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Examining belief-adjustment model and investors overconfidence on investment decision making

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Abstract

This research aims to examine whether there is a different judgment between the investor who receives good news followed by bad news and the one who receives bad news followed by good news information order in the step-by-step and the end-of-sequence disclosure pattern by using financial information type and non-financial information type and overconfidence characteristics on investment decision making. This research is included in the experimental design by using a mixed design of between-subjects and within-subject design and classified as experimental research which uses the 2x2x2 method. Participants used in this research are undergraduate business students in STIE Perbanas Surabaya who are studying and/or have completed investment management and/or financial statement analysis courses who will serve as non-professional investors. The results obtained in this research showed that recency effect occurred between the investor who receives good news followed by bad news and the one who receives bad news followed by good news in the step-by-step disclosure pattern, while there is no order effect occurred when the disclosure pattern used is the end-of-the-sequence.

Abstrak

Penelitian ini bertujuan untuk menguji apakah terdapat perbedaan keputusan antara investor yang menerima informasi positif diikuti informasi negatif dibandingkan dengan investor yang menerima informasi negatif diikuti oleh informasi positif pada pola penyajian step-by-step dan end-of-sequence dengan menggunakan informasi keuangan dan non keuangan dan karakteristik investor overconfidence dalam pengambilan keputusan investasi. Penelitian ini menggunakan desain eksperimen dengan mixed design 2x2x2. Partisipan dalam penelitian ini adalah mahasiswa Akuntansi dan Manajemen STIE Perbanas Surabaya yang telah menempuh mata kuliah Manajemen Investasi dan/atau Analisa Laporan Keuangan yang dapat dikategorikan sebagai investor non-professional. Hasil penelitian ini menunjukkan bahwa recency effect terjadi pada investor yang menerima informasi positif diikuti informasi negatif dan investor yang menerima informasi negatif diikuti informasi positif pada pola penyajian step-by-step, sementara efek urutan tidak terjadi pada pola penyajian end-of-sequence.

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1. Introduction

The investors need the information to analyze their investment. It means that there are financial information and non-financial information needed for investment decisions. The publication of financial statements and annual reports on the IDX website shows that there were 483 companies that had presented its financial statements and 490 companies which had presented its annual reports in 2013. While in 2014 there were 493 companies that had presented its financial statements and 494 companies which had presented its annual reports, and there were 486 companies that had presented its financial statements and 487 companies which had presented its annual reports in 2015. This indicates an increase in the company's disclosure of the audited financial statements and the audited annual report. The factors that affect investment decisions can be described in a model of the belief-adjustment process.

Hogarth & Einhorn (1992) proposed the belief-adjustment model which proposed that individual who processes information sequentially will use the anchoring process and adjustment process. The belief-adjustment model predicts that there is no order effect on the consistent evidence that occurs when an individual gets various evidence. The order effect will often come up when the disclosure pattern is sequential or step-by-step (SbS).

Research conducted by Almilia & Supriyadi (2013) concluded that there is a difference in investment decisions among participants who received good news followed by bad news compared to participants who received bad news followed by good news in sequentially information disclosure. And conversely, there is no difference for participants who received good news followed by bad news compared to participants who received bad news followed by good news in simultaneously information disclosure.

The understanding of investors about that information or any disclosure presented by the com-

pany is important to make investment decisions because it reflects uncertainty faced by the company. Ghosh & Wu (2012) explained that the measurement of financial and non-financial performance and their favorableness have an interactive impact on analyst recommendations. This research contributes to theory in investment decision making. The theoretical contributions in this study are: (1) the researcher examines the effect of financial information and non-accounting; (2) This study also tries to understand the attitudes of investors influenced by errors in judgments or even mental routines. Trivers (2004) stated that in self-deception theory, individuals are designed to think they are better (smarter, stronger) than they really are. Self-deception can explain overconfidence, the tendency of decision-makers to give excessive weight to the assessment of knowledge and accuracy of information possessed and ignore the public information available. Indeed, investors are not fully rational and their demand for financial assets is often affected by their beliefs or feelings which are not clearly justified by economic fundamentals. The research conducted by Huisman, Van der Sar, & Zwinkels (2012) found a method of measuring alternative investor confidence, using unique survey data about investors' stock market predictions. Merkle (2017) stated that the role of past success and hindsight affects the subsequent investor overconfidence in line with learning to be confident.

Almilia & Wulanditya (2016) show that individuals who have a high level of confidence that will tend to ignore the information available, the impact on individuals with a high level of confidence will be spared from the effect of the information sequence. Almilia et al. (2018) show that participants give a different response when receiving non-accountancy information (expressive decision frame) with different presentation patterns which are step-by-step and end-of-sequence. The other findings Almilia et al. (2018) show that there is no different response between participants receiving accountancy information (financial decision frame) and partici-

pants receiving non-accountancy information (expressive decision frame) at the end-of-sequence presentation pattern. However, when participants receive accountancy information compared to non-accountancy information in a step-by-step presentation pattern, it shows that there is a different response. The overall results of the Almilia et al. (2018) study indicate that the investment decision frame affects the investment decision making when the information presentation pattern is step-by-step.

