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Operating Cash Flow Prediction: A Comparative Study of Earnings and Accruals

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ABSTRACT

Purpose : Accurate cash flow prediction is crucial for effective financial management in companies, facilitating informed strategic decisions related to investment, financing, and working capital management. This study investigates the comparative effectiveness of historical income-based and accrual-based models in predicting short-term cash flows.
Method : Using data from Bloomberg Terminal on 155 manufacturing companies listed on the Indonesia Stock Exchange (IDX) between 2011 and 2021, regression analysis was employed to examine the predictive power of both models, with cash flow as the dependent variable and historical income or accruals as the independent variable.
Findings : The findings reveal that the historical income-based model, with an R^2 value of 0.6809, significantly outperforms the accrual-based model in predicting short-term cash flows. This study suggests that historical income data provides more relevant and reliable information for forecasting future cash flows.
Novelty : The study uniquely contributes by comparing the predictive effectiveness of historical income-based and accrual-based models, specifically in the Indonesian manufacturing sector, an area underexplored in current literature.

INTRODUCTION

Cash flow management is vital, especially for factories in Indonesia. Think of cash flow like blood circulation in the human body: smooth flow ensures health, while blockages cause problems. Similarly, in business, poor cash flow management can lead to bankruptcy. Studies show that 82% of business failures stem from poor cash flow management (Olufemi et al., 2023). Despite their growth, Indonesian factories face challenges like volatile commodity prices and global economic pressures, which can disrupt their cash flow (Almomani et al., 2023; Al-Sharawi, 2021; Ball & Nikolaev, 2022; Nguyen & Nguyen, 2020; Noury et al., 2020; Senan, 2019). For instance, the 2018 US-China trade war negatively impacted Indonesian exports, causing difficulties for manufacturers reliant on international markets (Wangke, 2020).

In today's rapidly changing and uncertain business world, companies need to be adaptable and have flexible financial strategies. Understanding and predicting future cash flows is like having a financial roadmap, which is crucial for making informed business decisions (Dreher et al., 2024). Indonesian accounting standards also emphasize the importance of assessing a company's ability to finance operations and meet obligations when evaluating its financial health (Zhao et al., 2011).

Theories like agency theory and signalling theory further support the importance of accurate cash flow predictions. These predictions help align the interests of management and shareholders and signal the company's financial condition to internal and external parties. There is debate on the best way to predict cash flows. Some advocate using historical earnings, especially in uncertain times (Ball & Nikolaev, 2022; McInnis et al., 2022). Others argue for including accrual accounting, which records transactions when they occur, even if money has not changed hands yet, to improve accuracy (Barth et al., 2001; Nallareddy et al., 2020).

While much research exists on cash flow prediction, studies specifically on Indonesian manufacturing are limited. This study aims to fill that gap. The 2018 financial crisis at PT. XYZ, a major Indonesian manufacturer, illustrates the challenges. Despite strong past earnings, they failed to account for timing differences in cash flows,

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leading to a liquidity crisis (Fachrudin, 2020; Olufemi et al., 2023). This study highlights the gap between theory and practice in cash flow prediction (Gryglewicz et al., 2022).

The novelty of this research lies in its methodological approach and its specific focus on the Indonesian manufacturing sector. This area has been largely overlooked in the context of operating cash flow (OCF) prediction models. Unlike previous studies that primarily focus on developed markets, this research adopts an approach better suited to the characteristics of emerging markets like Indonesia. We employ robust panel regression analysis using STATA software, and the Chow and Hausman tests carefully guide model selection (Barth et al., 2001).

A key aspect of this study's novelty is its focus on comparing the predictive accuracy of historical earnings versus accrual-based models within the Indonesian context. While the majority of existing literature emphasizes the generalizability of predictive models across different economic environments, this study uniquely addresses the specific dynamics of an emerging market like Indonesia, where economic stability and market conditions differ significantly from those in developed countries. The empirical evidence provided demonstrates that historical earnings offer a more reliable and stable foundation for cash flow predictions in Indonesia, contrasting with the findings from studies conducted in more stable economic environments (Ball & Nikolaev, 2022; McInnis et al., 2022).

Furthermore, this research contributes to the literature by examining the disaggregation of accrual components, such as changes in accounts receivable, accounts payable, inventory, and depreciation, which has been relatively overlooked in previous studies. By integrating these disaggregated accrual elements into the predictive model, the study enhances the accuracy of OCF predictions, providing deeper insights into the financial dynamics specific to Indonesian manufacturing firms. This disaggregated approach not only improves predictive accuracy but also offers practical implications for financial managers who need to navigate the volatile and complex business environment in Indonesia (Barth et al., 2001; Noury et al., 2020).

The uniqueness of this research is also evident in its empirical application. The study focuses on a comprehensive dataset of 1,698 observations from 155 manufacturing companies listed on the Indonesia Stock Exchange (IDX) over a decade (2011-2021) (Raditya & Utami, 2021) . This specific dataset, combined with the application of advanced econometric techniques, allows for a nuanced analysis of cash flow prediction models (Paidipally & Rao, 2023).This study advances academic knowledge and provides actionable insights for practitioners in financial management fields, particularly in the Indonesian market. It also focuses on the gap in the literature related to historical earnings versus accrual components.

