FINANCIAL PERFORMANCE ANALYSIS OF PHARMACEUTICAL LISTED COMPANIES FOUR YEARS BEFORE AND AFTER UNIVERSAL HEALTHCARE COVERAGE INITIATION IN INDONESIA (2010-2018)

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ABSTRACT

Indonesia has moved towards the universal healthcare coverage system since 1 January 2014, named "Jaminan Kesehatan Nasional" or JKN, and is implemented by "Badan Penyelenggara Jaminan Sosial-Kesehatan" or BPJS-K. However, during the seven years of implementation, many barriers have hindered, the biggest issue is the limited source of fund from the central government to defray the entire operations. Since the rolled-out, BPJS-K reported financial deficits, this simultaneously impacted to the ability to manage Account Payable to the drug suppliers, which makes pharmaceutical companies are suffered the most. In December 2019, many pharmaceutical companies through the association, so called "GP Farmasi", reported cash flow problem due to BPJS bad debt to the healthcare providers. There are three types of pharmaceutical companies operate in Indonesia: private multinational, private domestic, and state-owned companies. All of them are facing the same financial pressure's problem to bankruptcy risk. The purpose of this study was to analyze the financial performance of listed pharmaceutical companies in Indonesia among the three group companies; private multinational, private domestic and state-owned, and to examine the significant difference of the financial performances between four years before and four years after the JKN initiation, during period of 2010 to 2018. There were six companies became object of this study: PT. Darya-Varia Laboratoria Tbk., PT. Kalbe Farma Tbk., PT. Indofarma (Persero) Tbk., PT. Kimia Farma (Persero) Tbk., PT. Merck Tbk., and PT. Merck Sharp Dohme Farma Tbk, then grouped into multinational, private domestic and state-owned companies. The data were collected from audited financial report which published on Indonesia Stock Exchange (IDX) website, divided into 2 periods: prior (2010-2013) and post (2015-2018). The data were examined using financial ratio analysis to the respective company, and statistical t testing was applied to validate whether one group was having better performance to others, and also whether there were significant differences on the financial performance before and after the JKN program. The author believes that the findings will be helpful to illustrate the impacts of JKN implementation to the financial performance of listed pharmaceutical companies in Indonesia.

Keywords: Financial ratio analysis, Indonesia pharmaceutical listed companies, JKN initiation, universal healthcare coverage, state-owned company minister decree, student t-test.

1. Introduction

The pharmaceutical industry in Indonesia has grown more than doubled since 2011. Reported from IDR 43.2 trillion in 2011, and is forecasted to become IDR 102.8 trillion in 2020. (PT. Kalbe Farma, Tbk. Presentation, 2017). Beside the large Indonesia's population of more than 260 million people and the increased in per capita spending resulted from the growing middle class, the healthcare demand was driven by the continuous implementation of universal healthcare coverage program since Jan 1st, 2014. The scheme was known as National Health Insurance, or "Jaminan Kesehatan Nasional" (JKN), and administered by (Healthcare and Social Security Administration Agency, or "Badan Penyelenggara Jaminan Sosial-Kesehatan" (BPJS-K). The program is targeted to cover the entire population in stages up to 2019 at the initial plan, which has made JKN among the world's largest healthcare coverage system.

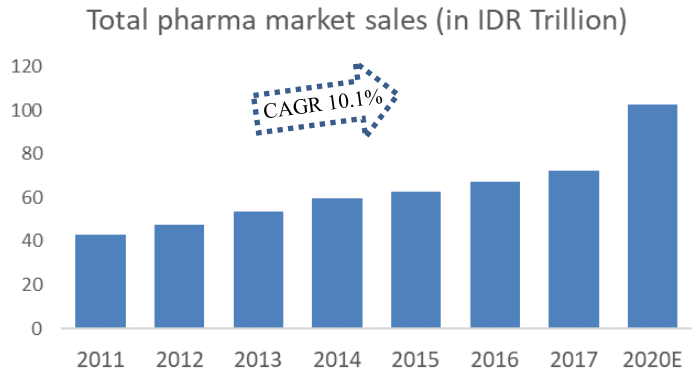


Figure 1: Indonesia Pharmaceutical Market (2011-2020E)
Source: PT. Kalbe Farma, Tbk. Presentation (2017).

The implementation of JKN was initially expected to boost demand for healthcare services, creating a positive outlook for the industry in the future. The reimbursement ceiling set by the Indonesia Case Based Groups (INA-CBGs) imposed the industry to provide the lowest product cost possible to serve as many patients as possible. Hence the pharmaceutical firms were responding to ensure that they were listed on the procurement e-catalogue, to be able to playing in the highly competitive market. As it covers the most claims for generic drugs, the Government's JKN program has become the major driver of strong growth of the generic drug market. Despite the sales volume increased, but the price per product

was going down, due to government e-procurement system that requiring the lowest bidder to win the healthcare tender for the similar group of products. (Britton, K., Koseki, S., and Dutta, A., 2018).

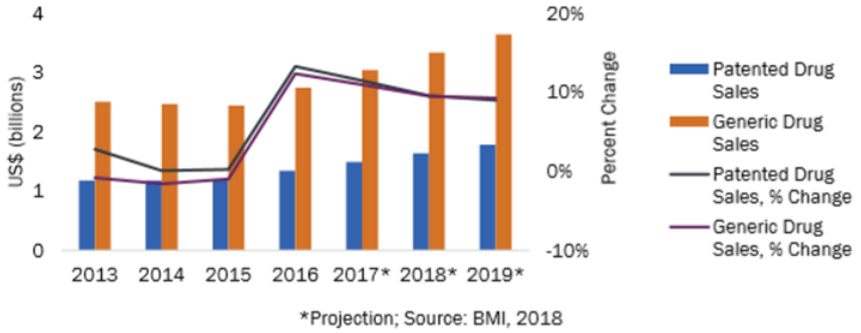


Figure 2: Patented and generic sales (2013-2019E).
Source: Britton, K., Koseki, S., and Dutta, A. (2018)

JKN has had an effect on market differentiation between multinational and local companies, with the former focusing on branded drugs while the latter focuses on generics. Competition among domestic firms has increased, though it is not clear that product quality has increased as a result of the competition. In a study, it had been reported that 30% multinational companies claimed that their revenues have grown since JKN, however ironically 43% of them stated that their profit have been decreased. (Britton, K., Koseki, S., and Dutta, A., 2018).

CAGR 5Y (2011-2016)

	Total	MNC	Domestic
Total	7.80%	9.83%	7.07%
Prescription	8.59%	10.80%	7.47%
Prescription Branded	7.70%	10.71%	5.76%
Unbranded Generic	12.51%	19.40%	12.37%
Non Prescription (OTC)	6.54%	6.39%	6.57%

Figure 3: Indonesia pharmaceutical product growth by company ownership (2011-2016).
Source: PharmaBoardroom. (2017, Aug).

Later in 2018, PT. Darya Varia Tbk (IDX: "DVL") reported industry growth in 3Q 2018 was 19.5% for generics, and 1.1% for branded, while the over-the-counter (OTC) business declined by almost 9% (IQVIA Combined Audit 3Q 2018). Overall, the pharmaceutical industry only grew by 2% in 2018. The Impact of JKN has been immense, not least on profitability, as the JKN bidding process has driven down medicine prices however for pharmaceutical industries; a more acute impact has been felt on the terms of payment, given that the government is still finding ways to resolve the arrears. (PT. Darya-Varia Laboratoria Tbk's Annual Report, 2018).

As for now, government is still struggling to finance the sustainability of the JKN program. By the design to assure healthcare accessibility to the entire inhabitant, the JKN financial sources are not sufficient to only depend on the premium payment, as the majority of the population is middle to low income. The persistent mismatch between claims paid and premiums collected made the BPJS K program deficit, with total deficit soared to IDR 10.9 trillion in 2018. This leads to concerns about the financial sustainability of the whole program.

