New Approach of Calculation for Malaysia Shariah Composite Index

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---*ABSTRACT*---
The objective of this study is to develop index for shariah compliant companies in Malaysia Stock Exchange. The purpose of Malaysia Shariah Composite Index (MSCI) is to provide indicator for market condition in Malaysia especially for Shariah compliant companies that issued stock as their financial asset. The method implemented in developing index is using free-float market capitalization with using value on 1st January 2019 as benchmark value.The benchmark of index is set on 1st January 2019 that indicates value of index is 100 at this data point. The observation period is involving 48 daily observation period from 1st January 2019 until 7th March 2019. The descriptive statistics shows mean value of shariah index is 99.4582 and standard deviation is 1.07189. The shape of distribution is determined by skewness is 0.781 and kurtosis is 0. 339.This study performed Shapiro-Wilk normality test for change rate of index value. The significant value (p-value) is 0.519 which is larger than 0.05 of chosen alpha. Therefore, data distribution for change rate of shariah index value follows normal distribution. The implication of this study is it will help investors to have better knowledge about volatility movement of stock prices for shariah compliant companies in Malaysia. In addition, the shariah index also will help investor to develop better investment portfolio that can reduce risk and increase investment return.
KEYWORDS;-Shariah Index, Malaysia Stock Exchange, Islamic Investment, Stock Price
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I. INTRODUCTION

Securities Commission of Malaysia was introduced the Kuala Lumpur Stock Exchange Shariah Index (KLSESI) in 1997 as a vital mechanism in order to accelerate the achievement of an Islamic capital market (ICM) plan. The ICM refers to the market where activities are carried out in ways that do not conflict with the conscience of Muslims and the religion of Islam. In other words, the ICM represents an assertion of religious law in capital market transactions where the market should be free from the involvement of prohibited activities by Islam such as usury (riba), gambling (maisir), and ambiguity (gharar) (Abu Bakar and Rosbi, 2017: Abdul Rahman, *et al.,* 2010; Securities Commission of Malaysia, 2018).

KLCI index encompassed 30 largest public listed companies individually and collectively influence heavily the economy of Malaysia, Southeast Asia and the world. Large companies often become Public Limited Companies (PLC) to gain access to capital from stock markets. The FTSE Bursa Malaysia Index Series is designed to represent the performance of companies, providing investors with a comprehensive and complementary set of indices, which measure the performance of the major size and industry segments of the Malaysian and regional market. All Malaysian companies listed on the Malaysian Stock Exchange are eligible for inclusion, subject to passing the FTSE international standards of liquidity and investment (FTSE Monthly report, 2019). Therefore, 30 largest public listed companies become most important companies in determent the excellent of Bursa Malaysia. Out of 19 companies from 30 largest public listed companies are shariah-compliant companies. This number indicated the outstanding of shariah-compliant companies as a benchmark in Malaysian stock market.

The Shariah Advisory Council (SAC) has been given the authority for the ascertainment of Islamic law for the purposes of Islamic banking business, takaful business, Islamic financial business, Islamic development financial business, or any other business, which is based on Shariah principles and is supervised and regulated by Bank Negara Malaysia (Shariah Advisory Council of Central Bank (2019). According to Abdul Rahman, *et al*. (2010) Shariah Advisory Council of KLSESI, in its written guidelines, focuses only on two criteria, namely: core activity and level of interest income of company to determine whether a particular company is permissible or not in its index.

However, there are varied method can be applied in measuring the performance of KLCI index. For example, Papachristou, *et al.,* (2018) used cumulating abnormal returns (CAR) and the buy-and-hold abnormal return (BHR) method in measuring the performance of Greek Stock market. While Abu Bakar, *et al.* (2019a) used cumulative abnormal return (MACAR) to examine the performance of initial public offering in Malaysian market. Abu Bakar *et al.,* 2(019b) also investigate the performance of shariah complaint companiesthat issued IPO during year of 2014 and 2015 using a market buy-and-hold abnormal returns (MABHR) methodindicated that stock prices performed less than the market of Malaysia Stock Exchange. Abu Bakar and Rosbi, (2019)used Monte Carlo approach in measuring the performance of Malaysian Stock Market.They found that Monte Carlo Simulation give better estimation of parameter in regression analysis thatexhibits better value that represent real economic condition in Malaysia.