The contribution of practices and policies of this study is to understand the impact of the presentation of financial and non-financial information (reports on the implementation of corporate governance and corporate social responsibility), the order in which information is presented, the pattern of information presentation and the characteristics of individual confidence in investment decision making. For the Capital Market and Financial Institution Supervisory Agency (BAPEPAMLK) and the Financial Services Authority (OJK), this research can contribute to the regulation of disclosure arrangements related to the order of presentation of disclosures and the completeness of disclosure presentation (not only financial information, but also disclosure of non-financial information). In addition, research is expected to contribute to the practice, namely to increase more transparent disclosures made by companies, especially for non-financial information, such as corporate governance implementation reports and corporate social responsibility reports. This is because the non-financial information published by the company can also affect investors' valuations of the company's shares and will ultimately influence investment decisions.

The diversity of the order in which information is presented also appears in the company's annual reports, such as PT. Telkom Indonesia Tbk, which in its annual report presents information, namely: company info at a glance, reports to shareholders, a review of the telecommunications industry in Indonesia, a review of telecommunications operations, management discussion and analysis,

additional financial information and corporate governance. PT. Perusahaan Gas Negara Tbk presents information that has a different order in its annual report, namely: company info at a glance, reports to shareholders, customer testimonials, management discussion and analysis, information for shareholders, corporate governance, HR management, commitment to customers, and consolidated financial statements. Based on the above phenomenon that the presentation of company information in the annual report shows a different order of presentation is expected to have an impact on corporate investment decision making. Based on the background above, this study is aimed to examine the information order (++ – and – ++), disclosure pattern (step-by-step and end-of-sequence), information type (financial information and non-financial information) and identifying investors overconfidence on investment decision making. The purpose of the study to examining the belief-adjustment model and investors' overconfidence on investment decision making. This is especially to identify the effect of the belief-adjustment model and investor overconfidence towards investment decision making.

2. Hypotheses Development

The research uses long series information, simple information and the step-by-step (SbS) disclosure pattern will result in the primacy effect, that is the first information received in order has the greatest effect on individual belief, while the research employs long series information, simple information, and the end of the sequence (EoS) disclosure pattern will result in the primacy effect also (Hogarth & Einhorn, 1992). According to the previous study and theoretical basic above, in this study, there will be a step done by the author. First, those non-professional investors are analyzed using a calibration technique to measure the level of investor overconfidence towards investment decision making. Second, those non-professional investors are examined to know the effect of the belief-adjustment model as described above.

Issues related to the information disclosure pattern (SbS or EoS) which may affect investment decision making as described in the previous theoretical framework is supported by the result of prior studies that have shown greater belief revisions for sequentially disclosed information than for simultaneous disclosures (Hogarth & Einhorn, 1992). The participants are predicted to give a higher proportion to the first information received at the beginning, that is, good news followed by bad news in Step-by-Step (SbS) disclosure pattern and financial information type. Thus, the first information in the order has a large effect on the individual belief, then such an order effect is called the primacy effect. While the participants receive bad news followed by good news in Step-by-Step (SbS) disclosure pattern and financial information type, tend to give a greater proportion to the information received at the beginning, thus the participants have a large effect obtained from the first information in the order, then such order effect is called primacy effect.

Almilia & Supriyadi (2013) show that when the investors receive the evidence sequentially with good news follow bad news then such investors will give negative judgment but when the investors receive information bad news follows good news then such investors will give a positive judgment. The above discussion is the basis for the following hypotheses:

H_1 : there is a different judgment between the investor who receives good news followed by bad news ($++-$) and the one who receives bad news followed by good news ($-++$) information order in the step-by-step disclosure pattern on financial information type.

H_2 : there is a different judgment between the investor who receives good news followed by bad news ($++-$) and the one who receives bad news followed by good news ($-++$) information order in the step-by-step disclosure pattern on non- financial information type.

Hogarth & Einhorn's Model (1992) predicts that the decision made each time receiving evidence known as Step-by-Step (SbS) tend to have a recency effect while the decision made only once after all evidence known as End-of-Sequence (EoS) tends to show no recency effect. EoS can reduce the recency effect since the reverse effect caused by the gradually presented information can be eliminated by combining the effects of positive and negative evidence that consequently remove the individual effect of positive and negative evidence. Almilia & Wulanditya (2016) conclude that professional and overconfidence investors do not experience the order effect when receiving information with EoS pattern. Almilia & Supriyadi (2013) conclude that EoS can be used to eliminate order effects, especially the recency effect. Luciana et al. (2018) also conclude that there is no order effect in the EoS information presentation pattern and financial decision frame. The above discussion is the basis for the following hypotheses:

H_3 : there is a different judgment between the investor who receives good news followed by bad news ($++-$) and the one who receives bad news followed by good news ($-++$) information order at the end-of-sequence disclosure pattern on financial information type.