This study aims to identify the most effective model for predicting operating cash flows in manufacturing companies, with a specific focus on the influence of historical earnings and accrual components. It evaluates the predictive power of historical earnings on future OCF, assesses the impact of aggregate accruals on OCF prediction, determines the effectiveness of disaggregated accrual components in enhancing OCF prediction accuracy and provides practical implications for accounting and finance professionals.

The goal of this study is to contribute significantly to the literature by providing empirical evidence on the reliability of historical earnings for cash flow predictions in an emerging market. By prioritizing historical earnings as a primary predictive tool and integrating disaggregated accrual components, this research offers new insights into accounting and financial management practices in Indonesia, highlighting the importance of context-specific models that are tailored to the unique environment conditions.

LITERATURE REVIEW

Cash inflow predictions, as conceptualized in agency theory by Jensen and Meckling (2019), play a crucial role in aligning the interests of management and shareholders by reducing information asymmetry. Agency theory suggests that accurate and transparent financial information, such as cash inflow predictions, is essential for minimizing potential conflicts between shareholders as principals and management as agents (Khidmat & Rehman, 2014). By providing reliable predictions of operating cash flows (OCF), management can bolster their credibility and reduce the likelihood of agency problems.

In parallel, signalling theory, as developed by Spencer and Skalaban (2018), posits that cash inflow predictions serve as important signals that inform both internal stakeholders (such as management) and external stakeholders (such as creditors and investors). These predictions guide stakeholders in making informed decisions about the financial health and prospects of a company. Effective cash flow management, supported by accurate OCF predictions, is therefore critical for ensuring that management can provide pertinent information to shareholders and other interested parties, thereby reducing information asymmetry and potential conflicts (Ma, 2024).

In summary, cash inflow predictions have significant implications for both agency theory and signalling theory. Through the provision of accurate and timely cash flow forecasts, management can enhance their position, satisfy shareholders, and guide stakeholders in making well-informed decisions, ultimately supporting more effective liquidity management (Nguyen & Nguyen, 2020).

Agency theory emphasizes the importance of providing relevant financial information to mitigate the agency problem, which arises from information asymmetry between management and shareholders (Jensen & Meckling, 1976). In line with signalling theory, accurate financial information, such as cash inflow predictions, is crucial for both internal and external stakeholders to respond appropriately to the signals provided by the company (Spencer & Skalaban, 2018). Historical earnings, as a predictor of future cash inflows, have been shown to effectively forecast

future OCF, making them a valuable tool for financial management (Ball & Nikolaev, 2022; Gryglewicz et al., 2022; Hamid et al., 2023; Nguyen & Nguyen, 2020; Olufemi et al., 2023; Senan, 2019; Raditya & Utami, 2021; Ball & Nikolaev, 2022; Ebaid, 2011; McInnis et al., 2022). Thus, the first hypothesis is formulated as follows:

H_1: Historical earnings can effectively predict future operating cash flow

Several studies suggest that combining historical cash inflows with accrual components can enhance the accuracy of cash flow predictions. Accrual accounting, as posited by agency theory, smooths out timing differences in financial transactions, providing more accurate and comprehensive financial information, which in turn reduces information asymmetry and mitigates potential agency issues (Barth et al., 2001; Nallareddy et al., 2020; Noury et al., 2020). From a signalling perspective, accrual-based financial information provides additional insights that can reduce the information gap between the company and external stakeholders, such as investors (Nallareddy et al., 2020; Noury et al., 2020). Therefore, the second hypothesis is proposed as follows:

H_2: Combining operating cash flow with aggregate accruals can effectively predict future operating cash flow

Barth et al. (2001) highlight that the predictive power of different accrual components varies, challenging the effectiveness of relying solely on aggregated accruals (Ali et al., 2022; Efayena, 2015; Nallareddy et al., 2020; Nguyen & Nguyen, 2020; Oh & Penman, 2024) for accurate cash flow predictions. Disaggregating accrual components, such as changes in accounts receivable (AR), accounts payable (AP), inventory (INV), and depreciation and amortization expenses (DAE), can further enhance the accuracy of OCF predictions. (Noury et al., 2020). Previous research suggests that combining OCF with these disaggregated accrual components results in more precise predictions of future cash flows. (Nallareddy et al., 2020; Noury et al., 2020). Therefore, the third hypothesis is proposed as follows:

H_3: Combining operating cash flow with disaggregated accrual components significantly improves the prediction of future operating cash flow

RESEARCH METHODS

This study seeks to ascertain the most effective model for predicting operating cash flows (OCF) within Indonesian manufacturing companies. The primary independent variables examined include historical earnings, operating cash flow, and accrual components, with future OCF serving as the dependent variable. Data were rigorously collected from 155 manufacturing enterprises listed on the Indonesia Stock Exchange (IDX) from 2011 to 2021. This dataset, sourced using the Bloomberg Terminal, ensures a comprehensive and reliable foundation for analysis.

