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LAMPIRAN

Lampiran 1. Analisis Deskriptif, Uji Normalitas dan Uji Hipotesis

Analisis Deskriptif sebelum

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
PER-t	93	-171,67	2263,64	71,5056	260,51159
TobinsQ-t	93	-,07	32,64	2,7126	4,93942
PBV-t	93	,08	58,48	4,8762	10,74832
MBVAR-t	93	,07	18,64	2,5508	3,59421
Valid N (listwise)	93				

Sesudah

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
PER+t	93	-146,13	2181,82	68,8610	287,85727
TobinsQ+t	93	-,06	22,99	2,0294	4,15380
PBV+t	93	,08	82,44	4,5730	12,61688
MBVAR+t	93	,37	23,29	2,3448	4,16351
Valid N (listwise)	93				

Uji Normalitas

One-Sample Kolmogorov-Smirnov Test									
		PER -t	PER +t	TobinsQ- t	TobinsQ +t	PBV -t	PBV +t	MBVA R-t	MBVA R+t
N		93	93	93	93	93	93	93	93
Normal Parameters ^{a,b}	Mean	71,50 56	68,861 0	2,7126	2,0294	4,876 2	4,5730	2,5508	2,3448
	Std. Devi ation	260,5 1159	287,85 727	4,93942	4,15380	10,74 832	12,616 88	3,59421	4,16351
Most Extreme Differences	Absol ute	,409	,414	,318	,362	,381	,380	,315	,374

	Positive	,409	,414	,318	,362	,381	,380	,315	,374
	Negative	-,337	-,344	-,287	-,307	-,328	-,361	-,275	-,318
Test Statistic		,409	,414	,318	,362	,381	,380	,315	,374
Asymp. Sig. (2-tailed)		,000 ^c	,000 ^c	,000 ^c	,000 ^c	,000 ^c	,000 ^c	,000 ^c	,000 ^c

- a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.

Uji Hipotesis

Test Statistics ^a				
	PER+t - PER-t	TobinsQ+t - TobinsQ-t	PBV+t - PBV-t	MBVAR+t - MBVAR-t
Z	-,136 ^b	-3,736 ^c	-4,326 ^c	-3,761 ^c
Asymp. Sig. (2-tailed)	,892	,000	,000	,000

- a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.
c. Based on positive ranks.

Lampiran 2. PER, Tobin's Q, PBV dan MVA/BVA

NAMA PERUSAHAAN	TAHUN	PER	Tobin's Q	PBV	MVA/BVA
ABBA	2013	18.55	0.85	1.65	1.25
	2014	18.60	0.56	0.95	0.98
	2015	-3.68	0.62	1.04	1.01
	2016	-3.39	0.60	0.86	0.95
	2017	-4.96	0.71	1.16	1.04
	2018	-38.25	0.81	1.15	1.06
ACES	2013	19.89	4.05	5.28	4.31
	2014	24.27	4.47	5.70	4.77

	2015	24.05	8.43	5.38	4.53
	2016	20.15	3.69	4.70	4.02
	2017	25.47	4.34	5.64	4.68
	2018	36.65	5.19	6.68	5.46
AMRT	2013	31.56	2.38	7.18	2.47
	2014	36.18	2.06	6.91	2.27
	2015	53.41	2.06	4.97	2.27
	2016	43.13	1.85	4.90	2.06
	2017	84.37	1.71	4.89	1.92
	2018	115.86	2.34	7.04	2.56
ASGR	2013	10.77	1.48	3.06	2.05
	2014	9.82	1.50	2.83	2.01
	2015	9.16	1.40	2.29	1.76
	2016	10.05	1.67	2.20	1.81
	2017	12.97	0.64	1.43	1.22
	2018	12.98	0.84	1.29	1.18
ASSA	2013	10.37	0.98	1.15	1.06
	2014	12.26	0.57	0.63	0.88
	2015	9.95	0.56	0.40	0.82
	2016	10.67	0.59	0.73	0.92
	2017	6.65	0.57	0.70	0.91
	2018	11.62	0.74	1.12	1.04
AUTO	2013	7.60	1.37	1.84	1.64
	2014	23.22	1.47	2.00	1.70

	2015	24.21	0.62	0.76	0.83
	2016	23.63	0.74	0.94	0.96
	2017	18.01	0.76	0.92	0.94
	2018	17.11	0.51	0.65	0.76
BMTR	2013	42.22	1.27	1.55	1.45
	2014	28.70	0.83	1.27	1.17
	2015	299.73	0.71	1.02	1.01
	2016	42.83	0.53	0.63	0.79
	2017	16.96	1.51	0.59	0.79
	2018	8.86	0.38	0.24	0.63
CINT	2013	5.75	1.18	1.86	1.61
	2014	14.72	0.77	1.24	1.19
	2015	11.88	0.73	1.07	1.06
	2016	16.36	0.68	0.97	0.97
	2017	12.08	0.65	0.87	0.90
	2018	23.36	0.59	0.73	0.79
EPMT	2013	23.39	2.01	3.78	2.47
	2014	14.85	1.14	2.14	1.65
	2015	14.85	1.07	2.00	1.60
	2016	14.22	0.93	1.71	1.46
	2017	15.64	0.89	1.58	1.40
	2018	12.12	0.45	1.02	1.01
ERAA	2013	8.33	0.64	1.05	1.03
	2014	14.94	0.65	1.05	1.02