H_4 : there is a different judgment between the investor who receives good news followed by bad news ($++-$) and the one who receives bad news followed by good news ($-++$) information order at the end-of-sequence disclosure pattern on non-financial information type.

In addition, those scenarios would also provide a calibration test to measure individual overconfidence characteristics. If the results show that the whole participants are overconfidence or non-overconfidence, there will be a differential test to the entire results of overconfidence or non-over-

confidence participants. If the results show that partially of the participants are overconfidence and partially others are non-overconfidence, the differential test will be employ to the majority results. Meanwhile, if the results show that a half of participants are overconfidence and non-overconfidence (50:50), then the differential test will be conducted to the entire results.

3. Method, Data, and Analysis

This study employs an experimental method. This research investigates the phenomenon by manipulating the circumstances or conditions through a certain procedure, then examines the manipulation result and interprets it (Nahartyo, 2012). This method is chosen because the experimental method is strong enough in the case of showing the causal relationship among research variables.

The experimental design used was a mixed design of between-subjects and within-subject design. Participants will be distributed to the two conditions of information order (good news followed by bad news or bad news followed by the good news), two conditions of investments information disclosure pattern (Step-by-Step or End-of-Sequence), and the two conditions of the type of information (financial information or non-financial information). Thus, there are 8 manipulated conditions of between subjects (two conditions of information order on the two conditions of information disclosure pattern by using the two conditions of the information type). Then, the participants are asked to repeat their experimental task two times. A within-subject design was used to compare the participant stock price judgment before and after the bad news in overconfidence individual characteristics.

An experiment in this research is done by using a paper and pencil test, it means that the participants are asked to answer the questionnaire manually. Participants asked to examine the role of investors in valuing the company performance based

on financial information and non-financial information given. This research contains 8 scenarios. Those scenarios are described as follows:

Scenario I, in this scenario participants, will be given good news followed by bad news (++–) information order by using step-by-step (SbS) disclosure pattern on financial information.

Scenario II, in this scenario participants, will be given bad news followed by good news (–++) information order by using step-by-step (SbS) disclosure pattern on financial information.

Scenario III, in this scenario participants, will be given good news followed by bad news (++–) information order by using step-by-step (SbS) disclosure pattern on non-financial information.

Scenario IV, in this scenario participants, will be given bad news followed by good news (–++) information order by using step-by-step (SbS) disclosure pattern on non-financial information.

Scenario V, in this scenario participants, will be given good news followed by bad news (++–) information order by using end-of-sequence (EoS) disclosure pattern on financial information.

Scenario VI, in this scenario participants, will be given bad news followed by good news (–++) information order by using end-of-sequence (EoS) disclosure pattern on financial information.

Scenario VII, in this scenario participants, will be given good news followed by bad news (++–) information order by using end-of-sequence (EoS) disclosure pattern on non-financial information.

Scenario VIII, in this scenario participants, will be given bad news followed by good news (–++) information order by using end-of-sequence (EoS) disclosure pattern on non-financial information.

First, participants are asked to answer experiment psychological questions to measure investor overconfidence characteristics. Then, participants are asked to revalue PT. NYE shares, which is a vir-

tual corporation but the provided data is based on the real data taken from Indonesia Stock Exchange (BEI). Virtual Corporation used in this research is a corporation in the field of Herbal Medicine and Supplement, Food and Beverage, and Pharmacy. This corporation was chosen because this virtual corporation can survive in all of the economic conditions in Indonesia. Moreover, PT. NYE share has been traded in Jakarta Stock Exchange formerly known as Indonesia Stock Exchange (BEI) nowadays.

Following is the background of the company provided in this experimental research. PT. NYE was established since 1951. The main sector of the company is in Herbal Medicine and Supplement, Food and Beverage, and Pharmacy Industry. PT. NYE's products in Indonesia include some well-known brands, and not only sold for domestic consumption but also imports its products to another country. PT. NYE. First, offer the shares to the public in 2013 and listed on the Indonesia Stock Exchange since December 18, 2013. IPO (Initial Public Offering) price of NYE Inc. is IDR 580 per share with the number of shares as much as 1.500.000.000 (one billion five hundred million) shares or approximately 10% of the total shares. The share price of PT. NYE at the beginning of 2015 was IDR 610, per share as a reference.

