ISSN 2669-2481 / eISSN 2669-249X

VILNIUS TECH
Vilnius Gediminas Technical University

BUSINESS, MANAGEMENT AND ECONOMICS ENGINEERING

2023
Volume 21
Issue 1
Pages 169–189

https://doi.org/10.3846/bmee.2023.18822

TOWARDS POVERTY ALLEVIATION FOR THE BASE OF PYRAMID: SOCIAL BUSINESS MODEL IN URBAN LOW-COST HOUSINGS

Mohammed Ali BERAWI [1], Perdana MIRAJ[2] ✉

[1]*Department of Civil Engineering, Universitas Indonesia, Depok 16424, Indonesia*
[2]*Department of Civil Engineering, Pancasila University, Srengseng Sawah, Jakarta 12640, Indonesia*

Article History:
- received 23 March 2023
- accepted 20 June 2023

Abstract. *Purpose* – this study investigates alternative a small-scale social business model that potentially generate sustainable income for households at the base of the pyramid. A comparison of two low-cost housings that have a different geographical condition and local characteristics is examined.

Research methodology – this research adopted two-stage approach to address the research objective. A pairwise comparison was employed to evaluate alternatives based on selected criteria for decision-making. In the second stage, the proposed business model was assessed by taking into account investment, processing cost, and revenue.

Findings – the findings of this research suggest suitable business model that combine profit orientation and facilitates social mission in urban settings. The business model offers attractive financial feasibility from the investor viewpoint and simultaneously engages low-income households to improve their prosperity level leaving the base of the pyramid (BOP) status.

Research limitations – this paper is not involving division of responsibility between stakeholders in low-cost housing and BOP sector. This study also not discussed how social entrepreneurs play a role in the social business model. There is a need to further investigate how the impact of social entrepreneurs on this model and engage collaboration with interest parties to engage community development.

Practical implications – the findings recommend strategies that can be used by policy-makers and other related stakeholders to scale-up the business model, empower more low-income households, and create new job opportunities for urban poor. The findings of this research also indicate social business model that enables households at the BOP to earn sustainable income and release their current poverty status.

Originality/Value – the research is one of the few studies that explored alternatives to social business models available for urban poor by taking into account project feasibility. No previous research has been attempted to consider both pairwise comparison and life cycle cost approach in the development of social business models. This research can be found useful for those with similar issues not only in emerging economies but also in developed countries.

Keywords: developing countries, feasibility, housing, poverty, social business model, sustainability.

JEL Classification: O18, O35, O53.

✉Corresponding author. E-mail: ***perdanamiraj@yahoo.com***

Introduction

Currently, more than half of the world population is living in cities (Thakur et al., 2022). In most urban areas, limited land supply along with a growing population causes an increased price of housing. Those who have low and unstable income – often called the base of the pyramid (BOP) cannot purchase proper settlement; therefore, the slum area is the only option they have for a living (Ouma et al., 2022). As mega-cities continuously emerged particularly

Copyright © 2023 The Author(s). Published by Vilnius Gediminas Technical University

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

in Asia that estimated to occupy more than 90% of urban development in the near future (UN-Habitat, 2016), there is a growing concern to fulfill adequate urban settlement for every citizen. In 2030, it is estimated that one-seventh of the people will be living in informal settlements or slum areas worldwide (Corburn & Sverdlik, 2017).

Indonesia as one of the developing countries in South East Asia experiences a growing slum area as housing for the poor. In 2014, there is approximately 38,431 ha of slum areas in 4,108 sites across the nation. The Indonesian government targeted to minimize the number of slum areas into less than one hundred sites in 2019 by introducing affordable housing nationwide (Ministry of Public Works and Housing, 2016). Although some of the housing allocated for regular occupants, most of the housing targeted low-income households as primary target. The government considers number of units and locations to evaluate the stages in national housing program. Major cities such as Jakarta and Surabaya are two targeted cities in the first stage of development due to their growing number of slums area and low-income households. Jakarta as the capital city of Indonesia have acute poverty issue where the population live in slum areas almost reach 50% (Jakarta Central Bureau of Statistics, 2022).

As vacant land in the city continues to be limited, the provincial government of Jakarta started to relocate low-income households from slums to an affordable house for a better living environment in the past few years. In the long term, this strategy expected to increase the ability of low-income households to find jobs, improve competitiveness, and earn a better quality of life (Majid, 2022). The local government charges a monthly fee for affordable housing that ranges between US$ 53.50 and US$ 100.33 depending on the size and location of the room. In some cases, low-income households may be required to pay less than US$ 8 per month for an 18-square-meter unit on the fifth level of the building in outer part of the city (Jakarta Provincial Government, 2018). This fees relatively cheaper than typical vertical houses across the city due to government support through a subsidy. In reality, there is a huge challenge regarding the sustainability of monthly charge. In the last five years, the local government experience a deficit of US$ 2,013,888.89 from the low compliance of occupants. The fact that most occupants had unstable earnings mostly below US$ 100/month and their expenditures include transport and/or daily expense almost occupy the overall income, thus it is not a surprise they cannot accommodate housing charges every month.

In the past decade, academics have been discussed social business as one of the solutions to cope with social problems and environmental issues, particularly in developing economies. Some studies discussed a combination of social businesses with local contexts such as tourism to alleviate poverty of local people (Dahles et al., 2020). While others evaluate the impact of technology adoption to provide the basic needs of the people in terms of safe drinking water to the urban poor (Sarkar, 2019). Some studies attempt to scale up current business process to engage more community into the project, in an attempt to boost economic activities and release low-income households from the current poverty level (Bocken et al., 2016; Palomares-Aguirre et al., 2018). In general, every social business model pursues sustainability and empowerment of community as the core functions to tackle poverty and other related social problems worldwide (Akter et al., 2020; Kuckertz et al., 2023).

In Indonesia, there are more than 340,000 social businesses in partnership with 2,000 both profit-based and non-profit organizations and targeting women, local people, and disability

(CNN, 2020). However, despite the increasing deployment and adoption across sectors and backgrounds, some business models struggle to reach financial break-even point while some others are not suitable for a certain type of household (Cheah et al., 2019). It is common that individuals from BOP background in developing countries such as Indonesia only knows the job they currently enrolled and little to pursue the path of entrepreneurship (Srimulyani & Hermanto, 2022). Thus, instead of finding new ways of opportunity in business, they often stay to their current activities although it might heavily cost them for transport or other daily expenditure when their settlements are relocated to other places far from the previous job location.

Existing research has examined the role and impact of social enterprises in addressing social problems and environmental issues, particularly in developing economies. However, there is a dearth of research on their application and viability in urban poor communities. Particularly unexplored is the potential of social business models in the context of urban housing affordability and sustainability for low-income households in expanding urban areas, such as Jakarta, Indonesia. It is necessary to conduct further studies in order to comprehend how social business models can be designed and implemented to effectively mitigate the housing affordability issues confronted by the urban poor. This includes evaluating the financial viability of such models, determining how they can be adapted to the unique socioeconomic dynamics of urban impoverished settlements, and determining how they might contribute to enhancing the residents' quality of life and financial stability.

