

OPTIMIZATION OF BUSINESS STRATEGY IN IMPROVING THE EFFICIENCY OF BUSINESS CAPITAL USE

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Abstract

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Indonesia is the fourth largest coffee-producing country in the world after Brazil, Vietnam, and Colombia (Richardson et al., 2023). Seeing this opportunity is widely used by business people in making coffee shops (Fahmi & Savira, 2023). This study aims to see the level of efficiency produced by coffee shops with data envelopment analysis (DEA) techniques. This analysis uses input variables, namely labor costs, raw material costs, overall capital, and the amount of labor, and output variables, namely gross profit, and net profit. In DEA using variable return scale (VRS) assumptions where the addition of inputs is not necessarily offset by the output. The sample used was 67 coffee shops in Soloraya. The results of the analysis show that 22 coffee shops have experienced a 100 percent efficiency level while 45 coffee shops have not experienced a 100 percent efficiency level, meaning that those that have not reached 100 percent need improvement in the use of inputs and improved output targets and also benchmarking to make adjustments to their business activities. Managers find it easier to make decisions about whether the business will be saved or increased targets so DEA techniques are more suitable for business people to use in making a decision.

Keywords: Efficiency, Input, Output, DEA

Authors' individual contribution: Conceptualization — S.T.U.; Methodology — S.T.U.; Formal Analysis — S.T.U.; Data Curation — W.M.; Validation — W.M.; Writing — Original Draft — S.T.U.; Writing — Review & Editing — W.M.

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1. INTRODUCTION

Coffee is the second largest commodity in world trade after oil (Kucukkomurler & Özgen, 2009). In 2003, coffee was the sixth most important agricultural product in the world and has been an essential commodity for many countries (Kucukkomurler & Özgen, 2009), Indonesia being one of them. According to Databoks (2018), the International Coffee Organization stated that in early 2000, coffee consumption in Indonesia was 2 million bags of 60kg per year. According to the Agricultural Information System database of the Ministry of Agriculture (Databoks, 2017), the

positive trend of national coffee consumption continues. Due to high coffee production abroad, companies can build coffee shops (Fahmi & Savira, 2023). With an investment strategy focusing on the long term, achieving business success should be profitable (Danyliuk et al., 2020). Therefore, entrepreneurs should emphasize activities that earn a healthy income, and from a sustainability perspective, the company's development and performance are signs that the company is doing very well.

According to Sasongko (2023), the number of SME players is 64.2 million, 99.99% of the number of business players in Indonesia. According to

the Ministry of Corporate Affairs and Small and Medium Enterprises (MenKopUKM), it is essential to have the same data for 64 million small and medium enterprises (SMEs) in Indonesia; they have still various challenges, such as finance and market access in direct communication technology. In addition, SMEs previously needed help adopting technology due to a lack of resources and market constraints. Many of the challenges associated with the rise of technology have a negative impact on business activities (Aprilia et al., 2023). Industry 4.0 will help new technologies such as big data, the Internet of Things, and smart factories achieve sustainable business practices (Haseeb et al., 2019). One of the emerging small businesses is the coffee shop. This coffee shop business can be found in almost every region of Indonesia, and its number is increasing every year.

One is the emergence of the coffee business, which should be connected with the city's social culture of young people and millennials. This has recently increased the number of coffee businesses in Indonesia. The most considerable increase has been in coffee shops, with household coffee consumption rising recently. Significant lifestyle changes and advanced technologies enabled businesses and coffee shops to celebrate this period (Vicol et al., 2018). Many new things are coming to Indonesia, especially in Soloraya; coffee shops are developing very fast. Success in the coffee business requires many skills to add value, all of which are processed into ground coffee, instant coffee, roasted coffee, blended coffee, blended coffee drinks, and other products to compete in the market (Ochago et al., 2023). Business premises used to produce coffee are ideal because they are not separated from the needs and customs of other coffee drinkers (Stofya, 2023). The emergence of local coffee shops is like seeing a vast market among coffee lovers. Therefore, coffee shops have developed rapidly in recent years, intensifying coffee competition.

This research uses data envelope analysis (DEA) to focus on efficiency and business performance. For this study, we aimed to determine how much capital should be used to run a company when setting guidelines for implementing new strategies or evaluating the performance achieved by management. Investigate what contributions are being made to accomplish this goal of generating corporate profits. There is no information in the context of the DEA in the coffee business of Indonesian companies, there is a lot of information about the financial sector (Abidin et al., 2021; Anwar, 2019; Endri et al., 2022; Kristianto & Hendrawan, 2019; Muarief, 2019; Octrina & Mariam, 2021; Vidianata & Satria, 2022; Wasiaturrahma et al., 2020), manufacturing companies (Ben Lahouel et al., 2021; Tubastuvi & Fitriati, 2018; Ulkhaq, 2022), Institutional Zakat (Ryandono et al., 2023), hospitals (Amrao & Kurane, 2019; Habib & Shahwan, 2020; Thabrani et al., 2019), education (Sapanji et al., 2021) and good insurance companies are also widely discussed in Nigeria, Malaysia, Singapore, Indonesia, Serbia, Poland, and Slovakia (Abdin et al., 2022; Smętek et al., 2022). As far as researchers know, this is the first time someone has examined the details of the Indonesian coffee shop business in context using

DEA (Tavana et al., 2023). Although this analysis is rarely performed, it is essential to know that managers are optimizing profits when using capital.

