ANALYSIS OF CAPITAL MARKET REACTION BEFORE AND AFTER SUSTAINABILITY REPORTING AWARD

A.S.L. Lindawati1*, Sandra Setyaningrum2, Archie Nathanael Mulyawan3, Meiryani4

1,2,3,4 Accounting Department, School of Accounting, Bina Nusantara University, Jakarta, Indonesia, 11480

1lindawati001@binus.ac.id, 2sandra.setyaningrum@binus.ac.id, 3archie.mulyawan@binus.ac.id, 4meiryani@binus.edu

ABSTRACT

The attention of investors and potential investors to environmental and economic reporting social issues is increasing along with the number of environmental cases that occur in Indonesia. Companies that win the Indonesia Sustainability Reporting Award will boost the company's image in the eyes of the public because it has won an award which prioritizes harmony between economic, social, and environmental aspects. The purpose of this study was to analyze the reaction of the capital market before COVID-19 in companies that Achieved the Sustainability Reporting Award around the announcement date Sustainability Reporting Award in 2015-2019 (the period before COVID-19), measured using abnormal return and trading volume activity. This study will provide data and information regarding the capital market reaction period before covid 19 which it will use for further research related to the efficiency capital market hypothesis. The period that is used in this research is D-5 (before the announcement) and D + 5 (after the announcement). This study used the data from Yahoo Finance Secondary, such as adjusted closing stock price and closing price of JCI. Samples were selected by purposive sampling method so that the samples Obtained were 53 companies. The analytical method used in this observation is a paired sample t-test using SPSS 20 software. The results of this study indicate that there are no significant differences in abnormal return and trading volume activity between the period prior and the period after the announcement.

Keywords: SRA, Abnormal Return, Trading Volume Activity, Before COVID-19

INTRODUCTION

A capital market is a market for a variety of financial instruments that can be traded. The trade form can be either in debt or equity capital. All the financial instruments can be issued by governments, public authorities, or even private companies. The capital market will evaluate every announcement issued by the company, so that it will cause some changes to trade stocks, for example, changes in the trading volume activity, changes in stock prices, the proportion of ownership, and others (Jogiyanto, 2017), Abnormal returns is used as an indicator to measure capital market performance toward announcement issued by the company due to investors who hold an active strategy will actively carry out the selection and buying and selling stock, search for information, with time and stock price movements to produce abnormal return. An abnormal return value means that an announcement has information content that will give an abnormal return to the capital markets. Otherwise, if it does not contain information not give abnormal returns to the capital markets. While trading volume activity can be used to confirm whether a trend will continue or whether the case of reversal. The activities had a very high trading volume on the exchange is interpreted as a sign that the market will improve. If the a high trading volume then the shares are very attractive to many investors. The tendency of investors interested in stocks to provide high stock returns despite having a high risk.

Investors as the recipient of the announcement information provided by the issuers need to understand the content and objectives of each announcement, so investors can plan a strategy to be taken regarding the announcement given by the issuer (Biktimirov and Xu, 2019). The announcement provides information either about financial events or non-financial events. Announcements related to
financial events such as the announcements related to income, such as annual reports, distribution of dividends, stock split and the issuance of bonds. While the announcement relates to non-financial events such as the award announcement, the announcement of political events, and natural disasters.

Aggarwal (2013) shows that the disclosure of sustainability reporting can improve the reputation of the company and its financial performance. This is supported by research from Dewi and Sudana (2015) and Wijayanti (2016) which states that the disclosure of sustainability reporting has a positive effect on the profitability of the company. Therefore, the purpose of this research is to examine the significance of the difference between return and trading volume activity of the Sustainability Reporting Award-winning companies before and after the announcement of the Sustainability Reporting Award within five days before and five days after the announcement of the Sustainability Reporting Award.

**Sustainability Reporting Award (SRA)**

We are using the announcement Sustainability Reporting Award in 2015 – 2019 as non-financial information, with a case study on the Sustainability Reporting Award 2015-2018 and Asia Sustainability Reporting Rating 2019 winning companies in this study. There have been a few previous studies analyzing stock market reactions represented by using the abnormal return and the trading volume activity toward non-financial information, including Apriyanti and Sidanti (2016) which used paired sample t-test to obtain the result that there is no difference between the abnormal return and trading volume activity before and after the announcement. Different results from Budiman and Supatmi (2009) using the Wilcoxon Sign Test stated there was a significant difference against the abnormal return, however, there were no differences in trading volume activity. In the research Swissia and Darmawan (2019) using a paired sample t-test state that there is no significant difference in abnormal returns, but there are significant differences in the trading volume activity. Chariri (2009) stated that report sustainability (sustainability reporting) is increasingly becoming a trend and a need for companies to inform about their economic, social and environmental performance as well as to all company stakeholders.

