JRSSEM 2022, Vol. 02, No. 4, 382 – 390
E-ISSN: 2807 - 6311, P-ISSN: 2807 - 6494

FINANCIAL ANALYSIS OF GREEN DETERGENT AS A WATER-FRIENDLY SOLUTION IN INDONESIA

***Dian Masita Dewi*[1]**
***Agni Danaryanti*[2]**
[1] Faculty of Economics and Business, Lambung Mangkurat University, Indonesia
[2] Faculty of Teacher Training and Education, Lambung Mangkurat University, Indonesia
[*]e-mail: dianmasitadewi@ulm.ac.id, agnidanaryanti@ulm.ac.id
**Correspondence: dianmasitadewi@ulm.ac.id*

Submitted: 10th October 2022 *Revised*: 18th October 2022 *Accepted*: 30th October 2022

Abstract: The most crucial global issue discussed at the Fourth Intergovernmental Review Meeting on the Implementation of the Global Program of Action for the Protection of the Marine Environment from Bali Land Based Activities (IGR-4) in 2018 is the danger of detergent. Up to 45% of Indonesia's rivers are in the category of being heavily polluted by detergent. Furthermore, Enzymatic Eco Detergent is a new, renewable, and innovative biodegradable product made from vegetable surfactants based on palm oil (MES). It is also enriched with organic enzymes produced by simple biotechnology from processing organic waste, such as fruits and vegetable peels, based on garbage enzyme/eco-enzyme. And it also has excellent potential to be developed on a micro business scale (Start-up). As a new product, conducting a business feasibility analysis is necessary to reduce the risk of failure or loss. Therefore, this study aims to analyze the feasibility of the Eco Detergent factory start-up business with a capacity of 12,000 liters per year based on a financial analysis involving the Payback Period, Net Present Value, Internal Rate of Return, and Return on Investment. The data obtained were analyzed using Microsoft Excel 2013 software. The result showed that the payback period (PP) is three years (2 years and 3 months) faster than the project age of 5 years, hence the Green detergent start-up project, "Enzymatic Eco Detergent," is feasible to be implemented. Meanwhile, the Net Present Value (NPV) criteria have a positive IDR of 1,117,448,350.97. The Internal Rate of Return (IRR) and the Return on Investment (ROI) obtained are 57.57% and 54%, respectively. Conclusively, the investment is considered profitable with a return rate of 10.37%, hence, it is feasible to be implemented.

Keywords: Eco Liquid Detergent; Eco Enzyme; Organic Enzyme; Business Feasibility Analysis, and Financial Analysis

INTRODUCTION

Detergent is a cleaning agent commonly used by industrial and household businesses[1)]. IDN Times released a news report stating that each household's average daily use of detergents is 50 grams[2)]. Detergents containing the active ingredient of LAS (Linear Alkylbenzene Sulfonate), a surfactant derived from petroleum, are commonly used and widely available in the market. However, its low biodegradability is not proportional to the clean power and has not been optimized as an active ingredient. This synthetic ingredient also has a negative effect on human skin because it is toxic and causes skin irritation[3,4,5)].

Methyl Ester Sulfonate (MES) is a chemical compound surfactant used in the production of detergent made from natural ingredients. The emulsion is oil soluble hence it is an appropriate detergent base. Moreover, its vegetable content is a more environmentally friendly alternative related to the rest of the washing products[6)]

The advantage of MES compared to LAS with the same concentration is its higher detergency power. In addition to the cleaning products that use enzymes, MES can maintain enzyme activities better than LAS[7).] Therefore, it is suitable as an alternative material for environmentally friendly detergents[8).]