The healthcare provider that currently suffered with payment problem from BPJS-K, subsequently found difficulties in defraying entire business operations. Medical professionals and pharmaceutical companies continued to file complaints on delayed claim payments, adversely affecting the cash flows of the entire industry chain. (PT. Kalbe Farma Tbk's Annual Report, 2018).

In December 2019, many pharmaceutical companies through the association, so called "GP Farmasi", reported cash flow problem due to BPJS bad debt to the healthcare providers. It concurrently impacted to the pharmaceutical companies as the drug suppliers. (Sidik, S., 2019, Dec 15). The net working capital has been increased due to incrementing inventory, but the account receivables from the customers were sluggish. Adding the fact that the pharmaceutical industries have allocated big investment since 2016 to increase production capacity until expanding the distribution network to fulfill the increased demand. (Nurcaya, I.A., 2020, Jan 30). To address the financial deficit, the government has stepped in by injecting additional funds to bail out the program. (BPJS-Kesehatan Press Release, 2018, Sept 17). As the agency which provides JKN, during the year the BPJS-K continued to facilitate partnerships with banks and financial institutions under supply chain financing agreements to help maintain the cash flow of healthcare providers (hospitals, primary care clinics, laboratories, etc.). Despite the financial pressure, the GP Farmasi Indonesia perceived the pharmaceutical industry outlook still positively going forward. In order to cross-subsidize the thin margin from BPJS sector, the business leaders needed to be smart and creative in putting company investment, selecting product portfolio to fit in BPJS demand and fortified the efforts to penetrate the private out-of-pocket market segment. (PT. Kalbe Farma Tbk's Annual Report, 2018).

2. Research Objective

The pharmaceutical companies are the backbone of the successful JKN program. The disrupted market landscape due to JKN implementation since 2014, has threaten the sustainability of the entire industry. In Indonesia, there are 206 pharmaceutical companies operated: 24 multinationals, 178 domestics and 4 state-owned. (PharmaBoardroom, 2017). This study analyzes 6 of 9 listed pharmaceutical companies on Indonesia Stock Exchange (IDX), which are: PT. Darya-Varia Laboratoria Tbk, PT. Kalbe Farma Tbk, PT. Indofarma (Persero) Tbk, PT. Kimia Farma (Persero) Tbk, PT. Merck Tbk, and PT. Merck Sharp Dohme Farma Tbk.

1. To analyze whether there are significant differences on the company financial performance four years before (2010-2013) and after JKN initiation (2015-2018), based on the paired *t*-test statistical method and computed the eight financial ratios analysis from the Indonesia SOCs Minister's Decree No. 100 (2002).
2. To analyze the financial healthiness rating after JKN rolled out (2014-2018), to the three group of pharmaceutical companies in Indonesia (multinational, private domestic and state-owned), using total weighted score approach of the Indonesia SOCs Minister's Decree No. 100 (2002), and to analyze whether there are significant differences among the three group of companies using independent *t*-test statistical method.

3. Research Questions

1. Is there any differences on the company performance based on financial ratio measurement between before and after the JKN initiation?
2. How does JKN impact to the healthiness level of pharmaceutical companies in Indonesia?
3. Is there any difference on the company health condition between multinational, private domestic and state-owned pharmaceutical companies?

4. Methodology

4.1 Financial Ratio Analysis

The descriptive Financial Ratio Analysis that used in this study are the eight indicators referring to State-Owned Company Minister Decree No. KEP-100/MBU/2002 about the assessment of financial health for state-owned companies (SOC). The eight financial indicators comprise of ROE, ROI, Cash Ratio, Current Ratio, Inventory Turnover, Total Assets Turnover, Collection Period and Total Equity to Total Assets Ratio. Those indicators will be computed and the total weighted score will be assessed to validate the financial performance of the company and the level of its healthiness. (Indonesia SOCs Minister's Decree No. 100, 2002).

Financial ratios are mathematical comparisons of financial statement accounts or categories. Financial ratios are often divided into four main categories: liquidity, solvency, activity, and profitability. Out of those 4 categories, this study will only use 8 ratios referring to the Decree of Ministry of SOCs No. KEP-100/MBU/2002, which are Return on Equity (ROE), Return on Investment (ROI), Cash Ratio, Current Ratio, Total Assets Turn Over, Inventory Turn Over, Collection Periods and Total Equity to Total Assets Ratio.).

4.1.1 Return of Equity (ROE) is a measure of how the stockholders fared during the year.
In other words, the return on equity ratio shows how much profit each dollar of common stockholders' equity generates. (Ross et al, 2012: 64).

$$ROE = \frac{\text{Net Income}}{\text{Shareholder's Equity}} \quad X\ 100\%$$

4.2.2 Return of Investment (ROI) is a performance measure used to evaluate the efficiency of an investment or compare the efficiency of a number of different investments. (Damodaran, 2015:161,189).

$$ROI = \frac{\text{EBIT + Depreciation}}{\text{Capital Employed}} \quad X\ 100\%$$

4.2.3 Cash Ratio is a measurement of a company's liquidity, specifically the ratio of a company's total cash and cash equivalents to its current liabilities. The metric calculates a company's ability to repay its short-term debt with cash or near-cash resources. (Ross et al, 2012:58)

$$\text{Cash Ratio} = \frac{\text{Cash}}{\text{Current Liabilities}} \times 100\%$$

4.2.4 Current Ratio measures a firm's ability to pay off its short-term liabilities with its current assets. The current ratio is an important measure of liquidity because short-term liabilities are due within the next year. (Ross et al, 2012:57)

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} \times 100\%$$

4.2.5 The Total Asset Turnover ratio is used to measure the effectiveness of total assets have been used to generate sales. (Ross et al, 2012:63).

$$\text{Total Asset Turnover} = \frac{\text{Net Sales}}{\text{Capital Employed}} \times 100\%$$

Note: Capital Employed = Total Assets – Fixed Assets

4.2.6 Inventory Turnover is an activity ratio that shows how effectively inventory is managed by comparing cost of goods sold with average inventory for a period. In other words, it measures how many times a company sold its total average inventory dollar amount during the year. (Ross et al, 2012:61).

$$\text{Inventory Turnover} = \frac{\text{Inventory}}{\text{Cost of Goods Sold}} \times 365$$

4.2.7 Collection Periods is the amount of time it takes for a business to receive payments owed by its clients in term of Accounts Receivables (AR). Companies calculate the Collection Periods to make sure they have enough cash on hand to meet their financial obligations. (Ross et al, 2012:62).

$$\text{Collection Periods} = \frac{\text{Account Receivables}}{\text{Sales}} \times 365$$

4.2.8 Total Equity to Total Asset Ratio, or sometimes called "Shareholder Equity Ratio", indicates how much of a company's assets have been generated by issuing equity shares rather than by taking on debt. The closer a firm's ratio result is to 100%, the more assets it has financed with stock rather than debt. (Kenton, 2020)

$$\text{Total Equity to Total Asset} = \frac{\text{Total Equity}}{\text{Total Assets}} \times 100\%$$

4.2 Assessment Method of Healthiness Rate for Indonesia State-Owned Enterprise

The government has established assessment standard for performance indicators of the state-owned enterprise (Badan Usaha Milik Negara, or BUMN), through issuance of BUMN Minister's Decree No: KEP-100/BMU/2002 about The Assessment of Healthiness Rate of State-Owned Enterprise. State-owned enterprise is the business corporation aimed to earn profits which the entire equity belongs to the state by at least 51% stock possession. Despite the initial purpose of this decree is to measure performance indicators of state-owned companies, however this study utilize this standard to measure and compare between different type of companies, including multinationals and private domestics, since the essence of such corporation objectives are the same as to maximize profit within good governance practice corridor. The author believe that all companies observed in this study have been standardized in term of good corporate governance practice by the Indonesia stock exchange authority. (IDX GCG, 2010).