Then, participants are asked to revalue each type of information regarding investment provided by using step-by-step (SbS) and end-of-sequence (EoS) disclosure pattern. After that, participants are asked to give the stock price recommendation based on the provided information, that is, company financial statements and non-financial information disclosure taken from the annual report or mass media with the multiple prices of +100 for very good news information and -100 for very bad news information. Then, they will be asked to fill out the manipulation check question. Participants in the experiment are also asked to answer the multiple-choice questions concerning their skill in investment

management and financial statement analysis. Therefore, the experimental procedures for the step-by-step (SbS) disclosure pattern are executed as below: (1) Participants are asked to respond to the experiment psychological question to measure investor overconfidence characteristics. (2) Reading company background. (3) Information containing beginning share price is given (by using IDR 610 as the initial stock price). (4) Giving financial information (financial statements) and non-financial information (annual report or information obtained from mass media) sequentially. (5) Revaluing company stock price that will be bought as much as 18 times judgments for each information (financial information and non-financial information given). (6) Participants are asked to respond to the manipulation check question, the question to measure the participant's basic understanding of financial statement analysis, investment management, and company demographic items. (7) Debriefing session.

Meanwhile, the experimental procedures for the end of the sequence (EoS) disclosure pattern are executed as follows: (1) Participants are asked to respond to the experiment psychological question to measure investor overconfidence characteristics. (2) Reading company background. (3) Information containing beginning share price is given (by using IDR 610 as the initial stock price). (4) Giving financial information (financial statements) and non-financial information (annual report or information obtained from mass media) once or simultaneously. (5) Revaluing company stock price that will be bought as much as one judgment for all information given (financial information and non-financial information given). (6) Participants are asked to respond to the manipulation check question, the question to measure the participant's basic understanding of financial statement analysis, investment management, and company demographic items. (7) Debriefing session

Information items used in this experimental research are 18 items which are grouped into 9 (nine)

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good news items and 9 (nine) bad news items taken from company financial statements for financial information items. Meanwhile, the non-financial information items used in this experimental research is taken from annual report and information obtained from the mass media as much as 18 items which are categorized into 9 (nine) good news items and 9 (nine) bad news items. This experiment tools used language.

Financial information Items – Good News:

Net Income of the company increases than in the last period.

Return on Assets ratio of the company increases than the last period.

Return on Equity ratio of the company increases than the last period.

Net Sales of the company increases than in the last period.

Current assets of the company increases than the last period.

Operating Income of the company increases than the last period.

Earnings per Share of the company increases than the last period.

Total Assets of the company increases than the last period.

Net Profit Margin of the company increases than the last period.

Financial information Items – Bad News:

Net Income of the company decreases than in the last period.

Return on Assets ratio of the company decreases than the last period.

Return on Equity ratio of the company decreases than the last period.

Net Sales of the company decreases than in the last period.

Current assets of the company decrease than the last period.

Operating Income of the company decreases than the last period.

Earnings per Share of the company decreases than the last period.

Total Assets of the company decreases than the last period.

Net Profit Margin of the company decreases than the last period.

Non-Financial information Items – Good News:

The company cooperates with Persatuan Tunanetra Indonesia (Pertuni) to empower members of Pertuni in the cultivation of plants where the company provides training and mentoring in June 2015.

The company provides services to the public in the form of clean water in the dry season in some regions in June 2015.

The company gives donations for orphans from orphanages in some areas as well as daily packages for the poor people in June 2015.

The company provides health services to the people who suffer leprosy disease in June 2015.

The company provides free eyes health check-up and gives free glasses for students in June 2015.

The company provides some donations to the community in the form of disaster relief, public infrastructures, worship places assistance and scholarships are given to students in June 2015.

The company is active in developing environmental programs to utilize and maximize the idle land by giving advisory services ranging from the planting, maintenance, harvesting, post-harvest processing to the raw material based on the factory standards and organic fertilizer production assistance in June 2015.

The company holds a social service in the form of free cataract surgery in order to participate in

the movement of blind prevention of cataracts in June 2015.

The company provides a free trip as an appreciation for the community and to assist the government program in providing public transportation for Eid Fitri in June 2015.

Non-Financial information Items – Bad News:

The company is facing demands from other parties related to the infrastructure development for schooling assistance which uses the land still in dispute in December 2015.

The company is facing the demands of the community because the use of the company's land disturbing public interest in December 2015.

The company has not used the code of conduct as the basis for the imposition of reward and punishment for employees in December 2015.

The company only reports sustainability reporting for management interest and social services just as a form of accountability reports in December 2015.

There are internal parties of the company that misappropriates donations for education in December 2015.

The company is facing the demands of the local community related to the construction of factories in some regions in December 2015

The company is facing problems related to the local communities demands related to the issue that there are inappropriate products sold to the public in December 2015.