We employed purposive sampling with rigorous criteria to select companies for analysis. Companies were included if they maintained comprehensive financial data for a minimum of seven years and experienced no delisting or stock suspension during the research period. This selection method yielded 1,698 high-quality observations, ensuring the data's relevance and reliability for the study's aims (Table 1).

The analytical framework of this study is founded on panel regression techniques facilitated by the use of STATA software. Panel regression is particularly suitable for this study as it accounts for both cross-sectional and time-series variations, providing a more nuanced understanding of the data. The models tested include the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM) (Ahmad et al., 2021; Bai et al., 2021b). The selection of the most appropriate model was determined through the Chow and Hausman tests,

Table 1. Data Selection Process (2011-2021)

Year	Listed Companies	Delisted Companies	Inconsistent Data	Companies Passing Criteria
2011	135	(2)	(9)	124
2012	137	(2)	(6)	129
2013	143	(3)	(9)	131
2014	143	(0)	(7)	136
2015	151	(3)	(0)	148
2016	156	(1)	(0)	155
2017	160	(2)	(3)	155
2018	169	(5)	(9)	155
2019	183	(3)	(25)	155
2020	196	(4)	(37)	155
2021	211	(7)	(49)	155
Total	**1784**	**(32)**	**(154)**	**1698**

Source: Research Result (2024)

Table 2. Explanation of Research Variables

Variable	Indicator	Proxy	Source
Dependent	Operating Cash Flow (OCF)	OCFit, OCFit–1, OCFit–2, OCFit–3: Operating Cash Flow of firm (i) in year (t), (t–1), (t–2), (t–3)	Noury *et al.*, 2020
Independent	Earnings (Eit)	Eit–1, Eit–2, Eit–3: Earnings of firm (i) in year (t–1), (t–2), (t–3)	Noury *et al.*, 2020
Independent	Aggregate Accruals (AGACR)	AGACRit–1, AGACRit–2, AGACRit–3: Aggregate Accruals of firm (i) in year (t–1), (t–2), (t–3)	Noury *et al.*, 2020
Independent	Accounts Receivable (AR)	ARit–1, ARit–2, ARit–3: Accounts Receivable of firm (i) in year (t–1), (t–2), (t–3)	Noury *et al.*, 2020
Independent	Accounts Payable (AP)	APit–1, APit–2, APit–3: Accounts Payable of firm (i) in year (t–1), (t–2), (t–3)	Noury *et al.*, 2020
Independent	Inventory (INV)	INVit–1, INVit–2, INVit–3: Inventory of firm (i) in year (t–1), (t–2), (t–3)	Noury *et al.*, 2020
Independent	Depreciation & Amortization (DEPRM)	DEPRMit–1, DEPRMit–2, DEPRMit–3: Depreciation and Amortization Expenses in year (t–1), (t–2), (t–3)	Noury *et al.*, 2020
Independent	Other Accruals (OTHit)	OTHit–1, OTHit–2, OTHit–3: Other Accruals in a year (t–1), (t–2), (t–3)	Noury *et al.*, 2020
Independent	Discretionary Accruals	AGACR, ADISGRE (depending on the model used)	Noury *et al.*, 2020

which evaluated the suitability of FEM or REM for the dataset. The results indicated that the Fixed Effect Model (FEM) was the most consistent and reliable for this analysis, given its ability to control for unobserved heterogeneity.

Each model utilizes a distinct method to examine the ability of historical variables to predict future OCF more accurately. The first model, the historical earnings model, seeks to use earnings data as a proxy for the historical OCF. In this model, the dependent variable is estimated from the year of observation, while earnings serve as the independent variable with historical values from the preceding three years (t-1, t-2, t-3). The regression equation model is:

$$OCF_{it} = \alpha_0 + \alpha_1.E_{it-1} + \alpha_2.E_{it-2} + \alpha_3.E_{it-3} + \varepsilon_{it} \quad \text{.....1}$$

The second model, referred to as the AGACR model, predicts future cash flow by using a combination of OCF and aggregate accruals (AGACR). The independent variables OCF and AGACR utilize data from the previous three years. This model explores whether the combination of OCF with aggregate accruals can better estimate future OCF. Its regression equation is:

$$OCF_{it} = \beta_0 + \beta_1.OCF_{it-1} + \beta_2.OCF_{it-2} + \beta_3.OCF_{it-3} + \beta_4.AGACR_{it-1} + \beta_5.AGACR_{it-2} + \beta_6.AGACR_{it-3} + \varepsilon_{it} \quad \text{.....2}$$

