Impact Valuation of mGreen

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ABSTRACT

In recent decades, there has been a tremendous growth of socially responsible investment (SRI), which has promoted Blended Value Accounting (BVA) and social accounting framework for impact valuation. Unlike traditional accounting tools, blended value accounting monetizes social impact alongside financial returns, which is suitable for valuation of social enterprises and enables investors to see a more thorough picture of both financial and social value of businesses. mGreen is a social enterprise in Vietnam that operates in the industry of waste management software. This company has contributed greatly to waste classification at source, recycling, improving environmental quality and raising environmental awareness in Vietnam. This paper conducts an impact valuation for mGreen through three main steps. First, I introduce the concepts of SRI and BVA and analyze the business model of mGreen and its industry. Second, I use cost benefit analysis to measure the impact of mGreen and project its value in five years through monetization. Third, I conduct a sensitivity analysis and make some recommendations for future activities of mGreen. Finally, I conclude that mGreen has created a net blended value of 40,480.988 USD in 2021 and net present values of $253,391.05 in the upcoming 5 years. Its terminal value comes at $950,000.

Introduction

Socially Responsible Investing

Socially Responsible Investing (also known as Impact Investing) is a strategy that considers not only financial returns from an investment but also its impact on the environment and society. Socially responsible investments fall into three main categories: mutual funds and exchange-traded funds (ETFs), community investments and microfinance (offering small loans to startups, especially those in developing countries). Investors assess the social impact of a project based on environmental, social, and corporate governance (ESG) and make socially responsible investments by negative screening (investigating practices of target companies and not investing in unethical companies), positive investing and community investing.

The concept of SRI originated in the 18th century when Methodists abstained from unethical business practices such as slave trade, smuggling, investments in companies manufacturing liquor and tobacco or advocating gambling. In 1960, SRI was first considered an investment discipline (Kell). In 1990, the Domini Social Index, which represents 400 publicly-traded companies possessing high ESG ratings, was introduced to track their social and environmental impact.

Companies and investors in various industries have been stepping up their progress and interest in SRIs. For instance, in 2019, Levi Strauss & Co., a jean manufacturer, first commercialized "cottonized hemp" (rainfed hemp fiber) that consumed less water and fertilizer than the conventional cotton. By the end of 2020, 75% of this company's cotton source came from more sustainable sources such as organic cotton farms or recycled cotton suppliers. Levi Strauss & Co. also promotes labor rights with their Worker Well-being Initiative, in which

they survey workers' conditions and partner with local and national nonprofits and NGOs to meet those needs. In the case of mGreen, environmental funds and companies are practicing social impact investing and corporate social responsibility when they invest in mGreen, because mGreen contributes to solving environmental problems and promoting green lifestyles among Vietnamese.

Blended Value Accounting

The rise of social entrepreneurship and socially responsible investing has promoted Blended Value Accounting (BVA) and social accounting framework for impact valuation. Compared with the traditional accounting approach, BVA assesses the value created by businesses more thoroughly. In addition, BVA also measures and monetizes the non-financial impact of organizations, which can be divided into three main categories: social, socio-economic, and economic (Manetti).

There are a lot of tools for BVA. The Foundation Center lists 13 tools and 16 methods to assess nonprofits and social enterprises. Companies and investors also build their own BVA tools to measure the impact of projects and organizations.

Cost-Benefit Analysis

Cost-benefit analysis (CBA) is a method that businesses use to consider which investments and decisions to make or decline. A CBA can provide thorough insights into the financial situation of a project or company as it quantifies both costs and benefits in monetary value. Decision-makers are recommended to invest in or proceed with the project or company if benefits outweigh costs in monetary terms.

mGreen in the context of growing socially responsible investment (SRI) blended value accounting (BVA)

With growing concern about the environment and technological innovations, investing has started to entail not only financial returns but also social impact and responsibility. According to the Global Impact Investing Network (GIIN), in 2020, the market size of impact investing was estimated to be around USD 715 billion. Specifically, Value Market Research estimated that the global waste management software market is estimated to reach 13.9 billion USD in 2025. In Vietnam, this industry has great room for development. Results from the World Economic Forum Annual Meeting in 2020 showed that Vietnam's solid waste generation rate increased approximately 10% per year, but a mere 10-15% of it is recycled or reused. In 2018, the Vietnamese government launched a ban on importing recycling waste, which boosted demand for recyclable domestic plastic waste. Vietnam also planned to implement the Zero Plastic Waste City program in small-to-medium-sized urban areas, potentially scalable to the entire Mekong Delta area. However, conventional garbage collectors do not classify waste and face frequent wage fluctuations. There are also few places to gather recyclable waste and existing ones often accept only certain kinds of products such as cosmetics, detergents and leftover textiles. Classifying and recycling waste are important to prevent leakage of hazardous waste pollution upon burning.