Eco enzyme is a multipurpose liquid that is produced from the fermentation of organic waste[9,10]. Eco enzyme was first developed by Dr. Rosukon Poompanvong, a founder of the Thai Organic Farming Association who has been researching since the 1980s[9,10,11)]. Eco enzyme is made through a fermentation process for 3 months with a ratio of organic matter, brown sugar, and water composition of 3: 1:10[10,11)]. Eco Enzyme contains secondary metabolic compounds, such as alkaloids, flavonoids, saponins, tannins, steroids, and triterpenoids [12)]. These compounds have physiological and antimicrobial functions with therapeutic potential but cause skin infections[10,12)]. It also contains protease, lipase, and amylase enzymes [12,13,14)]. These three enzymes strengthen the detergent’s function as a dirt remover, one of which is blood stains on fabrics. Protease, amylase, and lipase enzymes react to dissolve protein, starch, and oil stains, respectively[15,16)].

One of the most crucial issues discussed at The Fourth Intergovernmental Review Meeting on the Implementation of the Global Program of Action for the Protection of the Marine Environment from Bali Land Based Activities (IGR-4) in 2018 is the danger of detergent. Detergents cause river pollution that occurs in almost all parts of Indonesia. The main solution is an innovation called soft detergent[17)]. Therefore, the National Standardization Agency in 2021 stipulates SNI 4075-1:2017/Amd.1:2020 concerning liquid detergents for clothing where the change aims to adjust standards and technological developments. It specifically focuses on the test methods and quality requirements, adjustment of standards to new regulations that apply, protecting consumer health, ensure environmental sustainability[18)].

Enzymatic Eco Detergent, an innovative product not previously available in Indonesia, was developed in response to the above problems. It is an innovative detergent made from plant-based surfactants (MES) enriched with Organic Enzymes from processing fruit and vegetable peel waste using eco enzyme based biotechnology methods. Furthermore, the SNI Test from the Banjarbaru BSPJI in 2022 showed that the product met the quality requirements based on SNI 4075-1:2017/Amd.1:2020 concerning liquid detergent for clothing[19]. Utilizing waste into valuable products will reduce negative environmental impact[20,21,22,23,24,25] and the consumers demand for environmental friendly products has also gone up [26,27]. Therefore, it has a great opportunity to be developed on an industrial scale.

In order to avoid poor decision-making and reduce the risk of failure, a new business needs a good feasibility analysis. Furthermore, one of the key factors to consider before starting a business is finance, also known as capital. The process of capital planning must be implemented from the outset of a business plan. The minimum considerations include the estimated value of the project, cash flow projections and profitability, other business investments, and financial viability[28,29,30].

This study uses the financial accounting method for the feasibility analysis of the new industry with this bio-enzymatic detergent product[28].

MATERIALS AND METHODS

The Financial Accounting method was used to analyze the feasibility of a Green Detergent Start-up, "Enzymatic Eco Detergent". This method involves several eligibility criteria[28,29,30], including:

1. **Payback Period (PP)**

PP measures the return rate of an investment. Therefore, months and years, rather than percentages, serve as the measurement unit. This model measures the return rate of investment and thus relies on cash inflows as its foundation.

The payback period formula with a different cash flow per year [28,29,30].

$$Payback\ Period = n + \frac{a-b}{c-d} x1\ year$$
(1)

The payback period formula with the same cash flows per year[28,29,30]

$$Payback\ Period = \frac{Initial\ Investment}{Cash\ Inflows}$$
(2)

The formula in excel =

MATCH(**lookup_value**; lookup_array; [match_type])
(3)

Criteria:

- The project is feasible when the payback period/time is faster.
- It is not feasible when the payback period/time is longer.
- In a case where more than one investment project is proposed, the faster payback period is chosen [28,29,30,31].

2. **Net Present Value (NPV)**

NPV is calculated by comparing the investment PV with the cash outflows over time. Determining the interest rate for the present value calculation is essential. The interest rate used in this study is 10,37 % and was taken from the Credit for Small and Micro Enterprises[32] Furthermore, the social opportunity cost of capital is used as a factoring discount to arrive at the NPV, which is the net benefit.