	2015	6.99	0.42	0.49	0.79
	2016	6.60	0.38	0.51	0.78
	2017	6.28	0.45	0.58	0.82
	2018	10.02	0.87	1.40	1.15
EXCL	2013	42.98	1.58	2.90	1.72
	2014	-46.60	0.66	2.97	1.43
	2015	-171.67	0.59	2.18	1.28
	2016	65.76	0.72	1.16	1.06
	2017	84.31	0.82	1.46	1.18
	2018	-146.13	0.57	0.99	0.99
FASW	2013	-20.15	1.40	3.22	1.61
	2014	47.13	1.26	2.49	1.44
	2015	-8.34	0.77	1.05	1.02
	2016	13.06	1.65	3.22	1.82
	2017	18.00	1.90	4.07	2.08
	2018	22.21	2.25	4.84	2.48
FMII	2013	152.78	2.61	3.70	2.78
	2014	504.49	2.83	4.27	3.04
	2015	13.65	3.58	4.89	3.96
	2016	4.91	1.57	2.02	1.89
	2017	160.44	1.77	2.06	1.90
	2018	-33.85	0.23	5.35	1.28
GTJL	2013	48.00	0.81	1.02	1.01
	2014	18.40	0.69	0.83	0.94

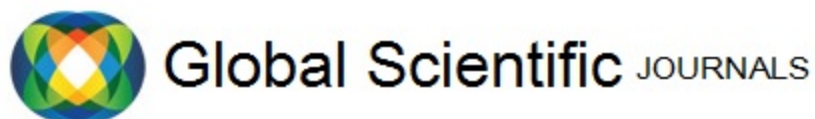
	2015	-5.89	0.54	0.34	0.80
	2016	5.95	0.61	0.64	0.89
	2017	52.63	0.56	0.42	0.82
	2018	-9.90	0.56	0.41	0.83
HERO	2013	13.78	1.76	1.89	1.62
	2014	227.53	1.42	1.20	1.54
	2015	109.94	0.81	0.60	0.95
	2016	-36.59	0.86	0.70	0.98
	2017	32.10	0.69	0.53	0.82
	2018	-17.27	0.61	0.42	0.75
HOME	2013	528.57	3.35	3.22	3.43
	2014	774.19	2.20	2.62	2.29
	2015	2263.64	2.29	2.72	2.38
	2016	2181.82	2.14	2.60	2.26
	2017	1616.67	0.91	1.05	1.04
	2018	-14.70	1.11	1.38	1.25
ICBP	2013	26.70	2.78	4.48	3.17
	2014	29.33	3.03	5.08	3.46
	2015	13.09	1.43	2.40	1.86
	2016	13.89	1.66	2.70	2.09
	2017	27.34	3.22	5.11	3.64
	2018	34.97	3.61	5.56	3.96
INDF	2013	80.49	1.08	1.64	1.37
	2014	15.25	0.83	1.44	1.21

	2015	15.31	0.64	1.05	1.03
	2016	16.79	1.06	1.58	1.31
	2017	16.06	0.97	1.43	1.23
	2018	23.20	0.93	1.35	1.18
JIHD	2013	2.18	0.35	0.62	0.70
	2014	64.54	0.46	0.52	0.65
	2015	443.18	0.38	0.31	0.52
	2016	58.57	0.37	0.24	0.45
	2017	76.79	0.33	0.22	0.42
	2018	717.65	0.32	0.22	0.42
MICE	2013	2.56	0.18	0.50	0.60
	2014	12.98	0.56	0.94	0.95
	2015	9.51	0.17	0.38	0.52
	2016	13.01	0.23	0.45	0.61
	2017	3.15	0.16	0.35	0.54
	2018	8.95	0.18	0.36	0.55
MLPL	2013	2.43	0.28	0.40	0.74
	2014	4.44	0.57	0.82	0.92
	2015	-2.15	0.40	0.29	0.72
	2016	14.13	0.38	0.37	0.75
	2017	-1.15	0.34	0.19	0.73
	2018	-0.83	0.39	0.10	0.65
MLPT	2013	29.71	16.85	42.69	15.84
	2014	26.77	11.05	31.43	11.67

	2015	21.46	12.65	30.21	13.22
	2016	22.34	18.53	40.13	19.08
	2017	10.35	6.21	13.25	6.75
	2018	31.85	8.27	19.94	8.78
MNCN	2013	21.74	3.52	4.84	4.09
	2014	20.58	2.46	3.86	2.97
	2015	22.34	1.74	2.77	2.17
	2016	18.31	1.76	2.64	2.09
	2017	12.62	1.28	1.87	1.57
	2018	9.96	0.64	0.94	0.96
MPPA	2013	23.37	1.80	3.17	2.08
	2014	29.61	3.11	5.76	3.33
	2015	53.63	1.93	3.54	2.12
	2016	206.70	1.62	3.28	1.83
	2017	-1.95	1.06	2.07	1.23
	2018	-5.84	0.69	0.50	0.85
MTDL	2013	5.62	0.26	0.69	0.87
	2014	7.69	0.46	1.18	1.08
	2015	6.24	0.32	0.91	0.96
	2016	6.77	0.28	0.81	0.91
	2017	12.69	0.60	1.43	1.22
	2018	11.12	0.35	0.87	0.93
RANC	2013	30.00	1.59	2.60	1.89
	2014	45.92	1.01	1.71	1.37

	2015	-30.99	0.93	1.37	1.20
	2016	20.36	1.28	1.92	1.55
	2017	13.14	0.77	1.12	1.07
	2018	15.00	0.73	1.01	1.01
RBMS	2013	-3.78	0.07	0.09	0.58
	2014	9.58	-0.02	0.22	0.74
	2015	-4.24	-0.07	0.08	0.07
	2016	-2.68	-0.06	0.11	0.84
	2017	3.44	0.15	0.28	0.42
	2018	49.21	-0.04	0.08	0.37
SCBD	2013	5.24	1.53	2.09	1.84
	2014	50.51	32.64	1.68	1.48
	2015	35.33	11.33	1.49	1.33
	2016	16.32	1.16	1.33	1.24
	2017	39.63	1.72	2.08	1.81
	2018	61.70	1.67	2.01	1.76
TGKA	2013	3.26	1.25	4.25	1.85
	2014	16.51	1.22	3.63	1.78
	2015	13.71	1.08	2.99	1.64
	2016	15.11	1.18	3.19	1.77
	2017	9.77	0.87	2.21	1.45
	2018	14.47	0.98	2.68	1.56
UNTR	2013	14.66	1.24	2.76	1.79
	2014	12.05	1.01	1.68	1.43