On an individual level, the Vietnamese are also paying greater attention to green lifestyles by reducing non-biodegradable waste, opting for recyclable materials and eco-friendly brands and recycling. Furthermore, Vietnamese people's smartphone use is also on the rise. The Ministry of Information and Communications of Vietnam estimated that as of 2021, there are 61.3 million smartphone users in this country and Vietnam's digital

economy is expected to reach $52 billion by 2025. Therefore, exploiting this increasing smartphone use to raise environmental awareness is a viable pathway.

Given these favorable market conditions, the industry of waste management software in Vietnam is a fertile ground. mGreen, a Vietnamese social enterprise that develops waste management and classification mobile app, is a prime example of businesses that successfully take advantage of burgeoning interest in corporate social responsibility and eco-friendly lifestyles. This company develops three applications based on the point-exchanging system: mGreen, mGreen collector and mPoint Shop. These mobile apps streamline recyclable garbage classification and management, human resources management at waste disposal companies and motivate Vietnamese people to lead green lifestyles by exchanging garbage for points and vouchers from 300+ merchants. mGreen also engages high-school students in implementing environmental projects at schools, thereby growing a future generation of environmentally aware citizens.

Despite mGreen's recent success, the company faces several challenges to their potential for growth. First, competition from traditional trash collectors remains a major issue. In Vietnam, every afternoon, each residential area has a garbage truck or collector gathering garbage. Second, garbage classification is not yet popular in Vietnam, with the WorldWide Fund estimating that in 2019, only 30% of Vietnamese households classified trash and business households were reluctant to do so. Third, social distancing policies make it more difficult for mGreen to organize Green Days and implement projects at primary schools, while economic downturns due to the pandemic might mean cuts in funding from environmental funds and companies that pursue corporate social responsibility.

In this study, I plan to conduct an evaluation of mGreen and explore whether it could be a profitable investment, while also doing good to society. I will use the cost-benefit analysis to monetize its impact.

Method

First, I analyze the business model of mGreen and its industry. Second, I employ the cost-benefit analysis, in which I quantify all social costs and benefits and conclude a net present value of mGreen. In the valuation process, several assumptions are made and explained to make up for undisclosed financial information due to financial privacy of a private company. After that, I conduct a sensitivity analysis to find out the level of uncertainties of my results and make recommendations for mGreen's future operations.

My cost-benefit analysis consists of 7 steps:

Step 1: Identify social benefits and costs;
Step 2: Make value judgements;
Step 3: Quantify all benefits and costs;
Step 4: Calculate WACC;
Step 5: Calculate net present value in 5 years;
Step 6: Determine terminal value and valuation;
Step 7: Perform sensitivity analysis;

Analysis overview

Industry analysis

mGreen operates in the waste management software industry. In Vietnam, nine million tons of garbage (approximately 600 million USD) is discarded annually and only 10% of this amount is recycled. There are around 200,000 trash collectors and 70 million smartphone users. Online or omnichannel sales in Vietnam are witnessing considerable growth, with the digital economy being valued at 5 billion USD in 2020 and growing with a rate of 81%.

Opportunities include:

- Growing concern about and funding into environmental protection and social responsibility.
- Increase in smartphone use.
- Increase in companies' need for omnichannel sales.
- Increase in need for human resource management technology at waste disposal companies.

Threats include:

- Economic downturns and funding cuts due to the COVID-19 pandemic.
- Intellectual property theft/ copy of the technology and point-exchange system.
- Competition from conventional garbage collectors and trucks.
- Substandard quality of products exchanged through the point-exchange system.
- Social distancing rules: As many of mGreen events are conducted offline (Green Days, environmental lessons, etc), social distancing rules make it difficult for this enterprise to earn revenue and promote environmental awareness.