Therefore, this study tries to fulfill the gap by develop a composite index for Shariah-compliance companies in Malaysia Stock Exchange. The index is represented by Malaysia Shariah Composite Index (MSCI). The most important investigate in this index is to find the appropriate index in measuring the performance of KLCI index.

II. LITERATURE REVIEW

Encouraging publicly listed companies to become accredited with Shariah-compliant status presents unique challenges especially to be as one of 30 largest public listed companies. Study by Azmi*, et al,* (2017) show that despite the differences in the regulatory environment, companies still make Islamic-related disclosures on a voluntary basis. Antonio,*et al.,* (2012) suggested that there are some points that can be concluded through Maqashid Index approach which consists of three namely; education, justice and welfare. Their finding found that Islamic banking industries in Indonesia perform better than Islamic banking industries in Jordan.

Hartono and Sobari (2017) test the ideal of sharia maqashid index for Islamic banks from the perspective of the sharia, namely to education for people, creating justice, and the achievement of welfare or benefit for the human (ummah) in Indonesia. The expected findings are able to evaluate the policy and the further development related to the performance appraisal Islamic banks in Indonesia according with Islamic sharia objectives that benefit the people on the basis of the index of sharia maqashid, ranging from reporting began using indicators which point to the benefit people.

Study that compares the performance of the Syariah Index (SI) and the Composite Index (CI,) of the Kuala Lumpur Stock Exchange (KLSE) show the results based on the raw returns revealed that generally, the KLSE SI and CI recorded the same level of returns. Tests using performance measures of Adjusted Sharpe Index, Treynor Index and Adjusted Jensen Alpha revealed that there is no significant difference in the (risk-adjusted) performance of both indices. They conclude that Shariah-approved stocks were not more favorable than the other stocks in the KLSE (Ahmad and Ibrahim, 2002).

Besides the study that focus on the performance of shariah index there are many studies that focus on the performance of stock market. For example, Sahu, *et al.,* (2014) investigate the dynamic relationships between oil price shocks and Indian stock market indicates the existence of long-term relationship. Dutta *et al.,* (2017) investigate whether the crude oil volatility index plays any key role in explaining the trend in emerging market stock returns from a global standpoint. Their findings confirm the effects of oil volatility index on equity returns. In addition, the results document that there exist time-varying jumps in the stock market returns.

Öhman and Yazdanfar, (2017) used Granger causal link between the stock market index and housing prices in terms of apartment and villa prices. The results indicate that the stock market index and housing prices are co-integrated and that a long-run equilibrium relationship exists between them. According to the Granger causality tests, bidirectional relationships exist between the stock market index and apartment and villa prices, respectively, supporting the wealth and credit-price effects. Moreover, variations in apartment and villa prices are primarily caused by endogenous shocks.

III. RESEARCH METHODOLOGY

The purpose of this study is to develop calculation procedure for Malaysia Shariah Composite Index (MSCI). This study performed index calculation including normality evaluation for data distribution.

3.1 Index calculation procedure

In developing Malaysia Shariah Composite Index (MSCI), this study calculated based on free float market capitalization. A free-float methodology tends to rationally reflect market trends because it only takes into consideration the shares that are available for trade and it makes the index more broad-based because it lessens the concentration of the top few companies in the index. Market cap is based on the total value of all a company's shares of stock. Float is the number of outstanding shares for trading by the general public. The free-

float method of calculating market cap excludes locked-in shares, such as those held by company executives and governments.