Data on the estimated investment, operating, and maintenance costs, as well as the estimated benefits of the planned project, are also needed[28,29,30,31].

$$\boldsymbol{NPV} = \sum_{t-1}^{t} \frac{Cash\ Flow_t}{(1+i)^t} - initial\ Cash\ Investment \quad (4)$$

Formulas in Excel = NPV(**rate**; value1; [value2]; ...) (5)

The criteria for accepting or rejecting an investment plan using the NPV method are as follows:

1) NPV > 0 (Positive): the investment made provides benefits for the company, hence, the project can be continued.
2) NPV < 0 (negative): the investment made will result in losses for the company, hence, the project cannot be continued.
3) NPV = 0: the investment made does not result in the company making a profit or loss. The company's finances are not affected when the project is implemented. Decisions must be made using other criteria, such as the impact of investment on the company's positioning[33]

a. IRR (Internal Rate of Return)

IRR is an indicator of the efficiency level of investment. A project can be carried out when the return rate exceeds other investments, such as interest on bank deposits, mutual funds, and others.

Projects with high IRR values are prioritized. However, it is insufficient to evaluate a project solely on the basis of IRR. Generally, the return rate must exceed the opportunity cost of using the funds. Therefore, a project will be implemented by considering the IRR and discount rate (i). The discount rate, also known as the external rate of return, is the cost of borrowing capital that must be considered with the return on investment rate [28,29,30,31].

$$\boldsymbol{IRR} = i\ (positive) + \frac{NPV\ (positive) \mathrm{X}\ (i\ positive - i\ negative)}{NPV\ (positive) - NPV(negative)} \quad (6)$$

Formulas in Excel = IRR(**values**; [guess]) (7)

The project is accepted when IRR > i (loan interest) and rejected when IRR < i (loan interest)

b. Return On Investment (ROI)

Return On Investment (ROI) measures the company's overall ability to generate profits with the total assets available. This measurement is affected by several factors as follows:

1) Turnover operating assets: This is the rate of turnover used for operations, which is the speed at which operating assets rotate in a certain period.
2) Profit Margin: It is also known as operating profit expressed in percentage and total net sales. It measures the profit level that can be achieved by the company associated with sales.

The size of ROI is influenced either by profit margin, asset turnover, or both. Therefore, they can be used by company leaders to increase ROI. Increasing profit margins requires more effective production, sales, and administration efficiency. Meanwhile, increasing turnover is the policy of investing funds in current and fixed assets[28,29,30,31]. The ROI value is calculated as follows:

$$\text{ROI} = \frac{\text{Net Profit}}{\text{Cost Of Capital}} \text{ x } 100\% \qquad (8)$$

The formula in Excel= NPV/Acc Cost Of Investment at 5th year.

RESULTS AND DISCUSSION

a. Data Collection on Needs Equipment, Machinery, and Production Costs

1. Procurement Cost

Procurement Cost is the sum of all equipment purchased to support business activities, and it is incurred in the first year[28,34]. The types of equipment and machines used are shown in Table 1.

Table 1. Procurement Cost

No	Types of Cost	Total (IDR)
1	Stainless steel Heating Machine for liquid detergent	250,000,000
2	Liquid detergent mixer and cooler	150,000,000
3	Continuous Sealer	50,000,000
4	Electric Scale	10,000,000
	Total Procurement Cost	**460,000,000**

2. Start-Up Cost

The start-Up cost is incurred to support operational needs. This cost is usually incurred in the first years because production activities, business licenses, permits from the National Agency of Drug and Food Control, and distribution permits are very important[28,34].