2. LITERATURE REVIEW

The financial indicator is a picture of the company's success and can be interpreted as the results of various practical activities (Izadikhah, 2022). It can be explained that financial performance is an analysis to determine how well the company has followed the rules of financial implementation (Dutta et al., 2020). Companies need to know financial indicators and evaluate how much the company's level of success is based on actual economic activities (Neves et al., 2021). Analyzing financial performance from a critical point of view includes calculation, measurement, interpretation of data, and proposal of financial solutions for the company in a certain period (Horváthová et al., 2019). DEA is often used to develop economic theory but is also used as a project management indicator to create appropriate decision-making units (DMUs) (Shafiee et al., 2021). At the same time, the concept of consumers develops needs or preferences (Wuttke et al., 2019). In production theory, it is called the boundary line, which is the line that shows how much input is used to produce the output (Dormady et al., 2019). A company is considered profitable if the output is less than the input (Pishgar-Komleh et al., 2020). Profitability means more output and resources and measures expected performance (Gerami, 2019). The most essential concept in economics is management through the efficient combination of resources (inputs) to achieve desired results (Iqbal et al., 2019). There are two types of efficiency: technical and economic (Oluwatayo & Adedeji, 2019). Technical efficiency shows the production process's ratio between inputs and outputs (Salas-Velasco, 2020). Economic efficiency has a broader meaning than technical efficiency. In economic efficiency, companies must choose levels of inputs or outputs and their combination to optimize their financial goals (Camanho et al., 2024), usually by minimizing costs or maximizing profits. The concept of technical efficiency is used in this study. This approach is essential in the coffee shop industry study as an evaluation and policy of using existing resources to generate business profits.

The coffee shop industry has given relative performance evaluation a lot of weight. This industry has recently evolved into a new way of life for coffee enthusiasts among seniors and teenagers. For that reason, this business opportunity is highly strategic in making money. Table 1 summarizes the literature on the use of DEA for quantitative analysis, which is used by many businesses, including manufacturing, marketing, and sales. This object was used as a map for coffee industry research. The result recommends using various methods to evaluate a company's performance. It was found that more ratio analysis alone was insufficient to assess project performance, and more sophisticated tools such as DEA should be used. Data from Soloraya, Indonesia's coffee shop business, is used in this study.

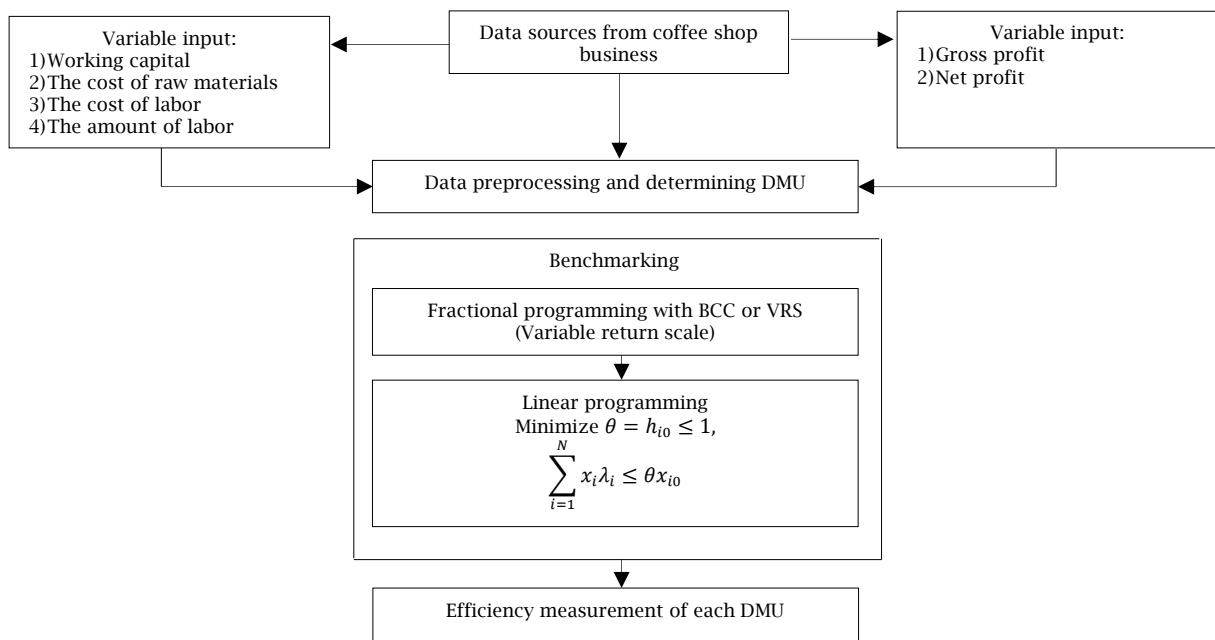
Table 1. Previous study

Sources	Methodology	Output/input	Main result
Shi and Yu (2021)	DEA-BBC model; Sector banking in Chinese	Input: Liquidity risk, credit Risk, Market risk, change asset quality, profitability, capital adequacy, adequacy reserves. Output: Profitability, return shareholders.	The level of risk management efficiency of Chinese commercial banks is low and the cause is technology Chinese banks are very volatile in the technical efficiency of risk management and management capabilities will soon be improved.
Sharma (2023)	The New Slack Model (NSM) of the DEA; The hospitality and restaurant (H&Rs) sector	Input: Capital employed, gross fixed assets, current assets, and operating costs. Output: Operating income and profit before depreciation, interest, and tax (PBDIT) are considered.	Technically speaking, only 65.58% of hospitals and restaurants are efficient. This suggests that there is a great deal of room for improvement because some resources are not being used.
Sultana et al. (2023)	The Cobb-Douglas Stochastic Frontier Analysis (SFA) and the input-oriented data envelopment analysis (DEA) methods; Potato farming in Bangladesh	Land, yield, seed, tiling cost of labor, irrigation, fertilizer, vitamins, pesticides, education, age, experience, training, access to credit, land fragmentation, weed uprooting cost, household size, and cold storage facility.	Efficiency points to major allocative, technical, and economic inefficiencies in potato farming, and efficiency enhancement has the potential to raise potato output levels. An inefficiency analysis reveals that socioeconomic and infrastructure factors work together to affect the variability of potato production.
Yu et al. (2023)	DEA-Malmquist model; The raw milk industry in China	Input: Concentrated feed, roughage, labor hours, capital input, and other production costs; Output: Raw milk production, by-product output value, and gross output value.	Raw milk production efficiency is significantly influenced by various factors, including the proportion of concentrate to roughage consumption, medical and epidemic prevention investment, the price of raw milk, the wage level, and fixed assets.