	2015	16.41	0.89	1.61	1.39
	2016	20.57	1.02	1.86	1.57
	2017	17.84	1.50	2.78	2.03
	2018	11.25	0.92	1.87	1.44
UNVR	2013	37.09	15.26	46.60	15.54
	2014	42.95	17.65	53.59	17.94
	2015	48.24	18.37	58.48	18.64
	2016	46.32	18.14	62.93	18.40
	2017	60.89	22.99	82.44	23.29
	2018	46.82	22.17	56.28	22.46



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COMPARATIVE ANALYSIS OF COMPANY VALUES BEFORE AND AFTER THE APPLICATION OF E-COMMERCE IN COMPANIES LISTED ON THE INDONESIA STOCK EXCHANGE

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KeyWords

Company Value, Price Earnings Ratio, Tobin's Q, Price to Book Value, Market Value of Assets to Book Value of Assets, e-Commerce.

ABSTRACT

This research aims to analyze the differences in the company's value that is measured through Price Earnings Ratio (PER), Tobin's Q, Price to Book Value (PBV) and Market Value of Assets to Book Value of Assets (MVA/BVA) before and after implementing e-commerce in the company registered on the Indonesia Stock Exchange. This type of research is an event study research. The population in this research is all companies listed on the Indonesia Stock Exchange. The sampling technique uses purposive sampling method; therefore, the number of sample companies are 31 companies. The analysis technique used is the paired sample t-test statistical test, but if the data are not normal, then the Wilcoxon Signed Ranks Test will be used for testing.

The result from the Wilcoxon Signed Ranks Test shows that there is no difference in company value measured by Price Earnings Ratio (PER), Tobin's Q before, and after the implementation of the e-commerce system. Meanwhile, there are differences in the company's value before and after implementing the e-commerce system as measured by PBV and MVA/BVA. These findings indicate the ones that are consistent with the theory are Price to Book Value (PBV) and Market Value of Assets to Book Value of Assets (MVA/BVA). Meanwhile, what is inconsistent is Price Earnings Ratio (PER), Tobin's Q. Thus, the investors should look at PBV and MVA/BVA to determine the company's value. Besides, being able to pay attention to various aspects not only in terms of the company's value but also considering other factors such as dividends, capital gains, or short sell, market risk.

I. Introduction

Currently, the world is facing the phenomenon of the 4th generation industrial revolution or commonly known as Industry 4.0. The Industrial Revolution 4.0 is a new technological advance that integrates the physical, digital and biological areas in which a fundamental change in the way of life of human work exists. The industrial revolution 4.0 will change almost a part of human life. This revolution creates a supercomputer, driverless vehicles, smart robots, neurotechnology development and other fully automated digital worlds that make the industrial features of the world change drastically (Hamdan, 2018). The Industrial Revolution 4.0 offers not only many benefits, but also has challenges that must be faced by the company, especially large incumbent companies (market leaders). Incumbent companies tend to experience a disruption in the trading market. The disruption arises from the presence and operation of digital companies based on online applications with the efficiency and practicality of transactions and the affordability of the products offered. The products or services produced by these online application-based digital companies make consumers switch from shopping at offline stores to online transactions. Online application-based digital companies are part of e-Commerce (electronic commerce). Although the application of e-Commerce is a relatively new concept, it has the potential to affect the large industrial sectors such as communications, finance, retail trade and other fields such as education, health and government (Shahjee, 2016).

The description above shows that most of public companies are indicated a decline in company value due to the implementation of e-Commerce. Company value is important because the purpose of establishing a company that has gone public is to increase the prosperity of its owners and shareholders by increasing company value. Company value is the investor's perception of the

company and often associated with share prices. For companies that trade shares on the share exchange, maximizing company value is the same as maximizing share prices, so the share market price is an indicator of company value. The share market price itself is a description of the various policies carried out by management, so it can also be said that company value can be based on management decisions (Aulia et al., 2018).

As an entity that operates by applying economic principles, generally, a company is not only oriented towards achieving the maximum profit from its business activities but is also oriented towards increasing the company value and the welfare of its owners. The go public companies value is reflected in the company's share price (Margaretha, 2016). Fundamental variables that become investors' assessment of company value are internal, one of them is market ratio (market value ratio). Market ratio is a ratio that connects the company's share price to earnings and book value per share. This ratio provides management with clues about what investors think about the company's past performance and prospects for the future. It means that market ratio is a ratio used to estimate the intrinsic value of the company (shares). Market ratio is used to measure company value including Price Earning Ratio (PER) and Price Book Value (PBV) (Sutrisno, 2013), Tobin's Q (Aulia et al., 2018), and Market to Book Assets Ratio, (MVA/BVA Ratio) (et al., 2016).

The PER ratio is used to compare investment opportunities. A company that has a high PER means that the company has a high growth rate. This shows that the market expects profit growth in the future. On the other hand, a company with a low PER will have a low growth rate, the lower the PER of a share, the better or cheaper the price to invest. It means that theoretically, the higher the PER value, the better the share price. If the PER of a share is low, then the share price is also low (Brigham et al., 2014).

Price Book Value is a ratio that describes how much the market appreciates the book value of a company's shares because the higher this ratio means that the market believes in the company's prospects so that investors will be interested in investing in the company. The more investors there are, the share price will increase due to the great demand. Sometimes, investors also look for companies with a low price-book value to invest because when the price book value is low, the share price is undervalued (Darmadji et al., 2012).