In addition, there are no studies that examine how social business models can encourage and empower individuals at the base of the pyramid (BOP) in developing nations to engage in entrepreneurial activities. Given the prevalent challenges associated with relocation, such as limited employment opportunities and high transportation costs, studies that investigate innovative solutions in this direction could make a significant contribution to the literature and policymaking in this area. Based on the problems, and opportunity that has been discussed, this research formulate research question as follows.

"How can social business models be effectively designed and implemented to address the housing affordability challenges faced by the urban poor in rapidly growing urban areas?"

The research output expected to mitigate increasing debt from individuals in the base of the pyramid, to attract investment for business sustainability, and to provide input for government in developing policies and regulations related to housing, urban poor and community engagement.

1. Literature studies

In an attempt to fully understand how to develop social business for low-income households, this research firstly discussed literature of low-income households and the key concept of social business as follows.

1.1. Low-income households and poverty

Low-income households define as someone who unable to fulfill their basic needs as the result of limited assets, low access to public services, and a low level of exchange entitlement.

They often associated with the definition of the base of the pyramid (BOP) due to their similarity in purchasing power and income generation. Nowadays, it is estimated that over four billion people are living in this economic level worldwide. The people in this category have annual income per capita by 1,500–2,000 USD (Visser & Prahalad, 2013) or employ a threshold of 1 or 2 USD/day (Kolk et al., 2014). World Bank (2022) further emphasizes those living on less than $2.12 a day categorized as extremely poor. Despite income measurement, individuals categorized as low-income households also considered being a group of people who use all their activities and time to fulfill basic needs such as food, shelter, and clothing.

According to United Nations Development Programme (2018) report, several factors outside personal earnings leading someone to instate in the base of the pyramid such as health (child mortality, nutrition), education (years of schooling, enrollment), and living standards (water, sanitation, electricity, cooking fuel, floor, assets). Unlike those living in developed economies, people in developing countries particularly in Africa and parts of Asia such as South Asia and South East Asia countries unable to access primary education, making it difficult to find a proper job and earn income as an adult. This situation resulting these people mostly into two options, begging for aid or borrowing to – in some cases loan shark for food (Jaiyebo, 2003). Although some studies argued that most BOP living in rural areas due to their dependency on to agriculture sector rather than service or manufacturing (Ma et al., 2022), but those living in cities also vulnerable to poverty when they failed to seek opportunity in generating income for the family (Headey et al., 2022).

Many stakeholders have put their interest in alleviating low-income households for a better life by taking into account various strategies such as loans or other aid-based programs to empower the local community (Biglaiser & McGauvran, 2022). However, it is believed that large firm involvement plays pivotal points in solving problematic issue of poverty alleviation. Initially, they need to take responsibility in terms of social and environmental issues for running a business and later on evolved to become the featured program of the company in dealing with the poverty issue. Therefore social mission in emerging markets dominated by BOP consumers argued as an inspiration for expanding companies' existence while at the same time contribute to one of the world's acute problems (Seelos & Mair, 2005).

Various stakeholders such as government agencies, international donors and non-governmental organizations (NGOs) need to switch their traditional approach in helping low-income households from aid-based programs to participatory-based approach by considering BOP as the agent of change in combating poverty (Visser & Prahalad, 2013). Since then, the discussion of poverty alleviation has been evolved from BOP as consumers and recipients of the existing product (Geradts et al., 2022) to the engagement of BOP not only as a business partner but deepen to product invention, management, and delivery process (Dembek et al., 2020).

Many initiatives that focus on different sectors emerged in various countries to utilize resources from low-income households and release them from the poverty trap (Seelos & Mair, 2005). Despite various attempts to engage social and environmental purposes into a profitable business, there is little evidence that this type of hybrid organization delivers its original promise in alleviating poverty. One business model from a particular country may not suitable for adoption and requires some adjustment or a different approach that has to established to reach successful social business initiatives. Therefore, both organizations

and participants must understand the context of living conditions, cultural habits, economic variations, product needs, and market orientation, in order to increase BOP participation and create a sustainable business model (Semprebon et al., 2020; Yunus et al., 2010).

1.2. Social business for BOP

The interest to develop business model has emerged since the 1990s and to date have been evolved into multiple concepts and adopted in economic, manufacturing, social, cultural, or other contexts. A business model denotes the rationale on how an organization creates optimum strategies to deliver products that meeting customers' requirements (Palomares-Aguirre et al., 2018). A business model often involves customer value, profitable activities and efficient resources to capture values for the targeted market (Zott et al., 2011). Initially, most firms tend to conceal their business model to prevent competition and maintain their supreme existence in the longer-term (Teece, 2010). Nowadays, many businesses have been collaborated with other organizations to pursue similar objectives (Foss & Saebi, 2017; Sabatier et al., 2017).

Unlike traditional business model that pursue three predominant elements (value proposition, value constellation, positive profit equation) as the core function of the organization, social business models induced social profit as an additional component to capture both economic and social value (Spieth et al., 2019; Yunus et al., 2010). Yunus et al. (2010) argued that the social business model aims both profit and non-profit objectives simultaneously by involving all related stakeholders in the business process. It is argued that business has to earn adequate revenues to cover its operation costs, but profits generated from running the organization are reinvested to the business instead of to the investor. However, this concept may not apply in practice in different settings, thus several adjustments are required when considering this type of social business model in other case studies (Madanaguli et al., 2023). Seelos and Mair (2007) emphasize that investment from the business should be justified from sufficient financial returns and social implications.

In the past years, literature has been discussed components that should be included for creating a social business model. Some of these components are mainly adopted from traditional business aims to capture customer value proposition. For instance, Hedman and Kalling (2003) argued that the business model should involve customers, competitors, the offering, activities and organization, resources, and factor market interactions. Rasmussen (2007) emphasizes six components to deliver business model including (1) value proposition, (2) market segment and revenue model, (3) value chain, (4) cost structure and profit potential, (5) value network, and (6) competitive strategy. On the other hand, Osterwalder and Pigneur (2010) proposes several components such as customer segments, value propositions, channels, customer relations, revenue streams, key resources, key activities, key partnerships, cost structure. While, Michelini and Fiorentino (2012) suggests five building blocks for social business including value proposition, governance model, partner network, market segment, and revenue management. Furthermore, there are four macro-level conditions, consist of governance, socially inclusive economic approach, financial services, and entrepreneurial culture that should be considered when dealing with business and social issues (Laylo, 2018).

Table 1. Research variables for the case study

Research Variables	Description
Market growth	Projected industry growth in the future
Human resources	Number of low-income households involved based on their level of productivity
Revenue	Nett income gained by the low-income households participant
Market Entry	Level of penetration for new business by taking into account Porter five forces indicator

This research takes into account the theoretical framework suggested by Yunus et al. (2010) and Michelini and Fiorentino (2012) to achieve the research objective and recommends a suitable business model for the case study. This research assessed potential industry in terms of business sustainability, therefore the prospect of the business should carefully addressed by taking into account historical data, future projection, or other related considerations. On the other hand, human resources related to the number of low-income households in performing industrial activities to generate revenue. If the industry attracts a high number of participants from low-income households, this social business model potentially expanded to contribute to alleviating poverty at the national level. Moreover, a business model cannot be separate from revenue that enables organization to operate business in the longer term. Therefore, it is crucial to select the type of social business model that offers optimum revenue for business sustainability. Last, market-entry relates to the chance of a product successfully penetrate the market and generate income for the organization and the low-income households as the participants. The summary of research variables shown in Table 1.