However, there are two types to measure managerial efficiency: operational and financial efficiency. This type has different stages in providing services that describe an important part of coffee business operations, namely by providing the resulting profit (Heskett et al., 1994). Combining the process with the results in the DEA model will result in a level of efficiency in evaluating management performance in coffee in the Soloraya Region. This method differs from traditional studies focusing only on an operational assessment (Choi et al., 2007; Donthu & Yoo, 1998). This research combines two types of efficiency in forming a coffee shop business performance

portfolio. Among them, the performance of management is no longer considered in terms of production efficiency but as a dimension that includes broad operational activities and financial results (Pascoe et al., 2023). Compared to traditional measurements of the efficiency of a single model, models that combine poses with results are considered more suitable for conducting performance evaluations (Nazari-Shirkouhi et al., 2023), which coffee shops produce because of their fluctuating characteristics in their business activities. Based on the explanation above, the stages of the research process carried out to reach business decisions in the efficient category or not are below:

Figure 1. Research conceptual framework



3. RESEARCH METHODOLOGY

The research uses quantitative methods (Charnes et al., 1978; Creswell, 2013; Perreault, 2011). Data is generated with data envelopment analysis (DEA), which measures the level of technical efficiency in categorizing inputs and outputs used (Sıcakyuz, 2023). The DEA was first introduced by Charnes et al. (1978) as a linear programming methodology to analyze the efficiency level of a business's

operational activities (Wong & Wong, 2007). The unit of analysis described is the decision-making unit (DMU). In other words, it eliminates the function of determining the relationship between performance and efficient calculations and uses the frontline concept of efficiency as the standard of empirical excellence (Sufian & Shah Habibullah, 2010). This advantage of DEA allows a manager to evaluate what actions should be done efficiently without finding any relationship in action (Novickytė & Drożdż, 2018).

Table 2. DEA advantages according to several studies

Sources	Model DEA with single input and multiple output	Sources	Model DEA with multiple inputs and multiple outputs
Karsak and Ahiska (2005)	<ul style="list-style-type: none"> Enhanced capacity for discrimination. Based on results that are both ordinal and cardinal. Produces the highest-performing DMU in comparison to DEA-based methods by solving fewer linear programs. 	Karsak and Ahiska (2007)	<ul style="list-style-type: none"> Adds to the work of Karsak and Ahiska (2005) by incorporating several inputs into the framework for making decisions. Offers computational advantages over traditional DEA models. Enhanced discriminating power in comparison to traditional DEA.
Karsak and Ahiska (2008)	<ul style="list-style-type: none"> Improves on the method (Karsak & Ahiska, 2005) suggested by using a bisection search algorithm. Enables the robust calculation of the discriminating parameter, values instead of requiring an arbitrary step size value. 	Amirteimoori and Emrouznejad (2012)	<ul style="list-style-type: none"> Permits the reduction of input or output when necessary due to system restrictions.
Foroughi (2012)	<ul style="list-style-type: none"> Retains the approach's discriminating power even after removing the discriminating parameter from the Karsak and Ahiska (2005) model. Offers computational efficiency in comparison to models that use the discriminating parameter's step size value. 	Omrani (2013)	<ul style="list-style-type: none"> Ensures the acquisition of the highest-performing DMU.
Toloo (2013)	<ul style="list-style-type: none"> Increased ability to discriminate without the need for a distinguishing parameter. 	Salahi et al. (2016)	<ul style="list-style-type: none"> Appropriate for issues involving interval data.
		Yang et al. (2016)	<ul style="list-style-type: none"> Determines how a DMU's efficiency scores have changed over time.
		Carillo and Jorge (2016)	<ul style="list-style-type: none"> Reduces each DMU's total Tchebychev distances to a desirable value.

This concept has proven valid in measuring the resulting performance comparison (Farrell, 1957). Some of the previous literature on DEA has been widely applied and developed in various concepts of efficiency in various sectors and fields of companies, such as marketing about advertising (X. Luo & Donthu, 2005); in supply chain performance (Wong & Wong, 2007); evaluation of agricultural financial performance (Fenyves et al., 2015); in the field of risk or crisis management bank (D. Luo & Yao, 2010; Shi & Yu, 2021); in fees and revenues at the airport (lo Storto, 2018); operational measurement at the port (Wang et al., 2022); in retail stores (Balios et al., 2015; Thomas et al., 1998); insurance companies (Abdin et al., 2022; Barros et al., 2005); performance in manufacturing (Bulak & Turkyilmaz, 2009); accounting service providers (Barrar et al., 2002); eco-technological innovation (Mehmood et al., 2022); in the field of transportation (Stević et al., 2022).

According to Charnes et al. (1978), an efficiency evaluation at the comparison unit level is based on several methods with basic assumptions to obtain decision making. This method uses assumptions that every DMU has inputs and outputs executed. The vector of each input that is used as a DMU is notated. Input variables are denoted as follows where v and you describe the input and output. It can be said that the DEA is a non-parametric method

to measure technical efficiency in this study (Ikapel et al., 2023). This means that this analysis tool does not use assumptions that appear in the data. Then, in the analysis valid fractional measures are considered using Constant Returns to Scale (CRS) and Variable Returns to Scale (VRS) method (Zarrin & Brunner, 2023). Charnes, Cooper, and Rhodes' (CCR) formulation according to Charnes et al. (1978) is:

$$\text{Min } \theta = h_{i0} \leq \theta x_{i0} \quad (1)$$

$$\sum_{i=1}^N x_i \lambda_i \leq \theta x_{i0} \quad (2)$$

$$\sum_{i=1}^N y_i \lambda_i \leq \theta y_{i0} \quad (3)$$

$$\lambda_i \geq 0, i = 1, 2, \dots, N$$

As a form for optimization solutions, the notation θ^* . When it is said a unit decision can be effective or efficient by the criterion $\theta^* = 1$ while a unit decision is ineffective or efficient if $\theta^* \leq 1$. In an equation that occurs means 1) If $\sum_{i=1}^N \lambda_i > 1$, this means that the input increases, which means that the output produced is greater than the input-output. This circumstance can be expressed as

an increased yield scale. Opposite to $\sum_{i=1}^N \lambda_i = i$, this means that the input that goes down means that the output produced is smaller than the input-output. It can be expressed as a decreased yield scale. If in a model situation equation (1) is reinforced $\sum_{i=1}^N \lambda_i = i$, then BCC or VRS models can be generated. This model states that every time there is an increase in the input unit issued, it is not necessarily that the output produced will increase. The BCC model is as follows:

$$\text{Min } \theta = h_{i0} \leq 1 \quad (5)$$

$$\sum_{i=1}^N x_i \lambda_i \leq \theta x_{i0} \quad (6)$$

$$\sum_{i=1}^N y_i \lambda_i \geq \theta y_{i0} \quad (7)$$

$$\sum_{i=1}^N \lambda_i = 1 \quad (8)$$

$$\lambda_i \geq 0, i = 1, 2, \dots, N$$

In this study, the working capital, raw material cost, labor cost, and the number of employees of each company, especially for the coffee shop business, can be used as the input power, and the output is the gross profit and net profit, usually using BCC or VRS. It is the basis of DEA. For example, when conducting DEA using constant variable scaling (CRS), the input process of a Starbucks coffee shop uses all capital, including labor and production costs. The model calculates capital costs and labor costs, and the results are the same as the actual results. So, the reason for using VRS/BCC is because of the assumption of this model: in general, all coffee shops studied have yet to operate under optimal conditions that can produce better efficiency scores than the CRS/CCR model. CRS/CCR is a coffee shop business in a position optimal for operational activities from the beginning, meaning that the company already has an efficient work structure, procedures, and policies in running its business. The choice of the model is more suitable to use VRS/BCC than CRS/CCR because the business studied still needs to be more stable and optimal.

In this study, the focus is on the operational activities of the coffee shop business in Soloraya. This shop business is trendy and has mushroomed in almost all regions of Central Java in recent years. The coffee business is modern among easy children and millennials, especially coffee drinks (Iannone & Caruso, 2023). Data collection is done by distinguishing outputs and inputs to explain how many efficient business activities are carried out. The inputs used include working capital (Sharma, 2023), the cost of raw materials, the cost of labor, the amount of labor (Hossain et al., 2023; Khadafi et al., 2023; Nguyen et al., 2023; Sultana et al., 2023; Yu et al., 2023) While the output produced is gross profit and net profit (Hossain et al., 2023; Nguyen et al., 2023; Sharma, 2023). Inputs include a benefit that results from what is spent, while outputs include what is paid to produce benefits. In this case, researchers use the concept of input and

output selection criteria that are carried out based on the similarities made or issued by the object under study as an example of this study examining the object of research in the coffee shop business. In contrast, in spending capital, labor costs, and raw material costs, the amount of labor must be needed when opening a business. What is produced is profit, meaning that if you open a business, it will undoubtedly generate profit; the concept of this research is like using the idea of several kinds of research objects that have been carried out in the input adopted on the Indian hotels and restaurants (Sharma, 2023), the selected garments factories in Bangladesh (Hossain et al., 2023), Vietnam's wire and cable market (Nguyen et al., 2023), the potato farming (Sultana et al., 2023), raw milk (Yu et al., 2023), tumbu sugarcane production in Dawe District, Kudus Regency (Khadafi et al., 2023). The output of this study adopts the selected garments factories in Bangladesh (Hossain et al., 2023), the Indian hotels and restaurants (Sharma, 2023), and Vietnam's wire and cable market (Nguyen et al., 2023). So, with the same concept of output and input, researchers try to option this study with the object of the coffee shop.

This is important for the coffee shop business as the main factor driving the business in generating output in the form of profits generated from the business. This research is also a replication of several studies in the banking field (Shi & Yu, 2021), hotels and restaurants (Sharma, 2023), potato farming (Sultana et al., 2023), the raw milk industry (Yu et al., 2023) thus resulting in a replication of research conducted by research in its application in the coffee shop business in the Soloraya region. The data source was taken with primary cross-sectional data in 2021 from 67 coffee shop businesses in Soloraya, Central Java. In the process of ensuring the data produced is following what is needed, the retrieval process is carried out by creating a Google form with several questions that need to be filled in, such as personal identities as the name of the ownership, business name, and permit form then filling in the input (working capital, the cost of raw materials, the cost of labor, the amount of labor) and output (gross profit and net profit) listed on the Google Form, we went to the association of coffee shops in the Soloraya area to conduct data collection and filling out questionnaires which were carried out later so that the results were in line with expectations, prospective respondents were not forced to fill out the questionnaire.

This was done by entering a coffee shop in Soloraya and requesting permission from the head of the organization to ensure that the findings were accepted by the coffee organization. After obtaining permission, the researchers went to each coffee shop and asked the owner and store manager for permission to fill out a questionnaire in Google Forms. This information can be sent to managers, business officers or business owners so that the information provided does not conflict with business operations. Soloraya is one of the cities in Indonesia. It was originally Surakarta Karisidnan. It has seven districts, namely Surakarta City, Boyolali, and Suko. Harjo, Karan Anya, Wonogiri, Slagen and Klaten. Thoreau's coffee business grew in 2008, but it grew rapidly from 2018 to 2019; there

are 205 coffee shops in Thoreau. Due to this location, Surakarta Karisidan serves as an old area for coffee storage areas, including Boyolali, Sukoharjo, Karanganyar, Wonogiri, Sragen, and Klaten, which also affects the expansion of the coffee business as a commercial area.