The Sustainability Reporting Award first was held in 2005 by the Indonesian Institute of Accountants-Compartment Management Accountants (Ikatan Akuntan Indonesia-Kompartemen Akuntan Manajemen) and the National Center for Sustainability Reporting (NCSR) as Indonesia Sustainability Reporting Award (ISRA). Since 2013 Indonesia Sustainability Reporting Award renamed the Sustainability Reporting Award due to the participation of companies that come from outside Indonesia. Furthermore, the Sustainability Reporting Award 2018 changed its name to Asia Sustainability Reporting Rating has adopted a rating system due to the winner. Now, companies report their activity regarding environmental and social aspects in their activity. These aspects are additional information to sustain the economic aspects (sustainability) of the company. Because of these reports, the Sustainability Reporting Award is given. The sustainability Responsibility Award was organized as a form of appreciation for the company which has published a sustainability report. It is intended as an introduction and socialization of the importance of sustainability reports in a company. Hopefully, not only be concerned about the economic aspects of finance but also as a form of non-economic aspects of corporate responsibility, such as environmental and social aspects. Sustainability Reporting winning companies will be able to improve the image and reputation of the company in the eyes of the public, especially in the eyes of investors. In addition, the winning companies can also feel the change in the stock price, which reflects the level of abnormal returns and trading volume activity.

Today the level of shareholder awareness of the importance of corporate social responsibility disclosure is increasing (Sumatriani, Pagalung, Said, and Pontoh, 2017). The presence of sustainability reporting disclosure is also able to improve the profitability of the company (Nugroho and Arjowo, 2014). According to Rudyanto and Siregar (2018) companies are under pressure from the environment and consumers to publish a sustainability report of a higher quality compared to other companies.

**CSR Disclosure**

Corporate social responsibility disclosure in the form of a sustainability report that will provide information from management to all stakeholders and prospective investors about the prospect for the company, where the company has a competitive advantage as well as the value that is owned by the company for its care companies to social, environmental, and economic (Lindawati and Puspita, 2015);
(Hamudiana and Ahmad, 2017). The company’s corporate social responsibility can increase the confidence of shareholders and as a result can increase the value of the company (Ilmi, Kustono, and Sayekti, 2017). That is because many companies accept social criticism from the local community to be more socially and environmentally responsible, but few companies follow up with a significant step (Silvasanarkari, 2018). Besides the implementation of Corporate Social Responsibility of the company, the company was responsible to the social and global environment to make the world a better place (Kumar, 2019).

This is supported by the Triple Bottom Line principle initiated by Elkington (1994) that businesses need to measure a company’s success not only based on financial performance, but also by the company’s influence on the economy is widely, environment, and social in which the company operates. The purpose of implementing triple-bottom-line reporting is to provide information that allows other parties to assess the sustainability of a company's operations. A sustainable organization is an organization whose financial aspects are guaranteed, demonstrated by probabilistic measurements, minimizes negative impacts on the environment, and operates according to the expectations of the community or community in which the organization operates.

**Announcement of 2015-2019 Sustainability Reporting Award Affects Abnormal Stock Returns**

Ross's (1977) Signaling theory explains why companies have incentives to provide financial report information to external parties. The company's push for providing information is because there is information asymmetry between the company and the parties outside. After all, the company knows more about the company and its prospects will come from outside parties (investors, creditors). The sustainability Reporting Award is an announcement that contains information that can make the market give a positive or negative signal. If the information is good (good news) then there will be an increase in the share price, which is reflected through changes in the price of the award-winning company stock. The influence of this information can be tested by looking at abnormal returns that occur through changes in the company's stock price. An abnormal return is an increased return due to the presence of information in an announcement.

