Managerial Ability, Real Earnings Management, and Earnings Quality

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Article Info	Abstract
Keywords: Managerial Ability; Real Earnings Management; Earnings Quality	This research aims to examine the effect of managerial ability on real earnings management and earnings quality, and the role of higher ability managers between real earnings management and earnings quality. The total sample includes 846 manufacturing firms-years for the research period 2008-2016. Real earnings management is measured by abnormal activities of over-sales, over-production, and discretionary expenses cutting. Data analysis uses the fixed-effect model of earnings persistence, and fixed-effect model of earnings value relevance and predictability. The results show that higher ability managers use their knowledge, skill, and expertise to perform real earnings management and to increase earnings quality. Since real earnings management can reduce earnings quality, high-ability managers engage more in efficient than opportunistic real earnings management to increase earnings quality. This research provides comprehensive evidence of the relationship between managerial ability, real earnings management, and earnings quality since there is a findings gap between managerial ability and earnings management, as well the gap between earnings management and earnings quality.

1. Introduction

1.1. Background

The case of Enron in 2002 becomes one of the most important issues regard to good governance and financial reporting concerns. It makes the US regulator develop a specific set of standards, which is the Sarbanes-Oxley Act (SOX). SOX provides the ethic of business guidance includes improvement of auditor and financial reporting control (Koh *et al.*, 2008). By improving financial reporting control and monitoring, SOX is succeeded to reduce accounting fraudulent includes earnings management behavior (Koh *et al.*, 2008). Unfortunately, earnings management reduction after SOX only occurs in accruals earnings management (Koh *et al.*, 2008), since regulator and auditor have more concerned about accounting fraud (Goh *et al.*, 2013; Roychowdhury, 2006) and GAAP misleading (Commerford *et al.*, 2016). It leads firms to shift their earnings management behavior from accruals to real earnings management (Cohen *et al.*, 2008) because it is harder for regulators and auditors to detect real earnings management than accruals one (Roychowdhury, 2006). Real earnings management is an action by managers to modify the reported earnings number, especially to avoid losses or beat earnings targets, by deviating the business activities from the normal level (Roychowdhury, 2006). Some studies

provide the existence of real earnings management (e.g.(Cohen *et al.*, 2008; Roychowdhury, 2006).

Since the transactions that relate to earnings management behavior can affect earnings quality (DeFond, 2010), it is important to examine the effect of real earnings management on earnings quality (e.g. persistence, value relevance, and predictability of earnings). Earnings persistence captures the quality of earnings sustainability where the market participant needs to evaluate the recurring components of earnings (Francis *et al.*, 2004). Earnings value relevance refers to the ability of earnings to explain the stock return variation where it shows that the earnings information is relevant to be used for stock investment decision making (Francis *et al.*, 2004). Earnings predictability refers to the information about future earnings in the current earnings and future earnings information will be reflected in the current stock return (Ha and Thomas, 2020). Some activities of real earnings management include over-sales, over-production, and discretionary expense cutting activities (Roychowdhury, 2006). Since real earnings management comes from abnormal activities where it has deviated from normal business activities, it is hard to recur and disturb the earnings persistence. It is also hard to use abnormal activities to pictures the current and future conditions. Abnormal activities also disturb the earnings value relevance and predictability. For example, the discount price strategy for over-sales is hard to recur all the time and not capture the real price. Non-recurring sales such as discounted price sales do not capture sales sustainability, real current sales level, and future sales. Further, it leads to lower persistence, value relevance, and predictability of earnings. Some studies find that earnings management reduces earnings quality. Li (2019) finds that higher real earnings management leads to low-earnings persistence. Subekti (2010) and Mostafa (2017) find that earnings management reduces the value relevance of earnings. Ha and Thomas (2020) find that earnings management by classification shifting makes investors cannot predict future earnings. On the other hand, Meini and Siregar (2014) do not find any significant effect of both accruals and real earnings management on earnings persistence. Adisetiawan and Surono (2016) also do not find any significant effect of earnings management on the value relevance of earnings.

Since managers have the responsibility to report the earnings information, managerial characteristics can affect both the earnings management and the quality of earnings. One of the managerial characteristics is managerial ability. Higher ability managers increase earnings quality (Demerjian *et al.*, 2013). Higher knowledge of business leads to higher ability managers to estimates earnings accurately and increases the earnings quality (Demerjian *et al.*, 2013). Higher managerial ability leads managers to less engage in real earnings management (Huang and Sun, 2017) since higher ability can generate higher revenue by using the given resources (Demerjian *et al.*, 2012, 2013; Huang and Sun, 2017). Higher ability managers also can engage more in real earnings management. First, higher ability managers have more knowledge and ability to do business activities beyond the normal level (Huang and Sun, 2017). Second, all managers, include higher ability ones, have the pressure to beat the earnings target (Huang and Sun, 2017). There are two types of earnings management, which are opportunistic and efficient earnings management. Since higher ability managers can increase earnings quality, they are more likely to engage in efficient real earnings management to increase earnings quality than the opportunistic one. Higher managerial ability facilitates managers to engage in earnings management to provide higher earnings forecasts and lower earnings volatility (DeFond and Park, 1997; Demerjian *et al.*, 2020). Huang and Sun (2017) find that higher ability managers increase the positive effect of real earnings management on future earnings. Demerjian *et al.* (2020) also find that higher ability managers engage in one of earnings management behavior, which is income smoothing, to provide better future earnings prediction. This research aims to examine: (1) The effect of managerial ability on real earnings management and earnings quality; (2) The effect of real earnings management on earnings quality for all samples, a sample of higher ability managers, and a sample of non-higher ability managers. This research provides

comprehensive evidence of the relationship between managerial ability, real earnings management, and earnings quality since there is a findings gap between managerial ability and earnings management (e.g.(Demerjian *et al.*, 2020; Huang and Sun, 2017) as well as earnings management and earnings quality (e.g.(Filip *et al.*, 2015; Gunny, 2010; Ha and Thomas, 2020; Leggett *et al.*, 2015; Li, 2019; Meini and Siregar, 2014; Simamora, 2018, 2019; Tabassum *et al.*, 2015; Vorst, 2016).

1.2. Literature Review
1.2.1. Managerial Ability

Upper echelon theory suggests that managerial characteristics are important to be examined since it determines the firms' strategy characteristics and organizational results (Hambrick, 2007; Hambrick and Mason, 1984). Different managerial characteristics lead to different decision-making styles (Bertrand and Schoar, 2003). Some studies find that managerial characteristics affect financial restatement (Aier *et al.*, 2005), earnings quality (Francis *et al.*, 2008), information disclosure (Bamber *et al.*, 2010), tax management (Dyreng *et al.*, 2010), and accounting policy (Ge *et al.*, 2011).

Managerial ability is one of the important managerial characteristics. Managerial ability defines managerial knowledge, capabilities, and experiences include managers' skill and expertise of strategy, technology, and market knowledge and experiences (Kor, 2003). Managerial ability refers to managers' contributions to make an optimal business decision. It allows managers to maximize the given resources to generates organizational output (Demerjian *et al.*, 2012).

Since it is hard to measures directly the managerial ability, Demerjian *et al.* (2012) introduce the quantitative method to measure managerial ability. In the context of accounting and finance, the managerial ability is always determined by the conventional measurements such as return on assets, stock price, or media mention (Demerjian *et al.*, 2012). These conventional measurements only capture the impact of firms' performance, does not consider the industry condition, and hide the managers' contribution from firms' characteristics (Demerjian *et al.*, 2012). Demerjian *et al.* (2012) suggest managerial ability is measured by the firm's efficiency measurement by using data envelopment analysis to measure the ability to use several inputs to generate sales in each industry. Demerjian *et al.* (2012) find that managerial ability relates to financial performance, stock return, and CEO reputation and tenure.

1.2.2. Real Earnings Management

Real earnings management refers to managers' policy to change the reported earnings number by deviating from the normal business activities to avoid losses or beat earnings targets (Roychowdhury, 2006). It includes over-sales, over-production, and discretionary expenses cutting activities. Over-sales refers to the activity where managers boost the sales up from the normal level by using strategies of price discount and lean credit sales. Over-production refers to the activity where managers reduce the cost of good-sold by producing the product overly since higher production leads to lower fixed production costs at a certain level. Discretionary expenses cutting activity allows managers to reduce discretionary expenses, such as advertising or research and development expenses, by cutting or delaying the advertising and research and development activities. Some studies find the existence of real earnings management. Roychowdhury (2006) finds that real earnings management is conducted to avoid losses and beat earnings targets. Cohen *et al.* (2008) find real earnings management is increased after SOX implementation.

Earnings management is divided into two types which are opportunistic and efficient earnings management. Opportunistic earnings management is based on agency theory. Agency theory explains the agency relationship between shareholders and managers (Jensen and Meckling, 1976). The concern of this theory is agency conflict that comes from information

asymmetry and leads to higher agency costs, such as monitoring costs. This theory captures information asymmetry of shareholders-managers increase opportunistic managers' behavior, such as earnings management. Opportunistic earnings management is manager selection strategies to change the reported earnings number based on opportunistic purposes (Scott, 2014) and personal gains (Schipper, 1989). Cohen *et al.* (2011) find that opportunistic real earnings management is used to cover up bad performance and liabilities management. On the other hand, opportunistic real earnings management fails to predict future performance because it creates more economic cost and reduces firms' growth (Filip *et al.*, 2015; Leggett *et al.*, 2015; Tabassum *et al.*, 2015; Vorst, 2016). Since opportunistic real earnings management captures the irrelevant of firms' performance (Cohen *et al.*, 2011), it reduces the earnings quality (Li, 2019).