4. RESULTS

Efficiency as a level of performance achievement that describes the minimization of inputs will result in the maximization of output (Abdullah et al., 2023). So, in condensing resources, it is necessary to understand why a business could be more efficient in utilizing resources and generating profits. Business actors oriented toward large profits will try to maximize their inputs and outputs (Indarto et al., 2023). The results obtained regarding the level of efficiency of the Soloraya shop business are in Table 3.

The analysis conducted shows that there are 67 coffee shops in Soloraya, and there are 22 coffee shops where respondents have experienced efficiency seen with DEA software that uses input data (overall capital, raw material costs, labor costs, number of labor) and output (gross profit and net profit) as seen in Table 3. And 45 coffee shops can be considered inefficient because the inputs released have not been maximized in producing output. This is shown in Table 4.

Table 3. The level of business efficient of coffee shops in Soloraya

No.	Coffee shop	Efficiency rate
1	Cold n Brew	100%
2	Topi Kopi Store	100%
3	After Midnight Coffee Station	100%
4	Alaz Coworking & Coffee	100%
5	Almamater Coffee & Eatery	100%
6	Asa Kita Coffee	100%
7	CNY Coffee	100%
8	Gemati Coffee	100%
9	Harso Coffee 8668	100%
10	James Coffee	100%
11	Jhon's Coffee House	100%
12	Keledupa The Private	100%
13	Kopi Dan Teh Karanganyar (Kin N Kim)	100%
14	Kopi Lawe Solo	100%
15	Kopi Manahan	100%
16	Linggih Food & Coffee Bar	100%
17	Namu Coffee & Eatery Solo	100%
18	Natahati Coffee & Eatery	100%
19	Sagga Coffee and Lifestyle	100%
20	Witwitan Kopi	100%
21	Tomuan Coffee	100%
22	Skapat Coffee Boyolali	100%

Note: A coffee Shop is a business that focuses more on coffee drinks with various types of menu choices. Efficiency rate is the level of achievement in optimizing input-output. If the resulting value is closer to 100%, the more efficient it is, as well as if less means the less efficient.

Table 4. Inefficient coffee shop (Part 1)

No.	Coffee shop	Efficiency rate	Benchmarking	Increased output
1	Babrak Space	82,76%	Cold N Brew; After Midnight Coffee Station; Almamater Coffee & Eatery; Asa Kita Kopi; Keledupa The Private	17,24%
2	Bell's Coffee	82,55%	Cold N Brew; Toko Kopi Sumbu; After Midnight Coffee Station; Harso Coffee 8668; Keledupa The Private	17,45%
3	Birru Tm	80,85%	Cold N Brew; After Midnight Coffee Station; Asa Kita Kopi; Harso Coffee 8668; Keledupa The Private	19,15%
4	Kopi Si Budi	79,36%	Cold N Brew; After Midnight Coffee Station; Almamater Coffee & Eatery; Asa Kita Kopi; Keledupa The Private	20,02%
5	Satu Tujuan Kopi	77,98%	Cold N Brew; After Midnight Coffee Station; Alaz Coworking & Coffee; Almamater Coffee & Eatery; Asa Kita Kopi; Keledupa The Private	22,02%
6	Suaka Coffee	82,38%	Cold N Brew; After Midnight Coffee Station; Asa Kita Kopi; Harso Coffee 8668; Keledupa The Private	17,62%
7	Cummunion Coffee Brewer	77,94%	Cold N Brew; After Midnight Coffee Station; Harso Coffee 8668; Keledupa The Private	22,06%
8	Couvee	90,61%	Cold N Brew; After Midnight Coffee Station; Almamater Coffee & Eatery; Keledupa The Private	9,39%
9	Salira Kopi	81,89%	Cold N Brew; Toko Kopi Sumbu; After Midnight Coffee Station; Harso Coffee 8668	18,11%
10	Situasi Kopi	77,56%	Cold N Brew; After Midnight Coffee Station; Asa Kita Kopi; Harso Coffee 8668; Keledupa The Private	22,44%
11	Dodolan Coffee	77,36%	Cold N Brew; After Midnight Coffee Station; Harso Coffee 8668; Keledupa The Private	22,64%
12	Heika Kopi Kartasura	69,64%	Cold N Brew; Toko Kopi Sumbu; After Midnight Coffee Station; Harso Coffee 8668; Keledupa The Private	30,36%
13	Hip.Pu.Su.Ta	82,26%	Cold N Brew; After Midnight Coffee Station; Alaz Coworking & Coffee; Asa Kita Kopi; Harso Coffee 8668	17,74%
14	Kopi Cendana	59,88%	Cold N Brew; Toko Kopi Sumbu; After Midnight Coffee Station; Harso Coffee 8668; Keledupa The Private	40,12%
15	Kopi Kepi	77,76%	Cold N Brew; Keledupa The Private; Namu Coffee & Eatery Solo; Natahati Coffee & Eatery	22,24%
16	Kulonuwun Kopi Saka Omah Sinten	72,12%	Cold N Brew; Toko Kopi Sumbu; After Midnight Coffee Station; Harso Coffee 8668; Keledupa The Private	27,88%
17	Lavanaa Coffee & Space	85,39%	Jhon's Coffee House; Keledupa The Private; Skapat Coffee Boyolali	14,61%
18	Loske Coffe Service	69,01%	Jhon's Coffee House; Keledupa The Private; Skapat Coffee Boyolali	30,99%
19	Kono Kopi	61,57%	Cold N Brew; Toko Kopi Sumbu; After Midnight Coffee Station; Keledupa The Private	38,43%
20	Kelana Oleh Sekutu Coffee	64,50%	Cold N Brew; Toko Kopi Sumbu; After Midnight Coffee Station; Harso Coffee 8668; Keledupa The Private	35,5%