Table 2. Start-Up Cost

No	Types of Cost	Total (IDR)
1	Business License Management	5,000,000
2	Management of National Agency of Drug and Food Control/ Indonesian National Standard Permits	15,000,000
3	Marketing Permit Management	20,000,000
	Total Start-Up Cost	**40,000,000**

3. On-Going Cost

On-Going cost is incurred when production has been carried out. It consists of the maintenance and replacement of components or spare parts [28,34]

Table 3. On Going Cost

No	Type of Cost	1^{st} year (IDR)	2^{nd} year (IDR)
1	Maintenance cost	0	2,000,000
2	Spare Part cost	0	3,000,000
	Total on Going Cost	**0**	**5,000,000**

4. Production Cost

The monthly micro-scale production capacity is planned to be 1000 liters. To make 1000 liters of Eco Enzymatic Detergent, approximately 100 kg of Vegetable Surfactant and 200 Liters of organic enzymes are needed. It is necessary to include other components, such as labor, electricity, additional materials, packaging, and administration, in order to calculate production costs [28,34]).

Table 4. Production Cost Details

No	Production Components	Needs	Cost (IDR)	Total (IDR)
1	Vegetable Surfactant (MES)	100 kg	100.000/kg	10,000,000
2	Organic Enzymes	200 liter	20.000/ltr	4,000,000
3	Labor	3 people	1.500.000 /person/ month	4,000,000
4	Local Water Company	-	1.000.000 /month	1,000,000
5	Electricity	-	1.000.000 / month	1,000,000
6	Additional Components	5 kg	100.000/kg	500.000
7	Liquid Detergent Packaging	1.000 pcs	10.000/pcs	10,000,000
8	Box packing	100 pcs	10.000/pcs	1,000,000
Total Production Cost				**32.000.000**

5. Product Selling Price

Based on the planned production capacity of 1000 liters per month, Eco detergent Enzymatic will be packaged per 1000 ml, hence the number of products to be marketed is 1,000 pcs/month. The desired level of profit is required to determine the selling price[28,34)]. In this study, the desired profit level is 40%. The selling price per pcs can be determined as follows.

$$MSRP = \frac{Monthly\ Production\ Cost}{Total\ Products\ production}\ x\ \big(1 + Profit\ level\ (\%)\big) \quad (9)$$

$$MSRP = \frac{32.000.000}{1000}\ x\ (1 + 40\%)$$

$$MSRP = \frac{32.000.000}{1000}\ x\ (1{,}4\ \%)$$

$$MSRP = IDR\ 44.800$$

Based on the product selling price calculation, the product will be sold at a price of IDR 44,800 per pcs with a net of 1000 ml.

b. Investment Feasibility Analysis

A feasibility analysis is carried out using the Payback Period, Net Present Value, and ROI methods. A summary of the calculation of costs is shown in the table below:

Table 5: Data Collection and Processing Results

1	Cost Of Investment (Credit for Small and Micro Enterprises)	10,37%
2	Revenue (1year = 44.800x1000X 12)	IDR 537.600.000
3	Growth	25%
4	Inflasi	4%
5	Initial Investment	IDR. 505.000.000
6	Usia Proyek	5 Years

Tabel 6: Production Components in 1 Year

Production Components	1 Month (IDR)	1 Year (IDR)
Methyl Ester Sulfonat (MES)	10,000,000	120,000,000
Organic Enzymes	4,000,000	48,000,000
Labor	4,500,000	54,000,000
Regional Water Supply Company	1,000,000	12,000,000
Electricity	1,000,000	12,000,000
Additional Ingredients	500,000	6,000,000
Liquid Detergent Packaging	10,000,000	120,000,000
Box packing/ 10 pcs	1,000,000	12,000,000
OPEX	**32,000,000**	**384,000,000**

Table 7: EBITDA To Determine Net Cash Flow

	Tahun 0	Tahun 1	Tahun 2	Tahun 3	Tahun 4	Tahun 5
Revenue		Rp 537.600.000	Rp 672.000.000	Rp 840.000.000	Rp 1.050.000.000	Rp 1.312.500.00
OPEX		Rp 384.000.000	Rp 399.360.000	Rp 415.334.400	Rp 431.947.776	Rp 449.225.68
EBITDA		**Rp 153.600.000**	**Rp 272.640.000**	**Rp 424.665.600**	**Rp 618.052.224**	**Rp 863.274.31**
EBITDA margin		**29%**	**41%**	**51%**	**59%**	**66**