Efficient earnings management is based on signaling theory. Signaling theory explains that firms need to communicate their quality by giving the signal of private information to the external parties since there is information asymmetry between firms and external parties (Battacharya, 1979; Connelly *et al.*, 2011; Kirmani and Rao, 2000; Ross, 1977). Efficient earnings management refers to earnings management as a contract efficiency of managers-shareholders (Scott, 2014). Efficient earnings management reduces agency costs by increasing information quality. In the context of real earnings management, managers use efficient earnings management to give a signal of firms' quality. Gunny (2010) finds that the positive relationship between real earnings management and future performance is a signal to show their quality of providing better future performance. Vorst (2016) finds that real earnings management as a tool of earnings target beating can predict future performance. In other words, efficient real earnings management increases earnings quality (Simamora, 2018, 2019).

1.2.3. *Earnings Quality*

Generally, earnings quality defines the ability of earnings to represent the information of firms' conditions (Menicucci, 2020; Schipper and Vincent, 2003). The use of earnings quality measurement is conditional. It depends on the context and earnings information users (Menicucci, 2020). Based on previous studies of earnings management and earnings quality (e.g.(Adisetiawan and Surono, 2016; Ha and Thomas, 2020; Li, 2019; Meini and Siregar, 2014; Mostafa, 2017; Subekti, 2010), this research uses the earnings attributes of persistence, value relevance, and predictability as earnings quality measure.

The first earnings quality attribute is earnings persistence. Earnings persistence shows how persistent the earnings are. It refers to earnings sustainability and how far earnings can recur (Francis *et al.*, 2004). Earnings persistence aims to help stakeholders to evaluate how far and sustain firms can generate the same level of current earnings by doing the recurring business activities. The second earnings quality attribute is earnings value relevance. Earnings value relevance shows how relevant the earnings to be used in decision making. In the context of the stock market, the earnings are relevant if it affects the shareholder or investor's decision that will be reflected in stock return variance (Francis *et al.*, 2004). The relationship between stock return and earnings is usually used to measure earnings value relevance as an earnings response coefficient (Ha and Thomas, 2020). The third earnings quality attribute is earnings predictability. Earnings predictability refers to the ability of earnings to predict future conditions, such as future performance or future earnings. The relationship between current stock return and future earnings is usually used to measure earnings predictability as a future earnings response coefficient (Ha and Thomas, 2020). Future earnings responses show how far future earnings can be reflected in the current stock return. Each earnings attribute is related from one to another. If earnings are persistent and sustain, then it can be used to predict future performance (Burgstahler *et al.*, 2002; Dichev and Tang, 2008; Lipe, 1990), and finally it is relevant to be used in decision making (Ha and Thomas, 2020).

1.2.4. *Managerial Ability and Real Earnings Management*

Demerjian *et al.* (2020) explain that earnings management is a complex strategy. A strategy to adjusts reported earnings needs the role of managers (DeFond and Park, 1997). Managerial characteristics, such as managerial ability, is needed when strategy of reported earnings adjustment involving operational decision (Bertrand and Schoar, 2003). Since reported earnings adjustment and business operational decisions are affected by managerial characteristics, this research expects managerial ability affects real earnings management.

One argument suggests that higher managerial ability leads to lower real earnings management. The main objective of real earnings management is to avoid losses (e.g. negative earnings level) and beat earnings target (e.g. previous earnings level) (Roychowdhury, 2006). Since higher ability managers can generate the maximum level of sales from given resources (Demerjian *et al.*, 2012) and increase both accounting-based (Demerjian *et al.*, 2012; Mostafa, 2010; Phan *et al.*, 2020; Romaisyah and Naimah, 2019) and market-based performance (Cox, 2017; Demerjian *et al.*, 2012), they will be able to avoid losses and beat earnings target without using a strategy of real earnings management. Higher ability managers also have the motivation to less engage in real earnings management. On one hand, higher ability managers consider real earnings management can bring negative consequences up to the future performance and firm value (Cohen *et al.*, 2011; Filip *et al.*, 2015; Leggett *et al.*, 2015; Tabassum *et al.*, 2015; Vorst, 2016). On the other hand, higher ability managers have the interest to keep their reputation since higher managerial ability bring positive consequences of good reputation (Demerjian *et al.*, 2012). Huang and Sun (2017) also explain higher ability managers realize they have limited time and effort to make an optimal decision while real earnings management will cause opportunity costs that can disturb the optimal decision-making process. Huang and Sun (2017) evidenced that managerial ability has a negative effect on real earnings management.

Another argument states that higher managerial ability leads to higher real earnings management. Higher ability managers have the superior skill of estimation and judgment (Demerjian *et al.*, 2012) while a complex strategy like earnings management needs superior ability to be done well (Demerjian *et al.*, 2020). Also, all managers, include higher ability managers, have earnings target beating pressure to be fulfilled and there is a possibility that higher ability managers will use their ability to engage in real earnings management for earnings target beating purposes. However, there is a chance that higher ability managers are more likely to engage in an efficient than opportunistic real earnings management since they can increase earnings quality (Demerjian *et al.*, 2013) and need to keep their reputation (Demerjian *et al.*, 2012). Demerjian *et al.* (2020) find that higher ability managers engage more in earnings management of income smoothing than other managers. Since higher ability managers can both less and more engage in real earnings management, the H1 is stated without any direction.

H1:   Managerial ability affects real earnings management

1.2.5. *Managerial Ability and Earnings Quality*

Higher ability managers provide higher knowledge, skill, and experience of firms and industry operational businesses, thus they can elaborate on the operational businesses' information reliably into reported earnings numbers. When reported earnings can communicate well the information, it means that earnings have high quality (Menicucci, 2020; Schipper and Vincent, 2003). Demerjian *et al.* (2013) find that managerial ability has a positive effect on earnings quality. The attributes of earnings quality in this research are persistence, value relevance, and predictability attributes. Higher ability managers can decide on better projects with lower risk and efficient operation (Demerjian *et al.*, 2013). It reflects the business's operational sustainability and maintains earnings to be persistent. Based on above explanation and previous research, the H2a for earnings persistence is as followed.

H2a: Managerial ability has a positive effect on earnings persistence

Since higher ability managers can elaborate on the operational business information reliably into reported earnings numbers, it can represent the current condition of firms' business performance. Further, it will be relevant to be used in the decision-making process, especially for shareholders or investors. The investor believes the earnings that have been reported by higher-ability managers are relevant to be used in investment decision-making (Fanani and Merbaka, 2020). Based on above explanation and previous research, the H2b for earnings value relevance is as followed.

H2b: Managerial ability has a positive effect on earnings value relevance

Higher ability managers can make earnings are persistent over the period. It makes earnings are less volatile and helps stakeholders to predict future earnings (Juliani and Siregar, 2018). The higher managerial ability allows managers to predict future demands and investment opportunities, thus, they can provide better performance in the future (Fanani and Merbaka, 2020). Based on above explanation and previous research, the H2c for earnings predictability is as followed.

H2c: Managerial ability has a positive effect on earnings predictability

1.2.6. *Real Earnings Management and Earnings Quality*

There are two directions of earnings management effect on earnings quality. On one hand, earnings management behavior is a reflection of lower earnings quality (Dechow and Schrand, 2004). In an opportunistic view, earnings management aims to achieve the personal gain of managers (Schipper, 1989) by misleading the stakeholders about the real performance of the firms (Healy and Wahlen, 1999). It indicates that earnings have low quality because earnings do not reflect the real condition of the firms. On the other hand, earnings management is a tool of information signaling. In an efficient context, earnings management aims to communicate private information (Scott, 2014). There is a possibility that earnings management improves earnings quality by providing private information.

Real earnings management deviates the normal operational business into the abnormal one such as over-sales, over-production, and discretionary expenses cutting. When the abnormal operational business determines the reported earnings, earnings will be less persistent and unsustainable in the future because abnormal activities less recur in the future. Li (2019) finds that real earnings management reduces earnings persistence. On the other hand, abnormal business activities also can be used to show firms' quality. For example, over-sales activities could be an indicator of the strong market position of the firms (Simamora, 2018, 2019). A strong market position brings over-sales activities as a sustained business activity and can be recurred in the future, thus, it will not disturb the earnings persistence. The H3 is stated without any direction since earnings management can both reduce and improve earnings quality.

H3a: Real earnings management affects earnings persistence

As an opportunistic behavior, real earnings management leads earnings cannot represent the real condition of firms' performance. It makes earnings is not relevant to be used in economic decision making. The decision-maker, such as an investor, will move from earnings information to other information (Adisetiawan and Surono, 2016). On the other hand, efficient real earnings management allows earnings information to give a signal of private information. For example, a signal of strong market position information from over-sales activities helps the investor to make a better investment decision. Meini and Siregar (2014) find that real earnings management reduces the cost of equity, which means that real earnings management decreases the information risk that is reflected by the cost of equity reduction.

H3b: Real earnings management affects earnings value relevance

In opportunistic view, real earnings management reduces earnings predictability. Since abnormal activities of real earnings management make earnings are less persistent in the future, it is hard for stakeholders to predict future earnings. Previous studies (e.g.(Filip *et al.*, 2015; Leggett *et al.*, 2015; Tabassum *et al.*, 2015; Vorst, 2016) find that real earnings management fails to predict future performance. On the other hand, efficient real earnings management can predict future earnings by providing a signal of private information. Gunny (2010) finds that real earnings management gives a signal of managers' skill to provide better future performance.