Information published as a notice gives investors a signal for their investment decisions. If the announcement contains a positive value, it is hoped that the market will react when the announcement is received by the market (Jogiyanto, 2017), information is an important element for both investors and businessmen. Information always constitutes information, records or descriptions of past, present and future conditions. Investors require complete, relevant, accurate and timely information as an analytical tool for making investment decisions.

Randa & Liman (2011), who examined the effect of sustainability reporting on financial performance in terms of abnormal returns, found that sustainability reporting was statistically significant in explaining abnormal returns for companies and that there was a statistically significant relationship between sustainability reporting and market returns given to firms. The first hypothesis of the study can thus be formulated as follows:

**H1**: Announcement of Sustainability Reporting Award affects the market reaction to Abnormal Stock Return

**Announcement of the 2015-2019 Sustainability Reporting Award Affects Trading Volume Activity**

In general, stock trading volume is an indicator used to show investors' interest in a stock. The larger the trading volume, the more frequently the stock is traded. This shows that investors are very interested in acquiring these shares. If investors perceive information about the Sustainability Reporting Award as positive, this improves the company's image in the eyes of investors, because investors and potential investors need information to be able to use it as a basis for decision-making.

According to Spence (1973); and Ross (1977), Signaling Theory states that high-quality firms intentionally signal to the market. One of the signals mentioned is the announcement of the award that the company has received. Therefore, this announcement will result in a rise or fall in the price of the Company's securities on the capital market. The rise in share prices shows that the information is giving a positive signal to the market. Conversely, a fall in stock prices shows a negative signal. Research
conducted by Budiman et al (2009) concluded that there are differences in abnormal stock returns of companies that win awards at ISRA, and Harun Aksa’s (2014) research also states that investors react positively to an ISRA award-winning company. As well as the results of calculations using independent samples. The test proves that there are differences in companies that receive awards ISRA with the reaction of investors of companies that do not receive ISRA awards with declining investor interest in investing in the company. Based on research by Swissia & Darmawan (2019), shows that there are differences in trading volume around ISRA announcements, especially on the five days and two days before the announcement and the first and second days after the announcement. Saputro’s research (2005) analyzed price differences and trading volume shares before and after the announcement of the Indonesia Sustainability Reporting Award (ISRA) 2005, it was found that there was no difference in the measured stock trading volume with trading volume activity before and after the 2005 ISRA announcement. This research is in line with research by Budiman and Supatmi (2009) which found no difference in significant trading value activity around the 2014-2016 ISRA announcement date. The second hypothesis of the study can thus be formulated as follows:

**H2:** Announcement of Sustainability Reporting Award influences the market reaction to Trading Volume Activity

**METHODS**

The objects in our research were public entities that shares traded in the capital market. The population was a collection in terms: of people, events, and other objects that are objects of research that researchers want to explore deeply. The sample is only part of the population being studied. In this study, researchers used a purposive sampling method in determining the number of samples to be taken, namely the number of samples determined based on certain criteria, adjusted for the original purpose of the study, including:

1. The publicly listed entity that shares their stock in the market between five consecutive years before 2019 periods.
2. Go Public Companies that have never delisted from 2015 to 2019.
3. A Go Public Company that has audited annual financial statements in the 2015-2019 period.
4. Companies that have the data needed to complete research.
5. Companies are included in the manufacturing industry and are in the consumer goods industry sector.

**Research Variable**

The capital market’s reaction in this study was measured using indicators of abnormal returns and trading volume activity, with the study period five days before the announcement (H-5) and five days after the announcement (H+5). According Jogiyanto (2018) explained that the return can be the actual return that already occurring or the expected return, which has not happened yet but is expected to happen in the future.

So the calculation of abnormal returns is described as follows:

\[ RTN_{it} = Rit - E(Rit) \]

Where :  

- \( RTN_{it} \) = Abnormal return for securities i in period t  
- \( Rit \) = Actual return for securities i in period t  
- \( E(Rit) \) = Expected return of securities i in period t
Return The real (actual return) is the return obtained by investors in the past. When investors invest, it will require a certain level of return. If the investment period has passed, investors will be faced with the real rate of return they received (Jogiyanto, 2018). The formula of the actual return is as follows:

\[
R_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}}
\]

Where :
- \( R_{i,t} \) = Actual Revenue return for securities \( i \) in period \( t \)
- \( P_{i,t} \) = The share price \( i \) at period \( t \)
- \( P_{i,t-1} \) = The share price \( i \) at period \( t \) - 1

In this study, the expected return is calculated using the market-adjusted model because this model estimates returns of the securities market index so it does not need to use the estimation period. This is done to convince the researcher that the reaction that occurs is the result of observed events and not because of other events that could affect the events to be observed. By using this model, it is not necessary to use the estimation period to establish the model estimates for estimated return securities as the same as the market index return (Nurhaeni, 2009).