Company analysis

Founded in 2018, mGreen is a social enterprise that is developing and implementing mGreen Solution - an environmental mobile app with garbage classification cards, a point-exchanging system characterized by Evouchers and Loyalty Customer Programs. By incorporating technology into environmental protection, mGreen encourages a green lifestyle among users, facilitates collectors in waste classification at source, and provides sales solutions for traders in Mpoint shop. The company operates based on Mobile Coalition Loyalty Program technology and Creating Shared Value with the principle of 3M = Mobility + Money for All + Multi-stakeholder.

This social enterprise has proved its efficiency over the past two years by reaching 10 provinces in Vietnam, attracting 10,000 users (rate of activity: 70%), 100 collectors, and 120 Environmental Ambassadors, while recycling 20,000 kilograms tons of recyclable waste. It also has established connections with 300+ partners in various sectors, ranging from government, international organizations, corporations and small and medium-sized enterprises, to press and television, and non-governmental organizations.

mGreen environmental solution includes a total of 3 mobile applications (mobile apps): mGreen, mGreen-Collector and mPointShop.

mGreen

mGreen is used to separate waste at source and collect recyclables in exchange for points. Users can dispose of recyclable waste in three ways:

- Calling garbage collectors to come to their houses to collect paper, plastic, nylon and metal through one button.
- At Green Houses in their residential areas.
- At gift-exchange events (Green Days).

Collectors weigh the amount of recyclable waste and app users (residents) will earn bonus points according to the number of times of sorting or the volume of recyclables. Reward points can be exchanged for many valuable gifts in all fields such as detergents, food, tourism, and education across the country. The garbage collected is sold to waste disposal companies.

The mGreen app also displays some guidance on recycling and environmental quizzes to raise environmental awareness.

mGreenCollector

mGreenCollector is a collection request application for recycling collectors through which collectors receive a call to schedule recyclables collection. They also receive a portion of revenue from recyclable waste.mGreen does not recruit collectors but instead, employs collectors that are currently working in waste disposal companies which partner with mGreen.

mPoint Shop

mPoint Shop is an application for stores associated with mGreen to compare Promo codes, accumulate points and redeem gifts of mGreen card holders. Through the Evoucher system released through mGreen and its partners, companies can do business responsibly. In mPoint Shop, brands and merchants give vouchers, free products and sell recyclable products.

mGreen's mission and operations has contributed greatly to improving environmental quality in Vietnam by helping tackle two of the root problems: waste classification at source and raising awareness. Although there are some similar companies on the market such as VECA and Grac, mGreen has an advantage over these competitors by having an extensive and long-established network with 300 partners in various sectors and employing the point-exchange system to incentivize residents to recycle and merchants to become partners. More importantly, mGreen pays great attention to environmental awareness among youths through engaging high-schoolers in environmental projects and running lessons at schools. Consequently, it is reasonable to say that mGreen can have long-term and sustainable impact.

Given positive externalities that mGreen has created, its scope and potential of growth, I have decided to assess the performance and impact of mGreen through Blended Value Accounting approaches, taking all imposed externalities (social benefits and social costs) into consideration.

mGreen's future development & growth

mGreen has made a positive impact on society and witnessed stable development. Below are mGreen projects with environmental organizations that are bound to launch in 2022 or under negotiation:

- Urenco Hanoi: mGreen signed an agreement to reach 400,000 households in 2021.
- Citenco Ho Chi Minh: mGreen signed an agreement to reach 200,000 households in 2022.
- Pay-per-click: mGreen collaborated with Monre& SCG, Unilever, Dow Chemical to sign a pay-per-click (PPC) contract in Vung Tau.

● Tan Hiep Phat and the circular economy: mGreen is discussing conditions of the contract and will implement it in Ha Nam once the COVID-19 pandemic is over.
● Alliance against plastic waste ATEPW: mGreen is discussing and building a plan with Waste Aid.

Besides, mGreen's plans for future development may include expanding the merchant and collector network and conducting environmental projects and lessons at schools in Hanoi and surrounding cities. Another possible plan is to manufacture eco-friendly products from recyclables and reinvest their profits in environmentally friendly products for greater social impact.

Results

Step 1. Identify social benefits and costs

Define social benefits and costs:

Social benefits include private benefits and external benefits. Private benefit is the profit a firm makes from its operations, while the external benefit (also known as positive externality) is the benefit received by third parties who are not involved in the company's operations.
Social costs include private costs and external costs. Private cost is the expense incurred by a company as a result of its operations and the external cost (also known as negative externality) is the expense incurred by third parties who are not involved in the company's operations.