2. Research methodology

This research employs two stages to achieve research objectives. Firstly, this study adopts pairwise comparison to evaluate alternatives for decision-making. In this second stage, the proposed business model evaluated by taking into account project life cycle (LCC) including initial cost, operation and maintenance cost, and revenue (Miraj et al., 2021).

2.1. Pairwise comparison

The method of pairwise comparison has been extensively developed as a means of prioritizing criteria. This approach involves requesting stakeholders to compare two criteria at a time, thereby promoting a comprehensive evaluation of all elements within the criteria set (Pinzon Amorocho & Hartmann, 2022). This study incorporated the expert panels committed to affordable housing, including those from the Ministry of Cooperatives and SMEs, private, Ministry of Public Works, and Jakarta Provincial Agency (see Table 2 for the background of experts). The research was primarily focused on Indonesian participants. This selective approach assured a level of consistency in the collected data by avoiding cultural differences between international and local participants that could have led to discrepancies. By concentrating solely on Indonesian respondents, the research could provide a more homogeneous and culturally specific understanding of the issues at hand in relation to affordable housing in Jakarta.

Table 2. Background of experts

Identifier	Current role	Institution	Experiences	Area of expertise	Expert Panel dates
Exp 1	Head of general affairs	Ministry of Cooperatives and SMEs	24 years	Planning and policy development in SME	11/05/2022
Exp 2	Comissioner	Private company	10 years	Industry expertise	
Exp 3	Head of settlement section	Jakarta provincial agency	15 years	Policy expertise	
Exp 4	Head of Housing Management System and Strategy	Ministry of public works	18 years	Planning and policy in financing low-cost housing	

Initially, a matrix comprising all relevant factors was constructed. Following the instructions provided in Table 3, the experts determined the relative significance of each of the pairings.

Table 3. Guidelines for scoring

Score	Guiding Criteria
0	When the factor in the left-sided column produce equal benefit than the right one.
1	When the factor in the left-sided column produce slight benefit than the right one.
2	When the factor in the left-sided column produce more benefit than the right one.
3	When the factor in the left-sided column produce significant benefit than the right one.

A decision matrix is a table to determine the best alternative among others based on the weighted score. After finishing the matrix, the geometric mean of each criterion's scores was computed (by locating the nth root of the product of all scores, where n is the total number of criteria within the matrix). The cumulative sum of all these geometric means was then calculated. Each criterion's weight was determined by dividing its geometric mean by the total sum of all geometric means (Li et al., 2020; Zardari et al., 2015). The calculation of variables in decision matrix can be seen in Table 4.

Table 4. Pairwise comparison matrix of research variables

Variable	A	B	C	D	Product	Product ^0.5	Sum of (Product ^0.5)	Weighting
A	–	3	1/3	½	3.833	1.958	7.464	26.23%
B	1/3	–	2	2	4.333	2.081	7.464	27.88%
C	1/3	1/2	–	1/3	1.167	1.080	7.464	14.47%
D	2	1/2	3	–	5.500	2.345	7.464	31.42%

Notes: A – Market growth; B – Revenue; C – Human resources; D – Market entry.

Each housing has three alternatives of potential social business model that will be treated as similar calculation above. Shrimp industry, catfish fillet processing, and knitting are three social business model for Marunda housing. While brown rice processing, educational toys,

and handicraft are three social business model for CBS housing. In order to determine the best alternatives, following formula was used.

Total Weight of Each alternative = (w1 * p1) + (w2 * p2) + (w3 * p3) + (w4 * p4).

Weights:

w1 – Global weight of market growth;

w2 – Global weight of revenue;

w3 – Global weight of human resources;

w4 – Global weight of market entry.

Weight of alternative:

p1 – Local weight of market growth;

p2 – Local weight of revenue;

p3 – Local weight of human resources;

p4 – Local weight of market entry.

The highest score selected as the best alternative and further analyzed using life-cycle cost analysis to determine its feasibility and its impact on low-income households.

2.2. Life cycle cost

While there are numerous resources available LCC, there is no definitive conclusion regarding the most appropriate LCC model to adopt, as it is primarily dependent on the specific objectives, sectors, and scope that researchers and practitioners wish to achieve (Durairaj et al., 2002). The relevant categories of costs for this study are detailed in Table 5. The following sections will provide in-depth discussions of all LCC components and other crucial factors, such as inflation rate, that contribute to determining the total LCC.

Table 5. Cost categories of life cycle cost

Initial cost	Operation and Maintenance costs	Renewal costs
IC 1 Land acquisition	OC1 Electricity, Water, Advertisement	R1 Equipment replacement
IC 2 Production building	OC2 Building maintenance	
IC3 Warehouse	OC3 Low-income housing Fees	
IC4 Car	OC4 Management	
IC5 Production materials	OC5 Materials and others	

The rate of return generated from the business model needs to meet The Weighted Average Cost of Capital (WACC) from companies that interested to participate in funding the project. WACC is an indispensable tool for evaluating the performance of investments, performing both direct and indirect roles. In essence, it affects the required rate of return on capital over a specific period of time for stakeholders and lenders (Koziol, 2014; Mian & Vélez-Pareja, 2008). From the perspective of the company, WACC is a valuable component of valuation, as it indicates the rate of return for evaluating prospective business projects. Consequently, the WACC plays a significant role in the discount rate utilised by the Discounted Cash Flow (DCF) method and other valuation models (Franc-Dabrowska et al., 2021). Literature showed that WACC from multiple companies in Indonesia are about 13% (Finbox.com, 2023).

2.2.1. Initial cost

The initial costs consist of five components, which have been determined based on inputs from similar studies conducted frequently in Indonesia and in-depth interviews with relevant stakeholders. These components include land acquisition, the construction of a production facility, a warehouse, a vehicle, and the acquisition of production equipment. The following formula is used to calculate the total investment cost for the completion year(s):

$$IC_v = \sum_{k=1}^{5} IC_k, \tag{1}$$

where IC_k represents investment cost (US$) of components k that follows categorization in Table 5.

2.2.2. Operation and maintenance cost

This study examines five components of operation and maintenance, including electricity and water, building maintenance, fees for low-income housing, and management, among others. This business model takes into consideration the rent paid by tenants who are also employees. The purpose of this arrangement is to ensure that the profits generated by the business model result in affordable housing and the occupants' ability to pay. The total cost of operation and maintenance is the sum of these component costs, as detailed in Table 5.

$$OM_T = \sum_{y=1}^{5} OM_y, \tag{2}$$

where OM_T is the total operation and maintenance cost, while OMy is the maintenance cost. Both are incurred every year during the particular life span that considers the inflation rate of and computed as follows:

$$OM_y = OM_z \frac{(1+s)^n - 1}{s(1+s)^n}, \tag{3}$$

where: OM_z – The fixed cost of specific components z in the operation or maintenance (US$); s – sectoral inflation rate (%); n – project life span (years).