The free float market capitalization calculated using Equation (1).

$$MC_{FF,i,t} = SV_{FF,i} \times SP_{i,t}$$ .... (1)

In Equation (1), the parameters are described as follows:

$MC_{FF,i,t}$ is free-float market capitalization for stock company i at observation period t,

$SV_{FF,i}$ is free float share volume that available for trading for company i, and

$SP_{i,t}$ is share price for company i at observation period t.

The benchmark value of free-float market capitalization methodology is set using the total value for 15 companies that shariah compliant. The 15 companies are selected among shariah complaint companies that exhibits top market capitalization that listed on Kuala Lumpur Composite Index (KLCI). The date of base benchmark is set at 1st January 2019. The value of Malaysia Shariah Composite Index (MSCI) calculated using Equation (2).

$$Index_t = \left(\frac{MC_t}{MC_{base}} \right) \times 100 \%$$ .... (2)

In Equation (2), the parameters are explained as below:

$Index_t$ is Malaysia Shariah Composite Index (MSCI) for observation period t,

MC_{base} is base value of free-float market capitalization for 15 shariah compliant companies at 1st January 2019,

MC_t is free-float market capitalization for 15 shariah compliant companies at observation period t.

3.2 Shapiro-Wilk normality statistical test

Most statistical tests rest upon the assumption of normality. Deviations from normality, called non-normality, render those statistical tests inaccurate. Tests that rely upon the assumption or normality are called parametric tests. If data is not normal, then the statistical tests that do not rely upon the assumption of normality, call non-parametric tests. Non-parametric tests are less powerful than parametric tests, which means the non-parametric tests have less ability to detect real differences or variability in your data. In other words, the parametric tests are important to increase chances of finding significant results.

The Shapiro-Wilk normality test is represented by Equation (3). Null hypothesis indicates that a sample $x_1, x_2, x_3, ..., x_n$ came from a normally distributed population.

$$W = \frac{\left(\sum_{i=1}^{n} a_i x_{(i)} \right)^2}{\sum_{i=1}^{n} \left(x_i - \bar{x} \right)^2}$$ .... (3)

In Equation (3), the parameters are described as follow:

$x_{(i)}$ are the ordered sample values. As an example, $x_{(1)}$ is the smallest order sample value.

a_i are constants generated from the means, variances and covariances of the order statistics of a sample of size n from a normal distribution.

$\bar{x}$ is sample mean.

If the p-value is greater than the chosen alpha level (0.05), then the null hypothesis that the data came from a normally distributed population cannot be rejected. Thus, on the one hand, if the p-value is less than the chosen alpha level, then the null hypothesis is rejected and there is evidence that the data tested are not normally distributed.

IV. RESULT AND DISCUSSION

The objective of this study is to develop composite index for Shariah-compliance companies in Malaysia Stock Exchange. The index is represented by Malaysia Shariah Composite Index (MSCI). This study implemented mathematical weight calculation for index, normality testing using graphical and numerical testing.

4.1 Data selection

This study calculated Shariahcomposite index for 15 companies that comply with Islamic finance regulation. The 15 companies are elected base on highest free-float market capitalization on year of 2019. Table 1 shows 15 companies that composed Shariahcomposite index (Malaysia Shariah Composite Index). Table 1 indicates the highest percentages of composition for free float market capitalization is 25.88%. High value of market capitalization indicates that stock of particular company has high contribution to index dynamic behavior.

Table 1: List of 15 companies for developing Malaysia Shariah Composite Index

No.	Company name	Market capitalization (Million MYR) on 1st January 2019	Percentage of composition (%)
1	TENAGA NASIONAL BERHAD	55124.88	25.88
2	IHH HEALTHCARE BERHAD	30948.30	14.53
3	AXIATA GROUP BERHAD	23717.16	11.13
4	DIGI.COM BERHAD	8333.10	3.91
5	PETRONAS CHEMICALS GROUP BERHAD	15953.81	7.49
6	DIALOG GROUP BERHAD	11330.97	5.32
7	SIME DARBY PLANTATION BERHAD	10367.76	4.87
8	TOP GLOVE CORPORATION BHD	7949.76	3.73
9	PETRONAS GAS BERHAD	7713.02	3.62
10	KUALA LUMPUR KEPONG BERHAD	7441.71	3.49
11	IOI CORPORATION BERHAD	7242.38	3.40
12	PPB GROUP BERHAD	7050.99	3.31
13	HARTALEGA HOLDINGS BERHAD	6933.29	3.25
14	MAXIS BERHAD	6551.34	3.08
15	SIME DARBY BERHAD	6369.12	2.99
	Total	213027.58	100.00