Private benefits of the company:

● Commission on mPoint Shop transactions: mGreen earns 10% commission on each transaction in mPoint Shop.
● Funding and investment from city councils, funds, companies and schools: mGreen spends this funding and investment on developing technology, implementing garbage classification programs and running environmental training and lessons at companies, schools and apartment buildings.
● Revenue from selling recyclable waste to recycling companies and plants: mGreen collects 3 types of recyclable waste: paper, plastic and metal. The price is set based on market price. Since prices vary among different kinds of paper, plastic and metal, I use the average price for each type of recyclable waste in my calculation below. 90% of this revenue goes to mGreen, while the remaining 10% goes to garbage collectors.
● Rental revenue from managerial technology for waste disposal companies: These companies can use mGreen Collector to manage collectors and the waste collection process.
● Revenue from financial activities

Private benefits
0,03%

31%   28%

16%   25%

- Commission on mPoint Shop transactions
- Funding and investment from city councils, funds, companies and schools
- Revenue from selling recyclable waste to recycling companies and plants
- Rental revenue from managerial technology for waste disposal companies
- Revenue from financial activities
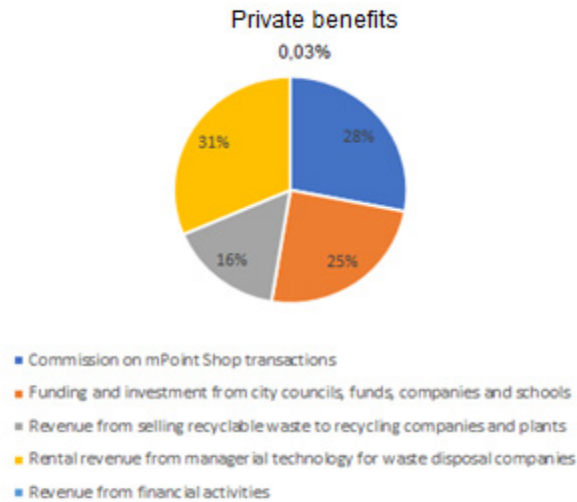
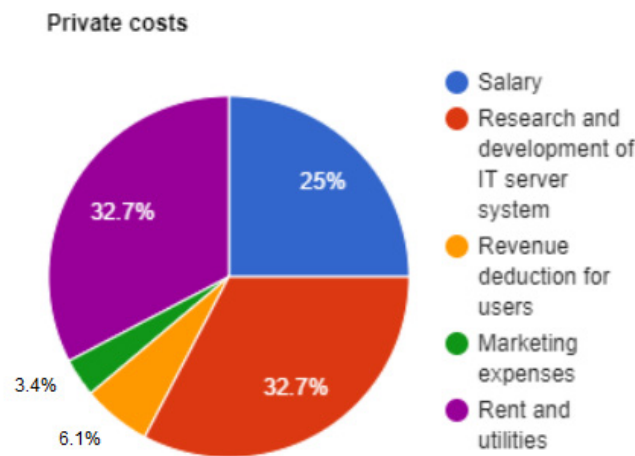**EXHIBIT 1.** Private benefits allocation

External benefits of the company

- Quantifiable:
  - ❖ Increased sales for merchants and companies: Merchants and companies can sell eco-friendly products in mPoint Shop and on Green Days.
  - ❖ Additional income for garbage collectors: As mentioned in the private benefits part, 10% of the revenue from selling recyclable waste to recycling companies and plants goes to garbage collectors.
- Unquantifiable
  - ❖ Improved environmental quality and mitigated health risks:
  - ❖ Unsorted and non-recycled garbage can end up being burnt similarly to garbage that can be burnt (e.g: organic garbage).
  - ❖ Classifying and recycling garbage can help alleviate the risk of leakage of poisons or air pollution from such careless burning. Besides, greater environmental quality can help people avoid health risks such as breathing problems or skin allergy.
  - ❖ Greater environmental awareness: By organizing Green Days and environmental lessons, mentoring environmental projects and including quizzes on recycling in the mGreen app, mGreen raises awareness of green lifestyles in Vietnam.
  - ❖ More knowledge contributed to environmental research: Information about the Vietnamese' recycling and waste disposal habits can provide insights into the reality of environmental protection in Vietnam, thereby potentially informing officials in making policies.
  - ❖ More efficient and streamlined management for waste disposal companies.

Private costs of the company

- Salary.
- Research and development of IT server system (technological R&D).

● Revenue deduction for users: mGreen converts 5% of its commission from mPoint transactions into mPoints for users.