H3c: Real earnings management affects earnings predictability

1.2.7. Managerial Ability, Real Earnings Management, and Earnings Quality

Since high-ability managers provide persistent, accurate, and low-error earnings information (Demerjian *et al.*, 2013), they can use earnings management as a strategy to increases earnings quality (Demerjian *et al.*, 2020). Huang and Sun (2017) find that high-ability managers implement real earnings management to predict future performance. High-ability managers are more likely to engage in efficient real earnings management than opportunistic ones. High-ability managers have the motivation to maintain their long-term compensation by avoiding low-reputation behavior such as opportunistic earnings management (Demerjian *et al.*, 2020). Since high-ability managers have more knowledge, skill, experience, and expertise about firms' business operational, they can differentiate the efficient aspects from opportunistic real earnings management. Further, efficient real earnings management generates higher earnings quality. Real earnings management increases earnings persistence, value relevance, and predictability if it is managed by high-ability managers.

H4a: Real earnings management by high-ability managers has a positive effect on earnings persistence compared to other managers

H4b: Real earnings management by high-ability managers has a positive effect on earnings value relevance compared to other managers

H4c: Real earnings management by high-ability managers has a positive effect on earnings predictability compared to other managers

Based on previous findings and hypotheses development, this research formulates four hypotheses that capture the relationship between managerial ability, real earnings management, and earnings quality. This research framework can be seen in Figure 1.
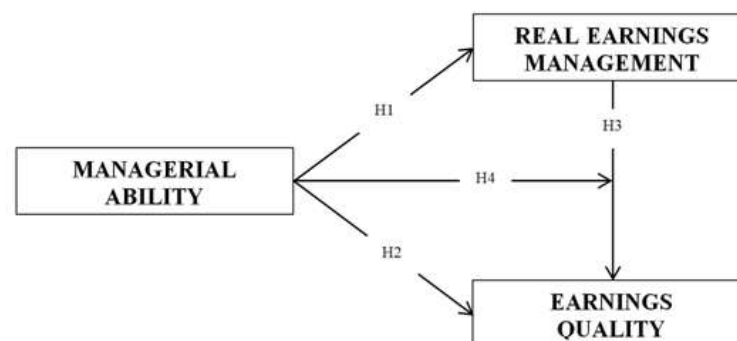

Figure 1. Research Framework

2. Research Method

2.1. Sample and Data

The sample includes manufacturing firms listed on the Indonesian Stock Exchange. Roychowdhury (2006) explains that it is irrelevant to measure over-production as one of the real earnings management activities for non-manufacturing firms. Since this research needs data from the period of t-5 until t+4, manufacturing firms have to be listed on the Indonesian Stock Exchange in 2003-2019 for the research period of 2008-2016. The sample has to be in the manufacturing industry with more than one firm in it and does not change the financial reporting period for managerial ability measurement purposes (Demerjian *et al.*, 2012). Sample data can be accessed on the Indonesian Stock Exchange with the website www.idx.co.id. The total sample includes 846 manufacturing firms-years. Sample selection can be seen in table 1.

Table 1. Research Sample

Criteria of Sample	Firms	Firms-years 2008-2016
Manufacturing firms listed in Indonesian Stock Exchange 2003-2019	102	918
Change financial reporting period	(5)	(45)
There is only one firm in manufacturing sub-industry	(1)	(9)
Incomplete data	(2)	(18)
Total	94	846

Source: www.idx.co.id

2.2. Managerial Ability Measurement

Managerial ability is measured by data envelopment analysis. Data envelopment analysis aims to measure the relative efficiency in using inputs to generates outputs. It is run in each manufacturing sub-industry based on the three digits code of the Jakarta Stock Industrial Classification (JASICA). The data envelopment analysis model can be seen in equation 1. (Demerjian *et al.*, 2012).

$$Max\ \theta = \frac{Sales}{v1COGS+v2SGA+v3PPE+v4OpsLease+v5RD+v6Goodwill+v7OtherIntan} \tag{1}$$

Max θ is firm efficiency. Total revenue (*Sales*) is the single output, as the main firms' objective is to generate sales. *COGS* is the cost of a good-sold period of t. *SGA* is sales and general administration expenses period of t. *PPE* is a net fixed assets period of t-1. *OpsLease* is the value of operating lease assets period of t-1, where it is calculated by the net present value of lease expense from the period of t-1 to the period of t+4. *RD* is the value of the research and development assets period of t-1, where it is calculated by capitalized net research and development expenses from a period of t-4 to a period of t. *Goodwill* is the value of the goodwill period of t-1. *OtherIntan* is the amount of intangible assets besides the goodwill value period of t-1.

Firms' efficiency is separated into firm-specific and manager-specific efficiencies. Manager-specific efficiency is an indicator of managerial ability. The estimation of managerial ability uses the model of equation 2 (Demerjian *et al.*, 2012).

$$Max\ \theta = a+b_1 \ln(total\ assets)+b_2\ market\ share+b_3\ free\ cash\ flow+b_4\ \ln(age)+ \tag{2}$$
$$b_5\ business\ segment\ concentration+b_6\ foreign\ curreny\ indicator+$$
$$\sum Industry_{Effect}+\sum Year_{Effect}+e$$

Total assets are the book value of assets. *Market share* is the percentage of firms' sales to total sales of each sub-industry based on JASICA. *Free cash flow* is cash flow from operation minus capital expenditure, where score 1 if free cash flow is positive and score 0 if otherwise. *Age* is the number of years where firms are listed on the Indonesian Stock Exchange. *Business segment concentration* is the average value of product segment concentration and geographical segment concentration by the model of Bushman *et al.* (2004). *The foreign currency indicator* is a dummy variable where score 1 if the firm reports a non-zero value for foreign currency adjustment and score 0 if otherwise. The estimation of managerial ability is reflected by the value of *e* in equation 2. Estimated managerial ability is used to determine the managerial ability rank and high-ability managers' category measurements. Managerial ability rank is measured by the decile rank of the value of *e* in equation 2 to avoid normality problems (Demerjian *et al.*, 2012). The category of high-ability managers is determined as the top quartile of the value of *e* in equation 2 (Demerjian *et al.*, 2020).

2.3. Real Earnings Management Measurement

Real earnings management includes over-sales, over-production, and discretionary expenses cutting activities. It is measured by the estimation of abnormal operating cash flow (equation 3), abnormal production (equation 4), and abnormal discretionary expenses (equation 5) (Roychowdhury, 2006).

$$\frac{Operating\ Cash\ Flow_t}{Assets_{t-1}} = a + b_1 \frac{1}{Assets_{t-1}} + b_2 \frac{Sales_t}{Assets_{t-1}} + b_3 \frac{\Delta Sales_t}{Assets_{t-1}} + \sum Firm_{Effect} + \sum Year_{Effect} + e_t \tag{3}$$

$$\frac{Production_t}{Assets_{t-1}} = a + b_1 \frac{1}{Assets_{t-1}} + b_2 \frac{Sales_t}{Assets_{t-1}} + b_3 \frac{\Delta Sales_t}{Assets_{t-1}} + \sum Firm_{Effect} + \sum Year_{Effect} + e_t \tag{4}$$

$$\frac{Discretionary\ expenses_t}{Assets_{t-1}} = a + b_1 \frac{1}{Assets_{t-1}} + b_2 \frac{Sales_t}{Assets_{t-1}} + \sum Firm_{Effect} + \sum Year_{Effect} + e_t \tag{5}$$

Production_t is calculated by inventory period of t, less by inventory period of t-1, and added by the cost of the good-sold period of t. *Discretionary expenses_t* includes sales expenses, general and administration expenses, and research and development expenses period of t. Model of equations 3, 4, and 5 are estimated from 2003 until 2019 with 1,598 firm-years samples since real earnings management is improved after 2002 when SOX is made (Cohen *et al.*, 2008). Over-sales occur in the negative value of abnormal operating cash flow (negative value of *e* in equation 3). Over-production occurs in the positive value of abnormal production (positive value of *e* in equation 4). Discretionary expenses occur in the negative value of abnormal discretionary expenses (negative value of *e* in equation 5). The aggregate of real earnings management is calculated in equation 6 (Tabassum *et al.*, 2015).

Real Earnings Management =
−abnormal operating cash flow + abnormal production −
abnormal discretioanry expenses (6)

$$Real\ Earnings\ Management = \text{-abnormal operating cash flow + abnormal production-abnormal discretionary expenses} \tag{6}$$

2.4. Earnings Quality Measurement

In this research, earnings quality consists of persistence, value relevance, and predictability. The original model of earnings persistence can be seen in equation 7 (Demerjian *et al.*, 2013; Francis *et al.*, 2004; Li, 2019). The coefficient of *b1* in equation 7 is an indicator of earnings persistence.

$$ROA_{t+1} \, or \, ROA_{t+1,t+3} = a + b1 \, ROA_t + e \qquad (7)$$

Earnings value relevance and predictability are measured by the relationship between stock return and current and future earnings. The original model of earnings value relevance and predictability can be seen in equation 8 (Collins *et al.*, 1994).

$$RETURN = a + b1 \, E_{t-1} + b2E_t + b3 \, E_{t+1,t+3} + b4 \, RETURN_{t+1,t+3} + e \qquad (8)$$

The value of *b2* is the current earnings response coefficient which reflects the value relevance of earnings. The value of *b3* is the future earnings response coefficient as an indicator of earnings predictability where information about future earnings is reflected in the current stock return. The original model of earnings persistence and earnings value relevance and predictability will be adjusted with the research hypothesis. The details of the adjusted model can be seen in the section "Data Analysis".

