business model itself [74,77]. The redesign of products, services, and business models to reduce complexity can also be aligned with the frugal mindset [79].

Interestingly, applying this concept can pose more challenges for companies from developed economies accustomed to abundant resources and advanced technologies, compared to BoP producers who are already adept at operating with resource scarcity [161]. Consequently, when expanding into BoP markets, multinational corporations can gain insights through knowledge exchanges with producers in low-income markets.

Bricolage, another innovation mindset, proves fitting for maneuvering through resource-scarce environments [27,60]. This approach encourages the amalgamation of available resources to solve problems and seize opportunities, serving as an engine for value creation [174]. It particularly finds application in situations where firms are resource-constrained, enabling them to outpace competitors and generate value [175].

4.2.7. Structural Frame

The term 'project-based' can be applied to BoP-BMs that organize their activities into separate, temporary projects. These projects may serve to deliver one-time solutions, such as infrastructure projects, or address time-bound issues, such as conducting training sessions with specific goals in mind [40]. Additionally, it can encompass project-based products that are repeatedly commercialized, such as the build-operate-own-maintain, pay-for-use solution model [11]. Furthermore, the term can also describe the utilization of a project framework to develop innovations catering to the BoP [23].

On the other hand, the term 'platform-based' characterizes BoP-BMs that structure their activities to foster interactions among diverse stakeholders through a platform [40]. These models often possess considerable potential for value creation by connecting various value-creation mechanisms. Typically, they incorporate a technological component that serves as an enabler, leading many researchers to refer to them as 'digital' or 'digitally enabled' platforms.

The solutions provided by these platforms encompass various supply chain activities, such as sourcing and distribution. Additionally, they can reconfigure operations and communities to enhance their effectiveness [40]. Examples include procurement services that open up new business opportunities by granting access to a broader range of virtual inventories from suppliers and producers [55], financial platforms that offer an array of services [6], and social media platforms that enable participation in market transactions [51].

In numerous communities, platforms have facilitated the emergence of dynamic and self-organizing ecosystems [51], which leads us to the subsequent category.

4.2.8. Ecosystem

A business ecosystem consists of an economic community comprising various organizations that are interdependent to varying degrees. This includes customers, partners, suppliers, producers, investors, competitors, research institutions, civil society organiza-

tions, the government, and other actors connected to the components of the business model. The configuration or reconfiguration of a business model responds to the ecosystem it operates within, and certain events or innovations can trigger systemic changes within the business ecosystem [6,32,174,177].

Creating (inclusive) business ecosystems in the BoP is believed to furnish the necessary resources and capabilities to overcome contextual challenges [60]. These ecosystems can enhance "business platforms in the form of software"—or digital platforms—that facilitate connections among the actors in this system [84,171]. This perspective suggests that platform-based solutions either establish new business ecosystems or reinforce connections within existing ones [51,56].

Given the significance of digital solutions, authors have employed the term 'digital platform' to denote solutions enabled by information and communication technologies (ICT) for service offerings that utilize internet and mobile features [109].

Lastly, innovation ecosystems consist of cross-sector partnerships that amalgamate resources and capabilities to foster sustainable innovations that extend beyond the boundaries of BoP enterprises. Incorporating such ecosystems as a capability within the BoP business model is advocated [178].

4.2.9. Sustainability

The circular economy has prompted business model innovation by incorporating specific components into their representation [77], as well as by fostering the creation of entirely novel business solutions that leverage circular economy principles to enhance accessibility and affordability [109].

The Sustainable Development Goals (SDGs), established by the United Nations (UN) to address global challenges, serve as a framework for setting priorities and providing a roadmap for achieving a sustainable future. Consequently, numerous scholarly works utilize the SDGs as benchmarks to assess enterprises and their business models [6,73,78,82,109].