● Marketing expense: mGreen runs online marketing campaigns on Facebook and its website. It also promotes itself offline by competing in pitch competitions, organizing Green Days and implementing environmental projects at schools and apartment buildings.

● Rent and utilities.

EXHIBIT 2. Private costs allocation

External costs of the company

● Opportunity cost of funding and investments: These capitals can be invested in other areas to generate financial returns and social benefit. The opportunity cost is the value generated by the best alternative use of these capitals.

Step 2. Make Value Judgements

As for social benefits, the better business reputation and positive secondary impact will not be monetized as these effects are vague and difficult to quantify, but they will be included in the qualitative assessment in the blended value.

Step 3. Quantify All Benefits and Costs

In this section, I quantify all social benefits and costs generated by mGreen in one year of operation. I use data in 2020, the latest year, to best match the present financial status of mGreen. I obtained my data from mGreen's financial statements and website and conversations with its CEO.

Quantify Private Benefits of the company

EXHIBIT 3 Equation and calculation of revenue from commission on mPoint Shop transactions
PB1   = Rt. 10%
     = 1,714,644,250 VND. 10%
     = 171,464,425 VND
Rt: Total value of transactions

EXHIBIT 4 Equation of funding and investment from funds and companies that promote corporate social responsibility
PB2   = 150,460,000 VND

EXHIBIT 5 Equation and calculation of revenue from selling recyclable waste to recycling companies and plants
PB_3 = 90%. $(P_{paper}. N_{paper} + P_{plastic}. N_{plastic} + P_{metal}. N_{metal})$
     = 90% . (13,000 . 2635 + 18,000 . 2175 + 15,000 . 1631)
     = 97,870,000 VND
P_{paper}: Average price per kilogram of paper
N_{paper}: Annual amount of paper collected
$P_{plastic}$: Average price per kilogram of plastic
$N_{plastic}$: Annual amount of plastic collected
P_{metal}: Average price per kilogram of metal
N_{metal}: Annual amount of metal collected

EXHIBIT 6 Equation and calculation of rental revenue from managerial technology for waste disposal companies
PB_4 = $R_c.N_c$
     = 96,000,000 . 2
     = 192,000,000 VND
R_c: Annual revenue per company
N_c: Number of companies

EXHIBIT 7 Equation of revenue from financial activities
PB_5 = 174,324 VND

EXHIBIT 8 Calculation of Total Private Benefit
PB   = $PB_1 + PB_2 + PB_3 + PB_4 + PB_5$
    = 171,290,101+ 150,460,000 + 97,870,000 + 192,000,000 + 174,324
    = 611,968,749 (VND)

Quantify External Benefits of the company

EXHIBIT 9 Equation and calculation of increased sales for merchants and companies
$EB_1 = R_t$ = 1,714,644,250 VND
R_t: Total value of transactions

EXHIBIT 10 Equation and calculation of additional income for garbage collectors:

$EB_2 = 10\% . (P_{paper} . N_{paper} + P_{plastic} . N_{plastic} + P_{metal} . N_{metal})$

$= 10\% . (13,000 . 2635 + 18,000 . 2175 + 15,000 . 1631)$

$= 9,787,000$ VND

P_{paper}: Average price per kilogram of paper

N_{paper}: Annual amount of paper collected

$P_{plastic}$: Average price per kilogram of plastic

$N_{plastic}$: Annual amount of plastic collected

P_{metal}: Average price per kilogram of metal

N_{metal}: Annual amount of metal collected

EXHIBIT 11 Calculation of Total External Benefit

$PB = EB_1 + EB_2$

$= 1,714,644,250 + 9,787,000$

$= 1,724,431,250$ (VND)

Quantify Social Benefits of the company

EXHIBIT 12 Equation and calculation of total social benefit

$SB = PB + EB$

$= 611,968,749 + 1,724,431,250$

$= 2,336,399,999$ VND

Quantify Private Costs of the company

EXHIBIT 13 Equation of salary

$PC_1 = 348,706,530$ VND

EXHIBIT 14 Equation of cost of research and development of IT server system

$PC_2 = 456,400,000$ VND

EXHIBIT 15 Equation and calculation of cost of revenue deduction for users

$PC_3 = R_t . 5\%$

$= 1,714,644,250$ VND. 5%

$= 85,732,212.5$ VND

R_t: Total value of transactions

EXHIBIT 16 Equation of marketing expenses

$PC_3 = C_m .12$

$= 4,000,000 . 12$

$= 48,000,000$ VND

C_m: Average monthly marketing expense

EXHIBIT 17 Equation of rent and utilities

$PC_4 = C_r .12$

$= 38,000,000. 12$

= 456,000,000 VND

C_r: Average monthly rent and utilities

EXHIBIT 18 Calculation of Total Private Cost

PC = $PC_1 + PC_2 + PC_3 + PC_4$

= 348,706,530 + 456,400,000 + 85,732,212.5 + 48,000,000 + 456,000,000

≅1,394,838,743 (VND)