According to the BUMN Minister Decree 2002, the state-owned enterprise is classified by Financial Service and Non-Financial Service industry. Within the Non-Financial group subsequently divided by Infrastructure and Non-Infrastructure companies. Healthcare and pharmaceutical companies are part of the Non-Infrastructure company group. Healthiness level of the BUMN is determined based on assessment of company performance for the current year, comprise of financial aspect, operational aspect & administrative aspect. In the scope of this study, the author only focus on financial aspect, and excluded the others.

The company healthiness rating is classified as below table:

Healthiness Level	Rating	Total Weighted Score (TWS)
Healthy	AAA	TWS > 95
	AA	80<TWS<=95
	A	65<TWS<=80
Less Healthy	BBB	50<TWS<=65
	BB	40<TWS<=50
	B	30<TWS<=40
Unhealthy	CCC	20<TWS<=30
	CC	10<TWS<=20
	C	TWS<=10

Source: Indonesia SOCs Minister's Decree No. 100, 2002

In order to assess financial performance aspect, the total weighted score is obtained from summing up the score of 8 financial ratios. Total weighted score of Non Infrastructure company group is 70 (where the pharmaceutical companies belong to).

The score is collected from computing financial ratios as below (in the scope of this study, only look at the "Non Infra" column):

1. Return On Equity (ROE), get a score from the computed ROE result:

ROE (%)	Skor	
	Infra	Non Infra
15 < ROE	15	20
13 < ROE<= 15	13,5	18
11< ROE <= 13	12	16
9 < ROE <= 11	10,5	14
7,9<ROE <= 9	9	12
6,6<ROE <= 7,9	7,5	10
5,3<ROE <= 6,6	6	8,5
4 <ROE <= 5,3	5	7
2,5 <ROE<= 4	4	5,5
1 <ROE <= 2,5	3	4
0 <ROE <= 1	1,5	2
ROE < 0	1	0

Source: Indonesia SOCs Minister's Decree No. 100, 2002

2. Return On Investment (ROI), get a score from the computed ROI result:

ROI (%)	Skor	
	Infra	Non Infra
18 < ROI	10	15
15 < ROI <= 18	9	13,5
13 < ROI <= 15	8	12
12 < ROI <= 13	7	10,5
10,5 < ROI <= 12	6	9
9 < ROI <= 10,5	5	7,5
7 < ROI <= 9	4	6
5 < ROI <= 7	3,5	5
3 < ROI <= 5	3	4
1 < ROI <= 3	2,5	3
0 < ROI <= 1	2	2
ROI < 0	0	1

Source: Indonesia SOCs Minister's Decree No. 100, 2002

3. Cash Ratio, get a score from the computed Cash Ratio result:

Cash Ratio = x (%)	Skor	
	Infra	Non Infra
x >= 35	3	5
25 <= x < 35	2,5	4
15 <= x < 25	2	3
10 <= x < 15	1,5	2
5 <= x < 10	1	1
0 <= x < 5	0	0

Source: Indonesia SOCs Minister's Decree No. 100, 2002

4. Current Ratio, get a score from the computed Current Ratio result:

Current Ratio = x (%)	Skor	
	Infra	Non Infra
125 <= x	3	5
110 <= x < 125	2,5	4
100 <= x < 110	2	3
95 <= x < 100	1,5	2
90 <= x < 95	1	1
x < 90	0	0

Source: Indonesia SOCs Minister's Decree No. 100, 2002

5. Collection Periods (CP), take the best score of either 2 variables below:

CP = x (hari)	Perbaikan = x (hari)	Skor	
		Infra	Non Infra
x <= 60	x > 35	4	5
60 < x <= 90	30 < x <=35	3,5	4,5
90 < x <= 120	25 < x <=30	3	4
120 < x <= 150	20 < x <=25	2,5	3,5
150 < x <= 180	15 < x <=20	2	3
180 < x <= 210	10 < x <=15	1,6	2,4
210 < x <= 240	6 < x <=10	1,2	1,8
240 < x <= 270	3 < x <=6	0,8	1,2
270 < x <= 300	1 < x <=3	0,4	0,6
300< x	0 < x <=1	0	0

Source: Indonesia SOCs Minister's Decree No. 100, 2002

6. Inventory Turnover, take the best score of either 2 variables below:

PP = x (hari)	Perbaikan (hari)	Skor	
		Infra	Non Infra
x <= 60	35 < x	4	5
60 < x <= 90	30 < x <=35	3,5	4,5
90 < x <= 120	25 < x <=30	3	4
120 < x <= 150	20 < x <=25	2,5	3,5
150 < x <= 180	15 < x <=20	2	3
180 < x <= 210	10 < x <=15	1,6	2,4
210 < x <= 240	6 < x <=10	1,2	1,8
240 < x <= 270	3 < x <=6	0,8	1,2
270 < x <= 300	1 < x <=3	0,4	0,6
300 < x	0 < x <=1	0	0

Source: Indonesia SOCs Minister's Decree No. 100, 2002

7. Total Assets Turn Over, take the best score of either 2 variables below:

TATO = x (%)	Perbaikan = x (%)	Skor	
		Infra	Non Infra
120< x	20 < x	4	5
105< x <= 120	15 < x <=20	3,5	4,5
90 < x <= 105	10 < x <=15	3	4
75 < x <= 90	5 < x <=10	2,5	3,5
60 < x <= 75	0 < x <= 5	2	3
40 < x <= 60	x <=0	1,5	2,5
20 < x <= 40	x < 0	1	2
x <= 20	x < 0	0,5	1,5

Source: Indonesia SOCs Minister's Decree No. 100, 2002

8. Total Equity to Total Assets, get a score from the computed result:

TMS thd TA (%) = x	Skor	
	Infra	Non Infra
x < 0	0	0
0 <= x < 10	2	4
10 <= x < 20	3	6
20 <= x < 30	4	7,25
30 <= x < 40	6	10
40 <= x < 50	5,5	9
50 <= x < 60	5	8,5
60 <= x < 70	4,5	8
70 <= x < 80	4,25	7,5
80 <= x < 90	4	7
90 <= x < 100	3,5	6,5

Source: Indonesia SOCs Minister's Decree No. 100, 2002

The last step is to sum up the total score obtained from 8 financial ratios result, subsequently define the weighted score by divided 70 as denominator and multiply by 100. The result of total weighted score will determine the rating of company healthiness (whether fall under AAA, AA, A, BBB, BB, B, CCC, CC, or C). (Indonesia SOCs Minister's Decree No. 100, 2002).

4.3 Student *t*-Test Inferential Statistic

Student *t*-test is one of the most popular statistical method to test whether mean difference between two groups is statistically significant. Null hypothesis stated that both means are statistically equal, whereas alternative hypothesis stated that both means are not statistically equal. In the study, the author may to check whether the statistical computation fall to conclude that alternative hypothesis is accepted, in other words, there are statistical significant different between the two comparing groups. (Sheskin, 2000:55).

This study used two *t*-test technique: paired samples testing and independent samples testing.

A paired-samples *t*-test compares the mean of two matched groups of people or cases, or compares the mean of a single group, examined at two different points in time. (Ross & Wilson, 2017:17). This statistical method is commonly performed by researcher to evaluate the significant differences in pre- and post- study in many different fields, including healthcare, finance, business and economics statistics. Example are the study by Daryanto and Meriana (2019) which have used this statistical tool to analyze the significant difference in financial performance of PT Kimia Farma (Persero) Tbk before and after BPJS implementation in Indonesia (2011-2017), also Mahesh and Daddikar (2012) when analyzed post-merger and acquisition financial performance of the airline companies in India during period 2007-2008.