Tobin's Q ratio is a market value ratio of the company's assets as measured by the market value of the number of shares outstanding and debt (company value) at the cost of replacing the company's assets. Tobin's Q>1 shows that the investment in assets generates a profit that provides a higher value than investment spending, this will stimulate new investment (Aulia et al., 2018).

The Market Value Asset to Book Value of Assets (MVA/BVA) ratio is used to measure the company's growth prospects based on the number of assets used in running its business. For investors, this proxy is taken into consideration in assessing the condition of the company. The higher the MVA/BVA, the bigger assets the company uses in its business. Moreover, the more likely the share price will increase, the share return will increase (Dahlan et al., 2016).

II. Literature review

Signaling Theory

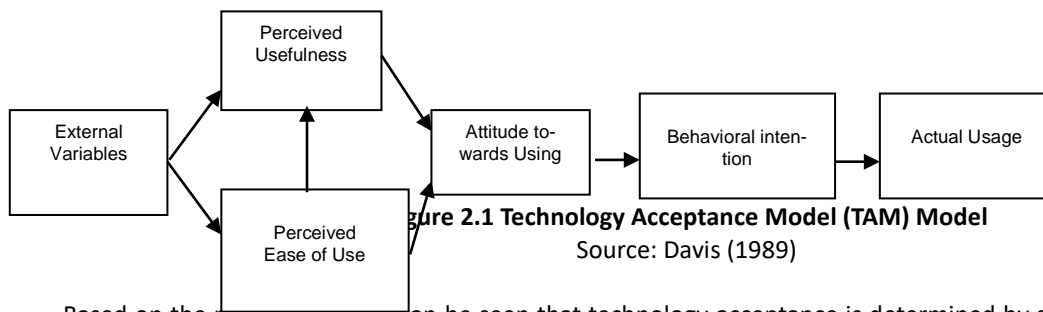
Signalling theory originates from Akerlof who introduces the term "information asymmetry". Akerlof (1970) examined the phenomenon of imbalance information regarding product quality between buyers and sellers by testing the used car market. From his study, Akerlof (1970) found that when a buyer does not have information related to product specifications and only has a general perception of the product, the buyer will judge all products at the same price, both high-quality and low-quality products. Thus, it costs sellers of high-quality products at a loss. This condition, in which one of the parties (sellers) who carry out a business transaction, has more information on the other party results (buyer) in adverse selection (Scott, 2009). Signalling theory explains why companies have the urge to provide financial statement information to external parties. The encouragement of companies to provide information is because there is information asymmetry between the company and outside parties so that the company knows more about the company and its future prospects than outsiders (investors and creditors).

In connection with the topic of this study about company value, signal theory shows that the disclosure of corporate value has a purpose of providing information about the company's performance as well as a means of providing a signal to stakeholders regarding other matters. Moreover, it is a sign that the company is not merely providing more information to high-quality stakeholders. This information will affect the expectations of interested parties, and in turn, will affect the value of the company (Halim et al., 2016).

Technology Acceptance Model (TAM)

Consumer perception can be improved based on the awareness of the presence of innovation. Davis (1989) developed the Technology Acceptance Model (TAM), which describes how consumers build their perceptions of technology. TAM shows that people's beliefs about the pros and cons of technology affect their attitudes and consequences, their intentions and behavior.

Technology Acceptance Model (TAM) is an adoption of the Theory of Reasoned Action (TRA) model, a theory related to a person's reasonable actions with the assumption a person's reactions and perceptions of something will determine that person's attitude and behaviour. Davis (1989) explained that the behaviour of using technology begins with the Perceived Usefulness of the technology and then continues by the Perceived ease of use. Thus, it can be seen that the Perceived Usefulness of technology can affect user perceptions of youthful use of technology. Technology Acceptance Model can be described as follows:



Based on the picture above, it can be seen that technology acceptance is determined by six factors, namely, external variables, perceived usefulness, perceived ease of use, attitude toward using, behavioural intention, and actual usage. These six factors have a regular causal path which in turn affects the use of information technology by users. This model aims to explain the main factors of user behaviour towards acceptance of technology users.

Company Values

According to Brigham et al., (2005), company value is the present value of free cash flow in the future at a discount rate according to the weighted average cost of capital. Free cash flow is the cash flow available to investors (creditors and owners) after calculating all expenses for company operations and costs for investment and net current assets. According to Aulia et al., (2018), company value is investors' perceptions of the company's success rate which is often associated with the share price or market value of the company's debt and securities equity.

Company value is the investor's perception of a public company. The higher the company value, the bigger the prosperity company owner will receive. For companies, which issue shares on the capital market, the share price traded on the share exchange is an indicator of company value. Company value is very important because the high prosperity of shareholders will follow high company value. The higher the share price, the higher the company value. High company value is a desire of the company owners because a high value indicates the prosperity of shareholders is also high. The wealth of shareholders and the company is represented by the market price of shares which is a reflection of investment, funding and asset management decisions (Besley et al., 2011).

Company value is formed from a series of processes that involve certain factors, both internal factors and external factors such as market conditions and investors. Internal factors include operations carried out within the company, funding decisions, investment decisions, and dividend policies. Market factors include market economic conditions, government regulations, and competition between companies. Investor factors consist of income or savings from investors, age or lifestyle of investors, interest rates, and risk preferences (Mardiyanto, 2014).

Based on the definition above, it can be concluded that company value is the price that must be paid by the buyer where if the company is sold, it will provide prosperity to the shareholders.

Measuring the Company Values

Indicators used to measure company values include (Brigham et al., 2018).