2.5. Control Variables

This research uses control variables relate to managerial ability, earnings management, and earnings quality. First, this research uses earnings targets as a motivation to engage in earnings management, include in avoid losses, and beat previous earnings (Roychowdhury, 2006). Earnings target beating is a dummy variable, score 1 if it occurs when net income or change of net income is between 0% and 5% relative to total assets in the beginning period of t, and score 0 if otherwise (Gunny, 2010). Second, this research uses earnings volatility, sales volatility, and operating cash flow volatility to control earnings quality determinant factors (Dechow and Dichev, 2002; Demerjian *et al.*, 2013) and performance uncertainty as a trigger to engage in earnings management (Demerjian *et al.*, 2020). Earnings volatility, sales volatility, and operating cash flow volatility are measured by the standard deviation of earnings, sales, and operating cash flow of the last five periods (Demerjian *et al.*, 2020). Third, this research uses sales growth to control firms' growth and economic shocks to managerial performance (Demerjian *et al.*, 2013). Sales growth is measured by the change in sales divided by total assets (Demerjian *et al.*, 2013). Fourth, this research uses return on assets, firms' size, and market to assets ratio to control if abnormal activities come from real manipulation or business condition (Roychowdhury, 2006). Return on assets is measured by net income divided by total assets, firms' size is measured by the natural logarithm of total assets, and market to assets ratio is measured by the market value of equity divided by total assets (Roychowdhury, 2006).

2.6. Data Analysis

This research tests the H1 by regressing the managerial ability (MA_Rank) on real earnings management. Real earnings management includes over-sales activities (OS), over-production activities (OP), discretionary expenses cutting activities (DEC), and aggregate of first three activities (REM). Test of H1 is as in equation 9. H1 is accepted if the coefficient of *b2* in equation 9 is significant.

$$REM\ or\ OS\ or\ OP\ or\ DEC = a + b_1 MA_{Rank} + b_2 MA_{Rank}\ x\ TARGET + b_3 TARGET +$$
$$controls + \sum Firm_{effect} + \sum Year_{effect} + e \tag{9}$$

Test of H2 aims to examine the effect of managerial ability on earnings persistence, value relevance, and predictability. Analysis of earnings persistence use equation 7 that has been adjusted with managerial ability as in equation 10 (Demerjian *et al.*, 2012). Equation 10 aims to regresses the interaction of managerial ability and current return on assets (ROA$_t$ x MA_Rank) on return on assets in the next year (ROA$_{t+1}$) and average of return on assets in the next three years (ROA$_{t+1,t+3}$). H2a is accepted if the coefficient of *b2* in equation 10 is positive and significant.

$$ROA_{(t+1)}\ or\ ROA_{(t+1,t+3)} = a + b_1 ROA_t + b_2 ROA_t\ x\ MA\_Rank + b_3 MA\_Rank +$$
$$controls + \sum Firm_{Effect} + \sum Year_{Effect} + e \tag{10}$$

Analysis of earnings persistence use equation 8 that has been adjusted with managerial ability as in equation 11 (Fanani and Merbaka, 2020; Juliani and Siregar, 2018). Equation 11 aims to regresses the interactions of managerial ability and current earnings (E$_t$ x MA_Rank) and managerial ability and next three years earnings (E$_{t+1,Et+3}$ x MA_Rank) on stock return (RETURN). H2b and H2c are accepted if the coefficient of *b6* and *b7* in equation 11 is positive and significant.

$$RETURN = a + b_1 E_{(t-1)} + b_2 E_t + b_3 E_{(t+1,t+3)} + b_4\ RETURN_{(t+1,t+3)} + b_5 MA\_Rank +$$
$$b_6 E_t\ x\ MA\_Rank + b_7 E_{(t+1,t+3)}\ x\ MA\_Rank + controls + \sum Firm_{Effect} + \tag{11}$$
$$\sum Year_{Effect} + e$$

Alternative test for H2 also can use the original model of equations 7 and 8. The earnings persistence model can be examined separately between high-ability managers and other managers. The earnings value relevance and predictability model also can be examined separately between high-ability managers and other managers.

Test of H3 aims to examine the effect of real earnings management on earnings persistence, value relevance, and predictability. Analysis of earnings persistence use equation 7 that has been adjusted with real earnings management as in equation 12 (Li, 2019). Equation 12 aims to regresses the interaction of real earnings management and current return on assets (ROA$_t$ x (REM or OS or OP or DEC)) on return on assets in the next year (ROA$_{t+1}$) and average of return on assets in the next three years (ROA$_{t+1,t+3}$). H3a is accepted if the coefficient of *b2* in equation 12 is significant.

$$ROA_{(t+1)}\ or\ ROA_{(t+1,t+3)} = a + b_1 ROA_t + b_2 ROA_t\ x(REM\ or\ OS\ or\ OP\ or\ DEC) +$$
$$b_3(REM\ or\ OS\ or\ OP\ or\ DEC) + controls + \sum Firm_{Effect} + \tag{12}$$
$$\sum Year_{Effect} + e$$

Analysis of earnings persistence use equation 8 that has been adjusted with real earnings management as in equation 13 (Ha and Thomas, 2020). Equation 13 aims to regresses the interactions of real earnings management and current earnings (E$_t$ x (REM or OS or OP or DEC)) and real earnings management and next three years earnings (E$_{t+1,Et+3}$ x (REM or OS or

OP or DEC)) on stock return (RETURN). H3b and H3c are accepted if the coefficient of *b6* and *b7* in equation 13 is significant.

$$
\begin{aligned}
RETURN = {} & a + b_1 E_{(t-1)} + b_2 E_t + b_3 E_{(t+1,t+3)} + b_4\, RETURN_{(t+1,t+3)} + b_5 (REM\ or \\
& OS\ or\ OP\ or\ DEC) + b_6 E_t\ x (REM\ or\ OS\ or\ OP\ or\ DEC) + b_7 E_{(t+1,t+3)} \\
& x (REM\ or\ OS\ or\ OP\ or\ DEC) + controls + \sum Firm_{Effect} + \\
& \sum Year_{Effect} + e
\end{aligned}
\tag{13}
$$

Test of H4 aims to examine the effect of real earnings management on earnings persistence, value relevance, and predictability by high-ability managers compared to other managers. Test of H4 uses the model of equations 12 and 13 that are examined separately based on the category of high-ability managers and other managers. H4a is accepted if the coefficient of *b2* in equation 12 for high-ability managers is positive and significant while for other managers it is insignificant or negative significant. H4b and H4c are accepted if the coefficients of *b6* and *b7* in equation 13 for high-ability managers are positive and significant while other managers are insignificant or significant with a negative sign. Details of variable definitions are in table 2.

Table 2. Variable Definition

Variable		Definition
Main Variables	MA-Rank	The rank of Managerial Ability
	REM	Real Earnings Management (Aggregate)
	OS	Over-Sales Activities
	OP	Over-Production Activities
	DEC	Discretionary Expenses Cutting Activities
Control Variables	TARGET	Earnings Target Beating
	EARN_VOL	Earnings Volatility
	SALES_VOL	Sales Volatility
	CFO_VOL	Operating Cash Flow Volatility
	SG	Sales Growth
	MVA	Market Value to Assets Ratio
	SIZE	Firms' Size
	ROA_t	Return on Assets period of t
Other Variables	ROA_{t+1}	Return on Assets period of t+1
	$ROA_{t+1,t+3}$	Average of Return on Assets for a period of t until the period of t+3
	RETURN	15 Months Stock Return
	$RETURN_{t+1,t+3}$	Total of 15 Months Stock Return for a period of t until the period of t+3
	E_{t-1}	Earnings to Market Value period of t-1
	E_t	Earnings to Market Value period of t
	$E_{t+1,t+3}$	Total of Earnings to Market Value for a period of t until the period of t+3

Source: previous research

3. Results and Discussions

3.1. *Descriptive Statistics*

Table 3 shows that the average managerial ability (MA-Rank) for the research sample is 0.534000. The average of real earnings management (REM) for the research sample is -0.00036 while the highest real earnings management comes from over-production activities (OP) which are 1.28245. The average of earnings (EARN_VOL), sales (SALES_VOL), and operating cash flow (CFO_VOL) volatilities for the research sample are 0.04828, 0.18027, and 0.06431 in a row. The average research sample has a sales growth of 0.12595 relative to total assets (SG) and has an equity market value of 1.00358 relative to total assets (MVA). The average size (SIZE) of sample firms is 28.16263. The average return on assets for the research sample is 0.05732.

Table 3. Descriptive Statistics

Variable	Minimum	Maximum	Mean	Std. Deviation
MA-Rank	0.10000	1.00000	0.53400	0.32500
REM	-1.17341	1.23074	-0.00036	0.16693
OS	-0.74445	0.50653	-0.00036	0.08872
OP	-1.28791	1.28245	0.00000	0.11796
DEC	-0.29931	0.21718	0.00000	0.03599
EARN_VOL	0.00154	1.05532	0.04828	0.08563
SALES_VOL	0.00791	3.51896	0.18027	0.26227
CFO_VOL	0.00429	0.49949	0.06431	0.05584
SG	-3.26780	14.20150	0.12595	0.59510
MVA	0.01066	17.94730	1.00358	1.84306
SIZE	24.85020	33.19881	28.16263	1.61768
ROA_t	-0.54847	2.65474	0.05732	0.14067
ROA_{t+1}	-0.54847	2.65474	0.06009	0.13842
$ROA_{t+1,t+3}$	-0.33908	1.13208	0.05743	0.10916
RETURN	-21.50000	0.99984	-0.38542	1.69038
$RETURN_{t+1,t+3}$	-30.57921	2.23808	-1.20312	3.15546
E_{t-1}	-19.20245	10.95808	-0.01091	1.06071
E_t	-5.78306	14.16050	0.09170	0.93204
$E_{t+1,t+3}$	-20.05798	13.64866	0.40285	1.74934

Source: statistical output

3.2. *Managerial Ability and Real Earnings Management*

Table 4 provides the results of managerial ability on real earnings management. It shows the results for each real earnings management measurement which are (1) aggregate of real earnings management activities, (2) over-sales, (3) over-production, and (4) discretionary expenses cutting.