The author also use *t*-test for independent samples, to compare the financial healthiness differences among the three group of companies (are multinationals, domestics and state-owned) after the JKN initiation (2014-2018). An independent samples *t*-test compares the means of two groups. The data are interval for the groups, and there is an assumption that the two standard deviations are equal. If the samples are equal or very similar in size, the assumption is not critical. (Ross & Wilson, 2017:13).

5. Research Model

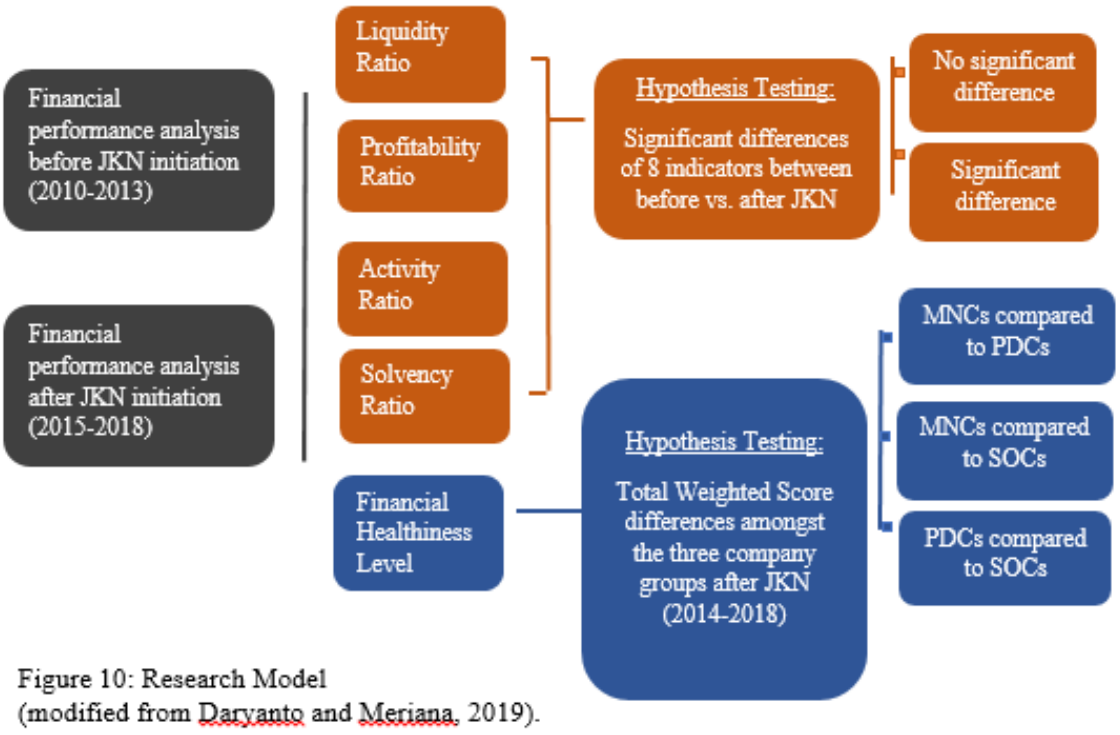


Figure 10: Research Model
(modified from Daryanto and Meriana, 2019).

This research model is adapted from studies regarding financial performance analysis in comparing the significant different between certain condition to another condition. The studies were done by Daryanto and Meriana (2019) in examine financial performance analysis of state-owned companies before and after JKN, also Daryanto and Nurfadilah (2018) when examined financial performance analysis before and after the decline in oil production in Indonesia.
The financial data were collected from published audited annual report from each of listed company. The date then computed to get the Financial Ratio Analysis of 8 indicators to determine the answers of 9 hypothesis. Subsequently from the 8 indicators, the author computed the total weighted score to obtain financial healthiness level of the 3 group of companies, in order to address the last three hypotheses.

6. Hypotheses
H1: There is significant difference in ROI analysis of the company between before and after JKN initiation.
H2: There is significant difference in ROE analysis of the company between before and after JKN initiation.
H3: There is significant difference in Cash Ratio analysis of the company between before and after JKN initiation.
H4: There is significant difference in Current Ratio analysis of the company between before and after JKN initiation.
H5: There is significant difference in Inventory Turnover analysis of the company between before and after JKN initiation.
H6: There is significant difference in Total Assets Turnover analysis of the company between before and after JKN initiation.

H7: There is significant difference in Collection Period analysis of the company between before and after JKN initiation.
H8: There is significant difference in Total Equity to Total Assets Ratio analysis of the company between before and after JKN initiation.
H9: There is significant difference in Total Weighted Score of the Company Healthiness Level between before and after JKN initiation.
H10: There is significant difference in Total Weighted Score of the Company Healthiness Level between private domestic and multinational pharmaceutical companies after JKN initiation.
H11: There is significant difference in Total Weighted Score of the Company Healthiness Level between private domestic and state-owned pharmaceutical companies after JKN initiation.
H12: There is significant difference in Total Weighted Score of the Company Healthiness Level between state-owned and multinational pharmaceutical companies after JKN initiation.

7. Research Limitation

The author has identified previous studies in this area. Daryanto and Meriana (2019) investigated financial performance analysis of PT. Kimia Farma (Persero) Tbk, before and after the JKN implementation in the year of 2011-2017. They revealed that the overall financial performance of PT Kimia Farma was significantly affected after JKN implementation with a significant different on 7 of 11 financial ratios examined. Daryanto and Daryanto (2019) evaluated the financial healthiness indicators of four listed local pharmaceutical companies (PT. Kimia Farma, PT. Bio Farma, PT. Kalbe Farma and PT. Darya Varia) during the period of 2010-2017, based on the Decree of Indonesia Minister of SOCs No. 100 (2002). The results showed financial health levels were achieved with rank ratings; 1. Kimia Farma; all AA levels; 2. Bio Farma (AAA for the first three years; and AA for the last five years); 3. Kalbe Farma (AAA for the first six years; and AA for the last two years); and 4. Darya Varia; all AA levels.

Hence, the author expanded the previous studies to analyze the financial performance difference of six listed pharmaceutical companies, before and after JKN implementation (2010-2018), and to analyze whether there are healthiness level difference among private domestic, multinational and state-owned companies. This study use eight descriptive financial ratio analysis and the state-owned ministry decree's company healthiness rating, collected from audited financial report of respective companies. Commercial and marketing activities analysis are not captured in the study.

Given the small sample size and the number of pharmaceutical companies involved in this study, it is recommended to conduct a broader study with longer period and much variety of companies to validate the consistency of the result. Considering JKN has impacted to the whole pharmaceutical industry ecosystem, spans from raw material producers, drug manufacturers, distributors, hospitals and retail pharmacies. It is also encouraged to use different methodology and variables to obtain the more comprehensive understanding regarding the effectiveness of JKN program.