Quantify External Costs of the company

The opportunity cost of funding and investment from funds and companies that promote corporate social responsibility is calculated based on the assumption that the best alternative use of the capitals is the return of the average corporate interest rate.

EXHIBIT 19 Equation and calculation of opportunity cost

OPC = $PB_2 \cdot I_{avg}$

= 150,460,000. 6.87%

= 10,336,602 VND

PB_2: Funding and investment

I_{avg}: Average corporate interest rate

EXHIBIT 20 Equation of external cost

EC = OPC = 10,336,602 VND

EXHIBIT 21 Calculation of social cost

SC = PC + EC

= 1,394,838,743 + 10,336,602

= 1,405,175,345 VND

EXHIBIT 22 Calculation of net value 2020

NV_{2021} = SB - SC

= 2,336,399,999 - 1,405,175,345= 931,224,654 VND

Step 4. Calculate WACC

WACC is a commonly used discount rate to calculate the present value of a company's terminal value. According to Investopedia, it is a calculation of a firm's cost of capital in which each category of capital is proportionately weighted. In other words, WACC is the opportunity cost of the invested capital or the expected rate of return for investments with a similar risk profile. The calculation of WACC is based on the assumption that the company will maintain the same debt-equity ratio (oberlindic).

EXHIBIT 23 Equation of WACC

WACC = After tax cost of debt . % of debt in the capital structure + cost of equity . % of equity in the capital structure

$$= (r_d.(1-T)).\frac{D}{D+E} + r_e.\frac{E}{D+E}$$

EXHIBIT 24 Calculation of Weight of Debt

Weight of Debt $= \frac{Debt}{Debt + Equity} = \frac{3,201,891,828}{3,201,891,828 + 30,000,000,000} = 0.0964$

EXHIBIT 25 Calculation of Weight of Equity

Weight of Equity $= \frac{Equity}{Debt + Equity} = \frac{30,000,000,000}{3,201,891,828 + 30,000,000,000} = 0.9036$

EXHIBIT 26 Calculation of WACC

WACC $= (r_d.(1-T)). 0.0964 + r_e . 0.9036$

$\qquad = (0.076475. (1-20\%)). 0.0964 + 0.05472. 0.9036$

$\qquad = 5.53\%$

Step 5. Calculate Net Present Value in 5 Years

Net present value (NPV) is the difference between the present value of cash inflows and the present value of cash outflows over a period of time (Investopedia). The projection period is five years, from 2022 to 2026. In this projection, all net values (end of each year) will be discounted to the present (end of 2021) for accurate assessment of mGreen's future impact and blended value.

NPV is calculated by multiplying the net values for each year with its respective discount factor. Discount factor is the present value of a dollar received at a future point in time.

EXHIBIT 27 Discount Factor

Discount Factor $= \frac{1}{(1+WACC)^t}$

where t is the year in the projection period.

In this section, two assumptions on the projected growth rate of mGreen are made:

(1) In the first five years (from 2021 to 2026), mGreen will follow an annual linear growth rate of 16.67% (g1).

I expect g1 to be 17% based on financial performance of mGreen in 2018, 2019 and 2020:

From 2018 to 2019:

Growth rate (g3) $= \frac{Ending\ balance - Beginning\ balance}{Beginning\ balance}.100\%$

$= \frac{939,089,123 - 637,337,757}{637,337,757}. 100\% = 47,34\%$

From 2019 to 2020:

Growth rate (g4) $= \frac{Ending\ balance - Beginning\ balance}{Beginning\ balance}.100\%$

$= \frac{807,306,038 - 939,089,123}{939,089,123}. 100\% = -14\%$

I let g1 be the average of g3 and g4, which is approximately 16.67%.

(2) After the first five years, mGreen will follow an annual linear growth rate of 9% (g2).