The third model, termed the ADISGRE model, involves OCF and disaggregated accrual elements, such as changes in accounts receivable (AR), accounts payable (AP), inventory (INV), depreciation and amortization expenses (DEPRM), and other accruals (OTH). This model tests whether the combination of OCF and disaggregated accruals from the previous three years can accurately predict future operating cash flows with the following regression equation:

$$\begin{aligned} OCF_{it} = {} & \gamma_0 + \gamma_1.OCF_{it-1} + \gamma_2.OCF_{it-2} + \gamma_3.OCF_{it-3} + \gamma_4.AR_{it-1} + \gamma_5.AR_{it-2} + \gamma_6.AR_{it-3} + \gamma_7.AP_{it-1} + \gamma_8.AP_{it-2} + \gamma_9.AP_{it-3} \\ & + \gamma_{10}.INV_{it-1} + \gamma_{11}.INV_{it-2} + \gamma_{12}.INV_{it-3} + \gamma_{13}.DEPRM_{it-1} + \gamma_{14}.DEPRM_{it-2} + \gamma_{15}.DEPRM_{it-3} + \gamma_{16}.OTH_{it-1} \\ & + \gamma_{17}.OTH_{it-2} + \gamma_{18}.OTH_{it-3} + \varepsilon_{it} \quad \text{.....3} \end{aligned}$$

This model is developed by incorporating changes in AR, AP, INV, DEPRM, and other accruals, provides a nuanced perspective on the company's financial dynamics, and captures a comprehensive snapshot of financial health and operational efficiency.

To enhance the clarity and understanding of the regression models presented in this study, Table 2 provides a comprehensive explanation of the symbols used in the three models: the historical earnings model, the AGACR

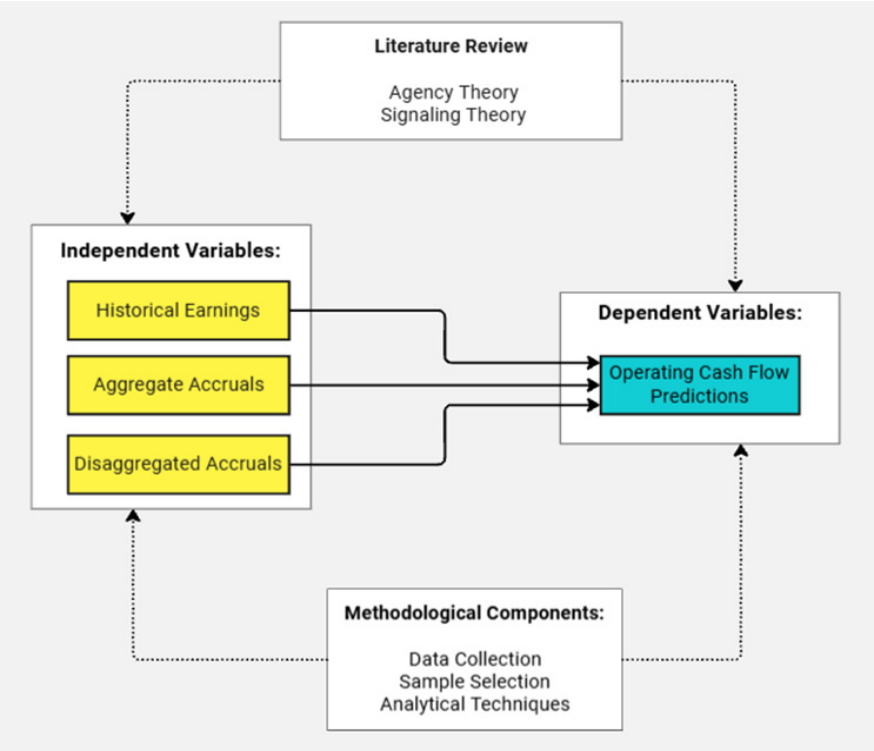

Figure 1. Conceptual Framework of Study

model, and the ADISGRE model. Each symbol represents a financial variable or parameter utilized in the regression equations to predict future operating cash flows (OCF). This table ensures that readers can accurately interpret the variables and their corresponding meanings within the context of this research.

This conceptual model is illustrated in Figure 1, the research design for predicting operating cash flow (OCF) by integrating theoretical foundations, independent variables, and methodological components. The literature review forms the basis of the study, drawing on agency theory and signalling theory to inform the selection of key independent variables, such as historical earnings, aggregate accruals, and disaggregated accruals. These variables are directly linked to the Operating Cash Flow Predictions, the dependent variable, through solid lines, indicating the direct influence these financial metrics have on the prediction model. Supporting the empirical analysis are the Methodological Components, which include Data Collection, Sample Selection, and Analytical Techniques (Bai et al., 2021a, 2021b).

These components directly impact the accuracy and reliability of the OCF predictions, as indicated by the solid lines. Dashed lines in the framework represent the underlying theoretical influences that shape the selection of variables and methodological choices, ensuring that the study is grounded in well-established financial theories. This integration of theory, data, and methodology provides a comprehensive and robust approach to developing a predictive model for OCF in the context of financial management.