Tabel 8: Net Cash Flow

	Tahun 0	Tahun 1	Tahun 2	Tahun 3	Tahun 4	Tahun 5
Initial investment	-Rp 505.000.000					
EBITDA		Rp 153.600.000	Rp 272.640.000	Rp 424.665.600	Rp 618.052.224	Rp 863.274.31
Net Cash Flow	**-Rp 505.000.000**	**Rp 153.600.000**	**Rp 272.640.000**	**Rp 424.665.600**	**Rp 618.052.224**	**Rp 863.274.31**
Accumulated Cash Fl	**-Rp 505.000.000**	**-Rp 351.400.000**	**-Rp 78.760.000**	**Rp 345.905.600**	**Rp 963.957.824**	**Rp 1.827.232.13**

Table 9: PV Cost of Investment

Cost Of Investment						
Usia Proyek	**Tahun 0**	**Tahun 1**	**Tahun 2**	**Tahun 3**	**Tahun 4**	**Tahun 5**
Initial Investnent	Rp 505.000.000					
OPEX		Rp 384.000.000	Rp 399.360.000	Rp 415.334.400	Rp 431.947.776	Rp 449.225.687
Cost Of Investment	Rp 505.000.000	Rp 384.000.001	Rp 399.360.002	Rp 415.334.403	Rp 431.947.780	Rp 449.225.692
PV Cost Of Investment	**Rp 505.000.000**	**Rp 347.920.632**	**Rp 327.840.407**	**Rp 308.919.112**	**Rp 291.089.859**	**Rp 274.289.621**
Acc Cost Of Investment	**Rp 505.000.000**	**Rp 852.920.632**	**Rp 1.180.761.039**	**Rp 1.489.680.151**	**Rp 1.780.770.011**	**Rp 2.055.059.631**

c. Investment Feasibility Criteria Green Detergent, "Enzymatic Eco Detergent"

The investment feasibility analysis is carried out in the production of Green detergent, based on the data processing. This is shown in Table 10:

Table 10: Investment Feasibility according to the Criteria

Investment Criteria	Feasibility Indicator	Result	Feasibility Result
IRR	> 10.37 %	57.57%	Feasible
NPV	> 0 (Positif)	IDR 1,117,448,350.97	Feasible
Payback Period	< 5 Years	3 Years	Feasible
ROI	> 10.37 %	54%	Feasible

CONCLUSIONS

Based on the financial analysis of four investment assessments for start-up green detergents, the project's implementation is feasible. Furthermore, all investment feasibility criteria meet the eligibility requirements where the IRR value is

57.57%. The average loan interest rate of a micro business is 10.37%. The NPV shows a positive IDR of 1,117,448,350.97, and the investment payback period is less than the project's age, which is three years. It is also faster, and the Return on Investment value is 54%. The investment is profitable with a return rate of 10.37%, hence, its implementation is feasible.