Table 4. Managerial Ability and Real Earnings Management

Independent Variable	Coefficient			
	(1)	(2)	(3)	(4)
	–	–	–	–
MA-Rank	-0.001525	0.001012	-0.002806	0.000269
MA-Rank x TARGET	**0.006587***	**0.002958****	**0.003782***	**0.000154*****
TARGET	-0.023403	-0.002767	-0.021511	0.000875
EARN_VOL	-0.064072	-0.069964***	-0.01477	0.020662
SALES_VOL	0.032049	0.02034***	0.00472	0.00699
CFO_VOL	-0.271059**	-0.272545*	-0.032486	0.033973
SG	-0.035468*	-0.003826	-0.011365*	-0.020277*
ROA_t	-0.099319**	-0.044625***	-0.047596	-0.007098
SIZE	0.006063	0.000199	0.004312	0.001552**

Independent Variable	Coefficient			
	(1)	(2)	(3)	(4)
MVA	-0.002774	0.000265	-0.003574	0.000534
Constant	-0.143740	-0.000115	-0.096454	-0.047171
Dependent Variable	REM	OS	OP	DEC
Adj R-squared	0.037708	0.055045	0.006287	0.112473
F-statistic	4.311154*	5.922229*	4.534644*	11.70838*
Firm-Effect	Yes	Yes	Yes	Yes
Year-Effect	Yes	Yes	Yes	Yes

*Significant in 0.01, **Significant in 0.05, ***Significant in 0.10, (1) Real earnings management, (2) Over sales, (3) Over-production, (4) Discretionary expenses cutting

Source: statistical output

Table 4 shows that interaction between managerial ability and earnings target beating (MA-Rank x TARGET) has coefficient value of 0.006587 (significant in 0.01) for real earnings management (REM), 0.002958 (significant in 0.05) for over-sales activities (OS), 0.003782 (significant in 0.01) for over-production activities (OP), and 0.000154 (significant in 0.10) for discretionary expenses cutting (DEC). The result shows that managerial ability has a positive effect on real earnings management to beat earnings targets. The result is consistent with Demerjian *et al.* (2020) who find higher ability managers are more likely to engage in earnings management, especially efficient earnings management. A complex strategy, such as real earnings management, needs higher skill and knowledge of business operations so that managers can make it done to beat earnings target effectively. For example, managers have to know the fair discount price to boost up the sales volume, or knowledge about the optimal capacity to boost up the production, of knowledge about advertising and research and development activities effectiveness to cut its expenses.

3.3. Managerial Ability and Earnings Quality

Table 5 provides the results of managerial ability on earnings persistence. It shows the results for on return on assets in the next year (ROA_{t+1}) and average of return on assets in the next three years ($ROA_{t+1,t+3}$). Table 6 provides the results of managerial ability on earnings value relevance and predictability.

Table 5. Managerial Ability and Earnings Persistence

Independent Variable	Coefficient			
	(1)		(2)	
ROA_t	0.195693*	0.281538	0.597084*	0.53525*
ROA_t x MA-Rank			**0.028403***	**0.03808***
MA-Rank			0.002844*	0.003852*
TARGET	-0.003972	0.004958	-0.002665	0.000681
EARN_VOL	-0.414397*	-0.206812	-0.124953**	-0.120989*
SALES_VOL	-0.007251	0.009018	0.003999	0.005304
CFO_VOL	0.080321	0.047234	-0.004548	-0.019616
SG	-0.000346	0.009336	0.005502	0.005338
SIZE	0.012747	-0.000334	0.00094	-0.000272
MVA	-0.001596	0.019305	0.011925*	0.015197*
Constant	-0.289775	0.03227	-0.011997	0.015876
Dependent Variable	ROA_{t+1}	$ROA_{t+1,t+3}$	ROA_{t+1}	$ROA_{t+1,t+3}$
Adj R-squared	0.365071	0.328478	0.274053	0.356155
F-statistic	5.457402*	52.66686*	32.89975*	47.74268*
Firm-Effect	Yes	Yes	Yes	Yes
Year-Effect	Yes	Yes	Yes	Yes

*Significant in 0.01, **Significant in 0.05, (1) Original model of earnings persistence, (2) Managerial ability adjusted model of earnings persistence.

Source: statistical output

Table 5 shows that the interaction variable of return on assets period of t and managerial ability (ROA_t x MA-Rank) has a coefficient value of 0.028403 (significant in 0.01) for return on assets period of t+1 and 0.03808 (significant in 0.01) for an average of return on assets period of t+1 to the period of t+3. It indicates that managerial ability has a positive effect on earnings persistence. The result is consistent with Demerjian *et al.* (2013) who find that managerial ability increases earnings persistence. Higher ability managers can execute business strategy in a lower risk and more efficient way. Higher ability managers also can maintain business operations to be persistent and sustainable, thus, earnings also can be generated persistently in the current and future period.

Table 6. Managerial Ability, Value Relevance, and Predictability of Earnings

	Coefficient	
	(1)	(2)
Independent Variable		
E_{t-1}	0.157092*	0.170945*
E_t	0.407208*	0.187879
$E_{t+1,t+3}$	0.213838*	0.090502
$RETURN_{t+1,t+3}$	0.124682*	0.084186*
E_t x MA-Rank		**0.032479***
$E_{t+1,t+3}$ x MA-Rank		**0.051704***
MA-Rank		0.009138
TARGET	0.290643*	0.205044*
EARN_VOL	-4.404071*	-3.980408*
SALES_VOL	0.289237	0.249984
CFO_VOL	0.934489	-0.341094
SG	-0.060486	-0.000825
SIZE	0.710834*	-0.031896
MVA	-0.38126*	-0.075991**
Constant	-20.12852	0.719567
Adj R-squared	0.247789	0.193651
F-statistic	3.485314*	15.49524*
Firm-Effect	Yes	Yes
Year-Effect	Yes	Yes

*Significant in 0.01, **Significant in 0.05, ***Significant in 0.10, (1) Original model of value relevance and predictability, (2) Managerial ability adjusted model of value relevance and predictability.
Source: statistical output

Table 6 shows that the interaction variable of current earnings and managerial ability (E_t x MA-Rank) has a coefficient value of 0.032479 (significant in 0.10). It indicates that managerial ability has a positive effect on earnings value relevance. The result is consistent with Fanani and Merbaka (2020) who find that managerial ability increases market responses on earnings information. Higher ability managers have the skill to elaborate business information into accurate earnings information. Further, accurate earnings information represents the actual firms' condition that can be useful in decision making. It helps stakeholders, such as an investor, to decide by using earnings information. In this case, investment decision-making is reflected by stock return.

Table 6 also shows that the interaction variable of current earnings and managerial ability ($E_{t+1,t+3}$ x MA-Rank) has a coefficient value of 0.051704 (significant in 0.01). It indicates that managerial ability has a positive effect on earnings predictability. The result is consistent with Juliani and Siregar (2018) who find that higher ability managers increase earnings predictability. Since higher ability managers provide sustainable and persistent earnings over a period, they help stakeholders to predict future earnings. In this case, higher earnings predictability is

captured by the reflection of future earnings into the current stock return. It shows that investors also make a decision based on the future condition of earnings.

3.4.   *Real Earnings Management and Earnings Quality*

Table 7 shows that the interaction between real earnings management and current return on assets (REM x ROA_t) has a coefficient value of -0.751319 (significant in 0.01) for return on assets period of t+1 and -0.29926 (significant in 0.01) for the average of return on assets period of t+1 to the period of t+3. It indicates that real earnings management has a negative effect on earnings persistence. The result is consistent with Li (2019) who finds that real earnings management reduces earnings persistence. Real earnings management, especially the opportunistic one, aims to mislead the stakeholders by covering up the real performance. It makes the performance is less persistent and not a permanent one.

Also, the interaction between over-sales activity and current return on assets (OS x ROA_t) has a coefficient value of -1.279971 (significant in 0.01) for return on assets period of t+1 and -0.385443 (significant in 0.05) for the average of return on assets period of t+1 to the period of t+3. Interaction between over-production activity and current return on assets (OP x ROA_t) has a coefficient value of -0.461884 (insignificant) for return on assets period of t+1 and -0.05818 (insignificant) for the average of return on assets period of t+1 to the period of t+3. Interaction between discretionary expenses cutting activity and current return on assets (DEC x ROA_t) has a coefficient value of -0.201114 (insignificant) for return on assets period of t+1 and -0.511155 (insignificant) for the average of return on assets period of t+1 to the period of t+3. It indicates that the negative effect of real earnings management on earnings persistence is pronounced more for over-sales than over-production and discretionary expenses cutting activities. For example, firms implement the discounted price to boost up the sales volume while the price discount strategy is only a permanent one, and hard for firms to recur it again in the future. When the discounted price is back to the normal price, the sales volume will be decreased. It makes sales are less sustainable, further, makes earnings are less persistent.