2.2.3. Renewal cost

Renewal (R) costs consist of different materials and components that need to be replaced during their service life. Each component for renewals shall be evaluated, taking into account the essential cost, number of occurrences, life expectancy, and adjusted using present-value to display its present cost. This calculation expressed by the following formula:

$$RC_x = \sum_{i=1}^{t} RC_i \frac{1}{(1+s)^f}, \tag{4}$$

where: RC_i – each component requiring replacement; t – number of occurrences; s – general inflation rate (%); f – the event of renewals (years).

2.2.4. Inflation rate

Inflation is a fluctuating process (either an increase or decrease) of prices linked to a market system. Consumption levels, market liquidity, or even the logistics distribution system can

have an impact on this variation (Barro, 2013; Guinée et al., 2011). Annual reports released by reputable international organisations or national statistics bodies often contain inflation figures. The Indonesian Statistics Agency is in charge of disseminating this information in Indonesia, and their online database makes it simple to do so. The Consumer Price Index (CPI), which reflects the fluctuating costs of goods and services, is used to measure inflation. The average inflation rate for Indonesia is 5.53% (Miraj et al., 2021).

2.3. The case studies

In this study, two examples of low-cost housing in Jakarta, Indonesia's capital city, were chosen as case studies to investigate suitable social business models. Despite its role as one of Southeast Asia's fastest growing urban centers and its important contribution to the nation's economic activity, Jakarta has severe social equity discrepancies, particularly in terms of population welfare. According to data from the Jakarta Bureau Statistics Agency (2022) as shown in Figure 1, the number of low-income households in the city has increased during the last decade. From 2012 to 2019, the number of low-income households stayed largely below 400,000, with a record high of 412,790 households in 2014. However, in the previous three years, this figure has skyrocketed, reaching 502,040 families. While this figure looks to be small (4%) in comparison to Jakarta's total population of 9.6 million, it is critical to realize that these marginalized citizens have an intrinsic right to appropriate urban living. As a result, the case studies chosen in Jakarta provide a suitable foundation for providing a benchmark model that might potentially be used in comparable urban environments.

The provincial government of Jakarta attempt to accommodate housing for low-income households by launched low-cost housing in 13 locations. However, the primary survey shows that the ability to pay from these low-income households is US$ 16.41 which far below from monthly rental fees charged by the government. In order to better understand the impact of

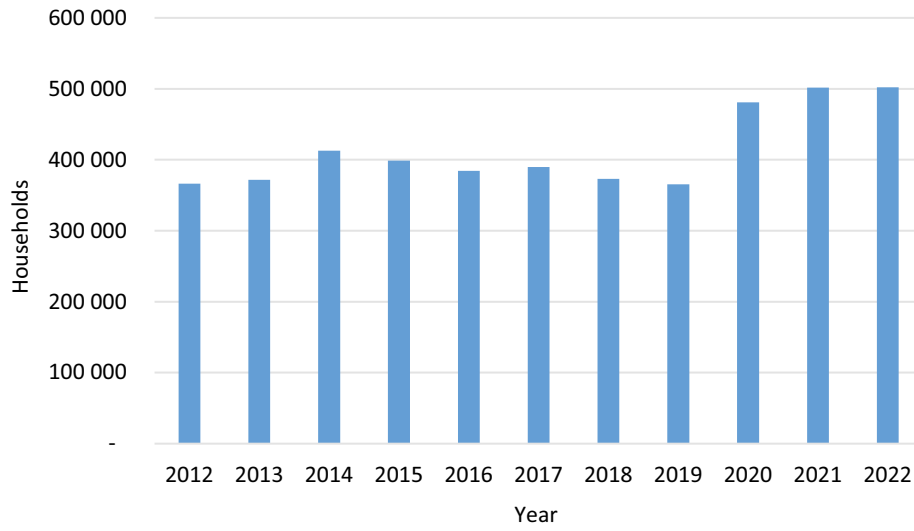

Figure 1. Number of low income households in Jakarta

the proposed social business on low-income households earnings and poverty reduction, this research considers two low-cost housing based on geographical condition and local characteristics namely Marunda Housing and Cipinang Besar Selatan (CBS) Housing. The earlier located in the coastal area with the fishery sector as a primary job. While the latter located in suburban areas with trading as a primary job.

2.3.1. Marunda housing

Marunda housing located in Cilincing, North Jakarta has nine blocks and each block has six stories. The type of unit is similar for every block but the number of units varied due to the different gross floor area. The units are consist of two bedrooms, a bathroom, a living room with a kitchen, and a sunroom. The local government also provide clinics, early childhood institution, green space, and transportation network around the housing complex. In total, this housing has 2,580 units and inhabited by approximately 8,700 persons.

The housing which firstly operated in 2009 is owned and managed by the housing department of Jakarta province to accommodate low-income households to have proper residential for the living. Based on the Governor Regulation No. 55 in 2018 concerning the housing service levy rates, the user will be charged US$ 13.36 to US$ 15.56 per month for selected occupants (those who relocated from slum area) and US$ 27.70 to US$ 32.23 for regular occupants. Although rental charges for the housing kept minimum, the Jakarta Provincial government experience debts for US$ 705,000 from 560 units. Most of the residents of the Marunda Housing are refugees from the Penjaringan Sub-District – an area in the northern part of Jakarta most frequently affected by flooding. In addition, the Kalijodo Region (area of illegal prostitution activities) refugees also relocated to the housing. Based on the primary survey to the site, most of them unable to pay monthly rent due to limited earnings or if they were able to, unwillingly to pay because the management missed to charge them.

This housing is located near the coastal area and potentially generate revenue related to salt-water resources. The location also included in national spatial planning as a special economic zone, which targeted to contributes to local economic roughly 7% annually from tourism, trade, creative industries, services, and finance as well as high technology and non-pollutant industries. Near the location, there are two logistic centers namely Marunda Center and Marunda Terminal. Both expected to be an international-scale industrial and warehousing area that serves maritime, cargo, mining, and vehicle crossing activities.

2.3.2. Cipinang Besar Selatan (CBS) housing

CBS Housing located in Cipinang, East Jakarta area, and has two blocks, and each block has six stories, similar to the previous housing in Marunda. In 2008, this housing had 200 units, but the number grows into 300 units in 2017 due to expansion from the provincial government, the housing currently inhabited by approximately 1,500 persons.