1. Price Earning Ratio (PER)

Price earnings ratio (PER) shows how much money investors are willing to spend to pay for every dollar of reported profit (Brigham and Houston, 2014). The use of PER is to see how the market appreciates the company's performance as reflected by Earning Per Share (EPS). PER relates to the common share market and EPS. PER is a comparison between the company's share price and earnings per share in shares (Tandelilin, 2014b). PER is the price per share; this indicator has practically been applied in the final income statement and has become a standard form of financial reporting for public companies in Indonesia. This ratio shows how much investors assess the share price against the multiple of earnings (Harmono, 2017). The PER calculation formula according to Brigham and Daves (2018) is as follows.

$$PER = \frac{\text{Price per share}}{\text{Earnings per share}} \dots \dots \dots (1)$$

2. Tobin's Q

Tobin's Q is discovered by a Nobel Prize winner from the United States, James Tobin. Tobin's Q is the market value of a company's assets at replacement cost. Based on the concept, Tobin's Q ratio is superior to the market value to book value ratio because this ratio focuses on what the company's current value is relative to how much it costs to replace it currently. In practice, Tobin's Q ratio is difficult to calculate accurately because estimating the replacement cost of a company's assets is not an easy job (Margaretha, 2016). Tobin's Q is a ratio of the market value of company's share to the book value of the company's equity (Hermuningsih, 2018). Tobin's Q Ratio is a ratio of the market value of company's assets as measured by the market value of the number of shares

outstanding and debt (firm value) at the cost of replacing company's assets.

Tobin's Q is a statistical representation that serves as a proxy of company value from an investor's perspective.

The Tobin's Q formula is stated by Aulia et al., (2018) as follows:

$$Q = \frac{(Share \times CP) + DEBT + INV - CA}{TA} \dots\dots\dots(3)$$

Description:

- Share* = Number of shares outstanding;
- CP* = Closing Price;
- DEBT* = Total Debt;
- INV* = Inventory;
- CA* = Current Aset;
- TA* = Total Asets.

Interpretation Score.

- a. Tobin's Q < 1 illustrates that shares are in an undervalued condition, it means that management has failed to manage the company's assets and the potential for investment growth is low, so investing in assets is not attractive.
- b. Tobin's Q = 1 illustrates that shares are in average condition, it means that management is successful in managing company assets and the potential for high investment growth.
- c. Tobin's Q > 1 shows that investing in assets generates a return that provides a higher value than investment expenditure, this will stimulate new investment.

3. Price to Book Value (PBV)

Price to Book Value (PBV) is one of the variables considered by an investor in determining which shares to buy. For companies that are doing well, this ratio generally reaches above one, which indicates that share market value is greater than book value. The greater the PBV ratio, the higher the company is assessed by investors relative to the funds invested in the company (Brigham and Houston, 2014).

A high PBV will make the market believe in the company's prospects. Conceptually, PBV is a comparison between share price and book value per share. The book value per share is the ratio between the capital (common equity) and the number of outstanding shares. PBV can be interpreted as the result of a comparison between the share market price and the book value of shares. PBV can also mean the ratio that shows whether the price of traded shares is overvalued (above) or undervalued (below) the book value of these shares (Fakhrudin et al., 2012). The formula for calculating PBV is as follows.

$$Price \ to \ Book \ Value \ (PBV) = \frac{Share \ Price}{Share \ book \ value} \dots\dots\dots(4)$$

A high PBV can reflect the level of the shareholders' prosperity. In other words, to achieve this goal, each company should be able to increase the share price, because a high or rising share price can increase the PBV. The PBV has several advantages, namely book value; it is a stable and straightforward measure that can be compared to market prices. The second advantage is that PBV can be compared between similar companies to show signs of expensive/cheap shares (Fakhrudin and Hadianto, 2012).

4. Market Value Asset to Book Value of Asset (MVA/BVA) Ratio

According to Dahlan, et al., (2016), Market Value Asset to Book Value of Assets (MVA/BVA) is a proxy for IOS based on price. This proxy is used to measure the company's growth prospects based on the number of assets used in running the business. For investors, this proxy is taken into consideration in assessing the condition of the company. The higher the MVA/BVA, the bigger assets the company uses in its business. Moreover, the more likely the share price will increase, the share return will increase. Market Value Asset to Book Value of Asset (MVA/BVA) can be calculated as follows.

$$MVA/BVA = \frac{(Tot.Aktiva - Tot.Ekuitas) + (J. \ outstanding \ shares \times \ saham \ price)}{Total \ aset} \dots\dots\dots(5)$$

E-Commerce

E-Commerce is the buying and selling of goods and services on the Internet (Pradana, 2015). Apart from buying and selling, many people use the Internet as a source of information to compare prices or see the latest products on offer before making a purchase online or in a traditional store. E-Business is sometimes used as another term for the same process. However, it is more often used to define a broader process of how the Internet is changing the way companies do business, the way companies relate to customers and suppliers, and the way companies think about functions such as marketing and logistics (Khan, 2016).

E-Commerce is a dynamic set of technologies, applications and business processes that connect companies, consumers and certain communities through electronic transactions and trade in goods, services, and information carried out electronically. E-

Commerce can take various forms depending on the level of digitality of the product/service for sale, and so on (Tanjung, 2016). E-Commerce apart from being a means of communication, information and entertainment is also a means of electronic commerce. Companies only need to create an e-commerce website so that buying and selling of goods can be done on the internet (Boone et al., 2013).

Types of e-Commerce

According to Laudon and Laudon (2016), several types can be classified in e-Commerce transactions, including the following.

- a. Business-to-Business (B2B)
- b. Business-to-Consumer (B2C)
- c. Consumer-to-Consumer (C2C)
- d. Consumer-to-Business (C2B)

DeLone and McLean Models

The DeLone and McLean models are usually models used to measure the success of the e-Commerce system. The DeLone and McLean develop a successful model of information systems as a framework and a model for assessing complex dependent variables in information systems research. This model considers the nature, level, quality, and suitability of system usage. The nature of system usage can be overcome by determining the full functionality of a system to be used for its intended purpose. For example, the full functional use of an e-Commerce system should include information use, transactional use, and customer service use (Delone & Mclean, 2003).