The company is facing the demands of local communities related to the waste of the company that disrupts public interest in December 2015.

The company is facing problems from the employee related to the fulfillment of employee benefits in December 2015.

To test the hypothesis above, participants used in this study are undergraduate business stu-

dents (management undergraduate or accounting undergraduate) who are studying and/or have completed investment and portfolio management and/or financial statement analysis courses. The undergraduate business students are chosen as the participants is based on the research conducted by Elliot et al. (2007) who explained that final year students had already had similar consideration patterns and similar investment decision making with non-professional investors in high and low task complexity.

The data analysis technique used in this research is the normality test. In this case, a normality test is utilized to ensure that the data used for the analysis is normally distributed. If the data is normally distributed, then the hypothesis testing will be continued by using the parametric sample t-test. If the data is abnormally distributed, then the hypothesis testing will be continued by using the non-parametric Mann-Whitney U test.

Criteria used for parametric sample t-test is: if the significant probability < 0.05 , it means that the null hypothesis is rejected, thus there is a different judgment. If the significant probability ≥ 0.05 , it means that the null hypothesis is accepted, thus there is no different judgment. While in Mann-Whitney U test, if the significant probability ≥ 0.05 , it means that the null hypothesis is accepted, thus there is no different judgment. If the significant probability < 0.05 , it means that the null hypothesis is rejected, thus there is a different judgment.

4. Results

Demographic data and manipulation check

Criteria for the subjects observed in this study are having knowledge in the field of investment and capital market and/or financial statement analysis, with the minimum cumulative GPA of 3.25. Based on the criteria of the subject, the subjects in this study include accounting undergraduate students and management undergraduate students who are studying and/or have completed investment and

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capital market courses and/or financial statement analysis courses.

There were 120 subjects willing to participate in the study consisting of 116 accounting undergraduate students and 4 management undergraduate students. Eight subjects were not coming into the experimental instrument assignment. Therefore, 112 participants were assigned to the experimental scenarios until a predetermined deadline. The participants were said to pass both of the manipulation checks if they could meet the criteria determined by the researcher before. Manipulation check is intended to find out that the experimental task as-

signed was already understood and responded well and correctly by participants according to the guidelines presented by the experimenter.

The predetermined criteria for the research participants which can be said to pass the calibration test, manipulation check and can be further analyzed were: (1) The participant's correct answer related to the calibration test should be lower than their level of confidence. (2) The participant's correct answer related to the manipulation check question should be a minimum of 2 out of 3 given questions. (3) The participant's correct answer related to the question to measure the participant's basic

Table 1. Demographic information of research participants

Demographic Data	Number of Participants	Percentage (%)
Gender		
• Male	22	24.18
• Female	69	75.82
Total	91	100.00
Student Year		
• Year of 2013	75	82.42
• Year of 2014	16	17.58
Total	91	100.00
Department		
• Accounting undergraduate	87	95.6
• Management undergraduate	4	4.4
Total	91	100.00
a. Courses has been taken		
• Financial statement analysis	26	28.57
• Investment and capital market	0	0
• Both courses	58	63.74
b. Courses being taken		
• Financial statement analysis	7	7.69
• Investment and capital market	0	0
• Both courses	0	0
c. Courses has been taken and being taken		
• Has studied financial statement analysis and currently studying investment and capital market	0	0
• Has studied investment and capital market and currently studying financial statement analysis	0	0
Total	91	100

understanding of financial statement analysis and investment management should be a minimum of 2 out of 5 given questions. Questions asked include: (a) how to measure the level of company liquidity; (b) components of net income; (c) the definition of profitability ratios; (d) mention the rate of return generated by the company for each currency invested in the company; and (e) types of solvency ratios. (4) The participants have fully responded and completed all of the experimental tasks assigned to them.

If one of the above criteria were not met by the participants, they were said to fail in the calibration test and manipulation check and cannot be further analyzed. As a result, there were 21 subjects who did not pass the calibration test criteria and manipulation check, and hence they were not eligible for further analysis. Total subjects for further analysis and passed the manipulation check was 91 individuals consisting of 87 accounting undergraduate students and 4 management undergraduate students. The experimental research was held on December 2, 2016, in four different rooms. The execution of the research was started at 13.00 pm.

Table 1 showed the demographic data of the research participant. There were 91 participants coming from STIE Perbanas Surabaya consisting of 22 male participants and 69 female participants. The research participants were also coming from different student years consisting of 75 participants from the year of 2013 and 16 participants from the year 2014. Additionally, the research participants were also coming from a different department. There were 87 accounting undergraduate students or equivalent to 95.6% and 4 management undergraduate students or equivalent to 4.4%. Table 4.3 also presents information about the course which has been taken by the research participants. From 91 research participants, there were 26 participants who have completed financial statement analysis course, 58 participants have been completed both investment and capital market course and financial statement analy-

sis course, and 7 participants are currently studying financial statement analysis course.

