

A COMPARATIVE STUDY OF CONVENTIONAL AND SHARIAH LIFE INSURANCE EFFICIENCY USING DATA ENVELOPMENT ANALYSIS

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ABSTRACT – This study aims to analyze and compare the efficiency between conventional life insurance companies and Islamic life insurance companies in Indonesia over the period of 2014-2018. The sample of this study was taken from 10 conventional life insurance companies and 10 shariah life insurance companies that were selected based on the purposive sampling technique. Measurement of efficiency in this study was conducted using the method of data envelopment analysis (DEA) based on Bankers-Charnes-Cooper (BCC) and Charnes-Cooper-Rhodes (CCR) models of the value-added approach. This was followed by testing the hypothesis using a different Mann-Whitney U-test. Input variables used are assets, capital, general and administrative costs, and commission expenses. Meanwhile, the output variables are premiums and investment income. The results showed that conventional life insurance companies are more efficient than Islamic life insurance companies based on the BCC and CCR models. Furthermore, the results of different tests using the Mann-Whitney U-test showed an insignificant difference in efficiency between conventional life insurance companies and Islamic life insurance companies during the study period. The results of the comparison of the average efficiency value with the DEA method indicated that the efficiency level of a conventional life insurance company was better than a shariah life insurance company.

Keywords: Efficiency. Conventional life insurance. Shariah Life Insurance. Data Envelopment Analysis

ABSTRAK – *Studi Perbandingan Efisiensi antara Asuransi Jiwa Konvensional dengan Syariah Menggunakan Data Envelopment Analysis.* Penelitian ini bertujuan untuk menganalisis perbandingan efisiensi perusahaan asuransi jiwa konvensional dengan perusahaan asuransi jiwa syariah di Indonesia pada periode 2014-2018. Sampel penelitian ini adalah 10 perusahaan asuransi jiwa konvensional dan 10 perusahaan asuransi jiwa syariah yang dipilih berdasarkan teknik purposive sampling. Pengukuran efisiensi dalam penelitian ini menggunakan metode data envelopment analysis (DEA) dengan model BCC dan CCR berdasarkan pendekatan nilai tambah. dilanjutkan dengan melakukan uji hipotesis menggunakan uji beda Mann-Whitney u-test. Variabel input yang digunakan adalah aset, modal, biaya administrasi dan umum, dan beban komisi. Sedangkan variabel outputnya adalah premi dan pendapatan investasi. Hasil penelitian menunjukkan bahwa perusahaan asuransi jiwa konvensional lebih efisien dibandingkan perusahaan asuransi jiwa syariah berdasarkan pengukuran dengan model BCC maupun model CCR. Selanjutnya hasil uji beda menggunakan uji mann-whitney u- test menunjukkan bahwa tidak terdapat perbedaan efisiensi yang signifikan antara perusahaan asuransi jiwa konvensional dan perusahaan asuransi jiwa syariah selama periode penelitian ini. Hasil perbandingan nilai efisiensi rata-rata dengan metode DEA menunjukkan bahwa tingkat efisiensi perusahaan asuransi jiwa konvensional lebih baik daripada perusahaan asuransi jiwa syariah.

Kata Kunci: Efisiensi. Asuransi Jiwa Konvensional. Asuransi Jiwa Syariah. Data Envelopment Analysis

INTRODUCTION

The insurance industry is a non-bank financial institution that acts as one of the pillars of the national economy. This relates to the role of insurance companies as collection agencies and their provision of long-term funds for national economic development. The insurance companies also provide protection against risks faced by the community as well as support developmental stability. Operationally, in the context of Indonesia, insurance companies are fostered and supervised by the Financial Services Authority (*Otoritas Jasa Keuangan* - OJK).

Over the last decade, the companies have shown an increase in development not only in Indonesia but worldwide. The insurance industry in Indonesia continues to grow, especially life insurance. In 2016 the insurance industry contributed around 2.92% to the Gross Domestic Product (GDP). The biggest contribution of the gross premium of the insurance industry comes from the life insurance sector, which is equal to 46.2%. It can be inferred that life insurance contributes significantly to the development of the insurance industry in Indonesia (Financial Services Authority, 2016).

Life insurance is an agreement between insurance participants and an insurance company. The insurance company promises to pay a sum of money in the event of death to the insurance policyholder. Life insurance is intended to protect a person or family from financial loss or loss of one's income due to the death of the insured. This is a form of guarantee for families left behind. In general, there are two types of life insurance companies in Indonesia; namely conventional life insurance and shariah life insurance.

Conventional insurance and shariah insurance have the same purpose which is to manage life risks. However, there are differences in executing the process. The risk management in conventional insurance is by using risk transfer which is distributing the risks of members to the insurance company, while shariah insurance is by using the *risk-sharing* concept among the members under the insurance company where the members help each other by sharing the risks they will face by collecting the premiums which consist of *tabarru'* fund (Puspitasari, 2015; Nisak & Ibrahim, 2014)

Although there are differences between Sharia Insurance and Conventional Insurance, the role of the two insurers is still the same, namely, to protect participants. However, there are benefits of Sharia insurance products that are



not included in conventional insurance, namely *waqf*. The *waqf* is the transfer of property rights or durable assets to recipients of *waqf* or *nazhir*, which aims to benefit the people as contained in the Waqf Program owned by PRUSyariah from Prudential Indonesia. Besides, in Sharia insurance, there is a Sharia Insurance Contract or agreement using a Grant Agreement *tabarru'* which is carried out according to Islamic law and halal. Apart from that, ownership of Sharia Insurance funds is a joint fund owned by all insurance participants. If a participant needs assistance, another participant helps through contribution funds (sharing of risk). Besides that, *zakat* is one of the pillars of Islam that must be done by Muslims. So that Sharia Insurance requires participants to pay *zakat*. The amount is determined based on company profits. The growth of both companies can be observed from the growth rate of gross premiums, assets, and investments, as illustrated in Table 1.

Table 1. The Growth of Conventional and Shariah Life Insurance over the period of 2015-2016 (In IDR Trillions)

Category	Gross Premium		Assets		Investment	
	2015	2016	2015	2016	2015	2016
Conventional Life Insurance	135.13	167.17	378.03	451.03	327.68	396.38
	23.7%		19.3%		21%	
Shariah Life Insurance	8.27	9.44	21.73	26.90	19.60	24.32
	14.1%		23.8%		24.1%	

Source: Financial Services Authority (2017)

As observed from Table 1, the growth of shariah life insurance is relatively higher than the conventional life insurance. This can be highlighted by the higher growth rate of assets and investments. However, the growth of gross premiums on shariah life insurance is far below the growth of gross premiums of conventional life insurance, even though gross premiums of shariah life insurance are growing but the value is insignificant.