The DeLone and McLean explained that "DeLone & McLean information system success model is a framework and model for measuring the complex-dependent variable in his research." This statement demonstrates that DeLone and McLean's successful information system model is a framework and a model for measuring complete variables in information systems research (Delone & Mclean, 2003). According to DeLone and McLean (2003), the main goal to be achieved with this model is to solve problems related to complex information systems through 6 dimensions in achieving information system success which includes system quality, information quality, use, user satisfaction, individual impact and organizational impact.

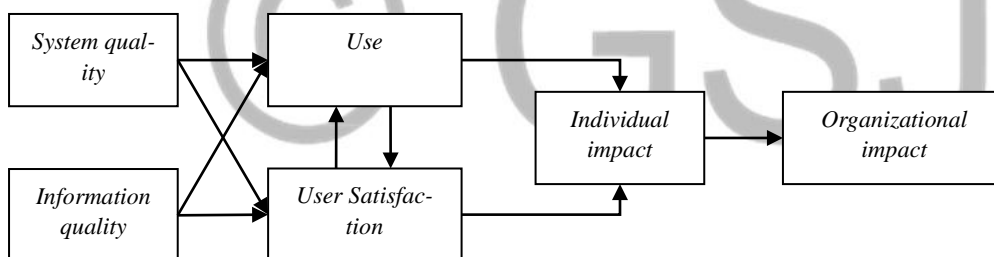


Figure 2.2. DeLone and McLean's Information Systems Success Model
Source: (Delone & Mclean, 2003)

Figure 2.1. shows that the DeLone and McLean Models consist of six variables, namely:

- 1) System quality evaluates the information processing system itself.
- 2) Information quality relates to the output of information systems.
- 3) System use relates to the use of the output from the information system by the recipient.
- 4) User satisfaction relates to the recipient's response to the use of information system output.
- 5) The individual impact is the impact of information on recipient behavior.
- 6) The organizational impact is the impact of information on organizational performance.

Research Hypothesis

- H1: There is a difference in company value as measured by Price Earning Ratio (PER) before and after implementing e-Commerce in companies listed on the Indonesia Stock Exchange.
- H2: There is a difference in company value as measured by Price to Book Value (PBV) before and after implementing e-Commerce in companies listed on the Indonesia Stock Exchange.
- H3: There is a difference in company value as measured by Tobin's Q before and after implementing e-Commerce in companies listed on the Indonesia Stock Exchange.
- H4: There is a difference in company value as measured by MVA/BVA before and after implementing e-Commerce in companies listed on the Indonesia Stock Exchange.

III. Research methodology

The type of study was an event study research which aims to determine the market reaction to an event that occurs in a certain period (Tandelilin, 2014a). The event study method used in this study was to determine the reaction of the capital market to differences in company value before and after the implementation of e-Commerce.

The data collection method in this study employed literature study and observational study method. The literature study method is a method in which data is obtained by reading and studying books related to the issues discussed in the scope of research. Meanwhile, the observation study method is a method of obtaining data using documentation based on financial reports published by the IDX.

Research variables

This study aimed to analyze the difference in variables, so this study used only one research variable, namely company value. This company value was measured by four indicators, namely Price Earning Ratio (PER), Tobin's Q, Price Book Value (PBV), and Market Value Asset to Book Value of Assets (MVA/BVA).

Data analysis technique

The data analysis technique used in this study was the statistical analysis method with the Statistical Product and Services Solutions (SPSS) software program. The steps of data analysis were as follows.

1. Descriptive Statistics

Descriptive statistics provide an overview or description of data seen from the mean, standard deviation, variance, maximum and minimum values. This aims to find a general description of all variables used in this study by looking at the descriptive statistical table.

2. Normality Test

Data normality test is an essential requirement in parametric analysis such as correlation, average comparison test, analysis of variance and so on because the data to be analyzed must be parametrically distributed. Data normality test is carried out to determine the analytical tool used in the hypothesis test. If the data is normally distributed, the paired sample t-test is used. But if the data is not normally distributed, the analysis tool used is the non-parametric Wilcoxon signed-rank test method.

3. Hypothesis Testing

a. Paired sample t-test

Paired sample t-test is an analysis used to test the mean difference between two paired or related sample groups. Paired sample T-Test is an analytical tool used to determine whether there is a difference in the mean of two independent samples. The two samples referred itself are the same sample but undergo different measurement and treatment processes (Priyatno, 2012).

The steps for testing the hypothesis are as follows (Priyatno, 2012).

1. Determining the hypothesis

H₀: There is no difference in company value before and after implementing e-Commerce

H_a: There is a difference in company value before and after implementing e-Commerce.

2. In determining the level of significance, this study used the test with a significance level of $\alpha = 5\%$

3. Decision making

H₀ is accepted if the significance > 0.05

H₀ is rejected if the significance < 0.05

4. Drawing conclusions

b. Wilcoxon signed-rank test

The Wilcoxon signed-rank test is a non-parametric test that does not require data to be normally distributed. It means that it can be used to test whether there is a difference between the two paired-sample groups. This test is often used as an alternative to the paired sample t-test if the data is not normally distributed (Priyatno, 2012). The steps for the Wilcoxon signed-rank test are the same as for the paired sample t-test.

