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Impact Of Efficiency and Productivity on EBITDA Margin

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ABSTRACT: Research Objectives, explore the impact of operational efficiency and operational productivity on EBITDA Margin, and examine the comparison of each variable during and after the pandemic. Research methodology, the study used secondary data, data sources from the Annual Reports of healthcare sector companies listed on the Indonesia Stock Exchange in 2020-2023. The results of the study showed that efficiency had a positive and significant effect on EBITDA Margin, then productivity did not affect EBITDA Margin. While the profit margin, asset turnover and EBITDA Margin variables during the pandemic were better than after the pandemic. While the cost recovery rate and receivables turnover variables after the pandemic were better than during the pandemic. Conclusion, to create a high EBITDA Margin, efficiency must be increased, while with the targeted EBITDA Margin the company can determine high productivity. Generally, the performance of healthcare sector companies during the pandemic is better. Suggestions, further researchers can research efforts to increase EBITDA Margin.

KEYWORDS: Profit Margin; Cost Recovery Rate; Asset Turnover; Receivable Turnover; EBITDA Margin.

1. INTRODUCTION

The achievement of national health development experienced a massive disruption with the start of the Corona Virus Disease 2019 (COVID-19) pandemic in 2020 which occurred on a global scale. The COVID-19 pandemic which had a wide impact on the entire social order created an additional burden in efforts to improve the quality of public health (Law of the Republic of Indonesia No. 17 of 2023). One of the institutions that run health services is the Hospital and other entities related to the provision of health services

This study emphasizes the importance of EBITDA as a measuring tool in improving the efficiency and productivity of the healthcare sector. By utilizing EBITDA, companies in Indonesia can better manage resources, reduce unnecessary costs, and improve service quality. This study is expected to provide significant contributions to the development of hospital management in Indonesia. Another phenomenon is the imbalance between the number of patients and the capacity of hospitals and other entities. Many hospitals in Indonesia, especially in urban areas, face a surge in the number of patients that is not comparable to the capacity and resources available. This causes reduced operational efficiency and decreased service quality. On the other hand, hospitals with less capacity located in remote areas often face difficulties in attracting patients and increasing productivity.

Hospitals in Indonesia face various challenges that affect their efficiency and productivity. One of the main challenges is the increasing operational costs that can be caused by various factors such as inflation, rising prices of drugs and medical equipment, and labor costs. In such conditions, hospitals must be able to manage their resources wisely so they can continue to provide quality health services without having to increase excessive costs.

Hospital must have the characteristics of hospital competitiveness, it means that hospitals are able to develop superior performance that provides a competitive advantage position compared to other hospitals. In order for hospitals to face competition, it is necessary to pay attention to: a). Service performance, b) Financial performance, c). Research performance and d). Benchmarking. The number of hospitals in Indonesia in 2023 is 3,126 hospitals, consisting of 1,953 private hospitals, 895 local governments, 113 Indonesian National Armed Forces, 70 State-Owned Enterprises and other Ministries, 41 ministries of health and 54 hospitals owned by the Police, (Central Bureau of Statistics of Indonesia, 2024). Based on these data, hospitals are faced with competition which is a serious challenge. In order to compete, hospitals are required to be highly efficient with high productivity. Several healthcare sectors including hospitals are experiencing financial crises because of inefficiency and declining productivity, for example RSUD Tasikmalaya (source, Kompas) RSUD Ambon after becoming a Regional Public Service Agency. Furthermore, many hospitals abroad are experiencing problems because of inefficiency and declining productivity. The purpose of this study was



to examine the impact of efficiency and productivity on EBITDA Margin and to examine the comparison of efficiency and productivity of healthcare sector companies listed on the Indonesia Stock Exchange.