Erwin Noekman, a shariah insurance observer, acknowledges that conventional insurance still dominates the insurance industry in Indonesia (Kontan.co.id, 2017). Although, every year the growth of shariah life insurance is always greater than conventional life insurance but the market share of shariah life insurance is far smaller than the conventional ones, which control almost 94% of the total market share. Referring to these figures, an argument could be made that conventional life insurance is more efficient than shariah life insurance.



One of the important aspects of the success of a company is efficiency (Abidin at al., 2009). Efficiency shows that a company has strong managerial abilities (Mawaddah, 2013). Efficiency is important for a company in regards to maintaining the public's trust, and efficiency is also one of the keys to increasing the competitiveness of a company, especially in the tight competition of the insurance industry in Indonesia today.

There some studies that have been conducted in the world which lead to different findings. Take a study done by Abduh et al., (2012) which compared shariah insurance and conventional insurance in Malaysia. The result of the study shows that conventional insurance is less efficient when compared to shariah insurance because shariah insurance is equipped with different products operated under the same system as conventional. Meanwhile, Khan at al., (2014) conducted a study about the level of efficiency of the conventional insurance company and shariah insurance company in Pakistan. The findings show that shariah insurance is more efficient than conventional insurance. This is due to the optimal use of variable input. Based on the elaborated background and the gap found in the previous studies, the researcher is interested to conduct this study.

The difference between this study and previous studies is that the input variables studied in this study were more than the previous research conducted by Abduh et al., (2012). They used two input variables, namely commission fees, and management fees, while in this study, there are two additional input variables, namely assets and capital. This study focuses on comparing the efficiency of life insurance companies, in contrast to Purwanti (2016) research which compares the efficiency of general insurance companies. The next difference is that this study measures the efficiency of insurance companies for the period 2012 to 2016 which is different from the research of Khan at al., (2014) which measures the efficiency of insurance companies for the period 2006 to 2010.

The strength of this research is that this research looks at the comparison of the latest data from 2014 to 2018. Also, this study compares the efficiency of these two insurance companies using Data Envelopment Analysis (DEA). DEA was first developed by Farrel in 1957 which measured the technical efficiency of one input and one output into multi-input and multi-output, using the relative efficiency value framework as the ratio of input to output (Sutawijaya &



Lestari, 2009). The choice of the DEA method has advantages over other methods. Purwantoro (2003) states that the advantages of the DEA are:

- a) Can measure the relative efficiency of several similar DMUs by using many input and output variables.
- b) There is no need to assume a functional relationship between the input and output variables.
- c) DMUs can be compared directly with each other.
- d) Input and output variables can have different units of measurement

The purpose of this study is to analyze the comparisons of efficiency between conventional life insurance and shariah life insurance in Indonesia for the 2014-2018 period using the Data Envelopment Analysis (DEA) method, as well as to test whether or not there are significant efficiency differences between the two.

The benefit of this research is to give an overview of the performance assessment of DEA method and to be input in improving the efficiency of insurance. As for the academics, the benefit of this research is to enrich the literature of this matter and to be used as a review for further research, especially ones about the efficiency of the insurance company.

The benefit of this research for insurance companies is that it can provide an overview of performance appraisal using the DEA method and become an input in increasing efficiency. The benefit for users of the company's financial statements is that they can provide information on the comparison of the efficiency of conventional and sharia life insurance companies so that they are taken into consideration in making decisions. For researchers, this research can add insight and knowledge about company performance, especially regarding the efficiency of the performance of insurance companies. For academics, this research can add to the library treasury and can be used as study material for further research on the efficiency of insurance companies.

LITERATURE REVIEW

The Concept of Efficiency

In general, efficiency is often associated with the performance of a company. This is because efficiency reflects the comparison between output and input in the company. Efficiency is the ability of a company to prepare work correctly



or can be mentioned as a ratio of output and input, or the amount of output obtained from an input used. The company is called efficient if the company can maximize output by using fixed inputs or by minimizing the use of inputs in achieving the same amount of output (Bastian, 2009; Ibrahim & Rahmati, 2017).

Data Envelopment Analysis (DEA)

Data Envelopment Analysis (DEA) is a mathematical programming technique that is used to measure the efficiency of an organization called a decision-making unit (DMU) by using lots of inputs and lots of output. The DEA approach can overcome the shortcomings of ratio analysis or multiple regression analysis. Efficiency measured using the DEA approach is relative efficiency, not an absolute value that can be achieved by an organization. Efficiency is a relative efficiency of a DMU compared to other DMUs in a sample that has similar inputs and outputs (Muharam & Pusvitasari, 2007). DMU whose performances are best is rated 100% while other DMUs whose performances are below the best DMU have varied values between 0% - 100% according to comparisons with the best DMU.

There are two models of efficiency measurement based on the DEA method. There are:

a) CCR Model (Charnes-Cooper-Rhodes. 1978)

CCR Model is also known as CRS because this model uses assumptions with the constant Return to Scale (CRS), which means proportional change at the input level will produce the same proportional change at the output level.

b) BCC Model (Bankers. Charnes and Cooper. 1984)

BCC Model also is known as Variable Return to Scale (VRS) which assumes that proportional change at the input level will not produce the same proportional change at the output level (bias greater or smaller).

Input and Output Relations in Efficiency Measurement

Huang and Eling (2013) state that there are two approaches in determining input and output relations:



- 1) The value-Added Approach which is a combination of a production approach and an intermediation approach that assumes that the insurance company provides three main services as follows:
 - a) Insurance companies operate based on risk pooling and risk-bearing. The company receives premiums from participants and redistributes them to participants who suffer losses.
 - b) Insurance companies provide 'real' services in the form of protection programs.
 - c) Insurance companies act as financial intermediaries by investing their funds and funds from participants in the capital market that are then used to fulfill the obligations of payment of participant claims.

- 2) An intermediation Approach is an approach that treats insurance companies as financial intermediaries. Insurance companies manage assets, borrow funds from policyholders, and invest them and the results are used to pay insurance claims, taxes, and other fees.