Table 4. Inefficient coffee shop (Part 2)

No.	Coffee shop	Efficiency rate	Benchmarking	Increased output
21	Meurdue Chocolate & Coffee	86,38%	Cold N Brew; After Midnight Coffee Station; Asa Kita Kopi; Keledupa The Private; Linggih Food & Coffee Bar	13,62%
22	Minala Coffee & Eatery	73,66%	Cold N Brew; Toko Kopi Sumbu; Keledupa The Private; Linggih Food & Coffee Bar; Sagga Coffee and Lifestyle	26,34%
23	Nalla Coffee	76,92%	Cold N Brew; Toko Kopi Sumbu; Keledupa The Private; Linggih Food & Coffee Bar; Sagga Coffee and Lifestyle	23,08%
24	Namdwa Co & Chicken	68,18%	Cold N Brew; Toko Kopi Sumbu; After Midnight Coffee Station; Keledupa The Private	31,82%
25	New Birth Coffee	74,21%	Cold N Brew; Toko Kopi Sumbu; Keledupa The Private; Linggih Food & Coffee Bar; Sagga Coffee And Lifestyle	25,79%
26	Pacific Kopi	76,30%	Cold N Brew; Toko Kopi Sumbu; James Coffee; Keledupa The Private; Sagga Coffee and Lifestyle	23,14%
27	Panamana Ice Cream & Dessert	72,86%	Cold N Brew; Toko Kopi Sumbu; After Midnight Coffee Station; Keledupa The Private	27,14%
28	Panana Kopi	68,99%	Cold N Brew; Toko Kopi Sumbu; After Midnight Coffee Station; Harso Coffee 8668	31,01%
29	Pinara Coffee Roaster	65,93%	Cold N Brew; Toko Kopi Sumbu; Harso Coffee 8668; Keledupa The Private	34,07%
30	Pinnko Coffee and Space	69,40%	Cold N Brew; Toko Kopi Sumbu; After Midnight Coffee Station; Harso Coffee 8668; Keledupa The Private	30,6%
31	Polla Coffee	79,51%	Cold N Brew; Toko Kopi Sumbu; After Midnight Coffee Station; Harso Coffee 8668; Keledupa The Private	20,49%
32	Ruwat Coffee	78,33%	Cold N Brew; Toko Kopi Sumbu; Harso Coffee 8668; James Coffee; Keledupa The Private	21,67%
33	Sadari Kopi	83,83%	Cold N Brew; Asa Kita Kopi; Harso Coffee 8668; Keledupa The Private; Linggih Food & Coffee Bar	16,17%
34	Sapakopi	77,02%	Cold N Brew; Toko Kopi Sumbu; James Coffee; Keledupa The Private; Sagga Coffee And Lifestyle	22,98%
35	Saudagar Laweyan	78,11%	Cold N Brew; Toko Kopi Sumbu; Keledupa The Private; Sagga Coffee and Lifestyle	21,89%
36	Yaya.Co	68,03%	Cold N Brew; Toko Kopi Sumbu; After Midnight Coffee Station; Harso Coffee 8668; Keledupa The Private	31,97%
37	Savva Coffee House	67,43%	Cold N Brew; Toko Kopi Sumbu; After Midnight Coffee Station; Harso Coffee 8668; Keledupa The Private	32,57%
38	Sekutu Kopi	64,32%	Cold N Brew; Toko Kopi Sumbu; After Midnight Coffee Station; Harso Coffee 8668; Keledupa The Private	35,68%
39	Sugeng Ngopi	69,57%	Cold N Brew; Toko Kopi Sumbu; After Midnight Coffee Station; Harso Coffee 8668; Keledupa The Private	30,43%
40	Tanaku Kopi Solo	65,74%	Cold N Brew; Toko Kopi Sumbu; After Midnight Coffee Station; Harso Coffee 8668; Keledupa The Private	34,26%
41	Thamrin Coffee Solo	76,67%	Cold N Brew; Toko Kopi Sumbu; James Coffee; Keledupa The Private; Sagga Coffee And Lifestyle	23,33%
42	The Hidden Swargi	75,55%	Cold N Brew; Toko Kopi Sumbu; James Coffee; Keledupa The Private; Sagga Coffee And Lifestyle	24,45%
43	Toko Kopi Sumbu	87,16%	Cold N Brew; Keledupa The Private; Namu Coffee & Eatery Solo; Natahati Coffee & Eatery	12,84%
44	Ndalem Wiryantami Seafood and Coffee	90,61%	Cold N Brew; CNY Coffee; Keledupa The Private	9,39%
45	Dialog Coffee and Space Sukoharjo	98,77%	Cold N Brew; Toko Kopi Sumbu; After Midnight Coffee Station; Keledupa The Private	1,23%

Note: A coffee shop contains the name of the coffee shop business in Soloraya. Benchmarking as a benchmark between one shop and another as a form of making standards better by understanding the standards owned by other businesses. For example, in the Benchmarking column, there are several coffee shop names in each row which shows that in this table there are 45 coffee shops that are not yet efficient, in the Coffee shop column describes the names of coffee shops that have not been efficient or efficiency has not reached 100% optimal so that benchmarking becomes a guideline in making operational work optimization standards in coffee shops that are not yet efficient by adopting operational work systems to several coffee shops in the Benchmarking column based on DEA analysis. Benchmarking is carried out by analyzing input and output data collected in the field, with DEA software the resulting data is processed using the VRS method and produces the analysis, where this analysis will result in increased output as a form of performance improvement that needs to be emphasized by the business world.

This shows that 45 coffee shops only produce efficiencies in the range of 48,4%-98,77%, meaning that they need to improve their performance to be efficient in the range of 1,23%-38,43%. The efficiency value that has not reached 100% is that the resulting

performance has not been optimal. Performance that could be more optimal is due to expenses that are not optimal, such as labor load, raw material costs, and the amount of energy where the input savings incurred are shown in Table 5.