2. LITERATURE REVIEW

Ebitda

EBITDA (Earnings Before Interest, Taxes, Depreciation and Amortization) is metric used to evaluate a company operational performance. The EBITDA metric is a variation of operating income (EBIT) that excludes certain non-cash costs (Ross, Westerfield and Jaffe, 2013). In financial statements, EBITDA shows a company's profit before deducting interest on debt and taxes owed to the government. EBITDA is also used to compare a company's level of profitability with other companies in the same industry that may have different levels of debt or tax liabilities. EBITDA Margin can convert 15% of its revenue into cash, Operational efficiency can save time, maximize service and minimize costs and reduce supply costs (Grant W, et.al, 2018). Clarity of strategy will produce EBITDAMAX that then produces good leadership, organizational culture, successful strategy execution, (Setyopurnomo R, et al. 2025). Hospitals in Taiwan, are under pressure, due to rising resource costs, so hospitals appoint hospital administrators and managers as health policy managers. EBITDA shows the company ability to generate cash (Chui, et al. 2022). Information technology strategies through higher digital maturity will affect profitability and allow for greater investment (Vogel J. et al. 2024). The approach helps leaders and employees improve the company's culture and systems to achieve increased performance and profitability. Researchers focus on implementing turnaround strategies effectively in company operations. (Setyopurnomo R, et al. 2025)

To calculate EBITDA use the following formula:

EBITDA = Net Profit + Interest + Tax + Depreciation + Amortization

EBITDA Margin is a measure of a company operating profit as a percentage of total revenue that provides a normal value so it can be compared fairly. Investors used EBITDA and EBITDA Margin to evaluate companies without the interference of interest, taxes, or non-cash costs such as depreciation because the evaluation is based on real income from business operations. EBITDA Margin can be calculated using the formula:

EBITDA Margin = (EBITDA : Total Revenue) x 100%

The image below explains the important steps towards maximum EBITDA starting from the preparation of profit and loss report targets, starting with sales activities that generate income, the company's main activities that incur costs, both fixed costs and variable costs, but in running the company's operations, management needs to exercise authority and control.



Figure 1. Company Earnings and their relationship with the Management Authority and Control (Setyopurnomo R, et al, 2025)

In order to maximize EBITDA Margin, starting from the strategy of action programs and objectives, execution of strategies that have been planned and require resources, daily supervision, then daily operational simulations and clear and aligned operational plans are conducted. The implementation of EBITDAMAX requires the establishment of an operational control center that is directly supervised by the board of directors. There is the operating system to generate Maximum EBITDA:



Figure. 2. The Operation Systems framework to maximize daily EBITDA. (Setyopurnomo R, et al, 2025)

Efficiency

The principle of efficiency invites all human resources as health service providers to strive for better results when associated with financial resources or the highest level of health care with the least expenditure of resources. (Medarevic A & Vukovic D, 2022). To measure efficiency is multifactorial, so the measurements can be carried out using several indicators. To improve the quality of hospital services is to use the efficiency of hospital health services (Nita Cahyani, et al., 2012)

Cost Recovery Rate (CRR) is used as a measure of efficiency with the aim of seeing the comparison of income with costs incurred (Aritonang, 2020). CRR must be able to evaluate and explain the contribution between the business results achieved and the resources consumed. CRR calculations are carried out to trace the treatment of costs compared to the rates charged (Syarifuddin, 2022).

Increasing EBITDA margin, hospitals may optimize resource utilization, reduce costs, and ultimately improve productivity and the quality of health services provided. Efficiency mechanisms implemented by hospitals, such as steps to reduce errors, have a positive impact on productivity. (Ali, 2016). The higher the bed occupancy rate and fixed asset turnover rate, the higher the technical efficiency and the higher the number of hospital beds per 100,000 people and the fixed asset turnover rate, the higher the technical efficiency (Lin Chung S, et al, 2022). More than 15% of hospitals in the lowest decile of hospital margins changed operating status in the following year (Dan et al, 2011). Financial efficiency should be improved by reducing medical costs, improving the quality of medical personnel, reducing the workforce, improving the use of medical records and artificial intelligence in services and management, and reducing inventory procurement systems (Jih Song. Wu. 2023). Measuring and developing hospital efficiency and productivity, then the hospital must have relevant information from time to time (Binie E & Emily C, 2021) Increasing efficiency and productivity during the Covid pandemic can be done with appropriate organizational changes in infrastructure, human resources and technology. (Androutsou, et al, 2022)