The approach used in this study is the value-added approach. The value-added approach is the most suitable approach for the insurance industry. This approach uses the components of the company's assets and liabilities which include investment activities, company capital, and expenses that are liabilities of the company. This value-added approach is also often referred to by other studies that discuss the efficiency of the insurance industry (Huang & Eling, 2013).

Input variables of this study are assets, capital, general and administrative costs, and commission expenses. While the output variables are premium and investment income, these input and output variables reflect the three main services of insurance companies.

I got the input and output from various previous studies which are studies done by Benarda, Sumarwan, U., & Hosen, (2016), Purwanti, (2016), Khan et al., (2014), Rahman, (2015), Ismail et al., (2011). The approach used in this study is a value-added approach. Huang & Eling, (2013) states that the value-added approach is the most appropriate approach for the insurance industry. This approach uses the asset component and company which consist of investment activity, company liability, company capital, and liability expenses of the company. The input variable in this study is based on the approach of asset value-added, capital, administration and general fee, and commission expenses.



The studies about efficiency of either conventional insurance or shariah insurance have been conducted by a few researchers which are studies done by Janjua & Akmal, (2015) about the comparative study of the efficiency of shariah-based insurance and conventional insurance in Pakistan in the period of 2006-2011 which shows that shariah insurance is more efficient than conventional insurance. A few other studies like one done by Yakob et al., (2014) and Abduh et al., (2012) show that Shariah Company shows a better risk management performance when compared to conventional ones. Out of those study findings, this research aims to study the same comparison of two insurances in Indonesia which is the Muslim-majority country in the world.

RESEARCH METHOD

Population and Research Sample

The population used for this study was conventional life insurance and shariah life insurance companies that were registered in OJK during the period of 2014-2018. The total population of Sharia insurance companies in Indonesia is 24 companies. Meanwhile, there are 50 conventional insurance companies (OJK, 2020). Sampling in this study was carried out with certain considerations according to the criteria. The samples taken were ten conventional life insurance companies and ten Sharia life insurance companies with the largest number of participants during the 2014-2018 observation period.

Sampling was done by purposive sampling which is the selection of samples that are not random whereby the information is obtained with certain considerations. A total of ten shariah insurance companies and ten conventional insurance companies were selected as the samples based on the largest number of policies or participants during the 2014-2018 period.

Every sample in this study was taken based on the following criteria.

- a. It is a conventional life insurance company or a shariah life insurance company operating in Indonesia during the 2014-2018 period.
- b. It presented financial reports in the 2014-2018 period which have been published in the Financial Services Authority.
- c. It is a conventional life insurance company or a shariah life insurance company that has complete data relating to input and output variables.

The sample in this study was taken based on the following criteria:



Tabel 2 Research Sample

Conventional Life Insurance	Shariah Life Insurance
PT Asuransi BRI Life	PT Asuransi Allianz Life Indonesia
PT AXA Life Indonesia	PT Asuransi Takaful Keluarga
PT Sun Life Financial Indonesia	PT Prudential Life Assurance
PT Equity Life Indonesia	PT AIA Financial
PT PaninDai-Ichi Life	PT Asuransi Jiwa Sinar Mas MSIG
PT Asuransi Jiwa Manulife Indonesia	PT Asuransi Jiwa Manulife Indonesia
PT Asuransi CIGNA	PT Asuransi Jiwa Central Asia Raya
PT Asuransi Allianz Life Indonesia	PT BNI Life Insurance
PT CHUBB Life Insurance Indonesia	PT Panin Dai-ichi Life
PT Asuransi Jiwa Central Asia Raya	PT Avrist Assurance

Source: Financial Services Authority (2019)

Source and Data Collection Method

This study uses secondary data obtained from the annual financial statements of conventional and shariah life insurance companies which are published through the website of each company and the report of OJK for the 2014-2018 period. Data was collected using the documentation method; which is a method for collecting data in the form of financial statements, published reports, notes, and other information related to the research variable.

Data Envelopment Analysis (DEA) Method

DEA is a linear program-based non-parametric approach for calculating the ratio of output to input across all units compared to a population supported by efficiency software packages, such as *Banxia Frontier Analysis* (BFA), *Warwick Data Envelopment Analysis* (WDEA), *A Data Envelopment Analysis Program* (DEAP), and *Linear Interactive Discreet Optimizer* (Lindo). This research uses DEAP 2.1 software. This is because the DEAP software is more complete and easier to use.

The DEA method is designed to measure the relative efficiency of a DMU with many input conditions and lots of output. This condition is difficult to do by other methods of measuring efficiency. The relative efficiency of a DMU is the efficiency of a DMU compared to other DMUs in the sample. Insurance efficiency research in this study used the DEA CCR model and the DEA BCC model and based on the assumption of output orientation.



The general equation for the DEA method is:

$$h_s = \frac{\sum_{i=1}^m u_i y_{is}}{\sum_{j=1}^n v_j x_{js}}$$

where:

h_s = s insurance efficiency

m = observed s insurance output

n = observed s insurance input

y_{is} = the total of output i produced by s insurance

x_{js} = the total of input j used by s insurance

u_i = the total of output i earned by s insurance

v_j = the total of input j given by s insurance, and I calculated from 1 to m while j calculated from 1 to n

Hypothesis Testing

The next data analysis is testing the hypothesis of the efficiency values of both. The model used to test the hypothesis is the non-parametric statistical technique with the Mann Whitney U-Test different test. The purpose of the Mann Whitney difference test is to determine whether there is a significant difference between the efficiency of conventional and shariah life insurance companies.

The purpose of the Mann Whitney test is to determine whether there is a significant difference between conventional life insurance companies and shariah life insurance companies.

The model used to test the hypothesis is a non-parametric statistical technique in the form of the Mann Whitney U-Test difference test. The purpose of the Mann Whitney difference test is to determine whether there is a significant difference between conventional life insurance companies and Sharia life insurance companies. The Mann Whitney U Test is a non-parametric test used to determine the difference in the median of the two independent groups if the dependent variable data scale is ordinal or interval or ratio but not normally distributed. The Mann Whitney U Test is different from other methods because the Mann Whitney U Test not only tests the Median difference but also tests the Mean. This is because in various cases, the median of the two groups could be the same, but the resulting P-value was small, namely <0.05 , which means there was a difference. This is because the mean of the two groups is significantly different.