I expect g2 to be 9% because that is the growth rate of the waste management market (Technavio).

EXHIBIT 28 Equation of NPV 2022-2026

$$NPV_{2022}^{2026} = \sum_{t=1}^{5} \frac{NV}{(1+WACC)^t}$$

$$NPV_{2022}^{2026} = \sum_{t=1}^{5} \frac{NV2020.(1+g)^t}{(1+WACC)^t}$$

EXHIBIT 29 Equation of NPV 2022-2026

$$NV_{2022}^{2026} = \frac{NV2020.(1+g)}{1+WACC} + \frac{NV2020.(1+g)^2}{(1+WACC)^2} + \frac{NV2020.(1+g)^3}{(1+WACC)^3} + \frac{NV2020.(1+g)^4}{(1+WACC)^4} + \frac{NV2020.(1+g)^5}{(1+WACC)^5}$$

$$= \frac{931,224,654.(1+16.67\%.)}{1+5.53\%} + \frac{931,224,654.(1+16.67\%)^2}{(1+5.53\%)^2} + \frac{931,224,654.(1+16.67\%)^3}{(1+5.53\%)^3} + \frac{931,224,654.(1+16.67\%)^4}{(1+5.53\%)^4} +$$

$$\frac{931,224,654.(1+16.67\%)^5}{(1+5.53\%)^5}$$

$$= 5,839,189,617 \text{ VND}$$

Step 6. Determine Terminal Value and Valuation

Terminal value is the value of a business or project beyond the forecast period. It is calculated based on the net value in the final year of projection and can aid investors in making decisions. In this paper, I will use the exit multiple method (EMM) to determine the terminal value of mGreen. The EMM calculates the remaining value within the company after the projection period.

EXHIBIT 30 Calculation of Exit Multiple

$$1+r^* = \frac{1+WACC}{1+g}$$

$$r^* = \frac{1+WACC}{1+g} - 1 = \frac{WACC-g}{1+g} \approx 0.0954$$

$$\text{exit multiple} = \frac{1 - (1+r^*)^{-\infty}}{r^*} \approx 10.48$$

EXHIBIT 31 Equation of Terminal Value Using EMM

$$TV = NPV_{2022}^{2026} + \sum_{t=6}^{\infty} \frac{NV2026.(1+g)^{t-5}}{(1+WACC)^t}$$

$$TV = \sum_{t=1}^{5} \frac{NV2021.(1+g)^t}{(1+WACC)^t} + \frac{\text{exit multiple} . NV2026}{(1+WACC)^5}$$

EXHIBIT 32 Calculation of Terminal Value

$$TV = 5,839,189,617 + \frac{10.48.931,224,654.(1+16.67\%)^5}{(1+5.53\%)^5}$$

$$= 21,950,000,000 \text{ (VND)}$$

= 21,950 million VND

Step 7. Perform Sensitivity Analysis

The CBA valuation process is based on several assumptions due to limited disclosure of financial information, so the final result is subject to variation. A sensitivity analysis is often conducted to measure and analyze how changes in input variables affect the valuation result. Therefore, with sensitivity analysis, the CBA valuation result is often presented in a range of values based on changes in key inputs.

In this sensitivity analysis, I will perform four sensitivity analyses based on two important input variables. The inputs are WACC and SYB's growth rate, and the output is terminal blended value.

Table 1. Sensitivity Analysis of Terminal Value (vs. g1 and WACC)

Terminal Value (VND in millions)					
g1 / WACC	17.07 %	16.87 %	16.67 %	16.47 %	16.27 %
5.13 %	23,209	23, 032	22, 854	23,222	22,505
5.33 %	23, 012	22, 836	22, 660	22,486	22,314
5.53 %	22, 817	22, 642	21, 950	22,296	22,124
5.73 %	22, 623	22, 450	22, 278	22,107	21,937
5.93 %	22, 431	22, 260	22, 089	21,920	21,752

Table 2. Sensitivity Analysis of Terminal Value (vs. g2 and WACC)

Terminal Value (VND in millions)					
g2 / WACC	11 %	10 %	9 %	8 %	7 %
5.13 %	18,297	17,579	16,884	16,213	15,565
5.33 %	18,144	17,432	16,744	16,078	15,436
5.53 %	17,992	17,286	21,950	15,945	15,308
5.73 %	17,843	17,142	16,466	15,814	15,182
5.93 %	17,694	17,000	16,331	15,683	15,057