Efficiency and productivity can be achieved by managing higher patient turnover at lower costs. Managers should also consider the possibility of merging small-scale hospitals to increase scale efficiency and realize performance improvements. (Medarevi'c, A & Vukovi'c D, 2021) The relationship between technical efficiency and quality is inversely proportional, technical efficiency is 84%, then the patient satisfaction score is at 32% (Vrabková I, et al, 2024) Efficiency increases along with increasing public trust, efficiency is also created due to hospital competition. (Lindaas NA, et al. 2024). Hospitals owned by the government have a low level of efficiency, then the size of the hospital, population, location of the hospital affect efficiency, (Nayer MY, et al. 2022).

The number of outpatient visits is positively related to efficiency, thereby increasing productivity growth that is due to technological change (Subhi Mosa Hamed, 2022). The average technical efficiency, managerial efficiency, and scale efficiency in the hospitals studied experienced negative changes, but technological efficiency experienced positive changes. (Sajad Vahedi., Mansour Zahir., Narges Pirani and Amin Torabipour., 2023). government subsidies, hospital size with beds above 618 and average length of stay have negative signs on technical efficiency; Bed occupancy rate, bed to nurse ratio, and nurse to doctor ratio show positive signs with technical efficiency. (Cheng et al, 2015)

Productivity

To increase productivity, one of the steps taken is to reduce errors with a positive impact on productivity, such as human capital and efforts to minimize errors. (Manhal Ali, et al, 2019). Technological factors can increase productivity in the Slovak Republic, while in the Czech Republic, increased productivity is due to changes in technical efficiency (Ivana Vanková and Iveta Vrabková .2022.

Research related to productivity, including measuring the productivity of surgical clinic units is quite satisfactory to high in 2021, surgical clinics are more efficient and productive than in 2020, when performance declined. Companies responded to pressure during the pandemic by increasing efficiency and productivity, by making appropriate organizational changes and infrastructure, human resources and information technology. Efficiency and productivity assessments must be reviewed in hospital planning decision making (Lorena et al, 2022). Regional hospitals showed productivity growth of 18.1% during 2015-2018, mainly due to an increase in technological change of 42.6% (Moosa Hamed, 2022). Productivity and efficiency can be increased by using information technology (Cordero et al, 2021) The main factors contributing to the increase in overall productivity are increased occupancy rates, types, and sizes of hospitals. (Xenos, et al, 2017)

3. RESEARCH METHODOLOGY

This type of research was quantitative, the population of the Healthcare company research listed on the Indonesian Stock Exchange for 2020-2023, the sampling technique used purposive sampling and the data criteria used, the number of observations was 70 or (15 companies for 4 years) consisting of hospitals and healthcare sector companies. The data used were secondary data, in the form of the company's annual report. Data sources come from IDX statistics and www.idx.co.id. In connection with the analysis method using regression analysis. The operational definition of this study used the variables:

1). Operational Efficiency,

The ability of an organization to manage resources well so it can produce high-quality products or services. Operational efficiency is measured by:

a. Profit Margin, with the formula: (Net Profit: Sales) x 100%

b. Cost Recovery Rate, with the formula (revenue: operating costs) x 100%

2). Operational Productivity

A measure of the efficiency of resource use to produce output, Operational productivity was measured by:

a. Asset turnover, with the formula: (total income: total assets)

b. Receivables turnover, with the formula: (total income: total receivables)

3) EBITDA Margin

The ratio that showed the company's profit in the form of a percentage of its revenue, EBITDA Margin was measured by the formula: EBITDA = Net Profit + Interest + Tax + Depreciation + Amortization, while EBITDA Margin was expressed as %, with the formula: (EBITDA: Total Revenue) x 100%

