

Business Models For The Base Of The Pyramid (Bop) In The Context Of Solid Waste Management

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Abstract:

Background: The growing demand for sustainable services highlights the importance of creating value and including disadvantaged communities in the development of products and services, not just as consumers, but also as an integral part of the process, thus promoting the local economy and development. Businesses are driven to promote social inclusion and income generation by integrating sustainable principles into their business models. Business model innovation provides entrepreneurial opportunities even in subsistence market contexts, where there are limitations such as lack of capital and creating new markets. Therefore, this review article seeks to evaluate business models aimed at the base of the pyramid, in the field of solid waste.

Materials and Methods: The study is an integrative literature review, based on two combinations of search terms “base of the pyramid AND recycling” and “base of the pyramid AND waste”, the databases used were ScienceDirect, Scopus and Web of Science.

Results: Value creation encompasses not only economic but also social aspects and entrepreneurs at the base of the pyramid (BoP) often create value out of necessity, solving local problems and developing products adapted to local needs and cultures, which results in improved income and quality of life for these communities. Partnerships are essential for the co-creation of value and for tackling challenges such as social and environmental imbalances, transforming communities into key players in solving problems. In addition, practical cases demonstrate the potential of BoP-oriented business models, especially in the use of waste as resources, boosting the circular economy and generating social value.

Conclusion: Waste management is emerging as a tangible opportunity to create markets, boost entrepreneurship and promote significant social impact.

Key Word: Value creation; Partnerships; Sustainability; Base of the Pyramid; Market innovation.

Date of Submission: 19-08-2024

Date of Acceptance: 29-08-2024

I. Introduction

Urbanization, inequality and poor governance cause various economic, environmental and social damages and are a threat to maintaining sustainability^{1,2}. In order to face the challenges related to the availability of resources, instruments are used according to the problems of each economic sector, and organizational and planning activities are essential, including prevention, response and recovery measures, for disaster management and the achievement of global objectives^{1,3}.

Proper management is one of the keys to mitigating the impacts caused by inadequate waste disposal⁴ and with population growth in urban and peri-urban areas of developing countries come a number of challenges, such as competition for resources and the need for innovative and integrated solutions to ensure the balance and quality of life of populations in these regions^{5,6}. Therefore, the integration and understanding of the links between social aspects and environmental impacts at the different stages of the value chain should be studied from a socio-ecological perspective for a more comprehensive understanding⁷.

It should be noted that the systemic challenge of achieving sustainable circularity requires a redefinition of responsibilities and relationships, broadening the focus of companies to consider opportunities for value creation, aligning incentives through business models that promote interaction between products and services, reinforcing the concept of a closed-loop economy, leaving aside the limited vision of take-make-waste and adopting a take-make-use-waste perspective^{8,9}. It is essential to rethink business models, promote corporate social responsibility and invest in practices that reduce waste in order to achieve effective and lasting results in the search for a healthy and balanced environment¹⁰.

Municipalities manage urban solid waste, but only a small proportion have cooperatives, associations of recyclable materials or public-private partnerships to ensure proper management and respect the life cycle of products.¹¹. Therefore, creating business models aimed at the Base of the Pyramid (BoP) can help reduce the use of financial and natural resources and create economic, social and environmental value¹². Many organizations are

working towards sustainability and seeking innovation in their products and services - changes in the way they create, deliver and capture value are capable of having significant impacts on the environment and society¹³. Given this context, this review article aims to evaluate business models aimed at the base of the pyramid, in the field of solid waste.

II. Research Methodology

Conceptual Structure

This chapter is an integrative review to evaluate business models, an approach focused on BoP communities and municipal solid waste. The integrative review was carried out to promote a more comprehensive construction and understanding of scientific knowledge on the subject. Different databases were used for the searches, including: ScienceDirect, Scopus and Web of Science. Two combinations of search terms were selected: “base of the pyramid AND recycling” and “base of the pyramid AND waste”, according to the article selection method shown in Figure 1.

Research model



Fig. 1

Data collection

Inclusion criteria:

1. Theme and relevance of the articles
2. Databases: Science Direct, Scopus and Web of Science
3. Keywords: base of the pyramide, recycling and waste
4. Research and review articles
5. Publication period from 2018 to 2023 for Science Direct

Exclusion criteria:

1. Case studies
2. Reports
3. Duplicate articles

Due to the low number of articles in the Scopus and Web of Science databases, the article selection period from 2018 to 2023 was applied only to the Science Direct database. 373 articles were found, Figure 2 shows the number of articles in each database and according to the combination of keywords.