RESULTS AND DISCUSSIONS

The descriptive statistical analysis in Table 3 provides critical insights into the behaviour and interaction of cash flow, profit, and accrual components within the dataset. The positive mean values for the OCF variables (OCF, OCFt-1, OCFt-2, OCFt-3) suggest that the sampled manufacturing companies consistently generated positive cash flows from operations during the study period. This consistency is crucial as it underlines the reliability of historical OCF as a predictor of future cash flows, aligning with expectations from the literature that historical earnings are a stable basis for financial forecasting (McInnis et al., 2022).

However, the data also reveals substantial variability, particularly in the aggregate accruals (AGACRt-1, AGACRt-2, AGACRt-3), which consistently show negative mean values. This study suggests that, on average, companies reported higher profits than the cash generated from operations, a phenomenon often linked to aggressive earnings management practices. The significant fluctuations in AGACRt-3, as indicated by its high standard deviation, might reflect the use of long-term accruals to smooth earnings over time.

The standard deviations observed in long-term accrual components such as depreciation and amortization (DEPRMt-1, DEPRMt-2, DEPRMt-3) suggest that stability in these estimates contributes positively to the accuracy of OCF predictions. In contrast, higher variability in short-term accrual components like changes in accounts receivable (AR), accounts payable (AP), and inventory (INV) indicate responsiveness to operational conditions, potentially complicating the prediction of cash flows.

Table 3. Descriptive Analysis

Variable	Mean	Minimal	Maximal
Operating Cash Flows (OCF)	0.0615	-0.3135	0.6473
OCF t-1	0.0625	-0.3135	0.6473
OCF t-2	0.0611	-0.3360	1.0137
OCF t-3	0.0601	-0.6243	1.0137
Earnings (E) t-1	0.0404	-0.9315	1.1026
Earnings (E) t-2	0.0481	-0.9315	1.1026
Earnings (E) t-3	0.0566	-0.9315	4.6126
Aggregate Accruals (AGACR) t-1	-0.0220	-1.0823	0.9424
Aggregate Accruals (AGACR) t-2	-0.0130	-1.0888	0.9424
Aggregate Accruals (AGACR) t-3	-0.0035	-1.0888	4.5091
Accounts Receivable (AR) t-1	0.0080	-0.6956	0.8624
Accounts Receivable (AR) t-2	0.0135	-0.6956	0.8624
Accounts Receivable (AR) t-3	0.0190	-0.6956	0.8624
Accounts Payable (AP) t-1	0.0043	-0.6451	1.0518
Accounts Payable (AP) t-2	0.0063	-0.6451	1.0518
Accounts Payable (AP) t-3	0.0119	-0.4945	1.0518
Inventory (INV) t-1	0.0100	-0.5975	0.5587
Inventory (INV) t-2	0.0162	-0.3520	0.5587
Inventory (INV) t-3	0.0225	-0.3520	0.6708
Depreciation Amortization (DEPRM) t-1	0.0323	0.0000	0.3150
Depreciation Amortization (DEPRM) t-2	0.0325	0.0000	0.3150
Depreciation Amortization (DEPRM) t-3	0.0328	0.0000	0.1899
Other Accruals (OTH) t-1	-0.0034	-0.3825	0.9709
Other Accruals (OTH) t-2	-0.0039	-0.9416	0.9709
Other Accruals (OTH) t-3	-0.0003	-0.9416	4.5416

Source: Research Result (2024)

Model Selection

The selection of the Fixed Effect Model (FEM) as the most appropriate model for this study was validated through the Chow and Hausman tests, as summarized in Table 4. The superiority of FEM indicates that individual effects related to specific companies are significant and that these effects do not vary randomly over time. This finding is particularly relevant for the dataset used in this study, which spans multiple years and includes companies with potentially diverse operational characteristics. The FEM's ability to control for unobserved heterogeneity strengthens the reliability of the regression results, making it a robust choice for analyzing the relationship between historical earnings, accruals, and future OCF.

The application of winsorization to address data normality issues further enhances the validity of the results. As shown in Table 5, after applying winsorization, the skewness and kurtosis values of the earnings variables (Et-1_w, Et-2_w, Et-3_w) were reduced to acceptable levels, indicating that the transformed data better approximates a normal distribution. Winsorization was chosen over other techniques, such as log transformation, because it effectively reduces the impact of outliers without distorting the underlying data distribution. This approach ensures that the regression analysis is based on data that meets the assumptions of normality, thereby increasing the robustness of the statistical inferences drawn from the model.