8. Result & Discussion

8.1 Financial Ratio Analysis Consolidated from All Companies

From the result of paired t-test statistical analysis, here are the summary of the 8 financial ratio plus 1 healthiness level indicator based on State-Owned Companies Minister Decree, consolidated from the 6 companies:

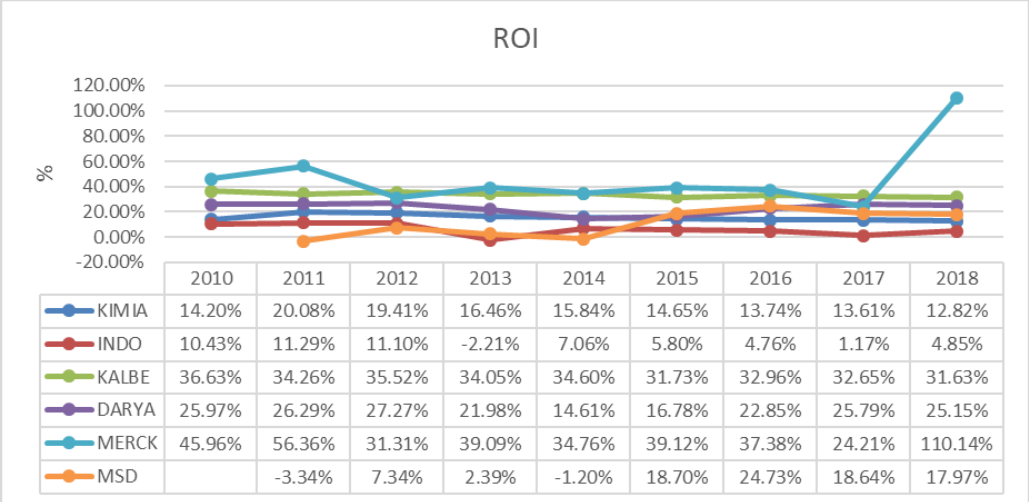
Paired t-test for 9 indicators of the 6 Companies; Before (2010-2013) vs. After JKN (2015-2018)

Source: Annual Report of each Company as published on IDX website.

ROI					
Financial Indicators	**Period**	**Means**	**SD**	**Paired Sample t-test**	**Decision**
ROI	Before	21.8%	15.8%	0.547154305	P value > 0.05. Reject the hypothesis. There is no significant difference
	After	24.2%	16.8%		
ROE	Before	-2.0%	50.3%	0.301123201	P value > 0.05. Reject the hypothesis. There is no significant difference
	After	30.1%	32.4%		
Cash Ratio	Before	98.2%	74.8%	0.167163371	P value > 0.05. Reject the hypothesis. There is no significant difference
	After	62.8%	46.3%		
Current Ratio	Before	341.9%	132.5%	0.1164467	P value > 0.05. Reject the hypothesis. There is no significant difference
	After	263.8%	110.7%		
Inventory Turn Over	Before	151.56	110.36	0.445813292	P value > 0.05. Reject the hypothesis. There is no significant difference
	After	109.58	32.30		
Total Assets Turn Over	Before	164.6%	51.5%	0.847300422	P value > 0.05. Reject the hypothesis. There is no significant difference
	After	159.7%	22.0%		
Collection Period	Before	73.09	39.64	0.626699318	P value > 0.05. Reject the hypothesis. There is no significant difference
	After	66.69	24.80		
TETA	Before	59.3%	29.3%	0.363336022	P value > 0.05. Reject the hypothesis. There is no significant difference
	After	53.9%	23.2%		
Total Weighted Score	Before	79.17	22.52	0.633120135	P value > 0.05. Reject the hypothesis. There is no significant difference
	After	83.58	16.30		

i. Profitability Ratio

Return on Investment (ROI)

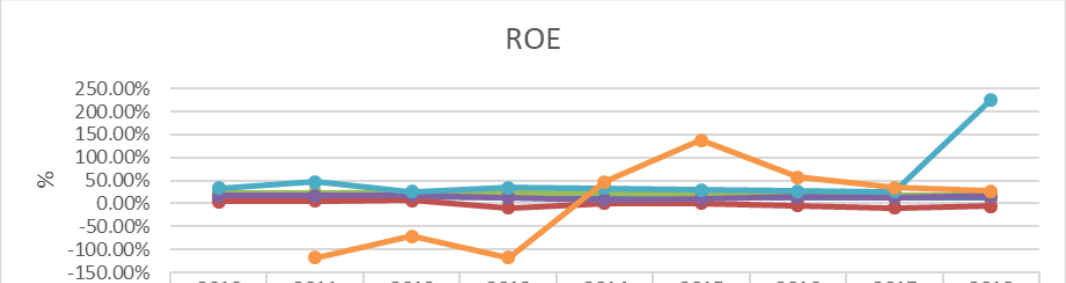


	2010	2011	2012	2013	2014	2015	2016	2017	2018
KIMIA	14.20%	20.08%	19.41%	16.46%	15.84%	14.65%	13.74%	13.61%	12.82%
INDO	10.43%	11.29%	11.10%	-2.21%	7.06%	5.80%	4.76%	1.17%	4.85%
KALBE	36.63%	34.26%	35.52%	34.05%	34.60%	31.73%	32.96%	32.65%	31.63%
DARYA	25.97%	26.29%	27.27%	21.98%	14.61%	16.78%	22.85%	25.79%	25.15%
MERCK	45.96%	56.36%	31.31%	39.09%	34.76%	39.12%	37.38%	24.21%	110.14%
MSD		-3.34%	7.34%	2.39%	-1.20%	18.70%	24.73%	18.64%	17.97%

Based on the paired t-test result consolidated from the 6 companies (figure 5), showed no significant difference on ROI ratio (p value = 0.54715), between before (2010-2013) and after (2015-2018) JKN initiation.

However, if we deep dive by company analysis, Kalbe (p value = 0.03163; μ before = 35.1%; μ after = 32.2%) and MSD (p value = 0.01414; μ before = 2.1%; μ after = 20.0%) showed significant difference between before and after JKN. Hence, Kalbe showed declining performance on ROI, conversely MSD was improving.

Return on Equity (ROE)



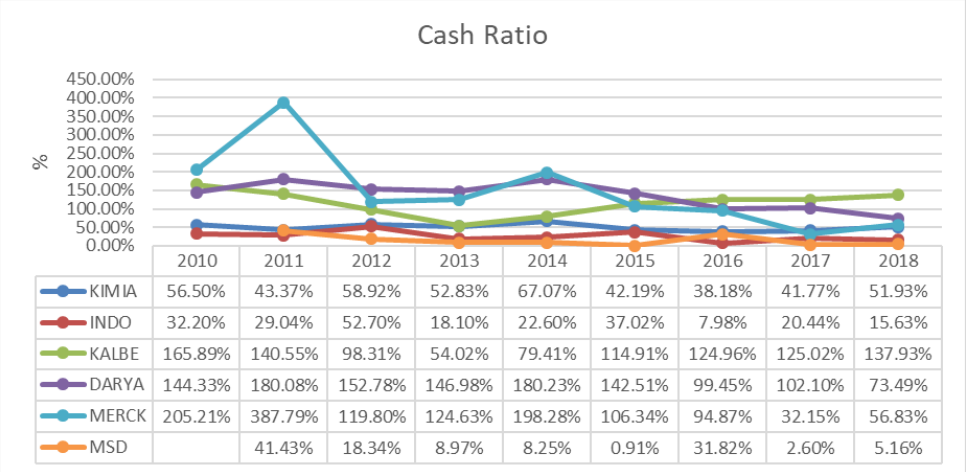
	2010	2011	2012	2013	2014	2015	2016	2017	2018
KIMIA	12.45%	13.71%	14.27%	13.28%	13.06%	12.91%	11.96%	12.89%	11.97%
INDO	4.03%	6.07%	6.52%	-9.18%	0.20%	0.84%	-3.99%	-9.37%	-5.99%
KALBE	23.32%	23.37%	24.08%	23.24%	21.81%	18.81%	18.89%	17.58%	16.69%
DARYA	17.31%	16.61%	17.69%	13.75%	8.41%	11.08%	14.09%	13.29%	16.94%
MERCK	32.72%	46.78%	25.87%	34.25%	33.47%	30.10%	26.40%	25.34%	225.45%
MSD		-117.70%	-71.54%	-117.13%	47.01%	137.62%	56.94%	34.03%	26.96%

Based on the paired t-test result consolidated from the 6 companies (figure 5), showed no significant difference on ROE ratio (p value = 0.30112), between before (2010-2013) and after (2015-2018) JKN initiation.