Public facilities provided by the provincial government exist in this housing consist of a playground, soccer field, WIFI area, and transportation network. Similar to Marunda housing, the provincial government experience outstanding payment for US$ 59,343.76 from 163 units. In contrast with occupants located in Marunda housing which more diverse in terms of background and job occupation, this housing mostly occupied by those from the slums area in

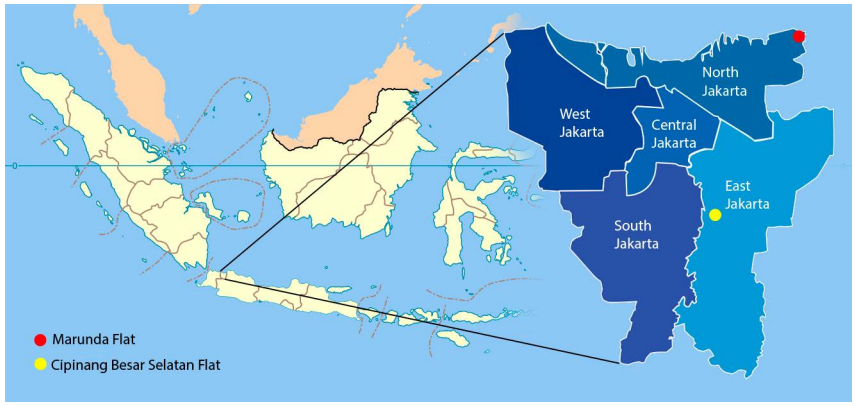

Figure 2. Location of Marunda housing and CBS housing (source: Wikimedia Commons, 2007 with author adjustment)

Ciliwung River, Pluit reservoir, and East Canal of Jakarta. They are also incapable to accommodate monthly rental fees mainly because of high transportation costs from their residence to the workplace. East Jakarta as the area of this housing has potential economic generation such as the central rice market located fifteen kilometers from the site, tourism area such as Taman Mini Indonesia Indah, Cipinang River, as well as Gombrong Central Toys Market. The site of both housings can be seen in Figure 2.

3. Results and analysis

3.1. Potential business in the case studies

Marunda housing has huge potential in fishery business due to its premium to the coastal area. This is supported by a report from the Indonesian government that fishery production plays a significant role in people's daily consumption accounted for more than 20 million tons (Indonesian Ministry of Marine Affairs and Fisheries, 2018) The report also shows that other industries related to the fishery sector experiencing an exponential increase such as the processing industry and tourism since 2014.

However, there is a limited option to use the fishery sector as a social business model for urban poor in low-cost housing. The production should consider a small and medium scale of business to maintain a simple structure of the organization and limit the investment as low as possible. Two potential industries in the fishery sector can be adopted due to its flexibility in terms of the scale of production and the increasing demand in the last ten years namely shrimp and fish processing.

On the other hand, this research considers the crafting industry as potential commodities that can be used for low-income households' main jobs. This creative industry contributes more than US$ 50 million per month across Indonesia. The demand particularly crafts knitting from Indonesia also increases in the US and Europe which therefore shows great prospects to generate revenue and to increase economic activities.

In contrast with Marunda housing located in the northern part of the cities, CBS housing located in the suburban area has potential in manufacturing and toy processing. There is two trading market that can be used the main source to generate revenue near the location namely Gombrong Toys Market. Furthermore, low-income households will be trained to decorate and to form the craft for selling purpose, and earnings in return from their result. The local government and related ministries such as Indonesia Creativity Board and Ministry of Small and Micro Enterprise invited to conduct workshops or entrepreneur training to the participants of the industry.

This research also proposed the brown rice processing industry as an alternative industry for the CBS housing. There is Cipinang Rice Market nearby the housing which potential for collaboration and trading activities. Besides, people living in cities started to consider their intake to gain a healthy life. Brown rice is one of the option to provide healthy food while at the same time, gain fiber, vitamins, and minerals. The content of fiber in brown rice will help in reducing cholesterol levels and make someone full longer rather than regular rice. CBS housing also needs to capture the opportunity of this industry due to its close distance to the rice market.

3.2. Pairwise comparison analysis

There are four indicators in the table: market growth, revenue, human resources, and market entry. The weight assigned to each indicator reflects its significance or contribution to the overall evaluation. The table displays the percentages of market growth, revenue, human resources, and market entry for each housing alternative option which is based on pairwise comparison matrix of research variables (see Table 4). To determine the total weight of an option, multiply the percentage of each indicator by its assigned weight and add the resulting values. For instance, the market growth of shrimp industry in Marunda Housing was calculated by multiply 34.51% with the global weight of market growth of 26.33%. After performing the calculations for each indicator, ones obtain a weighted score for each option. These scores are represented in the table's total weight column, which indicates the aggregate performance of each alternative across all indicators. The alternative with the highest total weight is deemed the most desirable option, whereas a smaller total weight indicates a less desirable option.

Among the three alternatives, the processing of catfish fillets is the most profitable business model for Marunda housing. This is due to its ability to effectively employ a large number of urban impoverished individuals, its market growth potential, its ability to generate stable revenue, and its relatively low to moderate market entry barriers. On the other hand, the decision matrix analysis indicates that two alternatives are appropriate for CBS housing business models: the processing of brown rice and the production of educational toys. However, educational toys are the preferred business model for CBS housing due to their market growth potential, reasonable revenue, and involvement of low-income households' human capital. The detail of the decision matrix score for both case studies is shown in Table 6.

Table 6. The result from decision matrix on both case studies

	Market growth	Revenue	Human Resources	Market Entry	Total Weight	Rank
Global Weight	26.23%	27.88%	14.47%	31.42%		
Alternative recommendation for Marunda Housing						
Shrimp Industry	34.51%	19.30%	19.30%	19.30%	23.29%	3
Catfish Fillet Processing	43.66%	47.28%	47.28%	33.42%	41.98%	1
Knitting Industry	21.83%	33.42%	33.42%	47.28%	34.73%	2
Alternative recommendation for Cipinang Besar Selatan Housing						
Brown Rice Processing	16.58%	36.87%	33.42%	47.28%	34.32%	2
Educational Toys	45.42%	46.64%	47.28%	19.30%	37.82%	1
Handicraft	38.00%	16.49%	19.30%	33.43%	27.86%	3

3.3. Life cycle cost analysis

The topmost social business model from Table 6 was utilized to conduct further feasibility calculations. Both housing projects were evaluated by a life cycle cost analysis that considered four primary factors: initial cost, operation and maintenance cost, renewals, and revenue. Each aspect is composed of multiple sub-aspects. For instance, the initial cost includes the production building, the warehouse, the production materials, and the value-added tax, whereas operation and maintenance costs include electricity, water, and advertising, building maintenance, low-income housing fees, and management, among other components. The study implies that all tools and equipment have no residual value, meaning they are not sold at the end of their five-year lifespan and are replaced with new equipment in the sixth year. In addition, a Bank of Indonesia annual interest rate of 6.5% is considered throughout the life cycle cost analysis. The comparison of LCC between Marunda and CBS housings can be seen in Table 7.

Table 7. Comparison of LCC between each housing

Components	Marunda Housing	CBS Housing
Initial		
Production building	724,137.93	241,379.31
Warehouse	482,758.62	24,137.93
Production materials	86,944.14	8,105.34
Value added tax	129,384.07	27,362.26
Sub total	1,423,224.76	300,984.84
Operation and maintenance/month		
Electricity, Water, Advertisement	334.48	275.86
Building maintenance	1,126.79	448.28
Low-income housing Fees	11,586.21	3,372.41
Management	115,862.07	10,344.83
Materials and others	263,540.69	23,165.28
Sub total	265,001.97	23,889.42
Renewals/6 years	86,909.66	8,105.34
Revenue	286,896.55	27,793.10

The number of households unable to pay their monthly rent differs between the two housing sites, with 560 households in Marunda and 162 households in CBS. Initially, it was anticipated that these households would join a social business model as employees. In the future, however, revisions may be made to better suit their purposes or satisfy technical requirements. In contrast to the small-scale business model of CBS housing, Marunda's business model is characterized as large-scale due to the large number of employees, necessitating a complex organizational structure. Distribution, administration, fish-cutting, fish-cleaning, and fish-packaging are responsibilities within the supply chain of the industry that can be considered to develop the business further.