Table 5. Realization vs target coffee shop

No.	Coffee shop	Input savings tiers	Output optimization level
1	Babrak Space	66,9%-82,8%	100%
2	Bell's Coffee	66,9%-82,6%	100%
3	Birru Tm	78,6%-80,9%	100%
4	Kopi Si Budi	77,1%-79,4%	100%
5	Satu Tujuan Kopi	78%	100%
6	Suaka Coffee	76,1%-82,4%	100%
7	Cook Onion Coffee Brewer	75%-77,9%	94,2%
8	Couvee	70,7%-90,6%	100%
9	Salira Kopi	81,6%-81,9%	83%
10	Situasi Kopi	71,3%-77,6%	100%
11	Dodolan Coffee	59,7%-77,4%	89,1%
12	Heika Kopi Kartasura	69,6%	99,8%
13	Hip.Pu.Su.Ta	74,1%-82,3%	100%
14	Kopi Cendana	59,91%	65,3%
15	Kopi Kepi	68%-77,8%	100%
16	Kulonuwun Kopi Saka Omah Sinten	72,1%	99,5%
17	Lavanaa Coffee & Space	48,4%-85,4%	25,3%
18	Loske Coffe Service	46,7%-69%	23,4%
19	Kono Kopi	54,3%-61,6%	65,3%
20	Kelana Oleh Sekutu Coffee	64,5%	88,8%
21	Meurdue Chocolate & Coffee	83,2%-86,4%	100%
22	Minale Coffee & Eatery	59,6%-73,7%	100%
23	Nalla Coffee	73,2%-76,9%	100%
24	Namdwa Co & Chicken	67,5%-68,2%	99,5%
25	New Birth Coffee	62,3%-74,2%	100%
26	Pacific Kopi	76,3%	83,6%
27	Panamana Ice Cream & Dessert	66,6%-79,5%	79,5%
28	Panana Kopi	69%	78,6%
29	Pinara Coffee Roaster	65,9%	73,2%
30	Pinnko Coffee and Space	69,4%	92,4%
31	Polla Coffee	79,5%	98,7%
32	Ruwat Coffee	78,3%	84,2%
33	Sadari Kopi	80,1%-83,8%	100%
34	Sapakopi	77%	88,4%
35	Saudagar Laweyan	77,8%-78,1%	87,8%
36	Yaya.Co	68%	63,9%
37	Savva Coffee House	67,4%	88,5%
38	Sekutu Kopi	64,3%	95,2%
39	Sugeng Ngopi	69,6%	88,2%
40	Tanaku Kopi Solo	65,7%	77,2%
41	Thamrin Coffee Solo	76,7%	86,8%
42	The Hidden Swargi	75,6%	79,2%
43	Toko Kopi Sumbu	78,6%-87,2%	100%
44	Ndalem Wiryantami Seafood and Coffee	59,9%-90,6%	38,9%
45	Dialog Coffee and Space Sukoharjo	89,6%-98,8%	58%

Note: The Input Saving Tier is the level at which a coffee shop business can make savings in conducting its business operations; the Onput Optimization Level is the level at which the coffee shop business can generate optimal profits.

The lowest inefficiency was shown at the coffee shop, with the achievement made in input savings still 48,4%-85,4%, so the shop had to increase savings of 51,6%-14,6%. This proves that the inefficiency of coffee shops produced in the input issued still needs to reach 100%, and the output produced is still below 50%; the cause is that there is overall capital. Raw material costs, labor costs, and high labor amounts in generating profits are not optimal. So, managing significant funds with suboptimal turnover will result in low profits. It can also be seen that although the inefficiency, the shops that have reached 100% optimal, are such as Toko Kopi Sumbu, Sadari Kopi, Babrak Space, Bell's Coffee, Kopi Si Budi, Suaka Coffee, Satu Tujuan Kopi, Couvee, Meurdue Chocolate & Coffee, Minale Coffee & Eatery, Nalla Coffee, and New Birth Coffee. This proves that 12 coffee shops that experience optimization in the output produced will still be considered wasteful; there needs to be a reduction in terms of labor costs, raw material costs, and the amount of labor so that even though the output of profits produced is optimal, the burden incurred is also optimal. A coffee shop will be able to make even

better savings for the continuity of the coffee shop business that runs.

5. DISCUSSION

The coffee shop business in Indonesia is increasingly rife due to its promising business opportunities, and almost all people, from young to old, become coffee connoisseurs. However, significant business opportunities will tighten competition between businesses in the market. Business people are competing to attract customers by providing coffee of various varieties, a place to hang out comfortably, and a price advantage for coffee drinks that the community can accept without reducing quality. On the other hand, with a comfortable place, many varieties of coffee menus provided, and prices, this is what coffee shops have to observe or control from the operational side of their business so that it will make the business situation survive and run well. Therefore, the coffee shop business must sharpen its competitive advantage. Research conducted using the DEA model as a strategic form of business in optimizing

business performance is carried out by coffee shops so that the inputs issued are equal to the output produced and there is an efficient use of capital.

This finding shows at least 67 coffee shops spread across the Soloraya region, Indonesia, whose shop business performance was efficient, only 22 coffee shops, while those that are inefficient were 45 coffee shops in 2021. This indication is that there is intense competition in running the coffee shop business, and also, due to the COVID-19 pandemic, which has an impact on the creative economy sector, people's purchasing power has yet to recover fully. People still prefer to prioritize their basic needs rather than buying coffee drinks. This makes coffee shop business people think about how to make it efficient so that the business continues to run by utilizing existing resources.

6. CONCLUSION

This research uses DEA that are not used in other studies and provides new ideas using work units whose social and economic conditions are sometimes different. DEA has advantages in measuring business performance evaluations. At the same time, Thanassoulis (1993) indicates that the DEA provides the right decision, the lowest cost, and the accuracy of the goal because the decision is based on the work it is planned to complete. Apart from the relationship between input and output, a comparison of values and objectives is also useful.