Table 4. Model selection test result

Regression Model	Chow Test		Hausman Test	
	α	Probability	α	Probability
Earnings model	0.05	0.0000	0.05	0.0000
AGACR model	0.05	0.0000	0.05	0.0000
ADISGRE model	0.05	0.0000	0.05	0.0018

Source: Research Result (2024)

Table 5. Data normality test results

Before Winsorized				After Winsorized			
Variables	**Skewness**	**Kurtosis**	**Result**	**Variables**	**Skewness**	**Kurtosis**	**Result**
OCF	0.8041031	6.469535	Abnormal	OCF	0.8041031	6.469535	Normal
E_{t-1}	0.6392242	23.29505	Abnormal	E_{t-1}_w	0.8857107	6.75049	Normal
E_{t-2}	1.07447	23.74323	Abnormal	E_{t-2}_w	1.195943	6.769543	Normal
E_{t-3}	17.08005	454.1146	Abnormal	E_{t-3}_w	1.256494	6.998869	Normal

Source: Research Result (2024)

The Earnings Model Analysis

The regression analysis for the Earnings Model (See Table 6) reveals that historical earnings have a substantial impact on future OCF, as evidenced by an R2 value of 0.6809. This result suggests that historical earnings explain 68.09% of the variance in future OCF. The t-test results for earnings at t-1, t-2, and t-3 all indicate significance with p-values below 0.05, confirming their predictive value. These findings strongly support hypothesis one, aligning with agency theory by demonstrating that accurate financial reporting reduces information asymmetry and enhances management's ability to justify decisions. Furthermore, signalling theory is validated as the model provides reliable information that stakeholders can use to make informed decisions. This outcome is consistent with previous research by Ball and Nikolaev (2021) and McInnis et al. (2022), which also highlighted the predictive strength of historical earnings for future OCF.

The earnings model has been demonstrated to significantly predict future operating cash flow (OCF), with an R^2 value of 0.6809, indicating that historical earnings can explain more than 68% of the variability in OCF. This finding supports the argument that accrual-based earnings are more effective than alternative methods in forecasting future cash flow. The robustness of this model in providing accurate predictions reinforces the role of accounting information as a primary tool in corporate financial management, both for internal decision-making and in building trust among external stakeholders.

From the perspective of agency theory, higher accuracy in OCF prediction has a significant impact on reducing information asymmetry between management and shareholders. A reliable prediction model enables management to present more transparent and credible financial data, thereby minimizing potential conflicts of interest and fostering investor confidence. In an increasingly complex business environment, precise cash flow forecasting plays a crucial role in shaping long-term financial strategies. This accuracy also influences stock price stability, as investors tend to favour companies that employ robust financial forecasting systems.

From the standpoint of signalling theory, the earnings model functions not only as an internal forecasting tool but also as a financial signal for external stakeholders. Creditors and investors often rely on accounting information to assess a company's ability to meet its financial obligations. In this context, an earnings model that provides accurate OCF predictions enhances a company's reputation in the capital market. Firms with reliable forecasting models find it easier to secure funding, whether through bank loans or equity investments, as they demonstrate greater financial stability and growth potential.

However, the implementation of the earnings model as a predictive tool is not without challenges. One of the primary concerns is the potential for earnings manipulation through aggressive accounting policies. The earnings used in OCF predictions must come from highly credible financial statements, adhering to strict accounting standards to prevent distortions in cash flow estimations. Earnings management practices, which are prevalent in certain business environments, can compromise the model's accuracy, underscoring the need for robust oversight mechanisms in financial reporting. The adoption of IFRS (International Financial Reporting Standards) and PSAK (Indonesian Financial Accounting Standards) should be enforced rigorously to ensure the reliability of accounting information.

From an implementation perspective, the earnings model can be an extremely valuable tool if integrated into Enterprise Resource Planning (ERP) systems, allowing OCF predictions to be generated automatically using real-time financial data. An ERP system linked to historical financial records enhances predictive accuracy while minimizing human error in manual calculations. Moreover, the integration of machine learning and AI-driven financial analytics can further improve the earnings model's ability to adapt to dynamic economic conditions. With

Table 6. The hypothesis test results of the Earnings model

Variable	t-1	t-2	t-3	Result
Earnings model	<0.05	<0.05	<0.05	Significant
R^2		0.6809		Significant
Probably (Statistik F)		0.0000		Significant

Source: Research Result (2024)

Table 7. The hypothesis test results of the AGACR model

Variables	t-1	t-2	t-3	Result
OCF	<0.05	<0.05	<0.05	Significant
AGACR	<0.05	<0.05	<0.05	Significant
R^2		0.0004		Weak
Probably (F-statistic)		0.0000		Significant

Source: Research Result (2024)

more sophisticated algorithms, businesses can identify complex historical earnings patterns, enabling them to make more precise estimations of future OCF.

In the Indonesian manufacturing sector, the earnings model has become increasingly relevant due to fluctuations in raw material prices and volatile market demand. Manufacturing firms facing external pressures, such as global economic uncertainties and trade policy changes, must closely monitor historical earnings trends to anticipate liquidity challenges. Accurate OCF forecasting allows companies to develop more adaptive cash flow strategies, including efficient working capital management, supply chain optimization, and investment adjustments based on more valid financial projections.

Furthermore, the earnings model has strategic implications for dividend planning. Accurate OCF predictions enable firms to design stable and sustainable dividend policies. For instance, companies can adjust dividend distributions based on expected future cash flows, ensuring a balanced approach between shareholder interests and long-term investment needs. This proactive financial management strategy can prevent situations where excessive dividend payments create unexpected liquidity pressures.