RESULT AND DISCUSSION

Descriptive analysis

Descriptive analysis is an analysis in which the data collected is then analyzed and interpreted objectively so that it provides information and an overview according to the topic discussed. The data in this study were analyzed by using DEAP 2.1 and SPSS software. The objective of using DEAP 2.1 software was to analyze the efficiency of conventional life insurance companies and sharia life insurance companies by processing the data from the variables studied, namely assets, capital, general and administrative expenses, commission, premiums, and investment income while the SPSS software was used to perform discrimination test to find out whether there is a significant difference between the degree of efficiency of conventional life insurance companies and sharia life insurance companies.

The development of input collection activities in conventional life insurance companies in Indonesia from 2014 to 2018 is provided in Table 3

Table 3. The development of input collection activities in conventional life insurance companies from 2014 to 2018 (In Milion Rupiah)

No	Perusahaan	2014	2015	2016	2017	2018
1.	PT Asuransi BRI Life	(6.046.243)	(6.528.710)	(8.147.899)	(10.587.464)	(11.906.451)
	• Aset	4.609.582	4.933.309	6.069.870	7.947.140	8.980.594
	• Capital	1.172.922	1.270.713	1.607.091	2.093.693	2.190.095
	• Adm Cost	211.687	243.568	261.527	283.955	341.311
	• Commission Expense	52.052	81.120	209.411	262.676	394.451
2.	PT AXA Life Indonesia	(775.558)	(584.294)	(598.386)	(7.098.153)	(7.821.199)
	• Aset	382.692	287.732	314.512	6.668.460	6.088.571
	• Capital	309.709	181.823	145.565	971.600	1.046.289
	• Adm Cost	53.824	64.768	65.836	389.684	395.684
	• Commission Expense	29.333	49.971	72.473	302.930	290.655
3.	PT Sun Life Financial Indonesia	(7.992.162)	(7.736.364)	(11.695.494)	(14.346.799)	(14.642.495)
	• Aset	6.212.136	6.060.354	9.618.219	11.742.806	11.996.023
	• Capital	1.170.127	1.066.111	1.288.588	1.550.978	1.495.844
	• Adm Cost	336.852	336.852	411.952	514.616	514.961
	• Commission Expense	273.047	273.047	376.735	538.399	635.667



4.	PT Equity Life Indonesia	(2.472.935)	(2.423.912)	(2.680.679)	(2.965.018)	(3.026.955)
	• Aset	2.023.930	1.933.500	2.117.048	2.353.274	2.378.498
	• Capital	285.654	301.786	363.821	404.654	437.677
	• Adm Cost	123.069	143.625	157.824	44.780	43.560
	• Commission Expense	40.282	45.001	41.986	162.310	167.220
5.	PT Panin Dai-ichi Life	(11.908.824)	(13.887.701)	(14.271.739)	(14.613.294)	(14.468.180)
	• Aset	7.554.979	8.887.980	9.079.542	9.158.871	9.082.567
	• Capital	4.101.564	4.605.738	4.758.210	4.972.132	4.874.632
	• Adm Cost	114.569	198.962	218.934	222.319	217.301
	• Commission Expense	137.712	195.021	215.053	259.972	293.680
6.	PT Asuransi Jiwa Manulife Indonesia	(44.312.332)	(46.203.200)	(50.024.815)	(58.920.869)	(59.461.071)
	• Aset	36.366.696	36.751.228	39.719.030	45.637.074	45.704.853
	• Capital	6.184.992	7.497.748	8.026.121	10.863.284	11.253.789
	• Adm Cost	678.021	802.888	895.083	812.498	877.988
	• Commission Expense	1.082.623	1.151.336	1.384.581	1.608.013	1.624.441
7.	PT Asuransi CIGNA	(3.411.293)	(3.316.271)	(3.096.570)	(3.097.667)	(2.974.395)
	• Aset	1.875.399	1.806.614	1.755.058	1.757.783	1.671.159
	• Capital	847.427	740.857	658.727	694.778	587.819
	• Adm Cost	245.703	286.612	315.253	317.133	333.279
	• Commission Expense	442.764	482.188	367.532	327.973	382.138
8.	PT Asuransi Allianz Life Indonesia	(32.673.021)	(34.198.631)	(38.210.070)	(42.204.989)	(41.208.827)
	• Aset	26.768.322	27.635.118	30.294.789	33.189.329	32.440.421
	• Capital	3.743.575	4.355.995	5.381.290	5.692.802	5.306.516
	• Adm Cost	529.537	629.568	890.647	1.537.440	1.650.131
	• Commission Expense	1.631.587	1.577.950	1.643.344	1.785.418	1.811.759
9.	PT CHUBB Life Insurance Indonesia	(2.152.114)	(2.559.889)	(2.858.806)	(3.513.885)	(3.603.618)
	• Aset	1.341.743	1.640.577	2.028.209	2.626.619	2.735.670
	• Capital	376.953	407.183	385.552	509.991	599.879
	• Adm Cost	160.860	175.745	200.911	203.624	177.269
	• Commission Expense	272.558	336.384	244.134	173.651	90.800
10.	PT Asuransi Jiwa Central Asia Raya	(6.874.778)	(6.630.957)	(7.826.317)	(7.551.264)	(8.777.738)
	• Aset	4.725.031	4.598.462	5.419.667	5.618.666	6.696.353
	• Capital	1.929.657	1.729.967	1.928.678	1.270.110	1.395.947
	• Adm Cost	142.187	160.786	231.655	217.595	229.373
	• Commission Expense	77.903	141.742	246.317	444.893	456.065

The table above indicates that in general, the number of inputs collected by the conventional life insurance companies in Indonesia from 2014 to 2018 was



increasing, and the development can be seen through the composition of the total inputs of each conventional life insurance company. Compared to other companies, four conventional life insurance companies had a larger number of inputs, namely PT Sun Life Financial Indonesia, PT Asuransi Jiwa Manulife Indonesia, PT Asuransi Allianz Life Indonesia, and PT Asuransi Jiwa Central Asia Raya that were able to collect the average total input above 5 trillion rupiahs per year. Meanwhile, the other six conventional life insurance companies were only able to collect an average total input below 5 trillion rupiahs per year. The development of input collection activities in sharia life insurance companies in Indonesia from 2014 to 2018 is presented in Table 4 below.