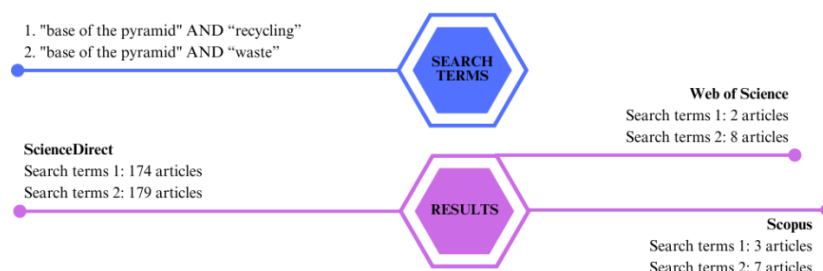


Fig. 2

Data Analysis

The presentation of the results and discussion is structured on the basis of the presentation and discussion of the quantitative and qualitative results and the main considerations presented by the selected research and review articles on the approaches to business models, the base of the pyramid and solid waste management.

III. Result

After obtaining the publications, 74 duplicate articles were identified and excluded, and the titles, abstracts and keywords were read to identify the articles related to the study topic. During the analysis, 244 articles were identified that did not deal with the topic. Of the 373 articles found, 55 were read in full and 35 were used to develop this review

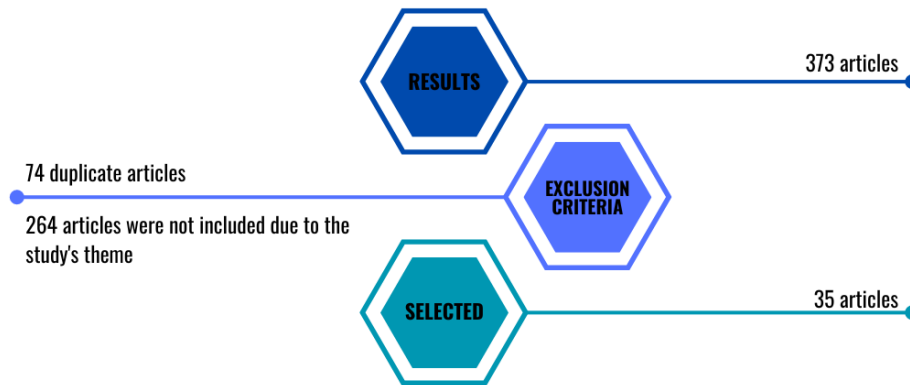


Fig. 3

The selection of articles sought a broader approach to the relationship between business models and the BoP, to look beyond the accessibility of the BoP to products and services, to identify its ability to create value. The main themes to be presented are related to value creation, partnerships, sustainability and basic sanitation in the context of solid waste. The discussion presents a synthesis of these themes in order to study the relevance of solid waste management as a business model aimed at the base of the pyramid (BoP). The quantitative analysis of the selected articles, including the main authors and topics covered, journals and year of publication, is shown in Figure 4.