However, if we deep dive by company analysis, Kalbe (p value = 0.00252; μ before = 23.5%; μ after = 18.0%) and MSD (p value = 0.00250; μ before = -102.1%; μ after = 63.9%) showed significant difference between before and after JKN. Hence, again like on ROI, Kalbe showed declining performance on ROE, conversely MSD was much improving.

ii. Liquidity Ratio

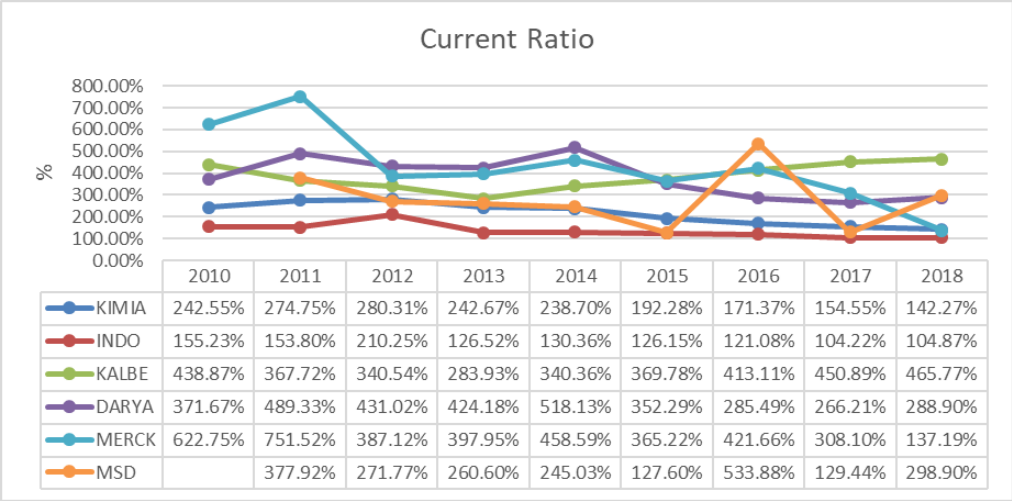
Cash Ratio



	2010	2011	2012	2013	2014	2015	2016	2017	2018
KIMIA	56.50%	43.37%	58.92%	52.83%	67.07%	42.19%	38.18%	41.77%	51.93%
INDO	32.20%	29.04%	52.70%	18.10%	22.60%	37.02%	7.98%	20.44%	15.63%
KALBE	165.89%	140.55%	98.31%	54.02%	79.41%	114.91%	124.96%	125.02%	137.93%
DARYA	144.33%	180.08%	152.78%	146.98%	180.23%	142.51%	99.45%	102.10%	73.49%
MERCK	205.21%	387.79%	119.80%	124.63%	198.28%	106.34%	94.87%	32.15%	56.83%
MSD		41.43%	18.34%	8.97%	8.25%	0.91%	31.82%	2.60%	5.16%

Based on the paired t-test result consolidated from the 6 companies (figure 5), showed no significant difference on Cash Ratio (p value = 0.16716), between before (2010-2013) and after (2015-2018) JKN initiation.

Current Ratio



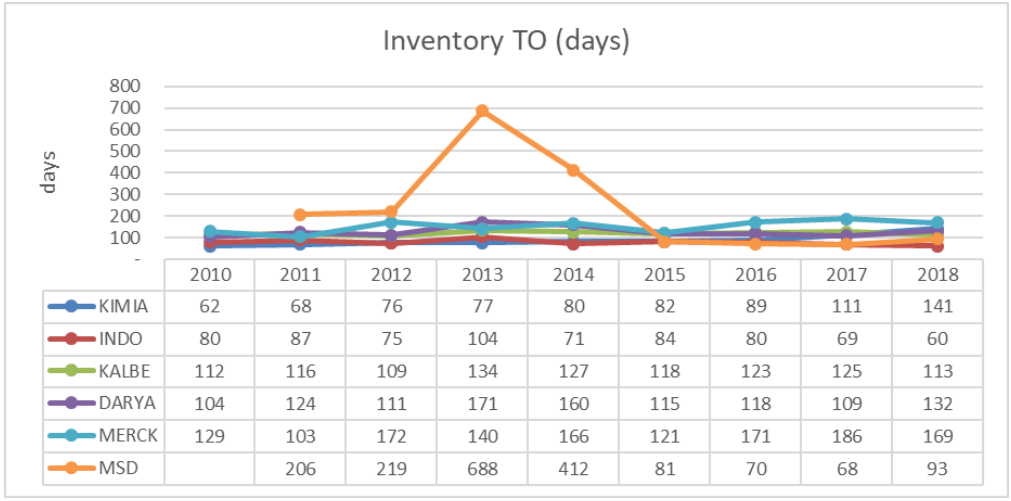
	2010	2011	2012	2013	2014	2015	2016	2017	2018
KIMIA	242.55%	274.75%	280.31%	242.67%	238.70%	192.28%	171.37%	154.55%	142.27%
INDO	155.23%	153.80%	210.25%	126.52%	130.36%	126.15%	121.08%	104.22%	104.87%
KALBE	438.87%	367.72%	340.54%	283.93%	340.36%	369.78%	413.11%	450.89%	465.77%
DARYA	371.67%	489.33%	431.02%	424.18%	518.13%	352.29%	285.49%	266.21%	288.90%
MERCK	622.75%	751.52%	387.12%	397.95%	458.59%	365.22%	421.66%	308.10%	137.19%
MSD		377.92%	271.77%	260.60%	245.03%	127.60%	533.88%	129.44%	298.90%

Based on the paired t-test result consolidated from the 6 companies (figure 5), showed no significant difference on Current Ratio (p value = 0.11644), between before (2010-2013) and after (2015-2018) JKN initiation.

However, if we deep dive by company analysis, Kimia Farma (p value = 0.00945; µ before = 260.1%; µ after = 165.1%), Darya Varia (p value = 0.04592; µ before = 429.1%; µ after = 298.2%) and Merck (p value = 0.02277; µ before = 539.8%; µ after = 308.0%), showed significant difference between before and after JKN. Hence, the 3 companies experienced declining on the Current Assets ratio in 3 years after the JKN initiation.

iii. Activity Ratio

Inventory Turn Over

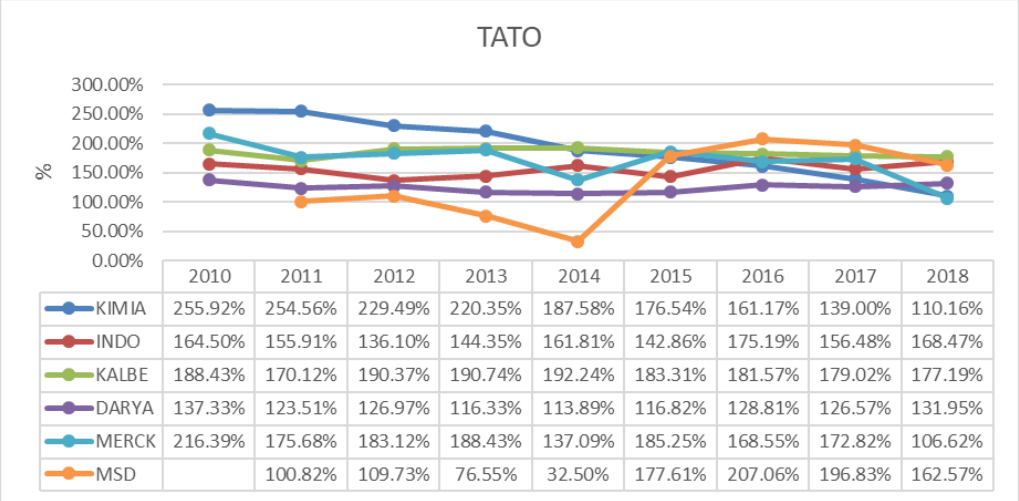


	2010	2011	2012	2013	2014	2015	2016	2017	2018
KIMIA	62	68	76	77	80	82	89	111	141
INDO	80	87	75	104	71	84	80	69	60
KALBE	112	116	109	134	127	118	123	125	113
DARYA	104	124	111	171	160	115	118	109	132
MERCK	129	103	172	140	166	121	171	186	169
MSD		206	219	688	412	81	70	68	93

Based on the paired t-test result consolidated from the 6 companies (figure 5), showed no significant difference on Inventory Turn Over (p value = 0.44581), between before (2010-2013) and after (2015-2018) JKN initiation.