Examining the effect of information order presentation and step-by-step information disclosure pattern on investment decision making (step-by-step)

This research examines the effect of information order presentation and step-by-step information disclosure pattern on financial information type and non-financial information type by using long series information on investment decision making. Hypothesis 1 testing result is presented on Table 2.

Table 2. Independent sample t-test result for hypothesis 1

Disclosure Pattern	Information Order	Mean	Sig. 2-tailed
<i>Step-by-Step</i>	++-	568.33	0.014
<i>Step-by-Step</i>	--+	800	

Table 2 presented above shows the hypothesis testing result for the step-by-step information disclosure pattern by using financial information type for all participants. Based on the independent sample t-test hypothesis testing result above, it can be concluded that the significant probability value was 0.014, thus the hypothesis 1 is supported ($0.014 < 0.05$). It means that there is a different judgment between the participant who receives good news followed by bad news (++) and the one who receives bad news followed by good news (--) information order in the step-by-step disclosure pattern on financial information type by using long series information on investment decision making. From the mean of the final judgment in the good news followed by bad news (++) information order was lower than the final judgment in the bad news followed by good news (--) information order, which was 568.33 for the order ++ and 800 for the order of --. It indicated that the recency effect took place.

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Table 3. Independent sample t-test result for hypothesis 2

Disclosure Pattern	Order	Mean	Sig. 2-tailed
Step-by-Step	++-	433.08	0.000
Step-by-Step	--++	870	

Table 3 presented above shows the hypothesis testing result for the step-by-step information disclosure pattern by using non-financial information type for all participants. Based on the independent sample t-test hypothesis testing result above, it can be concluded that the significant probability value was 0.000, thus the hypothesis 2 is supported ($0.000 < 0.05$). It means that there is a different judgment between the participant who receives good news followed by bad news (++) and the one who receives bad news followed by good news (--++) information order in the step-by-step disclosure pattern on non-financial information type by using long series information on investment decision making. From the mean of the final judgment in the good news followed by bad news (++) information order was lower than the final judgment in the bad news followed by good news (--++) information order, which was 433.08 for the order of ++- and 870 for the order of --++.

Examining the effect of information order presentation and end-of-sequence information disclosure pattern on investment decision making

This research examines the effect of information order presentation and the end-of-sequence information disclosure pattern on financial information type and non-financial information type by using long series information on investment decision making. This research hypothesis is whether there is a different judgment between the participant who receives good news followed by bad news (++) and the one who receives bad news followed by good news (--++) information order at the end of

sequence disclosure pattern on financial information type by using long series information on investment decision making. Hypothesis 3 testing result is presented on Table 4.

Table 4. Mann-Whitney U Test result for hypothesis 3

Disclosure Pattern	Information Order	Mean	Sig. 2-tailed
End-of-Sequence	++-	602.31	0.338
End-of-Sequence	--++	660	

Table 4 shows the hypothesis result for the end-of-sequence information disclosure pattern by using financial information type for all participants. Based on the Mann-Whitney U test hypothesis testing result above, it can be concluded that the significant probability value was 0.338, thus the hypothesis 3 is not supported ($0.338 \geq 0.05$). It means that there is no different judgment between the participant who receives good news followed by bad news (++) and the one who receives bad news followed by good news (--++) information order at the end-of-sequence disclosure pattern on financial information type by using long series information on investment decision making. It indicated that *no order effect* took place.

The fourth hypothesis data quality tested by using Kolmogorov-Smirnov normality test showed that the data is normally distributed. Thus, the hypothesis testing will be continued by using the parametric sample t-test. The hypothesis testing result is presented on Table 5.

Table 5. Independent sample t-test result for hypothesis 4

Disclosure Pattern	Order	Mean	Sig. 2-tailed
End-of-Sequence	++-	571.54	0.226
End-of-Sequence	--++	660	

Table 5 presented above shows that the hypothesis testing result for the end of sequence information disclosure pattern by using non-financial information type for all participants. Based on the

independent sample t-test hypothesis testing result above, it can be concluded that the significant probability value was 0.226, thus the hypothesis 4 is not supported ($0.226 > 0.05$).

5. Discussion

The effect of information order toward the final judgment of participants

Both of the results of hypothesis 1 and hypothesis 2 are not in accordance with the referred theory used by the researcher, that is, Belief-adjustment Model Theory (Hogarth & Einhorn, 1992). Belief-Adjustment Model proposed by Hogarth & Einhorn (1992) predicts that by using long series information, simple information and the step-by-step information disclosure pattern, the primacy effect exists. The primacy effect exists when the first information in the order has a large effect on individual belief.