Table 8. Financial analysis between both housings

Housing	IRR	NPV	Payback period	WACC
Marunda Housing	16.82%	Positive	6 Years	13%
CBS Housing	16.78%	Positive	6 Years	

IRR can be used to gauge the profitability of prospective investments. Typically, an investment is deemed profitable if its IRR exceeds the required return. Both Marunda Housing and CBS Housing have comparable IRRs of 16.82% and 16.78%, respectively. The results indicate a return rate of at least 15%, which is higher than the average WACC (Weighted Average Cost of Capital) in Indonesia (Finbox.com, 2023). This indicates that their expected rates of return are comparable. NPV is utilized in capital budgeting to evaluate the profitability of an investment or endeavor. A positive NPV indicates that projected earnings (in present currency) are anticipated to exceed projected expenses. Both Marunda Housing and CBS Housing possess a positive NPV, indicating that they are profitable businesses. In addition, the payback period is the time required for an investment to generate an amount of income or currency equal to its cost. It is a straightforward method for assessing the risk associated with an investment. The shorter the payback period, the less risky the investment is considered. Both Marunda Housing and CBS Housing have a return period of 6 years, indicating that the initial investment is expected to be recovered quickly. Table 8 depicts the expected financial analysis of both housings.

3.4. Discussions

This research uses a framework from Yunus et al. (2010) to discuss the social business model in both case studies and identifies lessons learned for other research development. In term of value proposition, the traditional business model put customers as the center of attention, and firms will take any effort to win customers interest over their competitors. In contrast, the social business model valued not only products but also the stakeholders' involvement. In the case studies, the value proposition is low-income households have sustainable income to cover their daily expense, and in the longer-term may lift their poverty level. This business model also benefitting other stakeholders such as local government, raw materials suppliers, and resellers. The local government can no longer concerned regarding outstanding fees or allocate financing schemes through the aid-based program, grants, and public-private

partnerships for low-income households. Instead, they can put their effort into other aspects regarding housing and the quality of life of the citizen.

In terms of value constellation, internal and external stakeholders involved in the business value chain should be identified. In this study, there are several stakeholders in value constellation. The fishermen are the origin of raw material sources of the catfish processing industry. In the case of the toy-processing industry, there are various sources of raw materials depends on the type of toys. The raw materials then processed by the social business organization before distributed to resellers, street vendors, or other types of customers/owners. Investors may support this social business model to the social business organization either from private, or government. International donors or NGOs may be involved in this model as part of the aid-based program to alleviate the poverty of low-income households.

The coordination of this business value chain can be understood in two ways. The organization can be made in a simple way when the government, international donors, and NGOs were not involved and dealing only with a social entrepreneur or other small-medium scale individuals as an investor. As a result, the business may not experience a progressive development but offers easier coordination and power-sharing among actors in internal organization. On the contrary, an organization requires more complex coordination when previously excluded parties are involved. It because each of them have their interest and agenda which may affect the main goals of the organization. However, this coordination and collaboration offer a higher chance for business expansion and progressive development in terms of leadership, commercialization, and management competencies.

This research suggested the engagement of low-income households to participate in the social business model as part of social profit equation. In Marunda housing, a large business model offers an opportunity for 560 low-income households to increase their income level and leaving extreme poverty behind. On the other hand, small-medium business in CBS housing offers low-income households to have sustainable income to cover their daily expenses. There are other low-cost housings where the people unable to have adequate earnings not only in the capital city but throughout Indonesia. There is a bigger chance to reduce the number of poverty by engaging more low-income households and encourage them to improve their quality of life from the slums environment when suitable social business models for each low-cost housing can be identified.

Yunus et al. (2010) denotes an economic profit equation related to sales revenue, cost structure, and capital recovery. This research suggests an expected level of financial feasibility from a business perspective where both of the proposed industries provide a significant rate of return larger than 15%. However, some main challenges should be taken into account when a business model attempt to take the transitional stage for scaled-up business namely the right business partner and share value capture among stakeholders (Sabatier et al., 2017).

From methodological point of view, pairwise comparison and life cycle cost analysis (LCCA) are two different methods used for decision-making and evaluating the economic performance of options. Combining these two techniques can offer a more comprehensive evaluation both qualitatively and quantitatively where pairwise comparison allows for a simplified, systematic comparison of multiple alternatives based on specific criteria. On the other hand, LCCA provides a detailed cost analysis over the entire lifespan of a project. On

the other hand, there are some drawback in using these approach. Pairwise comparison is largely subjective and can be influenced by the biases of those making the comparisons. When combined with LCCA, there is a risk of these biases affecting the overall outcome of the decision-making process. Furthermore, LCCA requires detailed cost data over the entire life of a project, which can be difficult to accurately estimate or may not even be available for all alternatives. This could limit the effectiveness of combining these methods.

Conclusions

The paper presents findings from potential social business models in two case studies in Jakarta to deal with the sustainability income of low-income households. The result showed that combining pairwise comparison and life cycle cost enable related stakeholders to understanding potential social business model that offers sustainable income for the base of the pyramid. The financial analysis from both housing showed high IRR, positive NPV, and short payback period. The findings also suggest some indicators that should be taken into account when initiating the social business model on a certain location. These indicators play a significant role in determining which alternative business model that is suitable for the targeted population. The failure to unfold these indicators may be resulting in ineffective program development and missed the opportunity to engage low-income households from the poverty trap. Subsequently, it is also crucial to understand the market, typical low-income households, and market barriers to deliver a successful social business model particularly in developing economies.

This research provided a conceptual framework that may enable a balanced from economic profit and social equations. This equilibrium can be achieved by proposing an optimum revenue from a traditional business perspective but involving a high number of low-income households. By this social business model, those who failed to accommodate daily expenditure may have sustainable income leading to a better chance of living in the city. These strategies may also be adopted in other low-cost housings across countries and contribute to alleviating poverty levels of those in the base of the pyramid on a larger scale.

Subsequently, this conceptual model requires support not only by the government but also by various parties in the social business value chain to reduce poverty across the country and to generate a regular payment from those living in low-cost housing. For instance, in the context of Indonesia, some industries still dominated by small-scale companies and yet to reach a larger scale due to various reasons. In this situation, the government may have a partnership with the local government to assist small-scale companies to scale up their business through training, monitoring, and funding. The government may also be involved regarding the suitability of the social business model based on cash flow and other quantitative or qualitative indicators. The management who runs this business model may use the aid-based program to collaborate or involved investors for operation or management. This strategy aims to make sure the business handled in professional ways and the low-income households gained benefits to improve their welfare and quality of life.