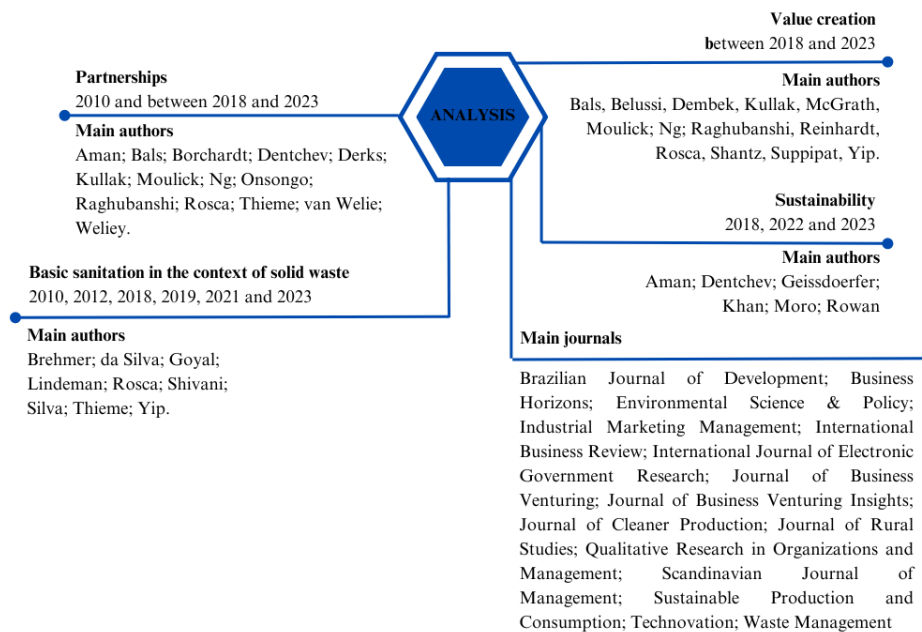
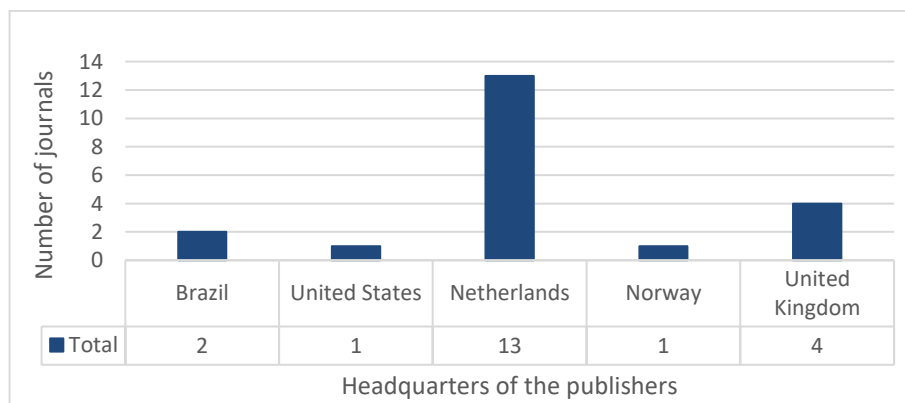


Fig. 4

The publications that contributed to the study are mainly produced by Dutch, British, Brazilian, American and Norwegian publishers. Table 1 shows the number of publications per country in which the journal publishers are based.

Table 1: Distribution of Publications by Country.

Articles	Headquarters of the Publishers	Journals
2	Brazil	Brazilian Journal of Development
		Revista Tecnologia e Sociedade
2	United States	Thunderbird International Business Review
		International Journal of Electronic Government Research (IJEGR)
14	The Netherlands	Procedia Engineering
		Environmental Innovation and Societal Transitions
		Resources, Conservation and Recycling
		Industrial Marketing Management
		Business Horizons
		Journal of Business Venturing
		International Business Review
		Technovation
		Journal of Rural Studies
		Sustainable Production and Consumption
		Journal of Business Venturing Insights
		Waste Management
		Environmental Science & Policy
1	Norway	Scandinavian Journal of Management
4	United Kingdom	Handbook of Green Economics
		International Institute for Environment and Development
		Thunderbird International Business Review
		Qualitative Research in Organizations and Management: An International Journal



He noted that although there is a lot of data for the study of waste management, business models and BoP, the authors present aspects that offer a direction for the study of business models for BoP conducive to waste management, considering the inclusion of disadvantaged communities, not only in the acquisition of products and services, but in the development of them, contributing to the construction of the local economy and social development.

Companies are driven to promote social inclusion, income generation and can contribute to the maintenance of resources, adding sustainable principles to the business¹⁵. Business models create new markets and innovate the way products and services are created¹⁶. When connected to the base of the pyramid (BoP) context, they offer opportunities for entrepreneurship and job creation, even if they are inserted in the subsistence market and made up of institutional voids, social norms, lack of capital, investment and subsistence, which limit potential business models^{17,18,19}.

Value creation encompasses various aspects and goes beyond economic interests, as social development is also driven, so it is necessary to identify the forms of value creation and the appropriate business models^{16,18,19,20}. Entrepreneurs in contexts of poverty create value out of necessity²¹ and BoP-oriented companies promote the resolution of local problems and develop products or services that are suited to the needs, norms and cultures of the community^{18,22,23} and the social value built adds income and quality of life^{12,24}.

Aligning business motivation with the social objective, government actions to shape and fulfill market demands, engaging the community to build legitimacy, are demands of the subsistence market, as the growth and

maintenance of a business model is linked to the satisfaction and financial performance of all those involved²⁵. In this context, several authors have shown that partnerships are essential for the sharing economy, and their relevance to BoP business models is related to the co-creation and delivery of value between all stakeholders in the network^{18,19,24,26,27,28,29,30,31}. Non-governmental organizations, NGOs, associations and other community representatives are able to mobilize and connect the community with organizations^{18,22}, but it is essential to establish reliable networks in order to reduce the risk of opportunistic behavior²⁵.