It is proven that DEA efficiency measurements will provide clear decisions in using inputs (overall capital, labor costs, raw material costs, amount of labor) and output results (gross profit and net profit) achieved. Out of 67 coffee shops in Soloraya, 22 have been efficient (Table 3), while 45 coffee shops have yet to experience efficiency in optimizing operational activities with the resulting targets, as shown in Table 4. This illustrates that 59,88% must make improvements by referring to coffee shops that are considered optimal in achieving capital balance with the resulting target (Table 5) so that shops that are not optimal will be able to have clear standards in managing the coffee shop business. DEA measures efficiency by homogeneously comparing one coffee shop business with another. With the lowest value of 61,57%, which is getting away from the optimal value compared to other shop businesses, it could perform better in the context of all objects studied. In the increase in inputs produced, 45 coffee shops must make savings in the range of 1,2%-53,3% following the measurement of input realization used (Table 4) and must increase output in the range of 0%-76,6% as a whole, as shown in Table 5.

In this case, the poor performance assessor is based on comparing the optimization rate of individual units that reach 100% with separate units that have yet to get 100%. The average efficiency rate in coffee shops has yet to go 100%. As many as 45 coffee shops with the lowest average efficiency value at 59,88%-98,77% means that the coffee shop must improve efficiency ranging from 40,12%-1,23%. This is by looking at the results of a comparative analysis based on input and output performance research that needs attention from as many as 45 coffee shops because they are not efficient, and the 45 coffee shops that are considered to have

the worst performance are shown in sandalwood coffee shops with the lowest average efficiency value of 59,88% compared to 45 coffee shops. It is not possible that all inefficient performance needs to be considered, but the level of attention in evaluating the business will differ more strongly from the company that is not yet efficient but close to 100%.

This result ensures a detailed description of the input and output levels of the created activities, related indicators, and the achievement of business objectives to show the nature of the business activities that achieve the business objectives. This process has excellent results; it tests these businesses within the business and defines the right goals and strategies. Branding can increase motivation because work can provide ideas for solving business problems to establish and follow business practices to prevent problems from occurring. However, accounting methods can be used in business. By understanding the business itself, business owners will learn to set boundaries by borrowing from the competitors' plans, products, policies, and practices and, over time, enabling them to use trademarks in the industry. In this study, the methodology was created by conducting industry inspections in work activities according to industry methods, selecting production equipment, and determining the costs to pay. Employees can increase the resources available for business use because the organization can choose the amount, they want to meet their current budget, saving money if the funds run out or the product is unsatisfactory.

On the other hand, the external challenges faced by coffee shops are the more significant market share of coffee connoisseurs, used by business people to open coffee shops so that more coffee shops make the competition tighter, it is also easy to open coffee shops and culinary substitutes that can replace the coffee shop business (Arifin & Ahadiat, 2023). The era of digitalization makes social media stronger in reviewing the coffee business so that it is determined with a good or bad rating that will affect the level of business efficiency (Arifin & Ahadiat, 2023). Unstable supply and price of raw materials due to increased costs and scarcity of raw material supply will also hamper business work and reduce the efficiency of coffee shops (Arifin & Ahadiat, 2023). The lifestyle and demographics of the community will also affect business efficiency due to demographics, one of which is the income of the surrounding community and the surrounding community in the view of coffee as a hobby of connoisseurs or just coffee as an ordinary drink.

The method is done by benchmarking or comparing with other coffee shops as a benchmark in seeing the standards carried out by the business; then, the company can apply several techniques that have benefits or advantages in different coffee shops. For example, Cold N Brew coffee shops have employee payrolls that maximize existing input standards, so Satu Tujuan Coffee Shop can adopt salary standards that are felt to be less than the payroll standards applied. Specifically, the salary is given following regional autonomy regulations on regional minimum wages plus bonuses if they meet business sales targets with this system employees in the form of how to increase sales of their coffee

shops and need to be used as an example in doing payroll for coffee shop businesses that are not yet efficient.

So far, many coffee shop businesses in starting a business are not controlled or adjusted to their business targets, so many leftover raw materials are idle after a lengthy purchase process and rot because the resistance level is shallow. As well as the burden of high labor costs in opening a business is a trigger for business people to produce targets that are achieved. Business owners need to balance whether the capital issued will be equal or optimal with the profits generated so that the business does not experience funding difficulties or arrive at business closure because the capital borne by business people is too large. In addition, business owners will be able to find out the advantages of competitors compared to their own business in terms of providing salaries, capital, raw materials, the number of workers owned, and others so that business owners will be able to describe the position of the coffee shop business and be able to build strategies that their coffee shop business can achieve in improving performance using existing capital.

This study's limitation is searching for papers in existing scientific databases that are considered the most relevant by using keywords according to this study. However, searches with other scientific

databases may yield different results. Therefore, a research search for papers may reveal only some relevant research. However, researchers believe this literature review has used a good sample of existing DEA-based economic efficiency studies and has openly exposed key highlights, challenges, and issues for further research, as shown in this paper. Future research can integrate more variables combined with the efficiency of working capital management not only as a short-term and long-term financial strategic tool but also as a basis for formulating, implementing, and evaluating multidisciplinary decisions that ultimately maximize profits. In addition, the impact of knowledge management systems (Ruparel & Choubisa, 2020), strategic governance concerning working capital (Khanra et al., 2019), resistance to efficiency and performance (Seth et al., 2019) and the impact of online marketing in connection with working capital management (Ruparel & Choubisa, 2020; Ruparel et al., 2022; Seth et al., 2020) may be an area for further examination. This will broaden the horizons of creative thinking among researchers and reject the use of robust methodologies to achieve a holistic understanding of working capital management, its efficient functioning, and overall corporate performance.

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