4.2 Shariah index analysis

This section describes the dynamic movement of shariah index that developed using 15 Shariah-compliant companies from KLCI(Kuala Lumpur Composite Index) in Malaysia Stock Exchange. The observation period is involving 48 daily observation period from 1st January 2019 until 7th March 2019. Figure 1 shows dynamic behavior of Shariah index. The benchmark of index is set at 1st January 2019 that indicates value of index is 100 at this data point. The maximum value of Shariah index is on 38th observation (21st February 2019) with value of 102.321792. Meanwhile, the minimum value of shariah index is on 32th observation (13th February 2019) with value of 97.9144421.

Next, this study performed normality checking using graphical approach namely histogram analysis. Figure 2 shows the histogram of shariah index for 48 daily observations. The distribution of data shows there is data point that is deviated from normality line (blue line). Then, Table 2 indicates descriptive statistics for index value. The descriptive statistics shows mean value of shariah index is 99.4582 and standard deviation is 1.07189. The shape of distribution is determined by skewness is 0.781 and kurtosis is 0.339.
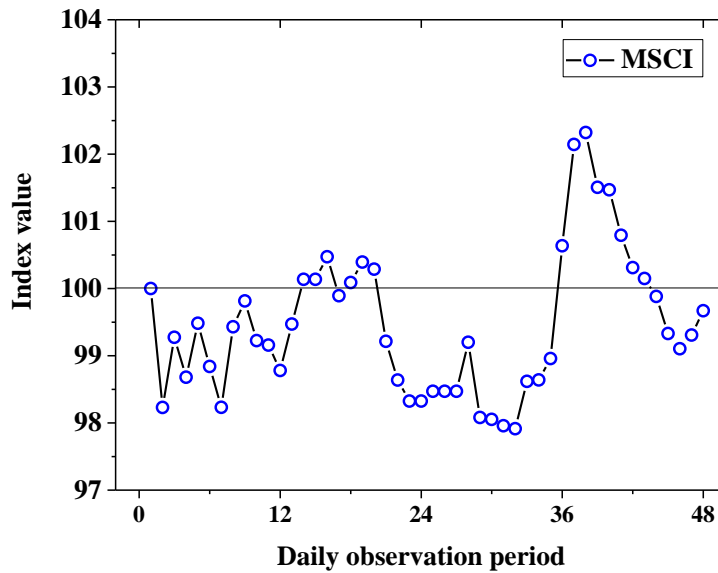
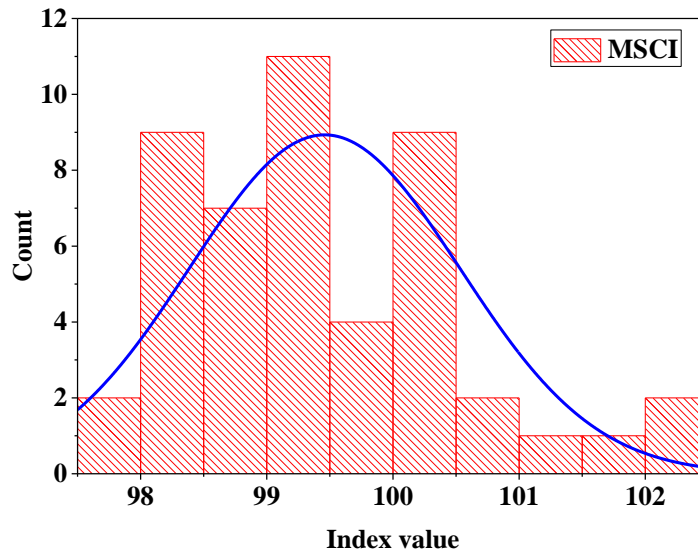**Figure 1**: Dynamic behavior of Malaysia Shariah Composite Index (MSCI)