REFERENCES

1. Connell, D. W. dan GJ Miller,"Kimia dan Ekotoksikologi Pencemaran." Jakarta : UI Press, 1995.
2. Anitya, Dita," Pakai Detergen Tiap Hari? Simak 4 Fakta Bahayanya Bagi Lingkungan," IND Times. https://www.idntimes.com/science/discovery/dita-anitya/fakta-bahaya-detergen-lingkungan-c1c2 (accessed May 20, 2022).
3. M. Bressan, M.G. Marin, R. Brunetti,"Effect of linear alkylbenzene sulphonate (LAS) on skeletal development of sea urchin embryos (Paracentrotus lividus Lmk)," *Water Res*. **25**(5), 613-616 (1991).
4. Lewis, M.A,"Chronic and sublethal toxicities of surfactants to aquatic animals: a review and risk assessment," *Water Res*. **25**(1):101-113 (1991)
5. Budiawan, Fatisa, Y., Khairani N ,"Optimasi Biodegradabilitas dan Uji Toksisitas Hasil Degradasi Surfaktan Linear Alkilbenzena Sulfonat (LAS) sebagai Bahan Deterjen Pembersih," *Makara Sains*, **13** (2), 125-133 (2009)
6. Lubis, E. H., Hendra, W., & Lestari, N ," Mempelajari ekstraksi dan stabilitas total karotenoid, α dan β cryptoxanthin dalam ekstrak buah merah (Pandanus conoideus, Lamk)," *Jurnal Riset Teknologi Industri*, **6** (12), 11–19. (2012). http://dx.doi.org/10.26578/jrti.v6i12.1517
7. Watkins, C., "All Eyes are on Texas". *Inform* 12 : 1152-1159. (2001)
8. Sampepana, I., Paluphy E.Y., Aditya R. and Amiroh ,"Perbandingan Karakteristik Metil Ester Sulfonat dan Sodium Lauril Sulfonat Sebagai Bahan Emulsifier," *Jurnal Ristek Teknologi Industri* **1**(2), 167-176 (2015). https://doi.org/10.26578/jrti.v9i2.1715
9. Adelliya Novianti, and I Nengah Muliarta.. "Eco-Enzym Based on Household Organic Waste As Multi-Purpose Liquid". *Agriwar Journal* **1** (1), 12-17 (2021). https://www.ejournal.warmadewa.ac.id/index.php/agriwar/article/view/3655
10. Dewi, Dian Masita," Pelatihan Pembuatan Eco-Enzyme Bersama Komunitas Eco-Enzyme Lambung Mangkurat Kalimantan Selatan," *ILUNG*,. **1**(1) 67-76 (2021). https://doi.org/10.20527/ilung.v1i1.3560
11. Hanifah, Primarista, Prasetyawan, Safitri, Adyati, Srihadyastutie," The Effect of Variations in Sugar Types and Fermentation Time on Enzyme Activity and Total Titrated Acid on Eco-Enzyme Results of Fermentation," *7th International Conference on Biological Science (ICBS 2021)* Atlantis Press International (2021). https://dx.doi.org/10.2991/absr.k.220406.084
12. L. Vama and M. N. Cherekar, Production, Extraction and Uses Of Eco-Enzyme Using Citrus Fruit Waste: Wealth From Weste. *Asian J. Of Microbiol. Biotech. Env. Sc*. **22**(2) 346-351 (2020). http://www.envirobiotechjournals.com/AJMBES/v22i220/AJM-18.pdf
13. Neupane, K., & Khadka, R. Production of Garbage Enzyme from Different Fruit and Vegetable Wastes and Evaluation of its Enzymatic and Antimicrobial Efficacy. *Tribhuvan University Journal of Microbiology*, **6**(1), 113–118 (2019). https://doi.org/10.3126/tujm.v6i0.26594
14. Galintin, O., Rasit, N., & Hamzah, S ," Production and characterization of eco enzyme produced from fruit and vegetable wastes and its influence on the aquaculture sludge," *Biointerface Research in Applied Chemistry* **11**(3) 10205–10214 (2021). https://doi.org/10.33263/BRIAC113.1020510214
15. C. Arun and P. Sivashanmugam, "Solubilisation Of Waste Activated Sludge Using Garbage Enzyme Produced From Different Pre-Consumer Organic Waste," *RSC*