Table 4. Development of input collection activities in sharia life insurance companies 2014 to 2018 (In Milion Rupiah)

No	Perusahaan	2014	2015	2016	2017	2018
1.	PT Asuransi Allianz Life Indonesia	(403.377)	(669.134)	(881.632)	(3.845.264)	(4.261.200)
	• Aset	142.548	238.257	313.307	2.724.009	2.878.705
	• Capital	12.975	207.352	263.420	363.187	486.584
	• Adm Cost	92.963	53.758	80.337	359.907	390.149
	• Commission Expense	154.891	169.767	224.568	398.161	505.762
2.	PT Asuransi Takaful Keluarga	(442.801)	(443.204)	(489.300)	(2.011.041)	(2.083.005)
	• Aset	176.680	181.369	203.492	1.660.572	1.712.378
	• Capital	159.802	162.399	185.805	164.118	173.206
	• Adm Cost	55.505	56.210	54.484	100.730	110.596
	• Commission Expense	50.814	43.226	45.519	85.621	86.829
3.	PT Prudential Life Assurance	(3.779.686)	(5.119.074)	(5.925.281)	(96.060.273)	(92.072.599)
	• Aset	1.644.546	2.321.159	2.611.954	81.652.906	78.937.978
	• Capital	1.521.856	2.155.174	2.524.888	8.797.858	7.600.494
	• Adm Cost	24.053	47.055	173.915	1.672.013	1.784.060
	• Commission Expense	589.231	595.686	614.524	3.937.478	3.750.067
4.	PT Asuransi Jiwa Syariah Al-Amin	(200.230)	(221.514)	(269.003)	(972.731)	(873.036)
	• Aset	93.917	106.002	118.316	723.983	623.688
	• Capital	76.867	82.469	111.181	102.308	105.331
	• Adm Cost	21.477	28.939	35.351	73.995	70.536
	• Commission Expense	7.969	4.104	4.155	72.445	73.481
5.	PT Asuransi Jiwa Sinar Mas MSIG	(355.265)	(433.785)	(531.949)	(1.497.229)	(1.241.290)



	• Aset	185.183	230.735	281.414	1.249.316	1.083.122
	• Capital	130.456	174.477	215.657	222.988	131.632
	• Adm Cost	2.776	2.244	1.551	643	481
	• Commission Expense	36.850	26.329	33.327	24.282	26.055
6.	PT Asuransi Jiwa Manulife Indonesia	(274.307)	(386.616)	(562.505)	(1.330.143)	(1.382.809)
	• Aset	150.624	209.760	320.487	869.682	894.859
	• Capital	105.974	152.020	194.075	241.796	293.290
	• Adm Cost	5.215	7.650	19.029	118.390	62.700
	• Commission Expense	12.494	17.186	28.914	100.275	131.960
7.	PT Asuransi Jiwa Central Asia Raya	(130.966)	(119.382)	(118.714)	(220.570)	(206.392)
	• Aset	70.244	56.935	56.622	156.320	156.561
	• Capital	51.146	52.626	52.528	34.109	43.826
	• Adm Cost	1.114	5.279	6.142	30.141	6.005
	• Commission Expense	8.462	4.542	3.422	0	0
8.	PT BNI Life Insurance	(207.562)	(252.681)	(315.430)	(833.224)	(973.818)
	• Aset	93.534	118.174	150.123	558.677	674.928
	• Capital	84.554	108.566	136.141	163.282	172.396
	• Adm Cost	9.583	11.454	13.541	46.278	60.990
	• Commission Expense	19.891	14.487	15.625	64.987	65.504
9.	PT Panin Dai-Ichi Life	(146.078)	(192.508)	(167.369)	(113.926)	(275.763)
	• Aset	84.838	123.050	85.623	171.091	169.683
	• Capital	57.029	66.964	79.169	92.241	100.339
	• Adm Cost	381	368	749	3.961	5.154
	• Commission Expense	3.830	2.126	1.828	633	587
10.	PT Avrist Assurance	(242.599)	(304.185)	(341.359)	(741.027)	(750.799)
	• Aset	119.949	148.086	167.738	524.110	518.280
	• Capital	116.292	145.117	164.205	184.198	198.373
	• Adm Cost	2.394	3.746	2.392	10.720	11.897
	• Commission Expense	3.964	7.236	7.024	21.999	22.249

Based on the table above, in general, the number of inputs collected by sharia life insurance companies in Indonesia from 2014 to 2018 was also increasing. The development can be seen from the composition of the total inputs of each sharia life insurance company. However, there were only three sharia life insurance companies that were able to collect an average total input above 300 billion rupiahs per year, namely PT Prudential Life Assurance, PT Asuransi Takaful Keluarga, and PT Asuransi Allianz Life Indonesia. Meanwhile, the seven other sharia life insurance companies were only able to collect an average total input below 300 billion rupiahs per year.



DEA Result

The Efficiency of Conventional Life Insurance Companies

Table 5 reports efficiency values with the CCR model. From the table, it can be identified that four conventional life insurance companies achieve 100 percent efficiency during the 2014-2018 period. These companies are PT Asuransi BRI Life, PT Equity Life Indonesia, PT Panin Dai-ichi Life, and PT CHUBB Life Insurance Indonesia.

Table 5. The Efficiency Value of the Conventional Life Insurance Company Model CCR in 2014-2018 (Percent)

No	Company	Year				
		2014	2015	2016	2017	2018
1.	PT Asuransi BRI Life	100	100	100	100	100
2.	PT AXA Life Indonesia	62.3	100	100	100	59.9
3.	PT Sun Life Financial Indonesia	100	61.5	82.6	96	94.5
4.	PT Equity Life Indonesia	100	100	100	100	100
5.	PT PaninDai-ichi Life	100	100	100	100	100
6.	PT Asuransi Jiwa Manulife Indonesia	100	74	100	100	83.5
7.	PT Asuransi CIGNA	91	100	100	100	100
8.	PT Asuransi Allianz Life Indonesia	100	100	100	95.7	91.9
9.	PT CHUBB Life Insurance Indonesia	100	100	100	100	100
10.	PT Asuransi Jiwa Central Asia Raya	71.7	84.2	100	98.1	96.5
Average of Efficiency		92.5	92.0	98.3	99.0	92.6

Source: Data processed

Meanwhile, the other six conventional life insurance companies do not achieve 100 percent efficiency (inefficiency) during the 2014 -2018 period. These companies are PT AXA Life Indonesia, which experienced inefficiencies in 2014 (62.3 percent) and 2018 (59.9 percent), PT Sun Life Financial Indonesia experienced inefficiencies in 2015 (61.5 percent), in 2016 (82.6 percent), in 2017 (96 percent) and 2018 (94.5 percent). PT Asuransi Jiwa Manulife Indonesia experienced inefficiencies in 2015 (74 percent) and 2018 (83.5 percent). PT Asuransi CIGNA experienced inefficiencies in 2014 (91 percent). PT Asuransi Allianz Life Indonesia experienced inefficiencies in 2017 (95.7 percent) and 2018 (91.9 percent) and PT Asuransi Jiwa Central Asia Raya experienced inefficiencies in 2014 (71.7 percent), in 2015 (84.2 percent), in 2017 (98.1 percent) and 2018 (96.5 percent).