Overall, the findings of this study highlight that the earnings model is not merely an academic tool but has significant practical applications in corporate financial management. Enhanced accuracy in OCF predictions strengthens financial stability, improves transparency for investors and shareholders, and supports data-driven financial decision-making. However, the effectiveness of this model depends heavily on a company's commitment to producing high-quality financial reports, as well as its ability to integrate financial technology to enhance prediction precision.

Therefore, the adoption of the earnings model as an OCF forecasting tool must be accompanied by stringent internal control systems, the leveraging of advanced financial analytics, and strict compliance with accounting standards. With a comprehensive approach, companies can maximize the benefits of the earnings model, ensuring sustainable business growth and long-term financial resilience.

The AGACR Model Analysis

The regression analysis of the AGACR Model presents a nuanced picture in Table 7. While the R2 value of 0.0004 suggests a weak explanatory power of the model, the significant F-test probability ($p = 0.0000$) indicates that the model is statistically significant overall. This discrepancy might imply that while the model explains only a small portion of the variance in future OCF, the variables included are nonetheless relevant in predicting OCF under certain conditions.

Further examination of the aggregate accruals (AGACR) model reveals a compelling trend. While accrual components exhibit strong predictive power in the short term (within one to two years), their significance diminishes considerably by the third year (t-3). This finding suggests that the informational value of accruals in forecasting operating cash flow (OCF) is time-sensitive, making them more suitable for short-term financial planning rather than long-term projections. The decreasing influence of accruals over time indicates that firms relying solely on accrual-based models for extended cash flow forecasting may encounter diminishing predictive accuracy.

One possible explanation for this decline is the reversing nature of accruals. Accrual adjustments such as

Table 8. The Hypothesis Test Results of the ADISGRE Model

Variables	t-1	t-2	t-3	Result
OCF	<0.05	<0.05	<0.05	Significant
AR	<0.05	<0.05	<0.05	Significant
AP	<0.05	<0.05	<0.05	Significant
INV	<0.05	>0.05	>0.05	Not Significant
DEPRM	>0.05	>0.05	<0.05	Not Significant
OTH	<0.10	<0.10	<0.05	Significant
R^2		0.0068		Weak
Probably (F-statistic)		0.0000		Significant

Source: Research Result (2024)

changes in accounts receivable, accounts payable, and deferred revenues are designed to smooth out fluctuations in financial reporting, aligning earnings with economic activity rather than actual cash transactions. However, over longer periods, these accrual adjustments tend to reverse, meaning that their impact on cash flow projections weakens as time progresses. This phenomenon is particularly relevant in industries with high earnings volatility, where market dynamics, regulatory shifts, or operational adjustments can distort accrual-based estimations.

The results of this study reinforce the importance of focusing on short-term accruals when integrating them into financial forecasting models. For businesses operating in environments with rapid operational shifts, such as the manufacturing and retail sectors, short-term accruals provide valuable insights into near-future liquidity conditions. Since short-term accruals reflect temporary adjustments in working capital, receivables, and inventory management, they serve as a crucial indicator of immediate cash flow fluctuations. Therefore, firms can leverage AGACR-based predictions to make timely financial decisions, such as adjusting credit policies, supplier payment schedules, and short-term borrowing strategies.

Moreover, these findings align with the work of Nguyen & Nguyen (2020) and Senan (2019), who argue that the integration of accrual-based and cash-flow-based information is essential for a holistic understanding of financial health. While historical earnings and past OCF provide a solid foundation for predicting cash flows, incorporating short-term accruals adds a layer of granularity by capturing the timing effects of revenue recognition and expense realization. This integration is particularly beneficial for companies managing complex revenue cycles, such as those in capital-intensive industries, where large transactions are often recorded on an accrual basis before actual cash receipts occur.

The ADISGRE Model Analysis

The ADISGRE Model represented in Table 8 provides insights into the predictive power of disaggregated accrual components alongside historical OCF. The model's R^2 value of 0.0068 suggests limited explanatory power, yet the F-test remains highly significant ($p = 0.0000$), indicating that the variables used are still meaningful in predicting future OCF. Specifically, operating cash flows and disaggregated accruals such as accounts receivable (AR) and accounts payable (AP) have significant impacts in the short term (t-1 and t-2), with diminished effects observed in the third year (t-3).

This finding highlights the importance of focusing on recent accrual data for more accurate predictions. These results support agency theory, as accurate predictions reduce informational asymmetry between management and shareholders, enhancing decision-making processes. Signalling theory is also validated, suggesting that clear and accurate financial signals can significantly aid external stakeholders in their decision-making. This conclusion is consistent with studies by (Nallareddy et al., 2020), which underscore the value of combining historical OCF with detailed accrual information for enhanced predictive accuracy.