4.3. Future Research Agenda

Future research should focus on conducting in-depth investigations to gain a deeper understanding of social value and its implications within BoP business models. This entails exploring the underlying mechanisms and contingencies related to the creation of social value by BoP enterprises. Researchers can delve into the specific elements of business models that contribute to the generation of social value and investigate how contextual factors influence these elements. Furthermore, understanding the challenges faced by enterprises in creating social value and identifying effective strategies to overcome them can enhance the social impact of BoP business models.

Another potential theme for future studies is examining the impact of value chains and business ecosystems on BoP enterprises. Gaining insights into how these factors shape and influence their business models can provide valuable information. Investigating how large enterprises can effectively integrate microsmall enterprises (MSEs) into their value chains while ensuring a fair balance of power is crucial for fostering inclusive and sustainable economic development. Understanding the dynamics of such partnerships and the role of larger enterprises in supporting the growth and sustainability of MSEs can provide valuable guidance for fostering collaborative and mutually beneficial relationships.

To promote productivity increase and production cost reduction in BoP enterprises, future research should concentrate on stimulating the adoption of innovation strategies, such as bricolage and frugal innovation. Exploring cases in various contexts can offer valuable insights into their applicability and potential for addressing the challenges faced by BoP businesses. Additionally, investigating the factors that facilitate or hinder the implementation of these innovation techniques can provide practical guidance for entrepreneurs.

Enhancing financial inclusion for the BoP community is another area for future research. Conducting exploratory or interpretive studies focusing on specific groups, such as migrant labor and small businesses, can shed light on their specific needs, preferences,

and challenges in accessing financial services. Moreover, investigating innovative financial inclusion models and understanding their impact on the economic empowerment of the BoP can open avenues for designing targeted interventions to enhance financial inclusivity.

Comprehensive exploration of business ecosystems in the BoP context is an additional research direction. Investigating factors influencing how small social enterprises (SSEs) interact within these ecosystems can provide valuable insights into their dynamics. Understanding how collaborations between multiple social enterprises within symbiotic ecosystems are formed and sustained can shed light on the dynamics of such relationships. Additionally, researchers can explore the distribution of benefits and values within these ecosystems and identify variations in the nature and intensity of symbiotic interactions.

Future research should also focus on identifying and researching important marketing phenomena and aspects specific to the BoP context. Investigating the unique marketing challenges faced by enterprises serving the BoP and exploring effective marketing strategies tailored to this context can be valuable for enterprises seeking to improve their market penetration and impact.

The influence of various stakeholders, including enterprises, social organizations, NGOs, and government departments, on the construction and functioning of digital platforms in the BoP context should be thoroughly explored. Understanding the roles and interactions of these stakeholders can provide insights into the dynamics of platform-based enterprises and how they contribute to inclusive economic development.

Finally, future research should investigate the link between different types of innovation and sustainability in BoP business models. Understanding how innovation strategies contribute to environmental and social sustainability can inform the design of more effective and responsible business practices. Additionally, exploring community-based social enterprises (CBSEs) concerning leadership practices and capabilities can shed light on the factors that influence sustainability outcomes in these enterprises, especially during times of crises, such as the COVID-19 pandemic. Research can also focus on the mediating relationships between sustainability leadership competencies and sustainability performance outcomes, providing insights into the pathways through which sustainability practices impact social development in business.

The research agendas indicated by the most recent articles were organized by themes in Table 11, indicating the original author for further thematic exploration.

Table 11. Future research agenda.