This research can contribute to the development of efficient, scalable, and replicable social business models for enhancing the well-being of low-income households in a variety of

contexts. Replication and expansion of the findings are possible when the context, indicators, and research framework are considered. Various socioeconomic and cultural contexts can facilitate the generalizability of results. While unique characteristics, market conditions, and potential barriers encountered by low-income households in the target locations can provide additional insight into this topic.

This paper has some limitations that should be addressed in future research development. For instance, this paper only focussed on social business feasibility through life cycle cost analysis. Further research suggested involving division of responsibility among parties including the government, international donors, and the private sector for market penetration and access to financing. Tax exemption and subsidy also can be adapted to increase the economic viability of social business models.

Furthermore, this study also not discussed how social entrepreneurs play a role in the social business model. Social entrepreneur is one of key success factor to delivering the project successfully as they have a good sense in scouting and recruiting employees and have leadership in motivating, training volunteers in BOP realm. Future research suggested investigating the impact of social entrepreneurs in scaling up a social business model and how they mitigate challenges created from a dual-mission business. Policymakers suggested facilitating cost-sharing and revenue sharing among parties to expand the social business model on a larger scale. Regular supervision and penalty mechanism should be developed to prevent violation of the law such as corruption and bribery and in longer-term maintain business sustainability.

References

Akter, S., Jamal, N., Ashraf, M. M., McCarthy, G., & Varsha, P. (2020). The rise of the social business in emerging economies: A new paradigm of development. *Journal of Social Entrepreneurship*, *11*(3), 282–299. https://doi.org/10.1080/19420676.2019.1640772

Barro, R. J. (2013). Inflation and economic growth. *Annals of Economics and Finance*, *14*(1), 121–144. https://doi.org/10.1086/259360

Biglaiser, G., & McGauvran, R. J. (2022). The effects of IMF loan conditions on poverty in the developing world. *Journal of International Relations and Development*, *25*(3), 806–833. https://doi.org/10.1057/s41268-022-00263-1

Bocken, N. M. P., Fil, A., & Prabhu, J. (2016). Scaling up social businesses in developing markets. *Journal of Cleaner Production*, *139*, 295–308. https://doi.org/10.1016/j.jclepro.2016.08.045

Cheah, J., Amran, A., & Yahya, S. (2019). Internal oriented resources and social enterprises' performance: How can social enterprises help themselves before helping others? *Journal of Cleaner Production*, *211*, 607–619. https://doi.org/10.1016/j.jclepro.2018.11.203

CNN. (2020). *Survei: Kewirausahaan Sosial Bisa Bangun Ekonomi Kreatif*. https://www.cnnindonesia.com/ekonomi/20181217184258-532-354362/survei-kewirausahaan-sosial-bisa-bangun-ekonomi-kreatif

Corburn, J., & Sverdlik, A. (2017). Slum upgrading and health equity. *International Journal of Environmental Research and Public Health*, *14*(4), 342. https://doi.org/10.3390/ijerph14040342

Dahles, H., Khieng, S., Verver, M., & Manders, I. (2020). Social entrepreneurship and tourism in Cambodia: Advancing community engagement. *Journal of Sustainable Tourism*, *28*(6), 816–833. https://doi.org/10.1080/09669582.2019.1706544

Dembek, K., Sivasubramaniam, N., & Chmielewski, D. A. (2020). A systematic review of the bottom/base of the pyramid literature: Cumulative evidence and future directions. *Journal of Business Ethics*, 165, 365–382. https://doi.org/10.1007/s10551-019-04105-y

Durairaj, S. K., Ong, S. K., Nee, A. Y. C., & Tan, R. B. H. (2002). Evaluation of life cycle cost analysis methodologies. *Corporate Environmental Strategy*, *9*(1), 30–39. https://doi.org/10.1016/S1066-7938(01)00141-5

Finbox.com. (2023). *WACC For Multiple Companies in Indonesia*. https://finbox.com/DB:3GZA/explorer/wacc/

Foss, N. J., & Saebi, T. (2017). Fifteen years of research on business model innovation: How far have we come, and where should we go? *Journal of Management*, *43*(1). https://doi.org/10.1177/0149206316675927

Franc-Dabrowska, J., Madra-Sawicka, M., & Milewska, A. (2021). Energy sector risk and cost of capital assessment – Companies and investors perspective. *Energies*, *14*(6), 1613. https://doi.org/10.3390/en14061613

Geradts, T., Jansen, J., & Cornelissen, J. (2022). Let's profitably fight poverty, shall we? How managers use emotional framing to develop base of the pyramid ventures inside a large fast-moving consumer goods company. *Organization & Environment*, *4*, 579–606. https://doi.org/10.1177/10860266221095253

Guinée, J. B., Heijungs, R., Huppes, G., Zamagni, A., Masoni, P., Buonamici, R., Ekvall, T., & Rydberg, T. (2011). Life cycle assessment: Past, present, and future. *Environmental Science and Technology*, *45*(1), 90–96. https://doi.org/10.1021/es101316v

Headey, D., Goudet, S., Lambrecht, I., Maffioli, E. M., Oo, T. Z., & Russell, T. (2022). Poverty and food insecurity during COVID-19: Phone-survey evidence from rural and urban Myanmar in 2020. *Global Food Security*, *33*, 100626. https://doi.org/10.1016/j.gfs.2022.100626

Hedman, J., & Kalling, T. (2003). The business model concept: Theoretical underpinnings and empirical illustrations. *European Journal of Information Systems*, *12*(1), 49–59. https://doi.org/10.1057/palgrave.ejis.3000446

Indonesian Ministry of Marine Affairs and Fisheries. (2018). *Marines and fisheries in number* (in Indonesian). https://kkp.go.id/setjen/satudata/artikel/9669-kelautan-dan-perikanan-dalam-angka-2018-telah-terbit

Jaiyebo, O. (2003). Women and household sustenance: Changing livelihoods and survival strategies in the peri-urban areas of Ibadan. *Environment and Urbanization*, *15*(1), 111–120. https://doi.org/10.1177/095624780301500113

Jakarta Central Bureau of Statistics. (2022). *Poverty level in DKI Jakarta*. https://jakarta.bps.go.id/

Jakarta Provincial Government. (2018). *Housing service retribution rates* (in Indonesian). https://peraturan.bpk.go.id/Home/Details/88325/pergub-prov-dki-jakarta-no-55-tahun-2018

Kolk, A., Rivera-Santos, M., & Rufín, C. (2014). Reviewing a decade of research on the "Base/Bottom of the Pyramid" (BOP) concept. *Business & Society*, *53*(3), 338–377. https://doi.org/10.1177/0007650312474928

Koziol, C. (2014). A simple correction of the WACC discount rate for default risk and bankruptcy costs. *Review of Quantitative Finance and Accounting*, *42*(4), 653–666. https://doi.org/10.1007/s11156-013-0356-x

Kuckertz, A., Bernhard, A., Berger, E. S. C., Dvouletý, O., Harms, R., Jack, S., & Kibler, E. (2023). Scaling the right answers – Creating and maintaining hope through social entrepreneurship in light of humanitarian crises. *Journal of Business Venturing Insights*, *19*, e00356. https://doi.org/10.1016/j.jbvi.2022.e00356