BoP-oriented business models correlate with sustainability strategies, as they address social and environmental imbalances, transforming the community into key players in solving problems³². Sustainability in business models is increasingly evident in studies, due to the demand for sustainable products and services and the acceptance of product-service systems, since they add economic and socio-environmental values^{25,30,33,34,35}. In the empirical study of the performance of BoP consumer value chain integration by Rosca & Bendul (2019), aimed at micro, small and medium-sized enterprises, it was shown that 75% of the companies studied emerged from the demands of the BoP.

In parallel with sustainability, the sanitation services promoted by BoP business models are instruments for guaranteeing public health and human rights, offering affordable basic products and services and an instrument for creating social value.^{22,26,36} Waste management is recognized as a viable source of income generation, promoted mainly by associations and cooperatives and the emergence of these business models is a reflection of excessive consumption and the use of discarded materials as a resource to be reused²⁶. In this context, there is an untapped potential for public-private partnerships, capable of boosting the quality of life of BoP individuals, confronting the lack of financing options and low government support, which could boost business development³⁶.

The analysis carried out by Lindeman *et al.* (2012) showed that recycling agents act as micro-entrepreneurs and waste collection transforms a community problem into a commercial activity in Brazil and Taizania. Understanding the effectiveness of a sanitation intervention and analyzing the impact of a business-led strategy on poverty reduction demonstrates the importance of having inclusive business models in pyramid markets³⁷.

In the study carried out by Da Silva *et al.* (2019), it is observed that in the context of waste management in the BRICS countries (Brazil, Russia, India, China and South Africa), Brazil has the most consolidated market focused on BoP, with a well-established network of associations and cooperatives, recognizing and integrating waste pickers. Organizational action and entrepreneurial solutions are influenced by local characteristics and cultures³⁸. In well-established ventures, the generation of value related to waste is related to reducing costs and environmental impacts³⁹ and the innovation of products, processes and services promotes the creation of value^{38,40}.

The need for changes in solid waste management (SWM) is investigated in different communities at the base of the pyramid and the disposal/recycling behavior of impoverished consumers⁴¹, which considers various aspects, including partnerships, leadership and management to drive sustainable development through education and awareness-raising, aligning the interests of the parties involved^{22,25,38}. Inclusive social innovation results in the equitable distribution of shared value and contributes to the local economy^{24,31}. Waste recovery takes place by transforming waste into new products, returning them to the industrial chain, promoting the circularity of these materials^{15,42}.

Studying the articles also helped to identify cases and business models that operate in the BoP. Brehmer *et al.* (2018), present thirteen cases that use waste as a resource from recycling, the organizations drive the circular economy and add social value. In Kisumu, Kenya, an NGO in partnership with experts created a decentralized sanitation service chain model to improve local sanitation management at an affordable cost⁴³.

In India, NEPRA Resource Management Unip. Ltd. created Let's Recycle, a solid waste recycling social enterprise that focused on providing solid waste collection and recycling solutions to communities and organizations through a supply chain that connected waste generators and collectors⁴⁴. Virginio *et al.* (2022), present ViraSer, a proposal to regionalize selective collection in order to increase the amount of recycled waste, generating economic and social benefits, promoting sustainable growth and decent work for all.

Among the articles read, some were not selected for this discussion, as they opened the door to other approaches that could be explored in the future. However, the study shows that waste management has the potential to create markets and establish guidelines based on the alignment of economic and social interests to promote the development of the base of the pyramid.

IV. Conclusion

Given the above, it is clear that solid waste management is not just an environmental issue, but also a business opportunity with a significant social impact. By integrating disadvantaged communities in the development of sustainable business models, companies not only promote social inclusion and income generation, but also stimulate innovation and create new markets. Collaboration between companies, governments, non-governmental organizations and local communities is essential for tackling social and environmental challenges, transforming these communities into active agents in solving problems. Through business models aimed at the

Base of the Pyramid (BoP), especially in waste management, it is possible to boost the circular economy, generate social value and promote inclusive development. Waste management therefore emerges as a tangible opportunity to create markets, boost entrepreneurship and improve the quality of life of disadvantaged communities.

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