In Table 8, interaction variable of real earnings management and current earnings (E_t x REM), over-sales activity and current earnings (E_t x OS), over-production activity and current earnings (E_t x OP), and discretionary expenses cutting activity and current earnings (E_t x REM) have a coefficient value of -1.486007 (significant in 0.01), -2.117688 (significant in 0.05), -2.420249 (significant in 0.01), and -3.06032 (significant in 0.05). It indicates that real earnings management includes all activities of over-sales, over-production, and discretionary expenses cutting, which have a negative effect on earnings value relevance. The result is consistent with Subekti (2010) and Mostafa (2017) who find that earnings management reduces the value relevance of earnings. Since real earnings management aims to cover up the actual performance, earnings are not relevant to represent the performance condition. It makes the decision-maker, such as an investor, use other information besides earnings to make an economic decision. For example, over-production activity is not relevant to capture the firms' ability to fulfill higher market demand. Over-production activity is only used to cover up the inefficient production.

Table 8 also shows that the interaction variable of real earnings management and future earnings ($E_{t+1,t+3}$ x REM) has a coefficient value of -1.24424 (significant in 0.01). It indicates that real earnings management has a negative effect on earnings predictability. The result is consistent with Filip *et al.* (2015), Leggett *et al.* (2015), Tabassum *et al.* (2015), and Vorst (2016) who find that real earnings management fails to predict future performance. Real earnings management provides less persistent, sustainable, and permanent earnings thus, it makes future earnings cannot be predicted.

In addition, interaction variable of over-sales activity and future earnings ($E_{t+1,t+3}$ x OS) has coefficient value of -1.839116 (significant in 0.01). Interaction variable of over-production activity and future earnings ($E_{t+1,t+3}$ x OP) has coefficient value of -1.932004 (significant in 0.01). Interaction variable of discretionary expenses cutting activity and future earnings ($E_{t+1,t+3}$ x

DEC) has coefficient value of 0.024739 (insignificant). It indicates that the negative effect on real earnings management on earnings predictability is pronounced more for over-sales and over-production than discretionary expenses cutting activities. For example, the discounted price cannot predict future sales since it is not the fair price of the product. Over-production also cannot predict future production efficiency since over-production generates over-inventory that cannot be absorbed by the market.

Table 7. Real Earnings Management and Earnings Persistence

Independent Variables	Coefficient									
	(1)				(2)					
ROAt	0.195693*	0.281538	0.1511111*	0.009268	0.55514*	0.278066*	0.555128*	0.280292*	0.400428*	0.279764*
REM x ROAt			-0.751310*	-0.29926*						
REM			0.01678	0.005619						
OS x ROAt					1.27997	-0.385443**				
OS					0.05751	0.03986				
OP x ROAt							-0.461884	-0.05818		
OP							0.033154	0.010565		
DEC x ROAt									-0.201114	-0.511155
DEC									0.033299	0.170071
TARGET	-0.003972	0.004958	-0.002907	-0.001367	0.000185	0.005043	0.000997	0.005033	0.000525	0.004934**
EARN_VOL	-0.414397*	-0.206812	-0.401132*	-0.454491*	0.18922	-0.205187*	0.185912	-0.206359*	0.188544	-0.211069*
SALES_VOL	-0.007251	0.009018	0.00167	-0.003325	0.00736	0.008651	0.007006	0.009026	0.007246	0.008495
CFO_VOL	0.080321	0.047234	0.070855	0.062737	0.03063	0.048753	0.032061	0.045803	0.046251	0.041078
SG	-0.000346	0.009336	0.000802	0.002022	0.00847	0.009412	0.008307	0.009392***	0.008201	0.013783**
SIZE	0.012747	-0.000334	0.019524	-0.012238	0.00114	-0.000259	0.001145	-0.000331	0.000986	-0.000498
MVA	-0.001596	0.019305	-0.004284	-0.00265	0.019326*	0.019323*	0.014987*	0.019325*	0.013019*	0.019239*
Constant	-0.289775	0.032270	-0.479631	0.422629	0.00751	0.029774	-0.006507	0.032183	0.000582	0.037212
Dependent Variable	ROAt+1	ROAt+1,t+3	ROAt+1	ROAt+1,t+3	ROAt+1	ROAt+1,t+3	ROAt+1	ROAt+1,t+3	ROAt+1	ROAt+1,t+3
Adj R-squared	0.365071	0.328478	0.376195	0.684904	0.27363	0.32883	0.2658	0.326959	0.264148	0.329343
F-statistic	5.457402*	52.66686*	5.590902*	17.54704*	32.83555*	42.39946*	31.59133*	42.04948*	31.33282*	42.49578*
Firm-Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Significant in 0.01, **Significant in 0.05, ***Significant in 0.10, (1) Original model of earnings persistence, (2) Real earnings management adjusted model of earnings persistence.

Source: statistical output

Table 8. Real Earnings Management, Value Relevance, and Predictability of Earnings

Independent Variable	Coefficient				
	(1)	(2)			
E_{t-1}	0.157092*	0.195765*	0.253622*	0.124283**	0.149794**
E_t	0.407208*	0.296032*	0.340098*	0.250838*	0.332876*
$E_{t+1,t+3}$	0.213838*	0.269401*	0.268135*	0.226048*	0.222693*
$RETURN_{t+1,t+3}$	0.124682*	0.123708*	0.12339*	0.120126*	0.120848*
E_t x REM		-1.486007*			
$E_{t+1,t+3}$ x REM		-1.24424*			
REM		-0.510255			
E_t x OS			-2.117688**		
$E_{t+1,t+3}$ x OS			-1.839116*		
OS			-0.123703		
E_t x OP				-2.420249*	
$E_{t+1,t+3}$ x OP				-1.932004*	
OP				-1.259178**	
E_t x DEC					-3.06032**
$E_{t+1,t+3}$ x DEC					0.024739
DEC					1.996278
TARGET	0.290643*	0.283023**	0.258804**	0.281064**	0.276459**
EARN_VOL	-4.404071*	-4.344208*	-4.327694*	-4.418749*	-4.682578*
SALES_VOL	0.289237	0.224831	0.233276	0.29835	0.366536
CFO_VOL	0.934489	1.045733	0.893237	1.764745	1.075283
SG	-0.060486	-0.129687	-0.061938	-0.026453	0.147776
SIZE	0.710834*	0.613548*	0.636427*	0.683283*	0.755695*
MVA	-0.38126*	-0.387727*	-0.38711*	-0.391163*	-0.387916*
Constant	-20.12852	-17.34527	-17.97143	-19.38613	-21.4056
Adj R-squared	0.247789	0.293137	0.283465	0.283568	0.25219
F-statistic	3.485314*	4.04715*	3.906834*	3.908309*	3.477971*
Firm-Effect	Yes	Yes	Yes	Yes	Yes
Year-Effect	Yes	Yes	Yes	Yes	Yes

*Significant in 0.01, **Significant in 0.05, (1) Original model of value relevance and predictability, (2) Real earnings management adjusted model of value relevance and predictability.

Source: statistical output

3.5. *Managerial Ability, Real Earnings Management, and Earnings Quality*

Table 9 shows that the interaction variable of real earnings management and current return on assets (REM x ROA_t) by high-ability managers has a coefficient value of 0.243598 (significant in 0.01) for return on assets period of t+1 and 0.240483 (significant in 0.10) for an average of return on assets period of t+1 to the period of t+3. It indicates that real earnings management by high-ability managers increases earnings persistence. On the other hand, the interaction variable of real earnings management and current return on assets (REM x ROA_t) by other managers has a coefficient value of -0.943756 (significant in 0.01) for return on assets period of t+1 and -0.334802 (significant in 0.01) for an average of return on assets period of t+1 to the period of t+3. It indicates that real earnings management by other managers reduces earnings persistence. The result shows that real earnings management by high-ability managers has a positive effect on earnings persistence compared to other managers. High-ability managers are more likely to engage in efficient real earnings management to improve earnings persistence. For example, high-ability managers engage in over-sales activity as a signal of firms' strong market position to generate sustainable sales in the future.

Also, the current return on assets (ROA_t) by high-ability managers in the original model (1) has a coefficient value of 0.427328 (significant in 0.01) for return on assets period of t+1 and 0.137091 (significant in 0.05) for the average of return on assets period of t+1 to the period of t+3. On the other hand, the current return on assets (ROA_t) by other managers in the original

model (1) has a coefficient value of 0.03912 (insignificant) for return on assets period of t+1 and -0.028047 (insignificant) for the average of return on assets period of t+1 to the period of t+3. The result shows that persistent earnings are pronounced more for high-ability managers than other managers.

Table 10 shows that the interaction variable of over-sales activity and current return on assets (OS x ROA_t) by high-ability managers has a coefficient value of 0.052488 (significant in 0.10) for return on assets period of t+1 and 0.310079 (significant in 0.10) for an average of return on assets period of t+1 to the period of t+3. The interaction variable of over-production activity and current return on assets (OP x ROA_t) by high-ability managers has a coefficient value of 0.460314 (significant in 0.10) for return on assets period of t+1 and 0.578193 (significant in 0.05) for the average of return on assets period of t+1 to the period of t+3. The interaction variable of discretionary expenses cutting activity and current return on assets (DEC x ROA_t) by high-ability managers has a coefficient value of 0.979566 (significant in 0.10) for return on assets period of t+1 and 0.24514 (significant in 0.10) for an average of return on assets period of t+1 to the period of t+3.