However, if we deep dive by company analysis, Kimia Farma (p value = 0.04289; µ before = 71 days; µ after = 106 days) showed significant difference between before and after JKN. Kimia Farma experienced increasing Inventory Turn Over by 35 days in average, 3 years after the JKN initiation. From the chart above, the slightly increased TOI occurred since 2015 when the company increased the stock of some finished goods of contraceptive and medical device products, in order to boost sales (KF Annual Report, 2015).

Total Assets Turn Over

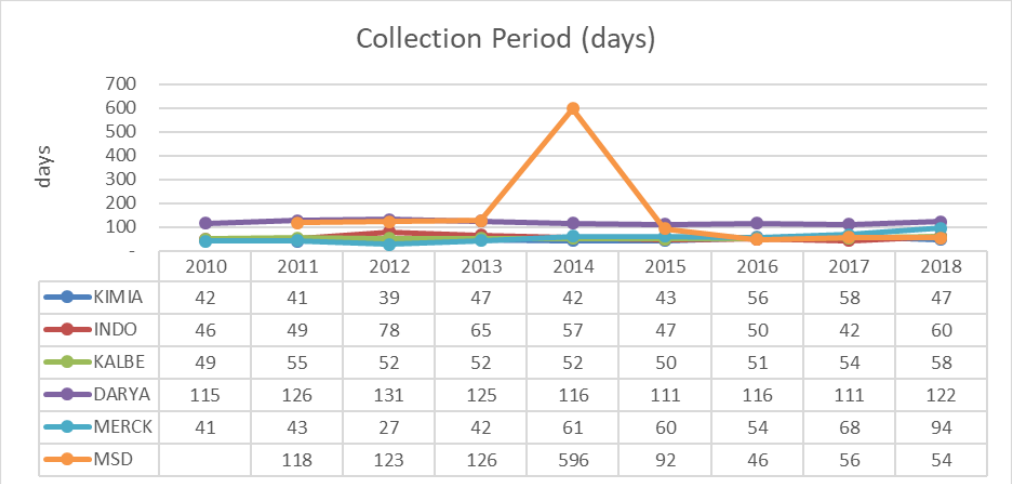


	2010	2011	2012	2013	2014	2015	2016	2017	2018
KIMIA	255.92%	254.56%	229.49%	220.35%	187.58%	176.54%	161.17%	139.00%	110.16%
INDO	164.50%	155.91%	136.10%	144.35%	161.81%	142.86%	175.19%	156.48%	168.47%
KALBE	188.43%	170.12%	190.37%	190.74%	192.24%	183.31%	181.57%	179.02%	177.19%
DARYA	137.33%	123.51%	126.97%	116.33%	113.89%	116.82%	128.81%	126.57%	131.95%
MERCK	216.39%	175.68%	183.12%	188.43%	137.09%	185.25%	168.55%	172.82%	106.62%
MSD		100.82%	109.73%	76.55%	32.50%	177.61%	207.06%	196.83%	162.57%

Based on the paired t-test result consolidated from the 6 companies (figure 5), showed no significant difference on Total Assets Turn Over (p value = 0.8473), between before (2010-2013) and after (2015-2018) JKN initiation.

However, from the deep dive analysis by company, shown that Kimia Farma (p value = 0.000688; μ before = 240.1%; μ after = 146.7%) and MSD (p value = 0.001341; μ before = 97.5%; μ after = 186.0%) showed significant difference between before and after JKN. Kimia Farma experienced declining on TATO, while MSD was much improving after JKN.

Collection Period



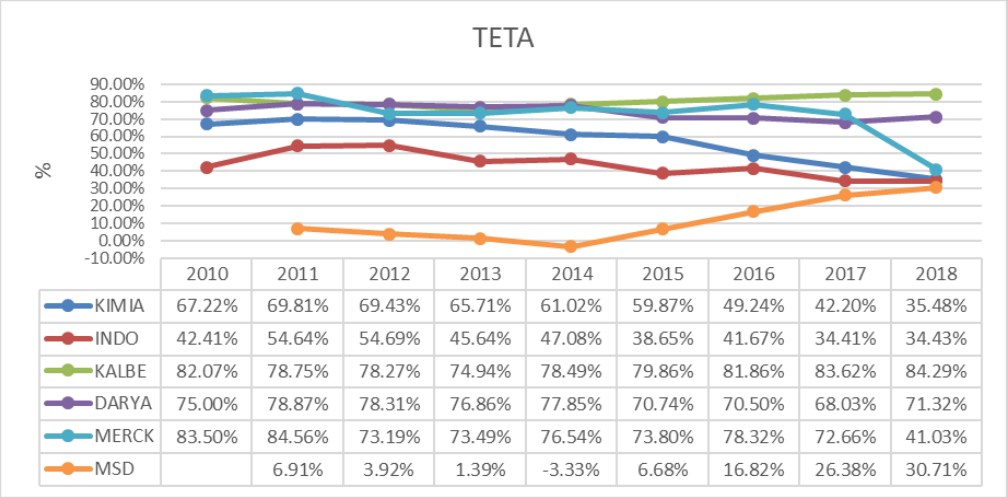
	2010	2011	2012	2013	2014	2015	2016	2017	2018
KIMIA	42	41	39	47	42	43	56	58	47
INDO	46	49	78	65	57	47	50	42	60
KALBE	49	55	52	52	52	50	51	54	58
DARYA	115	126	131	125	116	111	116	111	122
MERCK	41	43	27	42	61	60	54	68	94
MSD		118	123	126	596	92	46	56	54

Based on the paired t-test result consolidated from the 6 companies (figure 5), showed no significant difference on Collection Period (p value = 0.62669), between before (2010-2013) and after (2015-2018) JKN initiation.

However, from the deep dive analysis by company, shown that Merck (p value = 0.0475; μ before = 38 days; μ after = 67 days) and MSD (p value = 0.0101; μ before = 122 days; μ after = 62 days) showed significant difference between before and after JKN. The CP performance of Merck was deteriorated, while MSD was doubled improving. MSD has experienced shoot-up of CP in 2014, but after that went well controlled in 2015 onward. The improvement of CP has favored MSD in reducing company's net working capital.