Both hypothesis 1 and hypothesis 2 result by using an independent sample t-test show that the participants in this experimental research do not experience the primacy effect in such an order effect. Otherwise, the recency effect took place. Recency effect exists when the last information is the one that gives the largest effect on the final judgment.

Hypothesis 1 conducted with financial information items on SbS scenarios. The results of the research showed that the mean of the final judgment in the good news followed by bad news ($++-$) information order was lower than the final judgment in the bad news followed by good news ($-++$) information order, which were 568.33 for the order $++-$ and 800 for the order of $-++$. Based on the independent sample t-test hypothesis testing result above, it can be concluded that the significant probability value was 0.014, thus the hypothesis 1 is supported ($0.014 < 0.05$).

Hypothesis 2 conducted with financial information items on SbS scenarios. The results of the

research showed that the mean of the final judgment in the good news followed by bad news ($++-$) information order was lower than the final judgment in the bad news followed by good news ($-++$) information order, which were 433.08 for the order $++-$ and 870 for the order of $-++$. Based on the independent sample t-test hypothesis testing result above, it can be concluded that the significant probability value was 0.000, thus hypothesis 2 is supported ($0.000 < 0.05$).

Both of the results of hypothesis 1 and hypothesis 2 are not consistent with the referred theory used by the researcher, that is, the Belief-Adjustment Model Theory (Hogarth & Einhorn, 1992). Belief-Adjustment Model proposed by Hogarth & Einhorn (1992) predicts that by using long series information, simple information and the step-by-step information disclosure pattern, the primacy effect exists. The whole results of hypothesis testing by using the step-by-step disclosure pattern showed that the recency effect took place in all of the experimental conditions. The recency effect took place to the participants when they received both of the financial information type and non-financial information type. The recency effect would take place if the information disclosure pattern was step-by-step for both simple and complex information.

The results of the research are consistent with the findings of prior studies that the recency effect would take place when the information disclosure pattern was sequential or step-by-step in making investment and auditing decisions. In the area of investment decision making, this research supports the results of the prior research by Pinsky (2007) which indicated the presence of the recency effect on the step-by-step information disclosure pattern as compared to the end-of-sequence information disclosure pattern. This is due to the amount of information in the experimental assignment was quite a lot consisting of 18 information which made the participants would not remember the previous information given, thus the recency effect exists.

The effect of information order toward the judgment of participants (end-of-sequence)

Both of the results of hypothesis 3 and hypothesis 4 are not in accordance with the referred theory used by the researcher, that is, the Belief-Adjustment Model Theory (Hogarth & Einhorn, 1992). Belief-Adjustment Model proposed by Hogarth & Einhorn (1992) predicts that by using long series information, simple information and the end-of-sequence information disclosure pattern, the primacy effect exists. The primacy effect exists when the first information in the order has a large effect on individual belief. Both hypothesis 3 and the hypothesis 4 testing result by using the Mann-Whitney U test and independent-sample t-test show that the participants in this experimental research do not experience primacy effect in such an order effect. Otherwise, no order effect took place. When the participants provided information simultaneously, they tend to give more objective assessment because they use all of the information obtained to make a final judgment.

Table 6. Results of hypothesis 3 and 4

Information Type	Gained Effect
End of sequence information disclosure pattern (financial information)	No Order Effect
End of sequence information disclosure pattern (non-financial information)	No Order Effect

Research conducted by Ashton & Kennedy (2002) stated that there was no different judgment at the end of sequence information disclosure pattern which means that the end of sequence could be an effective method to reduce the order effect in the decision making made by the auditor. The results of this research are also consistent with the prior research conducted by Pinsker (2007) who stated that the belief revision in determining stock

prices is significantly larger in the sequential conditions compared to the simultaneous disclosure. Research conducted by Almilia & Supriyadi (2013) also concluded that there is no difference judgment for participants who received good news followed by bad news compared to participants who received bad news followed by good news in simultaneously information disclosure patterns. Thus, this current research is supported by the result of the prior research conducted by Ashton & Kennedy (2002), Pinsker (2007), Almilia & Supriyadi (2013), Almilia & Wulanditya (2016), and Almilia et al. (2018).

The results of this current research show that there is a different judgment both on financial information type and non-financial information type by using long series information when the information disclosure pattern which is used is sequentially or the step-by-step. The results gained in this current research showed that the recency effect exists in the step-by-step disclosure pattern. Otherwise, the results of this current research show that there is no different judgment both on financial information type and non-financial information type by using long series information when the information disclosure pattern which is used is simultaneously or the end of the sequence. It means that there is no order effect exists at the end-of-sequence disclosure pattern.