4. RESULTS AND DISCUSSION

1). Descriptive Statistics Table 1. Descriptive Statistics

| Descriptive Statistics | | | | | | | |
|------------------------|----|---------|---------|----------|----------------|--|--|
| Description | Ν | Minimum | Maximum | Mean | Std. Deviation | | |
| PM | 60 | -45.58 | 41.66 | 4.8667 | 15.38846 | | |
| CRR | 60 | 8.01 | 455.19 | 145.0763 | 69.01651 | | |
| PA | 60 | 5.87 | 224.14 | 64.7928 | 42.50403 | | |
| PP | 60 | 2.15 | 69.74 | 10.2375 | 9.62935 | | |
| EBITDA | 60 | -8.37 | 56.90 | 23.1180 | 10.89700 | | |
| Valid N | 60 | | | | | | |
| (listwise) | | | | | | | |

Source : Data Processing, 2025

Based on the descriptive statistical values, the average profit margin data was under standard deviation value, it means the data collected were bad, while the average value of cost recovery rate, asset turnover and receivables turnover was more than standard deviation value, so the data were declared good.

2). Classical Assumption Test

- a. Normality test, using one sample kolmogorov smirnov, the result of the significance calculation showed 0.06 and this value was greater than 0.05, the data were normally distributed
- b. Heteroscedasticity test, using a scatterplot graph, showed that the points were spread out, so that the data did not experience heteroscedasticity

- c. Multicollinearity test, the tolerance value of the four variables showed >0.1 and the VIF value of the four variables <10, so that the data did not experience multicollinearity
- d. Autocorrelation test, using Durbin Watson, the result was DL value of 0.6852 and a DU value of 1.974, while the DW value is 1.295, so there was no autocorrelation.
- 3. Regression Analysis
- a. Simple regression analysis

Table 2. Coefficient of simple regression analysis results

| Coefficients ^a | | | | | | | | |
|---------------------------|------------|-----------------------------|------------|------------------------------|-------|------|--|--|
| Model | | Unstandardized Coefficients | | atandardized Coefficients | | | | |
| | | В | Std. Error | Beta | t | Sig. | | |
| 1 | (Constant) | 10.268 | 3.114 | | 3.297 | .002 | | |
| | PM | .444 | .073 | .627 | 6.107 | .000 | | |
| | CRR | .077 | .015 | .485 | 5.050 | .000 | | |
| | PA | 008 | .031 | 033 | 270 | .789 | | |
| | PP | .013 | .134 | .011 | .096 | .924 | | |

Source : Data Processing, 2025

Based on the table, the regression equation model was : EBITDA Margin = 10,268+0.444 (X1)+0.077 (X2)- 0.008 (X3)+ 0.013 (X4)+ e

b. Multiple Regression Analysis

Table 3. Multiple Regression Analysis Results

| ANOVAª | | | | | | | | |
|--------|------------|----------------|----|-------------|--------|-------------------|--|--|
| | | Sum of Squares | | | | | | |
| Model | | | df | Mean Square | F | Sig. | | |
| 1 | Regression | 3634.848 | 4 | 908.712 | 14.826 | .000 ^b | | |
| | Residual | 3371.084 | 55 | 61.292 | | | | |
| | Total | 7005.933 | 59 | | | | | |

Source: Data processing, 2025

Based on the Anova table, the calculated F was 14,826 and the F table was 2.91, so the calculated F > F table, and the significance was 0.000, it means that efficiency and productivity had a significant effect on EBITDA Margin.