According to the average efficiency with the CCR model, in 2014 conventional life insurance reached an efficiency level of 92.5 percent, in 2015 around 92



percent, in 2016 around 98.3 percent, in 2017 around 99 percent, and in 2018 around 92.6 percent.

The results of the DEA-BCC for conventional life insurance companies are reported in table 4:

Table 6 The Efficiency Value of the Conventional Life Insurance Company Model BCC in 2014-2018 (Percent)

No	Company	Year				
		2014	2015	2016	2017	2018
1.	PT Asuransi BRI Life	100	100	100	100	100
2.	PT AXA Life Indonesia	100	100	100	100	60.3
3.	PT Sun Life Financial Indonesia	100	74.6	83.7	100	94.5
4.	PT Equity Life Indonesia	100	100	100	100	100
5.	PT PaninDai-ichi Life	100	100	100	100	100
6.	PT Asuransi Jiwa Manulife Indonesia	100	100	100	100	100
7.	PT Asuransi CIGNA	100	100	100	100	100
8.	PT Asuransi Allianz Life Indonesia	100	100	100	100	100
9.	PT CHUBB Life Insurance Indonesia	100	100	100	100	100
10.	PT Asuransi Jiwa Central Asia Raya	82.6	86.5	100	100	100
Average of Efficiency		98.3	96.1	98.4	100	95.5

Source: Data processed

From the above table 6 efficiency values with the BCC model, it can be identified that seven conventional life insurance companies achieve 100 percent efficiency during the period 2014-2018. These companies are PT Asuransi BRI Life, PT Equity Life Indonesia, PT Panin Dai-ichi Life, PT Asuransi Jiwa Manulife Indonesia, PT Asuransi CIGNA, PT Asuransi Allianz Life Indonesia, and PT CHUBB Life Insurance Indonesia.

Meanwhile, the other three conventional life insurance companies that failed to achieve 100 percent efficiency (inefficiency) during the 2014-2018 period include PT AXA Life Indonesia, which experienced inefficiencies in 2018 (60.3 percent), PT Sun Life Financial Indonesia experienced inefficiencies in 2015 (74.6 percent), in 2016 (83.7 percent), and 2018 (94.5 percent), and PT Asuransi Jiwa Central Asia Raya experienced inefficiencies in 2014 (82.6 percent) and 2015 (86.5 percent).

According to the average efficiency with the BCC model, in 2014 conventional life insurance reached an efficiency level of 98.3 percent, in 2015 around 96.1 percent in 2016 around 98.4 percent in 2017 around 100 percent, and in 2018 around 95.5 percent.



The efficiency of Shariah Life Insurance Companies

The results of processing the DEA-CCR liner program for shariah life insurance companies can be referred to table 5. Regarding Table 7, the efficiency value with the model CCR shows that there are only 2 shariah life insurance companies that achieve 100 percent efficiency (efficient) in 2014-2018; namely PT Asuransi Allianz Life Indonesia and PT Panin Dai-Ichi Life.

Table 7. The Efficiency Value of Shariah Insurance Company Using CCR Model in 2014-2018 (Percent)

No	Company	Year				
		2014	2015	2016	2017	2018
1.	PT Asuransi Allianz Life Indonesia	100	100	100	100	100
2.	PT Asuransi Takaful Keluarga	86.5	88	77.9	74.3	77.3
3.	PT Prudential Life Assurance	100	100	66.8	76.5	100
4.	PT Asuransi Jiwa Syariah Al-Amin	100	100	100	86.5	80.2
5.	PT Asuransi Jiwa Sinar Mas MSIG	100	80.3	100	100	100
6.	PT Asuransi Jiwa Manulife Indonesia	91.7	100	95	93.6	100
7.	PT Asuransi Jiwa Central Asia Raya	100	100	96.6	100	100
8.	PT BNI Life Insurance	84.6	86.6	80.2	100	100
9.	PT Panin Dai-ichi Life	100	100	100	100	100
10.	PT Avrist Assurance	100	100	69.1	100	68.5
Average Efficiency		96.3	95.5	88.6	93.1	92.6

Source: Data processed

The table also shows that there are 8 shariah life insurance companies that are unable to achieve 100 percent efficiency (inefficiency) during the 2014-2018 period. The company is PT Asuransi Takaful Keluarga that experienced inefficiencies in 2014 (86.5 percent), in 2015 (88 percent), in 2016 (77.9 percent), in 2017 (74.3 percent), and in 2018 (77.3 percent), PT Prudential Life Assurance experienced inefficiencies in 2016 (66.8 percent) and 2017 (76.5). PT Asuransi Jiwa Syariah Al-Amin experienced inefficiencies in 2017 (86.5 percent) and 2018 (80.2 percent). PT Asuransi Jiwa Sinar Mas MSIG experienced inefficiencies in 2015 (80.3 percent). PT Asuransi Jiwa Manulife Indonesia experienced inefficiencies in 2014 (91.7 percent), in 2016 (95 percent), and in 2017 (93.6 percent). PT Asuransi Jiwa Central Asia Raya experienced inefficiencies in 2016 (96.6 percent). PT BNI Life Insurance experienced inefficiencies in 2014 (84.6 percent), 2015 (86.6 percent), and 2016 (80.2 percent), and PT Avrist Assurance experienced inefficiencies in 2016 (69.1 percent) and in 2018 (68.5 percent).



Based on the efficiency average with the CCR model, in 2014 shariah life insurance reached an efficiency level of 96.3 percent, in 2015 amounted to 95.5 percent, in 2016 amounted to 88.6 percent, in 2017 amounted to 93.1 percent and year 2018 amounted to 92.6 percent.

Furthermore, the results of processing the DEA-BCC liner program for shariah life insurance companies are shown in table 6.