IV. Results

Regression Analysis Model 1

Normality Test Results

In the data normality test, this study used the Kolmogorov-Smirnov Test method. This method was chosen because it based on the fact that the Kolmogorov-Smirnov Test is a method commonly used to test data normality. The purpose of this test is to determine whether the sample used in this study is normally distributed or not. The sample is normally distributed if the probability value $>$ the specified level of significance ($\alpha = 0.05$). If the test results show that the sample is normally distributed, the different test used in this study is the parametric test. Still, if the sample is not normally distributed, the different test used in

this study is the non-parametric test. The results of the normality test with the Kolmogorov-Smirnov Test can be seen from Table 5.4 below:

Table 5.4 The Results of Normality Tests of One-Sample Kolmogorov-Smirnov Test
One-Sample Kolmogorov-Smirnov Test

	PER-t	PER+t	To- bin's Q-t	To- bin's Q+t	PBV- t	PBV+ t	MBV AR-t	MBV AR+t	
N	62	62	62	62	62	62	62	62	
Normal Pa- rameters ^{a,b}	Mean	70,70	86,51	2,183	2,071	5,34	5,50	2,46	2,386
	Std. De- viation	82	45	9	9	00	69	21	6
Most Ex- treme Dif- ferences	Absolute	351,2	339,5	3,692	4,206	11,5	14,2	3,62	4,220
	Positive	3644	2237	50	57	0337	4221	370	80
	Negative	,394	,438	,311	,387	,389	,401	,332	,399
Kolmogorov-Smirnov Z	,394	,438	,311	,387	,389	,401	,332	,399	
Asymp. Sig. (2-tailed)	-,363	-,378	-,271	-,309	-,324	-,352	-,280	-,321	
	3,103	3,449	2,450	3,049	3,06	3,15	2,61	3,142	
	,000	,000	,000	,000	0	6	1	,000	

a. Test distribution is Normal.

b. Calculated from data.

Based on the results of the data normality test above, it can be seen that the probability value < significance level ($\alpha = 0.05$), therefore, it can be concluded that the data on company values listed on the Indonesia Stock Exchange are not normally distributed. This is in accordance with the initial assumption in selecting the method to test data on the value of companies listed on the Indonesia Stock Exchange that because the data is not normal, the Wilcoxon Signed Ranks Test is used for testing.

Description of Results

The data description shows that the research data is not normally distributed. Hence, the description of the results of this study using the Wilcoxon signed-rank test. This is a non-parametric test that does not require data to be normally distributed. It means it can be used to test whether there is a difference between the two paired-sample groups. This test is often used as an alternative to the paired sample t-test if the data is not normally distributed (Priyatno, 2012). The following are the results of the Wilcoxon Signed Rank Test for each comparison of the company value ratio, Price Earning Ratio (PER), Tobin's Q, and Price to Book Value (PBV) and Market Value Asset to Book Value of Assets (MVA/BVA) on observations before and after the implementation of the e-Commerce system of companies listed on the Indonesia Stock Exchange for the period 2014-2017.

Table 5.5 The Results of Wilcoxon Signed Rank Test
Test Statistics^a

	PER+t - PER-t	Tobin's Q+t - To- bin's Q-t	PBV+t - PBV-t	MBVAR+t - MBVAR-t
Z	-,452 ^b	-1,777 ^b	-2,086 ^b	-2,177 ^b
Asymp. Sig. (2-tailed)	,651	,075	,037	,029

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

1. First Hypothesis Testing

The results in table 5.5 show the value of Sig. (2-tailed) of PER variable in the period before and after the implementation of the e-Commerce system is 0.651. These results indicate a probability >0.05, which means that there is no significant difference between the two sample groups. From these results, it can be concluded that H1 is rejected, it means there is no differ-

ence in company value as measured by Price Earning Ratio (PER) before and after implementing e-Commerce in companies listed on the Indonesia Stock Exchange.

2. Second Hypothesis Testing

The results in table 5.5 show the value of Sig. (2-tailed) of Tobin's Q variable in the period before and after the implementation of the e-Commerce system is 0.075. These results indicate a probability >0.05 , which means that there is no significant difference between the two sample groups. From these results, it can be concluded that H2 is rejected, it means that there is no difference in company value as measured by Tobin's Q before and after implementing e-Commerce in companies listed on the Indonesia Stock Exchange.

3. Third Hypothesis Testing

The results in table 5.5 show the value of Sig. (2-tailed) of PBV variable in the period before and after the implementation of the e-Commerce system is 0.037. These results indicate a probability <0.05 , which means that there is a significant difference between the two sample groups. From these results, it can be concluded that H3 is accepted, it means that there is a difference in company value as measured by PBV before and after implementing e-Commerce in companies listed on the Indonesia Stock Exchange.

4. Fourth Hypothesis Testing

The results in table 5.5 show the value of Sig. (2-tailed) of MVA/BVA variable in the period before and after the implementation of the e-Commerce system is 0.029. These results indicate a probability <0.05 , which means that there is a significant difference between the two sample groups. From these results, it can be concluded that H4 is accepted, it means that there is a difference in company value as measured by MVA/BVA before and after implementing e-Commerce in companies listed on the Indonesia Stock Exchange.

V. Discussion

The Comparison of PER Before and After Implementing e-Commerce

The Wilcoxon signed-rank test shows the Sig value. (2-tailed) of PER variable in the period before and after the implementation of the e-Commerce system is $0.651 > 0.05$. It means there is no difference in company value as measured by Price Earning Ratio (PER) before and after implementing e-Commerce in companies listed on the Indonesia Stock Exchange. This shows that the application of the e-Commerce system to companies listed on the Indonesia Stock Exchange for the 2014-2017 period does not affect the high and low PER values. This is not in line with Brigham and Houston's (2014) theory that the higher the PER value, the better the share price. If the PER of a share is low, then the share price is also low. The results of the data description show that PER from a period before and after the implementation of e-Commerce has fluctuated. In fact, several companies experience a decline in PER value after the implementation of e-Commerce. This explains that there are still some companies that have low fundamentals because ideally, a good and growing company is a company that can generate profits consistently.

These results indicate that the PER value is not the main basis for assessing the company's performance in terms of shares. In other words, a low (negative) PER value does not indicate that the company's shares are very cheap, but because the company is experiencing a net loss. It means that when the company's operations lose (the company cannot generate profit), PER will automatically become negative.