Table 3. Sensitivity Analysis of Terminal Value (vs. Exit Multiple and WACC)

Terminal Value-1 (VND in millions)					
Exit Multiple / WACC	12.48	11.48	10.48	9.48	8.48
5.13 %	25,995	24,427	22,860	21,292	19,724

5.33 %	25,771	24,218	22,665	21,112	19,539
5.53 %	25,549	24,011	21,950	20,935	19,396
5.73 %	25,329	23,805	22,282	20,758	19,235
5.93 %	25,112	23,603	22,095	20,584	19,075

Table 4. Sensitivity Analysis of Terminal Value (vs. Exit Multiple and g_1)

Terminal Value-2 (VND in millions)					
Exit Multiple g_1	12.48	11.48	10.48	9.48	8.48
17.07 %	26,078	24,503	22,928	21,353	19,779
16.87 %	25,876	24,314	22,753	21,191	19,630
16.67 %	25,674	24,126	21,950	21,030	19,482
16.47 %	25,474	23,940	22,405	20,870	19,335
16.27 %	25,276	23,754	22,232	20,710	19,188

The sensitivity analysis provides more comprehensive insight into variation in the impact level based on key elements (growth rate, WACC and exit multiple). From the results above, changes in g1 and g2 can create wider fluctuations in the valuation result, while exit multiple and WACC has a slightly smaller impact.

Conclusion on valuation and recommendations

From the cost-benefit analysis above, it is evident that mGreen has made considerable progress in blended value creation and possesses great potential to continue creating social impact alongside thriving financially. In 2021, mGreen has generated net blended value of 931,224,654 VND (40,480.988 USD) and its terminal value is estimated at 21,950 million VND (950,000 USD). In addition to these financial benefits, mGreen has also contributed greatly to improving environmental quality and growing a green lifestyle in Vietnam.

Based on the current business model of mGreen, I have some recommendations as follows for this company:

• Continue expanding its network with waste disposal companies (to increase rental revenue of managerial technology) and merchants.

• Diversify its content to raise environmental projects: In order to make waste classification and recycling more relatable to more age groups, mGreen can create more social media content such as videos, quizzes, competitions and run environmental workshops.

• Manufacture recyclable products and reinvest mGreen's profits in environmentally friendly products: Given its access to recyclable waste and extensive network with socially responsible companies, mGreen can look into the possibility of manufacturing recyclable products.

Discussion

This paper provides insights into the financial and social performance of mGreen and recommendations for future activities. Therefore, it can be a reference material for mGreen's employers, present and future partners

and investors, and researchers in social entrepreneurship and impact investing in their plans for expansion, investment and partnership. Other companies, especially social enterprises, can refer to this paper to assess their performance more thoroughly.

The public and academia would benefit from future research in these aspects:

- Financial and social impact of other companies.

- Impact valuation of companies using other valuation methods such as the internal rate of return and the social return on investment.

Conclusion

In this paper, I introduced the concepts of SRI and BVA, then I analyzed the business model of mGreen and the industry it operates in (waste management software). Subsequently, I used the cost-benefit analysis, in which I monetized most private and external benefits and costs generated by mGreen, to assess its financial performance and social impact. The CBA suggests that mGreen's net blended value in 2021 is $40,480.988. Next, using WACC, I projected its net present values in five years (5,839,189,617 VND $\cong$ $253,391.05)and terminal value ($950,000). Finally, I conducted a sensitivity analysis and made some recommendations for mGreen's future operations. Although there is no historical valuation for mGreen, I believe my valuation based on monetization can provide investors a clear picture of the potential of mGreen and SRI. I hope and believe that mGreen and more organizations and corporations will continue to combine positive social impact with financial returns.

Limitations

Potential inaccuracies in identifying and quantifying costs and benefits

Due to limited public information available (since the company has not gone on public offering), there are a lot of benefits and costs that are hard to quantify, unmeasurable or assigned subjective values. Furthermore, it is hard to figure out correct causal relationships. Therefore, the estimated values in the paper are inconclusive and prone to error.

Potential misleading analyses and forecasts resulting from inaccurate calculations of the present value

All future costs and benefits are equalized to present value, which eliminates consideration for potential inflation or speculative financial gains. Additionally, the discount rate in the calculation may not be realistic.

Timing of data

Calculations are conducted based on past and present data, so they are subject to changes if the market or the company undergoes financial fluctuations in the future.

Acknowledgments

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