Table 8. Efficiency Value of Shariah Life Insurance Company for BCC Model in 2014-2018 (Percent)

No	Company	Year				
		2014	2015	2016	2017	2018
1.	PT Asuransi Allianz Life Indonesia	100	100	100	100	100
2.	PT Asuransi Takaful Keluarga	88.8	100	92.1	75.5	80.1
3.	PT Prudential Life Assurance	100	100	100	100	100
4.	PT Asuransi Jiwa Syariah Al-Amin	100	100	100	100	85.8
5.	PT Asuransi Jiwa Sinar Mas MSIG	100	84.8	100	100	100
6.	PT Asuransi Jiwa Manulife Indonesia	92	100	100	100	100
7.	PT Asuransi Jiwa Central Asia Raya	100	100	100	100	100
8.	PT BNI Life Insurance	89.6	86.7	85.2	100	100
9.	PT Panin Dai-ichi Life	100	100	100	100	100
10	PT Avrist Assurance	100	100	94.7	100	71.4
Average of Efficiency		97	97.1	97.2	97.5	93.7

Source: Data Processed (2019)

Table 8 efficiency values with the BCC model show that there are only 4 shariah life insurance companies that achieve 100 percent efficiency during the period 2014-2018; namely PT Asuransi Allianz Life Indonesia, PT Prudential Life Assurance, PT Asuransi Jiwa Central Asia Raya, and PT Panin Dai-Ichi Life.

The table also shows that there are 6 shariah life insurance companies that do not achieve 100 percent efficiency (inefficiency) during the 2014-2018 period. The company is PT Asuransi Takaful Keluarga that experienced inefficiencies in 2014 (88.8 percent), in 2016 (92.1 percent), in 2017 (75.5 percent), and in 2018 (80.1 percent). PT Asuransi Jiwa Syariah Al-Amin experienced inefficiencies in 2018 (85.8 percent). PT Asuransi Jiwa Sinar Mas MSIG experienced inefficiencies in 2015 (84.8 percent). PT Asuransi Jiwa Manulife Indonesia experienced inefficiencies in 2014 (92 percent). PT BNI Life Insurance experienced inefficiencies in 2014 (89.6 percent), 2015 (86.7 percent), and in 2016 (85.2 percent) and PT Avrist Assurance experienced inefficiencies in 2016 (94.7 percent) and 2018 (71.4 percent).



According to the average efficiency with the BCC model, in 2014 shariah life insurance reached an efficiency level of 97 percent in 2015 which amounted to 97.1 percent, in 2016 to 97.2 percent, in 2017 to 97.5 percent, and in 2018 to 93.7 percent.

Hypothesis Testing Results

Before testing the efficiency differences between conventional and shariah life insurance. Normality and homogeneity tests must be carried out as different test conditions using Mann-Whitney U-Test.

Before testing the difference in efficiency between conventional life insurance companies and shariah life insurance companies, the normality and homogeneity tests must be carried out first. The normality test and homogeneity test are carried out to determine whether the statistical discrimination test would be carried out using the Mann Whitney U-Test or the Independent T-Test. The Mann Whitney U-Test is used when the data are homogeneous and come from a population that is not normally distributed while the Independent T-Test is used when the data are homogeneous and come from a normally distributed population (Carver, R. H., & Nash, 2012).

Normality Test Results

The purpose of the normality test is to find out whether the data collected has been distributed normally or not. The results of the normality test can be seen in the following table:



Table 9. Normality Test Result

Tests of Normality

Asuransi Jiwa		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
CCR	Conventional	0.383	50	.000	.545	50	.000
	Syariah	0.365	50	.000	.700	50	.000
BCC	Conventional	0.504	50	.000	.366	50	.000
	Syariah	0.449	50	.000	.568	50	.000

The results of the normality test state that the two data groups (CCR and BCC models) and the two sample groups have a significance value of 0.000 smaller than $\alpha = 0.05$. It can be concluded that the two groups of data are not normally distributed.

Homogeneity Test Results

The homogeneity test aims to determine whether a data variant of two or more groups is homogeneous (same) or not. The homogeneity test results can be observed in the following table:

Table 10. Homogeneity Test Result. Test of Homogeneity of Variances

Test of Homogeneity of Variances				
	Levene Statistic	df1	df2	Sig.
CCR	.792	1	98	.376
BCC	1.060	1	98	.306

Regarding the table, it is known that the significance value of the CCR and BCC models Based on Mean is equal to 0.376 and 0.306 greater than $\alpha = 0.05$. It can be concluded that the variance of the two groups of the efficiency values of the CCR and BCC models is homogeneous or the same.

After the normality test and homogeneity test, it was observed that the data group was not normally distributed and homogeneous. So the assumption in the use of a different test analysis of the Mann-Whitney U-Test statistical model has been fulfilled so that it can be continued.

Different Test Results of Mann-Whitney U-Test



Different Tests Result of the Mar-Whitney U-Test is conducted to find out whether there are significant efficiency differences between conventional life insurance companies and shariah life insurance. The results of the different test U-Test can be observed in table 9:

Table 11. Mann-Whitney U-Test Result. Ranks

		Ranks		
Asuransi Jiwa		N	Mean Rank	Sum of Ranks
CCR	Conventional	50	52.79	2639.50
	Syariah	50	48.21	2410.50
	Total	100		
BCC	Conventional	50	53.26	2663.00
	Syariah	50	47.74	2387.00
	Total	100		

Test Statistics		
	CCR	BCC
Mann-Whitney U	1135.500	1112.000
Wilcoxon W	2410.500	2387.000
Z	-.935	-1.420
Asymp. Sig. (2-tailed)	.350	.156

a. Grouping Variable: insurance

On the behalf of the output table test statistics in the Mann-Whitney U-Test above, it is shown that the efficiency of conventional and shariah life insurance companies uses the CCR and BCC models to have significant value or Asymp. Sig. (2-tailed) of 0.350 and 0.156 greater than the value of $\alpha = 0.05$. H1 is rejected. Therefore, it could be inferred that there is no significant efficiency difference between conventional life insurance and shariah life insurance in Indonesia

DISCUSSION

The calculation of the DEA-CCR during 2014-2018 shows that conventional life insurance companies are more efficient than shariah life insurance. From 10 of the conventional life insurance companies studied 4 companies achieved 100 percent efficiency. Whereas in the shariah life insurance company, from



the 10 companies studied, there were only 2 companies that achieved a 100 percent efficiency level.

The same results were also obtained by calculating DEA-BCC, namely conventional life insurance companies more efficient than shariah life insurance companies for the period of 2014-2018. Hence, from the sample of 10 conventional life insurance companies studied 7 companies achieved 100 percent efficiency. Whereas, with shariah life insurance companies there are only 4 companies out of 10 companies that achieve 100 percent efficiency.