Theme	Future Research Agenda	Authors
Social value	- A deeper understanding of social value. - Business model elements and contingencies related to social value creation processes.	[5]
Business model configuration	- Explore the impact of value chains and business ecosystems on enterprises to understand their effect on business models. - Analyze how large enterprises could integrate microsmall enterprises (MSEs), while still preserving a fair balance of power.	[174]
Innovation	- Analyze how bricolage and frugal innovation could be stimulated for productivity increase and production cost reductions.	[174]
Financial services	- Conducting exploratory or interpretive studies focusing on migrant labor and small businesses. - Develop qualitative studies.	[179]
Business ecosystems	- Explore factors influencing how small social enterprises (SSEs) interact with their ecosystems. - Investigate collaborations between multiple social enterprises in symbiotic ecosystems. - Explore the benefits and overall value generated in symbiotic ecosystems and how this is distributed. - Identify variations and provide explanations of the nature and intensity of such ecosystem symbiosis.	[2]

Table 11. *Cont.*

Theme	Future Research Agenda	Authors
Marketing	- Identify and research important marketing phenomena and aspects that characterize the BoP in particular.	[65]
Platform-based enterprises | Digital platforms	- Research how other enterprises, social organizations, NGOs, and government departments influence the construction of digital platforms.	[51]
Sustainability	- Explore the link between different types of innovation and sustainability. - Explore community-based social enterprises (CBSEs) concerning leadership practices and capabilities. - Effects of mediating relationships between sustainability leadership competencies and sustainability performance outcomes - Sustainability leadership, sustainable entrepreneurship, and social development in business. - Sustainability and resilience in the CBSE context during the COVID-19 pandemic crisis.	[1,112]

5. Conclusions

This literature review offers an encompassing overview of the evolution of the conceptual and intellectual landscape of base-of-the-pyramid (BoP) business models. It traces the evolutionary timeline, identifies pivotal authors and references, core research methodologies, and controlling variables, such as countries and sectors. Additionally, it examines emerging and niche themes alongside motor themes. The study delves into the BoP research terrain, scrutinizing the origin of BoP enterprises (top-down or bottom-up), their categorization into commercial, assistance, or collaboration types, and their association with BoP communities as either customers or entrepreneurs.

This review also interlinks the BoP perspective with an innovative outlook, drawing connections to frugal innovation and bricolage. It engages with various structural frameworks, delves into the realm of business and innovation ecosystems, and explores the intersection of sustainability. Concluding with a framework highlighting the fundamental constituents of BoP business models, it suggests potential avenues for future exploration, including how different BoP generations shape various BoP elements.

This study contributes substantially to the academic community by systematically organizing existing knowledge on BoP business models. It not only synthesizes current research, but also offers insights into future research directions outlined in recent publications. For entrepreneurs, the framework of core BoP business model components could prove invaluable when seeking solutions to encountered challenges. Policymakers can benefit from insights into emerging innovations within BoP business models, which might necessitate accelerated policy development.

Future research could delve into individual business model components, transcending the current focus on holistic enterprise analysis. Comparative investigations might dissect how various businesses structure their model components, considering factors such as economic segments, countries, enterprise origins, or types. The examination of customer/entrepreneurial relationships between businesses and the BoP presents another intriguing avenue. Neglected bottom-up BoP enterprises deserve further scrutiny due to their contextual significance. Exploring localized efforts could yield lessons crucial for the success of broader top-down initiatives. Additionally, delving into failed BoP endeavors might yield valuable insights.

An unexplored dimension is the impact of quantitative key performance indicators (KPIs)—both short-term and long-term—on the success of BoP business models. Qualitative KPIs that assess social and environmental impacts also merit investigation.

Notwithstanding its contributions, this research has limitations. Firstly, the chosen search string for retrieving relevant articles may have inadvertently excluded some similar keywords used by academics, such as: low-income segments, developing markets, emerging markets, lower socioeconomic segments, social innovation, social entrepreneurship,

subsistence markets, slum markets, economics of poverty, resource-constrained consumers, inclusive growth, inclusive markets, and community-based social enterprise (CBSE). Consequently, some relevant studies may have been omitted from the analysis. Secondly, the coding process employed in the study is subject to the inherent subjectivity of the researchers' decisions, which may influence the categorization and interpretation of the data.

Funding: Acknowledgments to FAPESP, Thematic Project No. 2020/16011-5.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Metadata is available with the corresponding author.

Conflicts of Interest: The authors declare no conflict of interest.

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