iv. Solvency Ratio

Total Equity to Total Assets Ratio



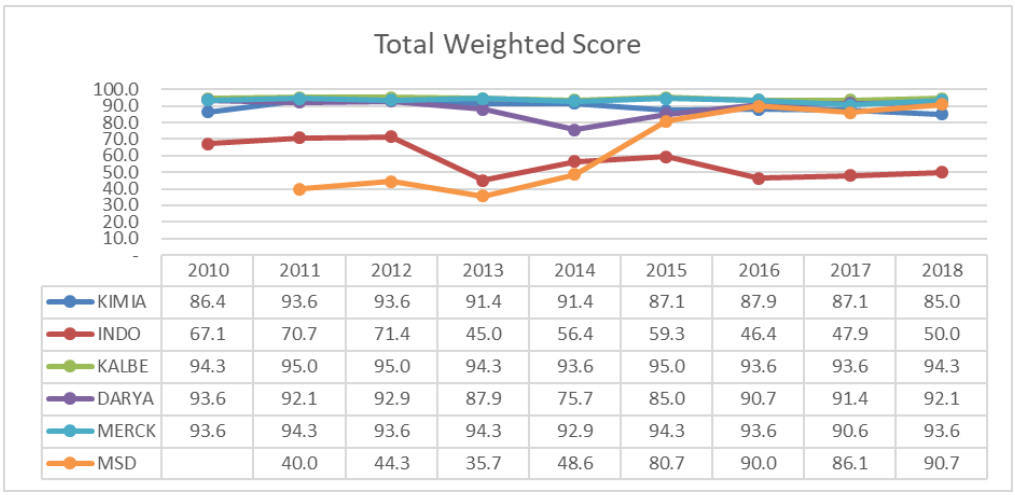
	2010	2011	2012	2013	2014	2015	2016	2017	2018
KIMIA	67.22%	69.81%	69.43%	65.71%	61.02%	59.87%	49.24%	42.20%	35.48%
INDO	42.41%	54.64%	54.69%	45.64%	47.08%	38.65%	41.67%	34.41%	34.43%
KALBE	82.07%	78.75%	78.27%	74.94%	78.49%	79.86%	81.86%	83.62%	84.29%
DARYA	75.00%	78.87%	78.31%	76.86%	77.85%	70.74%	70.50%	68.03%	71.32%
MERCK	83.50%	84.56%	73.19%	73.49%	76.54%	73.80%	78.32%	72.66%	41.03%
MSD		6.91%	3.92%	1.39%	-3.33%	6.68%	16.82%	26.38%	30.71%

Based on the paired t-test result consolidated from the 6 companies (figure 5), showed no significant difference on TETA ratio (p value = 0.3633), between before (2010-2013) and after (2015-2018) JKN initiation.

However, from the deep dive analysis by company, shown that Kimia Farma (p value = 0.02466; μ before = 68%; μ after = 46.7%), Indofarma (p value = 0.0379; μ before = 49.3%; μ after = 37.3%), Darya Varia (p value = 0.01357; μ before = 77.3%; μ after = 70.1%), and MSD (p value = 0.0449; μ before = 4.1%; μ after = 20.1%), all showed significant difference between before and after JKN.

8.2. Financial Healthiness Level

Referring to figure 5, based on the paired t-test result showed no significant difference on Total Weighted Score consolidated from the 6 companies (p value = 0.06331), between before (2010-2013) and after (2015-2018) JKN initiation. Therefore, can be concluded that in overall there is no significant different from the perspective of company healthiness, with means (μ) before JKN was 79.17 and means (μ) after JKN was 83.58. However, under the company classification stipulated from State-Owned Companies Minister Decree, score 79.17 was classified as A (65<TWS≤80), and 83.58 was AA (80<TWS≤95). Both conditions are classified under "Healthy" company. (Indonesia SOCs Minister's Decree No. 100, 2002)



	2010	2011	2012	2013	2014	2015	2016	2017	2018
KIMIA	86.4	93.6	93.6	91.4	91.4	87.1	87.9	87.1	85.0
INDO	67.1	70.7	71.4	45.0	56.4	59.3	46.4	47.9	50.0
KALBE	94.3	95.0	95.0	94.3	93.6	95.0	93.6	93.6	94.3
DARYA	93.6	92.1	92.9	87.9	75.7	85.0	90.7	91.4	92.1
MERCK	93.6	94.3	93.6	94.3	92.9	94.3	93.6	90.6	93.6
MSD		40.0	44.3	35.7	48.6	80.7	90.0	86.1	90.7

When the analysis was zoomed into the company level to compare between before and after JKN, t-test statistical analysis resulted that MSD was the only company shown significant difference. From the chart above we can see that MSD started the journey in 2011 at score 40 (classified as B, or Less Healthy), then dramatically improved in 2015 to score 80.7 (classified as AA, or Healthy). The journey has been continuing to improve until 2018 to score 90.7, remain fall under AA.

8.2.1. Total Weighted Score of the Company Healthiness Level between Private Domestic and Multinational Companies after JKN initiation (2014-2018)

Group	Means	SD	Independent Sample t-test	Decision
PDC	90,50	5,92	0,372121327	P value > 0.05. Reject the hypothesis. There is no significant difference
MNC	86,09	13,82		

TWS means of PDC was 90.5 and MNC was 86.09. According to independent samples t-test, resulted p value = 0.3721, hence no significant difference on the company healthiness between the private domestic group and multinational group after JKN initiation (2014-2018). Both groups were put under "AA" level, or Healthy, according to the average score during period 2014-2018.

8.2.2. Total Weighted Score of the Company Healthiness Level between Private Domestic and State-Owned Companies after JKN initiation (2014-2018).

Group	Means	SD	Independent Sample t-test	Decision
PDC	90,50	5,92	0,007858515	P value < 0.05. ACCEPT the hypothesis. There is significant difference
SOC	69,86	19,25		

TWS means of PDC was 90.5 and SOC was 69.86. According to independent samples t-test, resulted p value = 0.00785, hence there was significant difference on the company healthiness between the private domestic group and state-owned group after JKN initiation (2014-2018). Based on the average score during period 2014-2018, PDC were put under "AA" level, and SOC were under "A". However, both classified as Healthy.

9.2.2. Total Weighted Score of the Company Healthiness Level between State-Owned and Multinational Companies after JKN initiation (2014-2018).

Group	Means	SD	Independent Sample t-test	Decision
SOC	69,86	19,25	0,045702461	P value < 0.05. ACCEPT the hypothesis. There is significant difference
MNC	86,09	13,82		

TWS means of SOC was 69.86 and MNC was 86.09. According to independent samples t-test, resulted p value = 0.0457, hence there was significant difference on the company healthiness between the state-owned group and multinational group after JKN initiation (2014-2018). Based on the average score during period 2014-2018, SOC were put under "A" level, and MNC were under "AA". However, both classified as Healthy.

10. Conclusion & Recommendation

This study has discovered that, in overall there were no significant difference affected by JKN program to the six pharmaceutical companies. The risk of delayed payment from BPJS-K to healthcare providers, which concurrently assumed will affect to the cash flow of pharmaceutical manufacturers, did not seem hit significantly to the Financial Ratio indicators. Particularly in Collection Period (CP) analysis, out of 6 companies, only Merck has suffered declining of CP performance by almost double downturn. The other multinational company, MSD, performed better since 2015 onward.

With regard to FRA analysis by company, here are some significant changes after the JKN implementation:

- Kimia Farma's performance declined significantly after JKN in term of Current Ratio, Inventory Turn Over, Total Asset Turn Over and Total Equity to Total Asset Ratio;
- Indofarma's performance declined significantly in term of Total Equity to Total Asset Ratio;
- Kalbe Farma's performance declined significantly after JKN on ROI and ROE;
- Darya Varia's performance declined significantly after JKN on Current Ratio and Total Equity to Total Asset Ratio;
- Merck's performance declined significantly after JKN on Current Ratio and Collection Period;
- In contrary, MSD has been boosting up the performance significantly after JKN, in term of ROI, ROE, TATO, Collection Period, and TETA. Adding to that, the company healthiness level also increased from "B" (Less Healthy) to "AA" (Healthy), due to some corporate actions have been taken place in overcome the market change.

From the hypothesis comparing between the 3 groups of companies, discovered that state-owned company have the weakest healthiness level among the others two. When compared between private domestic and multinational group, there was no significant different found on the average score.

In summary, this study recommended the pharmaceutical companies participating in JKN program, to be more creative in overcoming the market change. JKN promised the increasing volume of patients with more affordable products. Hence, company need to adjust the business model and portfolio selection to fit in the market. Increasing net working capital need to offset with the cost reduction in non-productive activities and eliminate inefficient company assets.

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