The comparisons of the average efficiency values of conventional and shariah life insurance companies during the 2014-2018 period based on the calculation of DEA-CCR and DEA-BCC can be seen in the following table.

Table 12 Comparison of the Average Efficiency Value of Conventional Life Insurance Companies and Shariah Life Insurance in the Year 2014-2018 (percent)

Year	Company	CCR	BCC
2014	Mean of Conventional Life Insurance	92.5	98.3
	Mean of Shariah Life Insurance	96.3	97.0
2015	Mean of Conventional Life Insurance	92.0	96.1
	Mean of Shariah Life Insurance	95.5	97.1
2016	Mean of Conventional Life Insurance	98.3	98.4
	Mean of Shariah Life Insurance	88.6	97.2
2017	Mean of Conventional Life Insurance	99.0	100
	Mean of Shariah Life Insurance	93.1	97.5
2018	Mean of Conventional Life Insurance	92.7	95.5
	Mean of Shariah Life Insurance	92.6	93.7

Source: Data processed (2019)

The table shows that in 2014 conventional life insurance companies had an average value of efficiency with a CCR model of 92.5 percent and in the BCC model of 98.3 percent. Whereas shariah life insurance companies had an average value of efficiency with a CCR model of 96.3 percent and a BCC model of 97 percent. It can be concluded that in 2014 conventional life insurance



companies were more efficient than the shariah companies based on calculations with the BCC model. However, calculations using the CCR model show that shariah life insurance companies are more efficient than conventional life insurance in the same year.

In 2015, conventional life insurance companies had an average value of efficiency with a CCR model of 92 percent and a BCC model of 96.1 percent. While shariah life insurance companies had an average value of efficiency with the CCR model of 95.5 percent and the BCC model of 97.1 percent. It can be inferred that in 2015 shariah life insurance companies were more efficient than conventional companies with both the CCR and BCC models.

In 2016, conventional life insurance companies had an average efficiency value with a CCR model of 98.3 percent and a BCC model of 98.4 percent. Whereas shariah life insurance companies have an average value of efficiency with a CCR model of 88.6 percent and a BCC model of 97.2 percent. Therefore, it can be concluded that in 2016 conventional life insurance companies were more efficient than shariah with both the CCR and BCC models.

In 2017 conventional life insurance companies had an average efficiency value with a CCR model of 99 percent and a BCC model of 100 percent. While shariah life insurance companies had an average value of efficiency with the CCR model of 93.1 percent and the BCC model of 97.5 percent. it can be concluded that in 2017 conventional life insurance companies were more efficient than shariah life insurance companies with both the CCR and BCC models.

In 2018 conventional life insurance companies had an average efficiency value with a CCR model of 92.7 percent and a BCC model of 95.5 percent. Shariah life insurance companies had an average value of efficiency with the CCR model of 92.6 percent and the BCC model of 93.7 percent. Therefore, in 2018 conventional life insurance companies were more efficient than shariah with both the CCR and BCC models.

Regarding the calculation results using the CCR and BCC models in the 2014-2018 period, it is seen that conventional life insurance companies had a higher average value of three years efficiency with the CCR model and four years higher with the BCC model than shariah life insurance companies. Based on the results of the research during these five years of observation, it can be concluded that conventional life insurance companies achieved a better level of



efficiency than the shariah life insurance companies based on both the CCR model and the BCC model. The results of this study are in line with the research of Abduh et al., (2012) which states that conventional life insurance is better than shariah life insurance.

The results of testing different test hypotheses with the Mann Whitney U-Test model indicate that there is no significant difference in efficiency between conventional life insurance companies and shariah life insurance. These results indicate that managerial capabilities between conventional life insurance companies and shariah life insurance companies at an equivalent size generally have no difference in managing input factors to produce optimal output (Sari, D., 2015). Although the market share of shariah life insurance companies is very small compared to conventional life insurance companies, shariah life insurance companies can achieve an efficiency level that is equivalent to conventional life insurance companies. Therefore, shariah life insurance companies have great potential to achieve a higher level of efficiency than conventional by increasing market share in Indonesia.

The results of this study do not match the research of Ismail et al., (2011) which states that there is a significant difference in efficiency between Islamic insurance and conventional insurance. It can be inferred that the form of the organization does not have direct implications for its efficiency.

CONCLUSIONS AND IMPLICATION

According to the results of the research conclusions can be drawn as follows:

1. From the sample of 10 conventional life insurance companies studied, there were 4 companies that always achieved 100 percent efficiency in 2014-2018 based on the calculations using the CCR model, namely PT Asuransi BRI Life, PT Equity Life Indonesia, PT PaninDai-Ichi Life, and PT CHUBB Life Insurance Indonesia. There are 7 companies that always achieved 100 percent efficiency based on the calculations using the BCC model; namely PT Asuransi BRI Life, PT Equity Life Indonesia, PT Panin Dai-ichi Life, PT Asuransi Jiwa Manulife Indonesia, PT Asuransi CIGNA, PT Asuransi Allianz Life Indonesia, and PT CHUBB Life Insurance Indonesia.
2. With shariah life insurance companies regarding the calculations using the CCR model, there were only 2 companies that always achieved 100 percent efficiency from 10 companies which were from the research samples.



Namely PT Asuransi Allianz Life Indonesia and PT Panin Dai-ichi Life. Based on calculations with the BCC model there were 4 companies that always achieved 100 percent efficiency: PT Asuransi Allianz Life Indonesia, PT Prudential Life Assurance, PT Asuransi Jiwa Central Asia Raya, and PT Panin Dai-ichi Life.

3. The results of the comparison of the average efficiency value with the DEA method indicated that the efficiency level of a conventional life insurance company was better than a shariah life insurance company.
4. The results of different tests using the Mann-Whitney U-Test method indicated that there was no significant efficiency difference between conventional life insurance companies and shariah life insurance companies for the 2014-2018 period.

IMPLICATION

The implications of this study are as follows:

1. For a company, it can provide an overview of the performance appraisal with the DEA method and be used as input in determining steps and efforts to improve efficiency.
2. For users of the company's financial statements, it can provide information about the comparisons of the efficiency between conventional and shariah life insurance companies for use in making important decisions.
3. For academics, it can add to the treasury of the literature and can be used as study material for further research regarding the efficiency of insurance companies.

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