Figure 2: Histogram of Malaysia Shariah Composite Index (MSCI)

Table 2: Descriptive statistics for index value

Mean	99.4582
Standard deviation	1.07189
Skewness	0.781
Kurtosis	0.339

Next, this study performed normal probability plot for index value as shown in Figure 3. The distribution of data follows non normal distribution because there are data points that distributed outside upper percentiles of reference line (red line). This finding is validated using Shapiro-Wilk normality test. Table 3 indicates the Shapiro-Wilk normality test for index value. The significant value (p-value) is 0.024 which is less than 0.05 of chosen alpha. Therefore, data distribution for shariah index value follows non normal distribution.
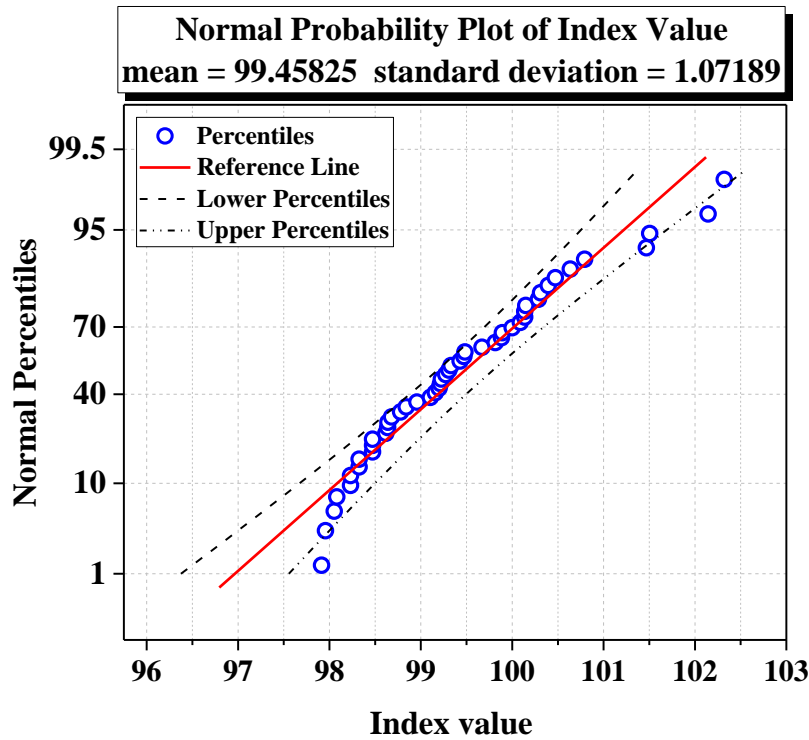
Figure 3: Normal percentiles of Shariah index

Table 3: Statistical normality test for index value

Shapiro-Wilk normality test		
Statistics	Degree of freedom, df	Significant value, p-value
0.945	48	0.024

4.2 Rate of change for Malaysia Shariah Composite Index (MSCI)
This section describes the change rate for Malaysia Shariah Composite Index (MSCI) that developed in this study. The change rate of composite index is calculated using Equation (4).

$$Rate_t = \left(\frac{MV_t - MV_{t-1}}{MV_{t-1}} \right) \times 100\% \quad \text{.. (4)}$$

In Equation (1), the parameters are described as follow:

$Rate_t$ is rate of change at observation period t,

MV_t is free float market capitalization at observation period t, and

MV_{t-1} is free float market capitalization at observation period t-1.