The interaction variable of over-sales activity and current return on assets (OS x ROA_t) by other managers has a coefficient value of -1.792776 (significant in 0.01) for return on assets period of t+1 and -0.610163(significant in 0.01) for the average of return on assets period of t+1 to the period of t+3. The interaction variable of over-production activity and current return on assets (OP x ROA_t) by other managers has a coefficient value of -1.447059 (significant in 0.01) for return on assets period of t+1 and -0.423576 (significant in 0.05) for the average of return on assets period of t+1 to the period of t+3. The interaction variable of discretionary expenses cutting activity and current return on assets (DEC x ROA_t) by other managers has a coefficient value of 0.328424 (insignificant) for return on assets period of t+1 and 0.359872 (insignificant) for the average of return on assets period of t+1 to the period of t+3. The result shows that all real earnings management activities by high-ability managers have a positive effect on earnings persistence compared to other managers.

Table 11 shows that the interaction variable of real earnings management and current earnings (E_t x REM) by high-ability and other managers has a coefficient value of 2.093692 (significant in 0.05) and 0.389448 (insignificant). It indicates that real earnings by high-ability managers increase earnings value relevance while real earnings management by other managers does not affect earnings value relevance. The result shows that real earnings management by high-ability managers has a positive effect on earnings value relevance compared to other managers. High-ability managers are more likely to engage in efficient real earnings management to improve earnings value relevance. For example, high-ability managers engage in over-production activity to represent that firms have a high capacity of production. Over-production activity can be used by stakeholders to evaluate production performance when they making a decision. Also, current earnings (E_t) in the original model (1) by high-ability managers have a coefficient value of 1.332254 (significant in 0.01) while other managers have a coefficient value of -0.178241 (significant in 0.05). It indicates that earnings value relevance is pronounced more for high-ability managers than other managers.

Table 9. Managerial Ability, Real Earnings Management, and Earnings Persistence

Independent Variables	Coefficient							
	Other Managers				High-Ability Managers			
	(1)		(2)		(1)		(2)	
ROA_t	0.427328*	0.137091**	0.39702*	0.220375*	0.03912	-0.028047	0.037696	-0.026862
REM x ROA_t			**0.243598***	**0.240483***			**-0.943756***	**-0.334802***
REM			0.045071*	0.001101			-0.071901*	-0.029619**
TARGET	-0.005333	-0.022891	-0.001369	-0.005701	-0.002617	0.00256	-0.002076	0.002789
EARN_VOL	-0.44249*	-0.833563*	-0.417238*	-0.388516*	-0.08732	-0.04	-0.08434	-0.03859
SALES_VOL	0.018219	0.026787	0.019487	0.016083	-0.012204	-0.019136	-0.009543	-0.018954
CFO_VOL	-0.096632	0.618436**	-0.131302	-0.098	0.039928	-0.062477	0.036911	-0.061908
SG	0.000586	0.002688	-0.001149	0.003561	0.034201*	0.02115*	0.036872*	0.02243*
SIZE	0.003515	0.014373	0.005281	0.002129	-0.005571	-0.031084*	-0.004764	-0.031094*
MVA	0.00834	-0.008903	0.003826	0.008367	0.001148	0.001876	0.00081	0.001771
Constant	-0.04123	-0.33872	-0.08741	0.004281	0.215114	0.939069	0.190272	0.938457
Dependent Variable	ROA_{t+1}	$ROA_{t+1,t+3}$	ROA_{t+1}	$ROA_{t+1,t+3}$	ROA_{t+1}	$ROA_{t+1,t+3}$	ROA_{t+1}	$ROA_{t+1,t+3}$
Adj R-squared	0.08738	0.504397	0.083776	0.060845	0.632295	0.824755	0.65788	0.828628
F-statistic	3.78861*	4.339916*	3.130473*	2.509543*	10.72831*	27.62553*	11.6811*	27.85757*
Firm-Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Significant in 0.01, **Significant in 0.05, ***Significant in 0.10, (1) Original model of earnings persistence, (2) Real earnings management adjusted model of earnings persistence.

Source: statistical output

Table 10. Managerial Ability, Each Activity of Real Earnings Management, and Earnings Persistence

Independent Variable	Coefficient											
	Other Managers						High-Ability Managers					
ROA_t	0.426791*	0.251963*	0.39309*	0.210671*	0.41448*	0.24789*	0.033031	-0.030571	0.017797	-0.034174	0.034009	-0.022127
$ROA_t \times OS$	**0.052488*****	**0.310079*****					**-1.792776***	**-0.610163***				
OS	0.063372***	0.01577***					-0.086944**	0.027819				
$ROA_t \times OP$			**0.460314*****	**0.578193*****					**-1.447059***	**-0.423576****		
OP			0.032515***	0.025481***					-0.125674*	-0.037628***		
$ROA_t \times DEC$					**0.979566*****	**0.24514*****					**0.328424**	**0.359872**
DEC					0.180282***	0.033862***					-0.10032	-0.126107**
TARGET	-0.00279	-0.00774	-0.00326	-0.00593	-0.00698		-0.00265	0.00256	-0.00197	0.002763	-0.00278	0.002746
EARN_VOL	-0.444691**	-0.415943*	-0.407968**	-0.378883*	-0.443179*	-0.409127*	-0.091028	-0.041609	-0.067365	-0.034086	-0.068159	-0.064194
SALES_VOL	0.01909	0.015512	0.017891	0.015523	0.021358	0.0155	-0.008976	-0.017848	-0.012053	-0.019165	-0.01383	-0.017214
CFO_VOL	-0.09621	-0.0699	-0.13727	-0.1087	-0.10856	-0.07239	0.075776	-0.05136	-0.01886	-0.07984	0.042403	-0.06562
SG	0.000334	0.003765	-0.000853	0.002592	-0.000835	0.002352	0.036238*	0.021855*	0.037758*	0.022238*	0.031743**	0.024371*
SIZE	0.003772	0.000932	0.005127	0.002488	0.004335	0.001282	-0.004982	-0.030848*	-0.010988	-0.032724*	-0.007885	-0.028343*
MVA	0.007939	0.010857	0.00267	0.006185	0.008151	0.010748	-0.003	0.000456	0.001914	0.002104	0.001169	0.001754
Constant	-0.04871	0.036039	-0.08187	-0.0038	-0.06159	0.025704	0.198748	0.932556	0.369301	0.985723	0.280332	0.862002
Dependent Variable	ROA_{t+1}	$ROA_{t+1,t+3}$	ROA_{t+1}	$ROA_{t+1,t+3}$	ROA_{t+1}	$ROA_{t+1,t+3}$	ROA_{t+1}	$ROA_{t+1,t+3}$	ROA_{t+1}	$ROA_{t+1,t+3}$	ROA_{t+1}	$ROA_{t+1,t+3}$
Adj R-squared	0.080174	0.059204	0.0834	0.06434	0.081346	0.058702	0.663703	0.828803	0.646518	0.825776	0.631603	0.82555
F-statistic	3.03087*	2.466274*	3.120032*	2.602213*	3.063208*	2.453062*	11.96224*	27.89088*	11.15923*	27.32705*	10.52308*	27.28577*
Firm-Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Significant in 0.01, **Significant in 0.05, ***Significant in 0.10

Source: statistical output

Table 11. Managerial Ability, Real Earnings Management, Value Relevance, and Predictability of Earnings

Coefficient	High-Ability Managers		Other Managers	
	(1)	(2)	(1)	(2)
E_{t-1}	1.558417*	0.885736*	-0.054536	-0.064473
E_t	**1.332254***	0.719707*	**-0.178241****	-0.131932
$E_{t+1,t+3}$	**0.76552***	0.473703*	**-0.080598****	-0.110667**
$RETURN_{t+1,t+3}$	0.172504*	0.076869**	-0.082359*	-0.079475*
E_t x REM		**2.093692****		**0.389448**
$E_{t+1,t+3}$ x REM		**2.517135***		**-0.420516****
REM		2.296205*		0.103058
TARGET	0.308953	0.215555	0.178564***	0.182723***
EARN_VOL	3.589529	1.406635	0.875476	0.915127
SALES_VOL	-0.533308	0.234658	0.341101	0.305375
CFO_VOL	6.587555	-6.593128*	-0.691045	-1.067762
SG	-0.373508**	-0.3003***	-0.310818	-0.274947
SIZE	2.075025*	0.020616	0.457998**	0.390493***
MVA	-1.086148*	-0.765949*	-0.00599	-0.004462
Constant	-57.9837	0.007454	-13.42161	-11.48444
Adj R-squared	0.08738	0.433297	0.220796	0.224554
F-statistic	3.78861*	13.72499*	2.559765*	2.552046*
Firm-Effect	Yes	Yes	Yes	Yes
Year-Effect	Yes	Yes	Yes	Yes

*Significant in 0.01, **Significant in 0.05, (1) Original model of value relevance and predictability, (2) Real earnings management adjusted model of value relevance and predictability.

Source: statistical output

Table 11 also shows that the interaction variable of real earnings management and future earnings ($E_{t+1,t+3}$ x REM) by high-ability and other managers has a coefficient value of 2.517135 (significant in 0.01) and -0.420516 (significant in 0.05). It indicates that real earnings by high-ability managers increase earnings predictability while real earnings by other managers reduce earnings predictability. The result shows that real earnings management by high-ability managers has a positive effect on earnings predictability compared to other managers. High-ability managers are more likely to engage in efficient real earnings management to improve earnings predictability. For example, high-ability managers engage in the over-sales activity by using lean sales credit to represent that firms have a high ability of receivable collection. It can be used to predict higher credit sales with higher receivable collection ability in the future. Also, future earnings ($E_{t+1,t+3}$) in the original model (1) by high-ability managers have a coefficient value of 0.76552 (significant in 0.01) while other managers have a coefficient value of -0.080598 (significant in 0.05). It indicates that earnings predictability is pronounced more for high-ability managers than other managers.