The market return is calculated by the formula as follows:

\[
R_{mt} = \frac{(IHSG_t - IHSG_{t-1})}{IHSG_{t-1}}
\]

Where :
- \( R_{mt} \) = Market return
- \( IHSG_t \) = Composite stock price index at period \( t \)
- \( IHSG_{t-1} \) = Composite stock price index at period \( t \) - 1

Trading volume activity (TVA) is an instrument used to see the reaction of capital markets to an information through the parameters of the movement of stock trading volume (Muzdalifah, 2015). Trading volume activity is calculated by the formula as follows (Budiman, Supatmi, 2009):

\[
TVA = \frac{\Sigma \text{traded shares of the company } i \text{ at period } t}{\Sigma \text{outstanding shares of the company } i \text{ at period } t}
\]

Population and Samples

The population in this study is a company registered in the Indonesia Stock Exchange (IDX) in 2015-2019. The population-based sample is determined using a purposive sampling technique in which the sample is selected based on specific criteria to achieve the desired results of the study. The method is based on the criteria for determining the sample used in this study are as follows:

1. Sustainability Reporting Award-winning companies in the period 2015-2019
2. Sustainability Reporting Award-winning companies listed in Indonesia Stock Exchange (IDX) 2015-2019
3. Sustainability Reporting Award-winning companies that do not perform corporate actions in the observation period, which is five days before (h-5) until five days after (h + 5) Sustainability Reporting Award announcement
4. Sustainability Reporting Award-winning companies with no outlier data.

Analysis Method

Hypothesis testing of this research using a paired sample t-test for variable abnormal return and trading volume activity. This test requires a normal distribution of data to meet the assumption of normality. Decision-making can be done with criteria hypothesis probability or Sig. (2-tailed).
Paired samples t-test in the study will have a significant level $\alpha$. This test can be analyzed by looking at the P-value or Sig. (2-tailed):

1. If the P-value < $\alpha$, then it means there is a significant difference before and after the announcement Sustainability Reporting Award
2. If the P-value > $\alpha$, then it means there is no significant difference before and after the announcement Sustainability Reporting Award

**ANALYSIS**

**Normality Test**

Normality test using the Kolmogorov-Smirnov with the basics: (1) if the significance value (Sig.) is greater than 0.05 then the data were normally distributed (2) if the value of significance (Sig.) is less than 0.05 then the research data is not normal (Ghozali, 2018).

Based on tables 1 and 2, it is known that abnormal return data have significant value Asymp. Sig. (2-tailed) of 0.831 greater than 0.05 and trading volume activity has significant value Asymp. Sig. (2-tailed) of 0.320 greater than 0.05. Then the appropriate basis for a decision in a test of normality Kolmogorov-Smirnov above, it can be concluded that the data Abnormal Return and Trading Volume Activity have normal distribution. Thus, assumptions or requirements of normality in the regression model are met.

**Hypothesis Testing of Abnormal Stock Return**

Based on Table 3, it can be seen that the first pair; pair 2; pair 3; pair 4; and pair did not show any significant difference, from the absence of the fifth pair which shows the results of less than 5%. It shows that from the statistical test results and overall there was no significant difference between the abnormal return on the announcement of the Sustainability Reporting Award.

These results also explain that there was no significant difference before and after the announcement of the Sustainability Reporting Award throughout the observation period. If it is connected with the theory of market efficiency, then it suggests that the market reaction did not occur around the period of observation, as well as the possibility of no leakage of information received by investors did not occur around observation five days before and five days after the period of research undertaken. Moreover, Alpius and Robert (2018) stated that an otherwise efficient market, if the information or response is rapidly absorbed by the market, is in one or two spots around each time or day of the announcement. So the market in this study can be said to be inefficient because the market reaction is abnormal returns are not visible within one to five days after the announcement. The market also needs time to analyze and assess the information content of the company, whether the company's decision will bring positive effects to the economic value and the level of investor profits ride or bring negative effects that the economic value of the company declined.