Figure 4 shows dynamic behavior of change of rate for Malaysia Shariah Composite Index (MSCI). The maximum value of change rate for Shariah index is on 36th observation (19th February 2019) with value of 1.677 %. Meanwhile, the minimum value of shariah index is on second observation (2[nd]January 2019) with value of -1.769.

Next, this study performed normality checking using graphical approach namely histogram analysis. Figure 5 shows the histogram of change rate for shariah index. The distribution of data is close to normality line (blue line). Therefore, the distribution of change rate for shariah index is follow normal distribution.

Then,Table 4 indicates descriptive statistics for change rate of index value. The descriptive statistics shows mean value of change rate for shariah index is -0.0048 and standard deviation is 0.67392. These values indicate the data for rate of change is distributed nearly to zero percentages line. The shape of distribution is determined by skewness is 0. 225 (positive skewness-right skewed) and kurtosis is 0.723 (leptokurtic).
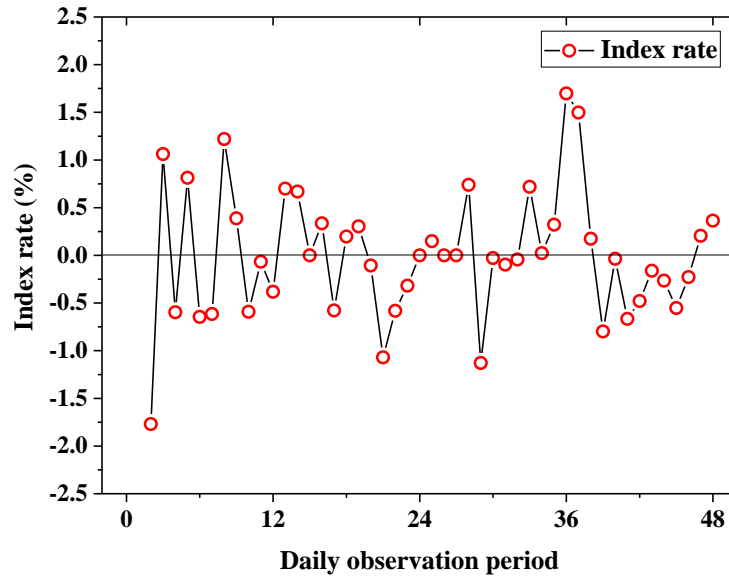
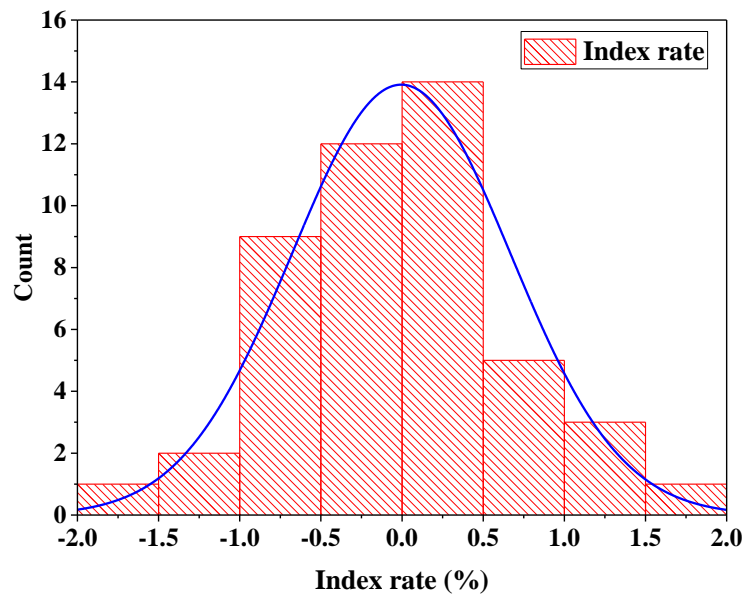**Figure 4**: Dynamic movement of change rate for Malaysia Shariah Composite Index (MSCI)

Figure 5: Histogram of change rate for Malaysia Shariah Composite Index (MSCI)