Table 12. Managerial Ability, Each Activity of Real Earnings Management, Value Relevance, and Predictability of Earnings

	Coefficient					
	High-Ability Managers			**Other Managers**		
E_{t-1}	1.047019*	1.144967*	1.032251*	-0.08457	-0.048469	-0.047824
E_t	0.855029*	0.389015***	0.726071*	-0.102483	-0.166085***	-0.167799***
$E_{t+1,t+3}$	0.388771*	0.342255*	0.312686*	-0.125079*	-0.086958**	-0.088289**
$RETURN_{t+1,t+3}$	0.074417**	0.052837	0.057815	-0.0851*	-0.081728*	-0.082974*
E_t x OS	6.943422***			0.65506		
$E_{t+1,t+3}$ x OS	3.362184**			-0.855554*		
OS	-0.315056			0.692498		
E_t x OP		8.325544**			-0.049591	
$E_{t+1,t+3}$ x OP		3.270094*			0.150149	
OP		-3.900786*			0.104084	
E_t x DEC			5.847283***			-0.8167
$E_{t+1,t+3}$ x DEC			-0.561892			0.397877
DEC			-1.747474			-0.771394
TARGET	0.156159	0.097688***	0.341114	0.162352	0.182909***	0.17454***
EARN_VOL	3.054991	2.421862	2.239723	1.121317	0.876176	0.965602
SALES_VOL	0.210991	0.237956	0.374492	0.285578	0.329106	0.350447
CFO_VOL	-6.298297*	-5.841556	-7.016457*	-0.856779	-0.764544	-0.862642
SG	-0.202226	-0.076079	0.195347	-0.319115	-0.302173	-0.335365***
SIZE	-0.024443	0.036117**	-0.049166	0.424341**	0.438299**	0.453138**
MVA	-0.667952*	-0.830924	-0.669354*	-0.00025	-0.005466	-0.000625
Constant	1.107411	-0.451266	1.657418	-12.44324	-12.86182	-13.27996
Adj R-squared	0.413974	0.455311	0.336856	0.232742	0.216579	0.217131
F-statistic	12.75668*	14.91192*	9.454031*	2.625809*	2.481695*	2.486515*
Firm-Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year-Effect	Yes	Yes	Yes	Yes	Yes	Yes

*Significant in 0.01, **Significant in 0.05, **Significant in 0.10

Source: statistical output

Table 12 shows that interaction variable of over-sales activity and current earnings (E_t x OS), over-production activity and current earnings (E_t x OP), and discretionary expenses cutting activity and current earnings (E_t x DEC) by high-ability managers have a coefficient value of 6.943422 (significant in 0.10), 8.325544 (significant in 0.05), and 5.847283 (significant in 0.10). Interaction variable of over-sales activity and current earnings (E_t x OS), over-production activity and current earnings (E_t x OP), and discretionary expenses cutting activity and current earnings (E_t x DEC) by other managers have a coefficient value of 0.65506 (insignificant), -0.049591 (insignificant), and -0.8167 (insignificant). The result shows that all real earnings management activities by high-ability managers have a positive effect on earnings value relevance compared to other managers.

Table 12 also shows that interaction variable of over-sales activity and future earnings ($E_{t+1,t+3}$ x OS), over-production activity and current earnings ($E_{t+1,t+3}$ x OP), and discretionary expenses cutting activity and current earnings ($E_{t+1,t+3}$ x DEC) by high-ability managers have coefficient value of 3.362184 (significant in 0.05), 3.270094 (significant in 0.01), and -0.561892 (insignificant). Interaction variable of over-sales activity and future earnings ($E_{t+1,t+3}$ x OS), over-production activity and current earnings ($E_{t+1,t+3}$ x OP), and discretionary expenses cutting activity and current earnings ($E_{t+1,t+3}$ x DEC) by other managers have coefficient value of -0.855554 (significant in 0.01), 0.150149 (insignificant), and 0.397877 (insignificant). The result shows that positive effect of real earnings management on earnings predictability by high-ability managers is pronounced more for over-sales and over-production activities than discretionary expenses one.

3.6. Discussion

This research examines the effect of managerial ability on real earnings management and earnings quality, the role of higher ability managers between real earnings management and earnings quality. The first result shows that, statistically, managerial ability increases real earnings management to beat earnings targets. It indicates that H1 is accepted where managerial ability affects real earnings management. This result is consistent with Demerjian *et al.* (2020) who find that higher ability managers engage more in earnings management than other managers. Real earnings management requires higher knowledge and skill of firms' business activities so it can be performed well. Higher ability managers have higher skill to perform a complex strategy such real earnings management. Like other managers, higher ability managers also have pressure to achieve a certain level of earnings. Higher ability managers motivate to engage real earnings management to beat earnings targets.

The second result shows that, statistically, managerial ability increases earnings persistence, value relevance, and predictability. H2a is accepted where managerial ability has a positive effect on earnings persistence. H2b is accepted where managerial ability has a positive effect on earnings predictability. H2c is accepted where managerial ability has a positive effect on earnings value relevance. In general, managerial ability has a positive effect on earnings quality. The result is consistent with Demerjian *et al.* (2013), Fanani and Merbaka (2020), and Juliani and Siregar (2018) who find that managerial ability improves earnings quality. Higher earnings quality can be provided if managers have higher knowledge, skill, and experience of firms and industry operational businesses. If managers have higher knowledge, skill, and experience, they can provide earnings that can represent firms' real condition. Higher ability managers use their knowledge, skill, and experience to improve earnings ability to represent and communicate firms' condition and performance.

The third result shows that, statistically, real earnings management reduces earnings persistence, value relevance, and predictability. H3a is accepted where real earnings management affects earnings persistence. H3b is accepted where real earnings management affects earnings predictability. H3c is accepted where real earnings management affects earnings value relevance. In general, real earnings management has a negative effect on earnings quality. The result is consistent with Cohen *et al.* (2011) and Meini and Siregar (2014) who find that earnings management reduces information quality. In an opportunistic view, real earnings management aims to mislead stakeholders about the real performance. By deviating the normal activities, stakeholders cannot evaluate the normal business activities of the firms. Earnings information that is generated by real earnings management behavior does not represent and communicate firms' condition. The inability of earnings to represent and communicate firms' condition indicates that earnings quality is reduced.

The fourth real earnings management by higher ability managers increases earnings persistence, value relevance, and predictability. H4a is accepted where real earnings management by high-ability managers has a positive effect on earnings persistence compared to other managers. H4b is accepted where real earnings management by high-ability managers has a positive effect on earnings value relevance compared to other managers. H4c is accepted where real earnings management by high-ability managers has a positive effect on earnings predictability compared to other managers. In general, real earnings management by higher ability managers increases earnings quality. The result is consistent with Huang and Sun (2017) and Demerjian *et al.* (2020) who find that earnings management by higher ability managers can predict future performance. Higher ability managers can use their ability both to engage real earnings management and to improve earnings quality. In this case, higher ability managers engage in efficient real earnings management. Efficient real earnings management allows earnings to generate higher information quality to represent and communicate firms' real condition. Since high-ability managers have more knowledge, skill, experience, and expertise

about firms' business operational, they can differentiate the efficient aspects from opportunistic real earnings management.

This result contributes to provides comprehensive evidence of the relationship between managerial ability, real earnings management, and earnings quality. It is important to fill the findings gap between managerial ability and earnings management (e.g.(Demerjian *et al.*, 2020; Huang and Sun, 2017) as well as earnings management and earnings quality (e.g.(Filip *et al.*, 2015; Gunny, 2010; Ha and Thomas, 2020; Leggett *et al.*, 2015; Li, 2019; Meini ssand Siregar, 2014; Simamora, 2018, 2019; Tabassum *et al.*, 2015; Vorst, 2016).

4. Conclusions

This research aims to examine the effect of managerial ability on real earnings management and earnings quality. Based on the analysis, the managerial ability has a positive effect on real earnings management and earnings quality. This research also aims to examine the effect of real earnings management on earnings quality for all samples, a sample of higher ability managers, and a sample of non-higher ability managers. The result shows that real earnings management has a negative effect on earnings quality, while real earnings management by high-quality managers has a positive effect on earnings quality. The results indicate that higher ability managers use their knowledge, skill, and expertise to perform real earnings management and to increase earnings quality. Since real earnings management can reduce earnings quality, high-ability managers engage more inefficient than opportunistic real earnings management as a signaling tool to increase earnings quality.

This research implies firms choose higher-ability managers so they can increase earnings quality, especially with efficient real earnings management. This research also implies shareholders make an investment decision based on earnings information which is provided by higher ability managers.

This research has the limitation that earnings value relevance and predictability only consider investors or shareholders from the stock market as a decision-maker. Relevant decision-making and future performance prediction are not only made by investors or shareholders but also by other stakeholders, such as the government or creditors. Future research is expected to examine the value relevance and predictability of earnings from other stakeholders' points of view. Earnings predictability and earnings target also does not consider the analyst earnings forecast since it is hard to be accessed freely in Indonesia. Future research is expected to use an analyst earnings forecast since it is also used in investor decision-making.

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