In terms of signalling theory which focused that the information announced by the company was considered less important for the investment decisions of stakeholders, in the span of five days after the announcement of the Sustainability Reporting Award no movement significant abnormal return indicating that a majority of the announcement of the Sustainability Reporting Award-winning companies in 2015-2019 were considered less positive because the market does not respond in five days after the announcement.

The results are consistent with research from Alpius and Robert (2018) and Randa and Liman (2011) stating there is no significant difference in the abnormal returns after the announcement of the Sustainability Reporting Award.

**Hypothesis Testing of Trading Volume Activity**

Based on Table 4, it can be seen that the first pair; pair 2; pair 3; pair 4; and 5 pair did not show any significant difference, from the absence of the fifth pair which shows the results of less than 5%. It shows that from the statistical test results and overall there was no significant difference between the trading volume activity to the announcement Sustainability Reporting Award.
According to Jogiyanto (2017); and Alpius and Robert (2018), an otherwise efficient market if the information or response is quickly absorbed by the market in the days around each announcement. So the market in this study can be said to be inefficient because the reaction of the market is trading volume activity not seen in five days after the announcement. Trading volume activity did not experience any difference also due to less market reaction to the announcement Sustainability Reporting Award to the Sustainability Reporting Award-winning companies, shareholders may also need time to analyze and assess the information content and purpose of the Sustainability Reporting Award, whether awards Sustainability Reporting Award in the future will bring a positive effect to the economic value and the profit rate of investors or even a negative effect so that the company's economic value decreases, so that in the five days before and after the announcement of the Sustainability Reporting Award of trading volume activity did not experience any difference.

If linked to signalling theory reveals that there is an event that is capable of signalling information from an event associated with the existing signal or the information contained in the market at the time. At the time of an event has been publicized to the public usually reviewing market participants as well as the sort of information that is considered beneficial as well as information that is considered unprofitable. Furthermore, this study indicates that the information that was announced by the company was considered less important for investment decisions stakeholders.

The results are consistent with research from Randa and Liman (2011) and Budiman and Supatmi (2009) stating that there is no difference in trading volume activity around the announcement date of the Sustainability Reporting Award. Based on information and decision-making, the Indonesian capital market is inefficient. Researchers who have studied the efficiency of the Indonesian capital market, including Sari (2015) and Safitri (2017), have discovered that the market is inefficient. As a result, share prices do not accurately reflect the information that is available on the market, including information about successful companies. ISRA prize. This may result in stock returns being unchanged, which was noteworthy following the ISRA award announcement. Hartono, p. 586 incorporates a decision-based definition of market efficiency, whereby a market is considered efficient if the price of its securities reflects all available information that is used (processed) as cleverly and successfully as possible in decision-making, with the result that decisions-based on this information can affect the price of the company's shares. Investors in this instance lack the expertise to analyze the data in the Indonesia Sustainability Reporting Announcement Awards (ISRA). Hartono (2014:591–592) asserts that while information like an announcement about earnings does not require more analysis due to the information included therein, information like ISRA awards does require additional analysis to be taken into consideration.

**CONCLUSION**

This study aimed to analyze the effect of the announcement Sustainability Reporting Award on the capital markets reaction, as measured by the indicators of Abnormal Return and Trading Volume Activity. Based on the research that has been done, the conclusions obtained are as follows: (1) Abnormal returns before and after the announcement of the Sustainability Reporting Award (SRA) 2015 to 2019 shows that there is no difference around the date of the announcement of the Sustainability Reporting Award (SRA) 2015-2019 winning companies. This is evidenced by the results of hypothesis testing around the observation period five days before and five days after the announcement of the Sustainability Reporting Award, this is evidenced by the level of significance (sig.), which is far above \( \alpha \) (0.05). The absence of difference might be due to investors are still oriented on short-term performance while Corporate social responsibility considered influential on the performance of medium-term and long-term; (2) Trading Volume Activity before and after the Sustainability Reporting Award (SRA) 2015 to 2019 shows that there is no difference around the date of the announcement of the Sustainability Reporting Award (SRA) 2015-2019 winning companies. This is evidenced by the results of hypothesis testing around the observation period five days before and five days after the announcement of the Sustainability Reporting Award, this is evidenced by the level of significance (sig.), which is far above \( \alpha \) (0.05). The absence of difference might be due to investors still do not understand the content and purpose of the Sustainability Reporting Award.