The existence of the different judgment in the step-by-step response mode may be caused because the investors often give more attention to each information that is presented sequentially, so there is a tendency of greater belief revision to each disclosed information made by the investors. When the participants provided information simultaneously, they tend to be biased. This is caused by the fact when an individual who processes information sequentially will use the anchoring process and adjustment. Besides, the discrepancy of the result of this current research with the belief-adjustment model proposed by Hogarth & Einhorn (1992) is due to the amount of information in the experimen-

tal assignment was quite a lot consisting of 18 information which made the participants would not remember the previous information given, thus the recency effect exists. If the information disclosure pattern is ++ – (good news followed by bad news), individuals tend to be biased downward, whereas if the information disclosure pattern is – ++ (bad news followed by bad news), individuals tend to be biased upward (Tuttle et al., 1997). This is caused by the fact that participants were more sensitive to the latest information presented (Pinsker, 2011). On the other hand, research conducted by Gerhard, Hoffmann, & Post (2017) found that long-term return information was not effective in reducing belief updates on average, while belief updates were reduced for subjects who remain in default.

Otherwise, there is no different judgment if the simultaneous response mode is used. It can be concluded that when the information is received simultaneously (End of Sequence), the information order has no impact on the investment decision-making process. This may be caused by the fact that when the investors receive evidence simultaneously (EoS) either with a sequence pattern of good news followed by bad news (++) or bad news followed by good news (–++) , then the investor will provide a more objective assessment. It is because the investors make a comprehensive assessment of all information received both positive and negative information to make a final judgment (Almilia & Supriyadi, 2013). The discrepancy of this current research with the Belief-Adjustment Model Theory proposed by Hogarth & Einhorn (1992) may also be caused by the investor overconfidence characteristics, the tendency of decision-makers to give excessive weight to the assessment of knowledge and accuracy of information possessed and ignore the public information available. It may be caused by the belief of high overconfidence investors that they have the ability or more experience and specialized knowledge or more knowledge in the field of investments.

6. Conclusion, Limitations, and Suggestion

Conclusion

This research aims to examine the effect of the belief-adjustment model and investor's overconfidence on investment decision making by using the information order, information disclosure pattern, information type and identifying investor's overconfidence as the research variables. From the discussion in the previous chapter, the conclusions which can be drawn from this research is: first, there is a different judgment between the overconfidence participant who receives good news followed by bad news (++) and the one who receives bad news followed by good news (–++) information order in the step-by-step disclosure pattern on financial information type and non-financial information type by using long series information on investment decision making. The overconfidence participant tends to give a higher proportion to the information received at the end. It indicated that the recency effect took place. Second, there is no different judgment between the overconfidence participant who receives good news followed by bad news (++) and the one who receives bad news followed by good news (–++) information order in the end of sequence disclosure pattern on financial information type and non-financial information type by using long series information on investment decision making. The overconfidence participant tends to give the same proportion to the information received and give the same final judgment. It indicated that no order effect took place.

The whole results in this research are not consistent with the referred theory used by the researcher, that is, Belief-Adjustment Model Theory (Hogarth & Einhorn, 1992). Belief Adjustment Model proposed by Hogarth & Einhorn (1992) predicts that by using long series information, simple information and both by using the step-by-step information disclosure pattern and the end of sequence information disclosure pattern, the primacy effect ex-

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ists. This discrepancy is also affected by to the amount of information in the experimental assignment was quite a lot consisting of 18 information which made the participants would not remember the previous information given, thus the recency effect exists in a step-by-step response mode and no order effect exist at the end of sequence response mode.

Limitations and suggestions

There are also some research limitations in this research. First, some participants had a rescheduled class a few days before the execution day of the research. As a result, the researcher has to immediately find another subject who met the research subject criteria who were willing to be a participant. Second, in the day of research execution, there were some participants who suddenly canceled their willingness to participate in the experimental assignment without any reason even though the researcher has warned the participants to tell the researcher earlier if they cannot participate in the research in order the researcher could look for another participant before the day of execution. Third, a conducive atmosphere that is expected by the researcher

could only occur from early to the middle experimental assignment. While at the end of the assignment, the participants started to look a bit bored and started making noise. Fourth, the minimum criteria to pass the test related to the question to measure the participant's basic understanding of financial statement analysis and investment management is that the participant's correct answer should be 3 out of 5 given questions. In fact, most of the participants could only answer 2 out of 5 given questions correctly. Thus, the minimum criteria were lowered by the researcher.

There are also some recommendations for further researches. First, the future researcher should give more attention to the participants in order to make a conducive and quiet atmosphere so it can help the participants to be more focused on the experimental assignment. Second, looking for a reserve participant in case it will be easier to find new participants when there are participants who cancel their willingness to participate in the experimental assignment. Third, the researcher should have warned the participants to come earlier before the experimental assignment begins a few days before the day of research execution.

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