advances **5**(63) 51421-51427 (2015).
16. C. Arun and P. Sivashanmugam, "Study on optimization of process parameters for enhancing the multi-hydrolytic enzyme activity in garbage enzyme produced from preconsumer organic waste," *Bioresour. Technol* **226** 200–210 (2017). doi: 10.1016/j.biortech.2016.12.029
17. United Nations Environment Program ,"Fourth Intergovernmental Meeting of the Global Programme of Action." (2018) https://www.unep.org/cep/events/working-group-meeting/fourth-intergovernmental-meeting-global-programme-action (acssessed July 3, 2022)
18. Badan Standardisasi Nasional ,"SNI 4075-1:2017 Detergen Cuci Cair bagian 1 Pakaian," (2017)
19. BSPJI. Balai Standarisasi dan Pelayanan Jasa Industri Banjarbaru (2022). https://bspjibanjarbaru.kemenperin.go.id/pengujian/ (acssessed August 4, 2022)
20. E. Kusrini, D. Supramono, M.I. Alhamid, S. Pranata, L.D. Wilson, and A. Usman, "Effect of polypropylene plastic waste as co-feeding for production of pyrolysis oil from palm empty fruit bunches," *Evergreen*, **6** (1) 92–97 (2019). https://doi:10.5109/2328410
21. A. Gautam, T.M. Mata, A.A. Martins, and N.S. Caetano, "Evaluation of areca palm renewable options to replace disposable plastic containers using life cycle assessment methodology," *Energy Reports*, 6 80–86 (2020). https://doi:10.1016/j.egyr.2019.08.023.
22. K. Changwichan, and S.H. Gheewala, "Choice of materials for takeaway beverage cups towards a circular economy," *Sustainable Production and Consumption*, 22 34–44 (2020). https://doi:10.1016/j.spc.2020.02.004
23. C.F. Jung, D.A. de Jesus Pacheco, F. Sporket, C.A. do Nascimento, and C.S. ten Caten, "Design from waste: a novel eco-efficient pyramidal microwave absorber using rice husks and medium density fibreboard residues," *Waste Management*, 119 91–100 (2021). https://doi:10.1016/j.wasman.2020.08.047
24. S. Hartini, F.Yuanda, Y. Widharto, and H. Muhammad, "Optimal Treatment Combination for Dishwashing Liquid Soap based on Waste Cooking Oil According to The Requirement of Indonesian Quality Standards," *Evergreen*, **8** (2) 492–498 (2021). https://doi.org/10.5109/4480734
25. A.Berisha and L Osmanaj," Kosovo Scenario for Mitigation of Greenhouse Gas Emissions from Municipal Waste Management," *Evergreen,* **8** (3), 509-516 (2021) https://doi.org/10.5109/4491636
26. B. Shahriari, A. Hassanpoor, A. Navehebrahim, and S. Jafarinia, "A systematic review of green human resource management," *Evergreen*, 6 (2) 177–189 (2019). doi:10.5109/2328408.
27. N.Bhasin, R.R.Kar, and N.Arora , "Green Disclosure Practices In India: A Study of Select Companies," *Evergreen*, **2** (2) 5-13 (2015). https://doi.org/10.5109/1544075
28. Dewi, D. M., & Wahdi, A," *Bisnis dan Perencanaan Bisnis Baru,*" Deepublish, 2020. https://books.google.co.id/books?id=xXzSDwAAQBAJ&p
29. Nurmalina R, Sarianti T, Karyadi A," *Studi Kelayakan Bisnis*," Bogor : IPB Press, 2017
30. Kasmir dan Jakfar ,"Studi Kelayakan Bisnis," Jakarta. Penerbit Kencana, 2003
31. Karl, T, Ulrich," Product Design and Development," Mc. Graw Hill Companies, 2012.
32. OJK ,"Suku Bunga Dasar Kredit,"[Online]. 2022 https://www.ojk.go.id/id/kanal/perbankan/Pages/Suku-Bunga-Dasar.aspx. (acssessed August 8, 2022)
33. Marimin," Teknik dan Aplikasi Pengambilan Keputusan Kriteria Majemuk." Jakarta : Grasindo, 2003.
34. Nasution, Hakim, Anwar. Manajemen Industri. Yogyakarta : Andi Offset, 2006

© 2021 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY SA) license (https://creativecommons.org/licenses/by-sa/4.0/).