Some suggestions for this research are as follows: (1) Adding the study period for each announcement Sustainability Reporting Award every year. Because this study is limited to the research...
period of five days before the announcement of the Sustainability Reporting Award and five after the announcement of the Sustainability Reporting Award; (2) Using other methods of calculating the expected return, or adding other methods, in addition to market adjusted model that has been used in this study. To increase the variation in similar research; (3) Adding companies that are outside Indonesia. So the results can be taken into consideration and evaluated to understand investors about the Sustainability Reporting Award in each country; (4) Pairing event Sustainability Reporting Award with other similar awards which have a major impact, which may further influence the decision-making of investors in investing; (5) Using other than the variable capital market reactions, one using financial performance variables such as Return on Assets (ROA), Return on Common Equity (ROE), and Earning per Share (EPS). Future research should address the following weaknesses of this study: the observation period was too short, which could have skewed the findings in favour of the amount of time needed to make decisions.

REFERENCES


APPENDIX

Table 1. Normality Test Abnormal Return

<table>
<thead>
<tr>
<th>One-Sample Kolmogorov-Smirnov Test</th>
<th>Unstandardized Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>53</td>
</tr>
</tbody>
</table>
| Normal Parameters 
  Mean          | 0E-7                    |
| Std. Deviation 
  Absolute       | 0.00161883              |
| Most Extreme Differences 
  Positive       | 0.086                   |
| Negative        | -0.057                 |
| Kolmogorov-Smirnov Z               | 0.624                   |
| Asymp. Sig. (2-tailed)             | 0.831                   |

a. Test distribution is Normal.
b. Calculated from data.

Source: Author

Table 2. Normality Test Trading Volume Activity

<table>
<thead>
<tr>
<th>One-Sample Kolmogorov-Smirnov Test</th>
<th>Unstandardized Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>53</td>
</tr>
</tbody>
</table>
| Normal Parameters 
  Mean          | 0E-7                    |
| Std. Deviation 
  Absolute       | 0.0003079               |
| Most Extreme Differences 
  Positive       | 0.070                   |
| Negative        | -0.131                 |
| Kolmogorov-Smirnov Z               | 0.956                   |
| Asymp. Sig. (2-tailed)             | 0.320                   |

a. Test distribution is Normal.
b. Calculated from data.

Source: Author
<table>
<thead>
<tr>
<th>Variable</th>
<th>Testing Requirements</th>
<th>Sig. (2-tailed)</th>
<th>Hasil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>AR5before - AR5after</td>
<td>&lt;0.05</td>
<td>.426</td>
</tr>
<tr>
<td>Pair 2</td>
<td>AR4before - AR4Safter</td>
<td>&lt;0.05</td>
<td>.774</td>
</tr>
<tr>
<td>Pair 3</td>
<td>AR3before - AR3Safter</td>
<td>&lt;0.05</td>
<td>.794</td>
</tr>
<tr>
<td>Pair 4</td>
<td>AR2before - AR2after</td>
<td>&lt;0.05</td>
<td>.358</td>
</tr>
<tr>
<td>Pair 5</td>
<td>AR1before - AR1after</td>
<td>&lt;0.05</td>
<td>.736</td>
</tr>
</tbody>
</table>

*Source: Author*

Table 4. Paired Sample T-Test Trading Volume Activity

<table>
<thead>
<tr>
<th>Variable</th>
<th>Testing Requirements</th>
<th>Sig. (2-tailed)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>TVA5 before - TVA5after</td>
<td>&lt;0.05</td>
<td>.240</td>
</tr>
<tr>
<td>Pair 2</td>
<td>TVA4before - TVA4after</td>
<td>&lt;0.05</td>
<td>.086</td>
</tr>
<tr>
<td>Pair 3</td>
<td>TVA3before - TVA3after</td>
<td>&lt;0.05</td>
<td>.904</td>
</tr>
<tr>
<td>Pair 4</td>
<td>TVA2before - TVA2after</td>
<td>&lt;0.05</td>
<td>.521</td>
</tr>
<tr>
<td>Pair 5</td>
<td>TVA1before - TVA1after</td>
<td>&lt;0.05</td>
<td>.538</td>
</tr>
</tbody>
</table>

*Source: Author*