4. Hypothesis Testing

a. T-test

Referring to the results of the simple regression analysis, the partial hypothesis test is as follows:

- 1). Profit margin variable, the t count was 6.107 and the t table was 1.671, because 6.107> 1.671, then the hypothesis was accepted, it means that profit margin had an effect on EBITDA Margin, then the significance was 0.000.
- 2). Cost Recovery Rate variable, the t count was 5.050 and the t table was 1.671, because 5.050> 1.671, then the hypothesis was accepted, meaning that cost recovery rate had an effect on EBITDA Margin, then the significance was 0.000
- 3). Asset turnover variable, the t count was -0.270 and the t table was 1.671, because -0.270<1.671, then the hypothesis was rejected, it means the turnover did not affect EBITDA Margin, with a significance of 0.789
- Receivables turnover variable, the t count was 0.096 and the t table was 1.671. Because 0.096
 < 1.671, the hypothesis was rejected, meaning that the receivables turnover variable does not affect EBITDA Margin, with a
 significance of 0.924.

5. Determination Coefficient

Table 4. Coefficient of Determination

| Model Summary ^b | | | | | | | | |
|----------------------------|-------|----------|------------------|----------------------------|--|--|--|--|
| Model | R | R Square | ljusted R Square | Std. Error of the Estimate | | | | |
| 1 | .720ª | .519 | .484 | 7.82895 | | | | |

Source; Data Processing, 2025

The magnitude of the determination coefficient was 0.519, it means that the contribution of the efficiency and productivity variables to the EBITDA Margin was 51.90%, while the remaining 48.10% was influenced by other factors that were not currently being studied, for example: service quality, hospital governance and others.

In this study, furthermore to predicting the influence of efficiency and productivity variables on EBITDA Margin, a comparison between variables for each year as a whole and a comparison during and after the pandemic would be studied.





To see the efficiency of each company, you may use the profit margin and cost recovery rate. Referring to the graph above, it can be seen from 15 sample companies. For the profit margin ratio, the lowest value was - 11.60 (company no. 6) while the highest was 29.50 (company no. 3), for 4 years the average company that experienced negative (loss) was 5 companies, while the rest profit margin was positive (profit), overall the average profit margin was 5.70, the number of companies that achieved profit margin above the total average was 7 companies. Referring to the graph above, it can be seen from 15 sample companies. For the cost recovery rate ratio, the lowest value was 28.28 (company no. 6) while the highest was 307.21 (company no. 15), overall the average cost recovery rate was 145.08, the number of companies that achieved CRR above the total average was 14 companies, Furthermore, to see productivity, each company may use asset turnover and receivables turnover, graphic image 1, showed that from 15 sample companies. For the lowest asset turnover ratio of

6.47 (company no. 15) while the highest was 99.49 (company no. 14), for 4 years the company with an average asset turnover of 64.79, it showed that for 4 years the asset turnover is very low due to the Covid-19 pandemic. Referring to the graph above, it can be seen from 15 sample companies. For the lowest receivables turnover ratio of 2.79 times (company no. 13) while the highest is 36.27 (company no. 9), overall the average receivables turnover was 10.24 times the number of companies that achieve CRR above the total average of 6 companies, it means that even though during a pandemic, the receivables turnover was still high Chart 1 showed that the lowest EBITDA Margin was 7.54% (company no. 6), while the highest was 41.89% (company no. 3), the average achievement of EBITDA Margin for 4 years was 23.12%, (minimum standard 20%) it means that the company was good at achieving EBITDA Margin. The higher the EBITDA Margin, the more efficient the company's operations were in generating profits. Here is a comparison of 5 variables from the time aspect during covid (2020- 2021) and after covid (2022-2023)

| | Profit Margin | Cost | Asset Return | eceivables | EBITDA |
|--------------|---------------|---------------|--------------|------------|--------|
| PERIOD | | Recovery Rate | | Turnover | Margin |
| During Covid | 6.38 | 133.90 | 67.62 | 9.13 | 25.52 |
| After Covid | 5.67 | 156.26 | 61.96 | 11.35 | 20.71 |

Table 5. Average Comparison of 5 indicators

Source: Data processing, 2025

Based on table 5, the performance of companies engaged in the healthcare sector during the Covid pandemic was better than after the Covid pandemic. It is because the pandemic was closely related to the healthcare sector and its handling must be carried out immediately and funding was supported by the government budget, both state and regional.