The Comparison of Tobin's Q Before and After Implementing e-Commerce

The Wilcoxon signed-rank test shows the Sig value. (2-tailed) of Tobin's Q variable in the period before and after the implementation of the e-Commerce system is $0.075 > 0.05$. It means, there is no difference in company value as measured by Tobin's Q before and after implementing e-Commerce in companies listed on the Indonesia Stock Exchange. This shows that the application of the e-Commerce system to companies listed on the Indonesia Stock Exchange for the period 2014-2017 does not affect the high and low Tobin's Q value. This is not in line with the opinion of Sudiyatno & Puspitasari (2010) that Tobin's Q is an indicator of company value, which shows proforma management in managing company assets. Tobin's Q value illustrates a condition of investment opportunities that the company has.

The results of this study are in line with the findings of Aulia et al. (2018) that the implementation of e-Commerce does not affect company value (Tobin's Q). Basically, the implementation of e-Commerce is an activity carried out by a company to facilitate marketing and sales to end consumers, so that it will be easier for end consumers to identify and obtain goods from the company. However, investors in that place, do not see it as an implication for company value in the share market so that the implementation of e-Commerce does not reflect the company's value.

The results of the data description show that Tobin's value Q from the period before and after the implementation of e-Commerce has fluctuated. It means that the application of e-Commerce does not affect the level of the company's Tobin's Q value. This explains that investors see Tobin's Q value not based on the company's e-commerce implementation, but rather on the value of the company's listed assets.

The Comparison of PBV Before and After Implementing e-Commerce

The Wilcoxon signed-rank test shows the Sig value. (2-tailed) of PBV variable in the period before and after the implementation of the e-Commerce system is 0.037 < 0.05. It means that there is a difference in company value as measured by PBV before and after implementing e-Commerce in companies listed on the Indonesia Stock Exchange. This shows that the application of the e-Commerce system in companies listed on the Indonesia Stock Exchange for the period 2014-2017 can affect the high and low PBV values. This is in line with the opinion of Brigham and Houston (2014), a company considered good by investors means the company with safe profits and cash flow and continue to experience growth are sold with a higher book value ratio than companies with low returns. According to Darmadji and Fakhruddin (2012), sometimes investors also look for companies with a low price-book value to invest, because when the price book value is low, the share price is undervalued.

The results of this study indicate that during e-Commerce competition, issuers still have high transaction values so that the PBV value is still high. Based on Table 1.2. shows that the PBV value is very fluctuating for the issuer, even the PBV MPPA value also slightly increases, the share price is only 1.6 times more expensive than its book value. It means that issuers on the IDX experience the impact of the application of e-Commerce.

The Comparison of MVA/BVA before and after implementing e-Commerce

The Wilcoxon signed-rank test shows the Sig value. (2-tailed) the MVA/BVA variable in the period before and after the implementation of the e-Commerce system is 0.029 < 0.05. It means that there is a difference in company value as measured by MVA/BVA before and after implementing e-Commerce in companies listed on the Indonesia Stock Exchange. This shows that the implementation of the e-Commerce system in companies listed on the Indonesia Stock Exchange for the 2014-2017 period can affect the level of the MVA/BVA value. This is in line with the study of Dahlan et al., (2016) that Market Value to Book Value of Assets Ratio affects company value. For investors, this proxy is taken into consideration in assessing the condition of the company. The higher the MVA/BVA, the bigger assets the company uses in its business. Moreover, the more likely the share price will increase, the share return will increase. Conversely, the lower the MVA/BVA, the smaller assets the company uses in its business, so the less likely the share price will increase. The results of the data description support that there is a decrease in the average value of the company with the MVA/BVA proxy after implementing e-Commerce.

The growth of company assets is an expectation wanted by internal parties of the company, namely management and external companies such as investors and creditors. The growth is a positive aspect for the company because there is an expectation of investment opportunities in the company. It can be said that the MVA/BVA proxy can be used to explain the existence of investment opportunities or company growth in the future.

Conclusion

Based on the results of hypothesis testing and previous discussion, several conclusions are drawn below:

1. The PER variable tested with the Wilcoxon test has no difference in company value as measured by Price Earning Ratio (PER) before and after implementing e-Commerce in companies listed on the Indonesian Stock Exchange. It can be concluded that the application of the e-Commerce system has no impact on the company's share price. Where the motive for implementing e-Commerce is an activity carried out by the company to facilitate marketing and sales to end consumers so that the end consumer is easier to identify and obtain goods from the company. However, investors in that place, do not see it as an implication for company value in the share market so that the implementation of e-Commerce does not reflect the company's value.
2. The Tobin's Q variable tested with the Wilcox test has no difference in company value as measured by Tobin's Q before and after implementing e-Commerce in companies listed on the Indonesia Stock Exchange. It can be concluded that the application of the e-Commerce system has no impact on the company's share price. Where the motive for implementation e-Commerce is an activity carried out by a company to facilitate marketing and sales to end consumers so that the end consumer is easier to identify and obtain goods from the company. However, investors in that place, do not see it as an implication for company value in the share market so that the implementation of e-Commerce does not reflect the company's value.
3. The PBV variable tested with the Wilcoxon test shows that there are differences in company value before and after implementing e-Commerce in companies listed on the Indonesia Stock Exchange. It can be concluded that the application of the e-Commerce system to companies listed on the Indonesia Stock Exchange for the period 2014-2017 can have an impact at high and low PBV values.
4. The MVA/BVA variable tested by the Wilcoxon test shows that there are differences in company value before and after implementing e-Commerce in companies listed on the Indonesia Stock Exchange. It can be concluded that the application of the e-Commerce system to companies listed on the Indonesia Stock Exchange for the period 2014-2017 can have an impact on the high and low MVA/BVA values.

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