Laylo, A. (2018). Macro-level enabling conditions for the formation of social business enterprises in the Philippines. *Asia Pacific Journal of Innovation and Entrepreneurship*, *12*(1), 5–13. https://doi.org/10.1108/APJIE-12-2017-0044

Li, Z., Chow, D., Ding, D., Ying, J., Hu, Y., Chen, H., & Zhao, W. (2020). The development and realisation of a multi-faceted system for green building planning: A case in Ningbo using the fuzzy analytical hierarchy process. *Energy and Buildings*, *226*, 110371. https://doi.org/10.1016/j.enbuild.2020.110371

Madanaguli, A., Dhir, A., Talwar, S., Clauss, T., Kraus, S., & Kaur, P. (2023). Diving into the uncertainties of open innovation: A systematic review of risks to uncover pertinent typologies and unexplored horizons. *Technovation*, *119*, 102582. https://doi.org/10.1016/j.technovation.2022.102582

Majid, W. (2022). Housing allowance and the perverse theory of housing outcomes. *Urban Research & Practice*. https://doi.org/10.1080/17535069.2022.2098049

Ma, L., Wang, S., & Wästfelt, A. (2022). The poverty of farmers in a main grain-producing area in Northeast China. *Land*, *11*(5), 594. https://doi.org/10.3390/land11050594

Mian, M. A., & Vélez-Pareja, I. (2008). Applicability of the Classic WACC Concept in Practice. *Latin American Business Review*, *8*(2), 19–40. https://doi.org/10.1080/10978520802084123

Michelini, L., & Fiorentino, D. (2012). New business models for creating shared value. *Social Responsibility Journal*, *8*(4), 561–577. https://doi.org/10.1108/17471111211272129

Ministry of Public Works and Housing. (2016). *Penataan Kawasan Kumuh Oleh Pemerintah*. https://pu.go.id/berita/tahun-2016-2-162-ha-kawasan-kumuh-dilakukan-penataan-oleh-pemerintah

Miraj, P., Berawi, M. A., & Utami, S. R. (2021). Economic feasibility of green office building: combining life cycle cost analysis and cost–benefit evaluation. *Building Research and Information*, *49*(6), 624–638. https://doi.org/10.1080/09613218.2021.1896354

Osterwalder, A., & Pigneur, Y. (2010). *Business model generation – Canvas*. Wiley. http://www.business-modelgeneration.com/canvas

Ouma, S., Corburn, J., & Weru, J. (2022). Property rights, public health, and planning for informal settlements in Nairobi, Kenya. *Journal of Urban Affairs*, *45*(3), 302–316. https://doi.org/10.1080/07352166.2022.2051712

Palomares-Aguirre, I., Barnett, M., Layrisse, F., & Husted, B. W. (2018). Built to scale? How sustainable business models can better serve the base of the pyramid. *Journal of Cleaner Production*, *172*, 4506–4513. https://doi.org/10.1016/j.jclepro.2017.11.084

Pinzon Amorocho, J. A., & Hartmann, T. (2022). A multi-criteria decision-making framework for residential building renovation using pairwise comparison and TOPSIS methods. *Journal of Building Engineering*, *53*, 104596. https://doi.org/10.1016/J.JOBE.2022.104596

Rasmussen, B. (2007). Business models and the theory of the firm. In *Pharmaceutical Industry Project* (Issue Jun). https://vises.org.au/documents/32-Business_Models_Rasmussen.pdf

Sabatier, V., Medah, I., Augsdorfer, P., & Maduekwe, A. (2017). Social business model design and implementation in developing countries: Learning from an affordable medicine developed in Burkina Faso. *Journal of Management Development*, *36*(1), 48–57. https://doi.org/10.1108/JMD-03-2015-0041

Sarkar, A. (2019). The role of new 'smart technology' to provide water to the urban poor: A case study of water ATMs in Delhi, India. *Energy, Ecology and Environment*, *4*(4), 166–174. https://doi.org/10.1007/s40974-019-00119-4

Seelos, C., & Mair, J. (2005). Social entrepreneurship: Creating new business models to serve the poor. *Business Horizons*, *48*(3), 241–246. https://doi.org/10.1016/j.bushor.2004.11.006

Seelos, C., & Mair, J. (2007). Profitable business models and market creation in the context of deep poverty: A strategic view. *Academy of Management Perspectives*, *21*(4), 49–63. https://doi.org/10.5465/amp.2007.27895339

Semprebon, E., Porsse, M. de C. S., Gurak, E. C., & Dameto, F. (2020). Explaining poverty and business with network concepts analysis. *Business and Society Review*, *125*(3), 311–327. https://doi.org/10.1111/basr.12199

Spieth, P., Schneider, S., Clauß, T., & Eichenberg, D. (2019). Value drivers of social businesses: A business model perspective. *Long Range Planning*, *52*(3), 427–444. https://doi.org/10.1016/j.lrp.2018.04.004

Srimulyani, V. A., & Hermanto, Y. B. (2022). Impact of entrepreneurial self-efficacy and entrepreneurial motivation on micro and small business success for food and beverage sector in East Java, Indonesia. *Economies*, *10*(1), 10. https://doi.org/10.3390/economies10010010

Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning*, *43*(2–3), 172–194. https://doi.org/10.1016/j.lrp.2009.07.003

Thakur, V., Parida, D. J., & Raj, V. (2022). Sustainable municipal solid waste management (MSWM) in the smart cities in Indian context. *International Journal of Productivity and Performance Management*. https://doi.org/10.1108/IJPPM-10-2021-0588

UN-Habitat. (2016). Urbanization and development: Emerging futures. In *UN Habitat World Cities Report 2016*. https://unhabitat.org/sites/default/files/download-manager-files/WCR-2016-WEB.pdf

United Nations Development Programme. (2018). *The 2018 Global Multidimensional Poverty Index (MPI): Illuminating Inequalities*. Human Development Report. http://hdr.undp.org/en/2018-MPI

Visser, W., & Prahalad, C. K. (2013). The fortune at the bottom of the pyramid. In *The Top 50 Sustainability Books*.

Wikimedia Commons. (2007). *Indonesia provinces blank map*. https://commons.wikimedia.org/wiki/File:Indonesia_provinces_blank_map.svg

World Bank. (2022). *Fact sheet: An adjustment to global poverty lines*. https://www.worldbank.org/en/news/factsheet/2022/05/02/fact-sheet-an-adjustment-to-global-poverty-lines

Yunus, M., Moingeon, B., & Lehmann-Ortega, L. (2010). Building social business models: Lessons from the grameen experience. *Long Range Planning*, *43*(2–3), 308–325. https://doi.org/10.1016/j.lrp.2009.12.005

Zardari, N. H., Ahmed, K., Shirazi, S. M., & Yusop, Z. Bin. (2015). *Weighting methods and their effects on multi-criteria decision making model outcomes in water resources management*. Springer. https://doi.org/10.1007/978-3-319-12586-2

Zott, C., Amit, R., & Massa, L. (2011). The business model: Recent developments and future research. *Journal of Management*, *37*(4), 1019–1042. https://doi.org/10.1177/0149206311406265