DISCUSSION

The Impact of Profit Margin on EBITDA Margin

Based on the results of the hypothesis test, it is stated that profit margin has a positive and significant effect on EBITDA Margin, this means that companies that are able to carry out efficiency in the operational field, for example the use of drugs, the use of information technology, doctor arrangements, optimal use of assets, the arrangement of doctor's practice hours, and others, will result in a decrease in costs, so company profit will increase. On the other hand, with good service there will be an increase in operational income, by carrying out these activities the company will be efficient and the impact of the profit margin is getting bigger, so the EBITDA Margin will increase.

The results of this study were in line with Pangestuti DC's research (2018), Working Capital Efficiency (WCT) was the dominant variable that influences EBITDA Margin. Factors that drive efficiency were human capital and efforts to minimize errors played a role (Ali, et al, 2016). Operational efficiency may save time, maximize service and minimize costs and reduce supply costs (Grant W, et.al, 2018). Financial efficiency must be improved by reducing medical costs, improving the quality of medical personnel, reducing the workforce, improving the use of medical records and artificial intelligence in services and management, and reducing inventory procurement systems (Jih Song. Wu. 2023)

The Impact of Cost Recovery Rate on EBITDA Margin

The results of the hypothesis test stated that the Cost Recovery rate had a positive and significant effect on EBITDA Margin, it means that the company must be able to reduce operational costs so it may result the higher profit. According to research data, the average CRR value of 1.45 showed that operating income was above operating costs. Arfiani, et al (2020) Found that the accumulated CRR was only 60%, it means that the INA-CBGs rate was only able to cover 60% of the costs incurred by the hospital. The CRR of local government hospitals did not reach 100% or 1, it is because hospital income was below the set target, while expenses exceeded the limit value (Mutmainah AA & Sinta G, 2024). Some services still require high costs but BPJS claims are still below the costs incurred, so evaluation and control must be carried out (Kusuma F, 2024)

The Impact of Asset Turnover on EBITDA Margin

The results of the Hypothesis Test were that asset turnover had no effect on EBITDA Margin. It means that the greater the asset turnover, the EBITDA Margin may not increase, conversely, the smaller the asset turnover, the EBITDA Margin will not decrease. The results of the study that were in line with this study among others : Mansur F, et al. 2017 stated there was no effect of asset turnover on the company's net profit. Total asset turnover had a positive and significant effect on profitability, meaning that the lower the asset turnover, the lower the profitability (Hakim MS, 2020). Furthermore, this study contradicts the results of Wulandari B, et al. 2020. Asset turnover affects net profit, while Purba and Kemal, 2024, asset turnover has a positive and significant effect on profit growth in the company

The Impact of Receivables Turnover on EBITDA Margin

The results of the hypothesis test were that accounts receivable turnover had no effect on EBITDA Margin, it means that the greater the accounts receivable turnover, the EBITDA Margin does not increase, conversely, the lower the accounts receivable turnover, the EBITDA Margin also does not decrease. The results of the study that were not in line with this study were : accounts receivable turnover had a positive effect on net profit (Maisuri Y, et al. 2022), then accounts receivable turnover had a positive and significant effect on return on assets (Hadi URS & Yusuf R, 2022)

5. CONCLUSION AND SUGGESTION

Based on the results of the study and discussion, it can be concluded that efficiency (profit margin and cost recovery rate) has a positive and significant effect on EBITDA Margin, then productivity (asset turnover and receivables turnover) does not affect EBITDA Margin. This study captures that profit margin, asset turnover and EBITDA Margin during the pandemic are better than after the pandemic. On the other hand, the cost recovery rate and receivables turnover after the pandemic are better than during the pandemic. It is recommended that the company form a special unit that manages EBITDA on a daily basis, so the targeted EBITDA can be achieved properly.

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