The Best Prediction Model for Operating Cash Flows (OCF)

This study demonstrates that historical earnings are the most reliable predictor of future OCF in Indonesian manufacturing companies, as indicated by the highest R^2 value of 0.6809. This finding underscores the importance of contextual factors in financial modelling, suggesting that in the Indonesian market, historical profits offer greater stability and predictability compared to other models, such as those based on accrual components. This result contrasts with findings in other contexts, such as the study by Noury et al. (2020) in France, which highlighted the stronger predictive power of accrual components. The preference for historical earnings aligns with Indonesia's unique market dynamics, where economic stability allows past performance to serve as a solid basis for future projections.

The historical earnings, which are more transparent and less prone to manipulation than accrual-based measures, provide a more accurate reflection of a company's financial performance. This finding means that reducing information asymmetry between management and shareholders is crucial for minimizing conflicts of interest. Reliable financial disclosures signal a company's true value to investors and creditors, reducing uncertainty and facilitating better decision-making. Consistent historical earnings send a positive signal regarding a company's financial health and operational efficiency, as posited by Spencer and Skalaban (2018).

Emphasizing historical earnings in financial statements can provide more reliable information for forecasting, thereby enhancing the accuracy of financial planning and risk management. Companies can use this information to make more informed decisions regarding budgeting, investments, and cash management (Cangoz & Secunho, 2021).Additionally, financial reporting standards may need to be adapted to reflect the predictive power of historical earnings better, potentially leading to greater transparency and reliability in the financial information provided to stakeholders.

It challenges the reliance on accrual-based measures, suggesting that the stability and reliability of historical earnings make them superior predictors in certain contexts. The relative stability and predictability of the Indonesian manufacturing sector, as opposed to the potentially more volatile conditions in other markets, may explain why historical earnings are more effective in this context. These findings suggest that financial models should be tailored to the specific conditions of each market, with historical earnings serving as a more reliable indicator in environments where economic stability prevails. This insight could be valuable for financial practitioners in other emerging

markets, where similar conditions might make historical earnings a superior predictive tool.

Implication

The stability observed in historical earnings underscores their reliability as a predictive tool. Furthermore, models that combine historical OCF with total or separate historical accruals also demonstrate significant predictive accuracy. These insights align with the work of Ball and Nikolaev (2022) and McInnis et al. (2022) but contrast with findings from Al-Sharaw (2021) and Efayena, 2015), thereby enriching our understanding of financial management practices in Indonesia's manufacturing sector.

Theoretically, the study contributes significantly to agency theory by demonstrating that historical earnings can effectively reduce information asymmetry between management and shareholders. The stable and predictable nature of historical earnings allows management to provide accurate estimates of future cash flows, thereby aligning the interests of both parties and minimizing potential conflicts. This transparency is precious in the Indonesian context, where market stability may enhance the predictive power of historical data. In terms of signalling theory, the findings suggest that historical earnings send strong signals about a company's financial health and operational efficiency. By providing reliable predictions of future OCF, these earnings help management communicate the company's true value to external stakeholders, such as investors and creditors.

By highlighting the importance of historical earnings in financial reporting, this study contributes to the advancement of accounting practices in Indonesia, encouraging a more nuanced approach to financial management. The significant role of historical earnings in predicting future OCF in Indonesian manufacturing companies improves transparency and strengthens their financial stability. This approach supports better decision-making and aligns with theoretical frameworks that emphasize the importance of reliable financial information in reducing information asymmetry and improving stakeholder relationships.

CONCLUSIONS

The historical earnings model demonstrates a significant influence of historical earnings on future operating cash flows (OCF), affirming the model's robustness in explaining OCF variability. This finding supports the hypothesis that historical earnings, including their accrual components, are effective predictors of future OCF. This finding aligns with agency theory, which posits that accurate financial information reduces information asymmetry between management and shareholders, thus mitigating potential conflicts of interest. Similarly, signalling theory suggests that reliable financial disclosures serve as positive indicators to investors and creditors, showcasing the company's financial health and operational stability.

The ADISGRE model, incorporating disaggregated accrual components, offers additional insights by revealing the specific effects of individual accrual elements on OCF prediction. Although this model shows a limited capacity to explain the overall variability of OCF, it highlights the importance of disaggregating accrual components to enhance the relevance and quality of financial information. This separation helps reduce information asymmetry between shareholders and management, providing practical insights for stakeholders in financial analysis and decision-making.

While this study provides valuable contributions to the literature, it also acknowledges certain limitations. One significant limitation is the exclusion of companies due to incomplete financial data, which could affect the generalizability of the findings. Additionally, the reliance on historical OCF data and accruals may introduce data 'noise' due to financial statement adjustments, potentially distorting the accuracy of predictions. Future research should consider including additional predictive variables, such as deferred taxes, to improve model precision. Expanding the range of variables will provide a more comprehensive understanding of the factors influencing OCF, thereby enhancing the accuracy of financial forecasts.

In summary, this study underscores the importance of selecting appropriate regression models and conducting rigorous assumption tests in econometric research, particularly within finance and accounting. By addressing its limitations and incorporating a broader set of variables, future research can build on these findings to develop more nuanced and effective cash flow prediction models, particularly in diverse economic environments and sectors.

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