Table 4: Descriptive statistics for change rate of index rate

Mean	-0.0048
Standard deviation	0.67392
Skewness	0.225
Kurtosis	0.723

Next, this study performed normal probability plot for change rate of index value as shown in Figure 6. The distribution of data follows normal distribution because data is distributed near reference line (red line). This finding is validated using Shapiro-Wilk normality test. Table 5 indicates the Shapiro-Wilk normality test for change rate of index value. The significant value (p-value) is 0.519 which is larger than 0.05 of chosen alpha. Therefore, data distribution for change rate of shariah index value follows normal distribution.
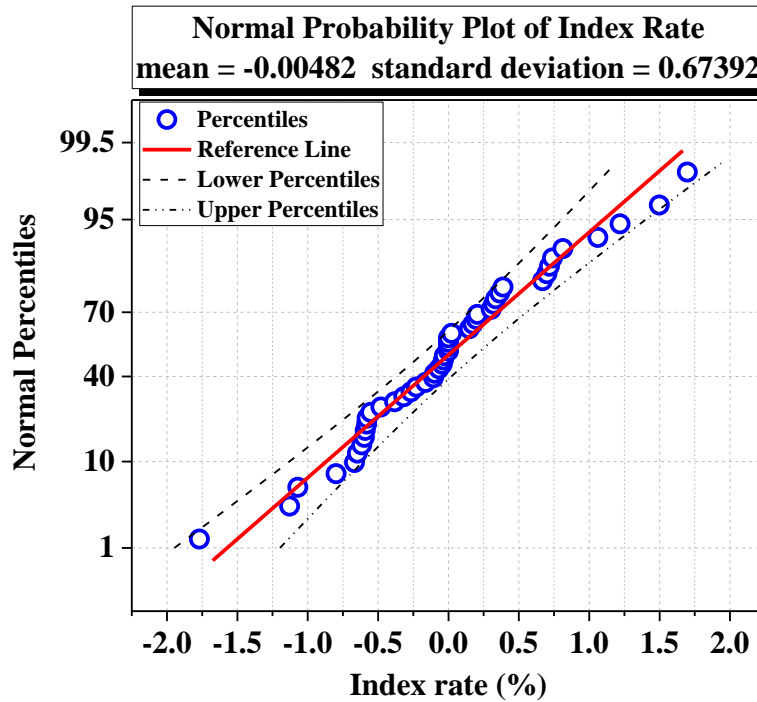
Figure 6: Normal percentiles plot for rate of change

Table 5: Statistical normality test for index rate

Shapiro-Wilk normality test		
Statistics	Degree of freedom, df	Significant value, p-value
0.978	47	0.519

V. CONCLUSION

The objective of this study is to develop mathematical derivation for developing Malaysia Shariah Composite Index (MSCI). In the same time, this study tries to evaluate the normality of data distribution for index value and index rate. The observation period is involving 48 daily observation period from 1st January 2019 until 7th March 2019. Main findings of this study are:

(i)   The benchmark of index is set at 1st January 2019 that indicates value of index is 100 at this data point. The maximum value of Shariah index is on 38th observation (21st February 2019) with value of 102.321792. Meanwhile, the minimum value of shariah index is on 32th observation (13th February 2019) with value of 97.9144421.

(ii)   This study performed Shapiro-Wilk normality test for index value. The significant value (p-value) is 0.024 which is less than 0.05 of chosen alpha. Therefore, data distribution for shariah index value follows non normal distribution.

(iii)   Change rate of index is the speed at which a variable (index value) changes over a specific period of time. The maximum value of change rate for Shariah index is on 36th observation (19th February 2019) with value of 1.677 %. Meanwhile, the minimum value of shariah index is on second observation (2nd January 2019) with value of -1.769.

(iv)   This study performed Shapiro-Wilk normality test for change rate of index value. The significant value (p-value) is 0.519 which is larger than 0.05 of chosen alpha. Therefore, data distribution for change rate of shariah index value follows normal distribution.

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