

Determinants of Earnings Management Using Discretionary Components of the Loans and Investments Portfolios of Banks: The Case of Saudi Arabia

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Abstract

This study aimed to examine whether banks in Saudi Arabia use the allocations for loan losses in managing earnings as this study is conducted on all banks registered on the Saudi Stock Exchange during the period from 2013-2022. The study also aimed to determine the impact of the discretionary component of the allocations for loan losses on both profitability metrics and market metrics. To achieve the objectives of the study, two metrics were used for managing earnings. The first metric used both the discretionary components of the allocations for loan losses and the realized gains and losses of investment portfolios. The second metric used only the discretionary component of the allocations for loan losses.

The study used the quantitative analysis approach with regressions and correlations models to test the study's hypotheses and answer the research questions. The results of the first metric of the earnings management indicated that the determinants of earnings management in banks were the financial leverage, total assets, net operating profit before taxes and zakat and loan provision, GDP growth rate and the loan portfolio components. While the capital adequacy ratio was not one of the determinants of earnings management.

The results of the second metric of the earnings management indicated that the discretionary component of the allocations for loan losses had positive impacts on the return on assets, return on equity, earnings per share, share price and annual share returns. That is, investors realize that the allocations for loan losses included a discretionary component that will be converted into future earnings and cash flows, and investors look at that component positively. According to the signal theory, the sample banks used the allocations for loan losses to transmit positive signals about the levels of the profits in the future. The results of this study have significant implications on the decisions of investors, the supervisory authorities, bank managers and the external auditors.

Keywords: Return on Assets – Return on Equity – Share Price - Discretionary Component - Financial Leverage – realized gains and losses.

1. Introduction

Earnings management means that managers adopt some practices using accounting methods or accounting accruals to achieve desirable profit levels but earnings management in this study means that bank's managers use the discretionary component of the allocations for loan losses to reduce the volatility of the earnings over years.

McNichol and Wilson (1988); Bhat, (1996) indicated that the motive of the earnings management in previous studies was to reduce the discrepancy in the income to improve the shareholder value and maximize the compensation for senior management based on percentages of profits.

Degeorge, et al. (1999) showed that managers might manage earnings to maximize their compensation, which is a function of

profits, whether profits are managed by controlling the timing of the real transactions such as sales, financing, expenses, or by controlling the discretionary elements in accounting.

Several studies have been conducted on the use of the allowance for Loan Losses to manage earnings, but the results were mixed. **Dye, (1988)** explained that banks manage earnings to maximize the shareholders' rights. **DeGeorge, et al. (1999)** Provided psychological evidence that the individuals used general rules to reduce the cost of acquiring and processing information, as they explained that there were three limits that may be appropriate for profits namely, Zero profits, Last year's profits, and analysts' predictions for profits.

Barth, et al. (1999) showed that the limits were important for the investors, as banks that disclose continuous increases in the earnings per share over many years showed a high ratio of price to earnings per share compared to the other banks, while the shares of those banks witnessed a decrease in the event of a decrease in earnings per share. Thus, these banks have an incentive to manage earnings.

Federal Reserve Bank of Atlanta, (2000) indicated that the allocations for loan losses could be viewed as a type of capital that must be formed during the times of prosperity to absorb the unexpected losses in the times of recession. In contrast to the accounting view, banks must build loan provisions larger than the expected credit losses, especially since the part of those provisions was considered one of the elements of the regulatory capital and that allowed bank's managers to use the provisions for loan losses to manage earnings. The previous study on earnings management relied on some theories to explain the phenomenon of earnings management, as follows:

Mahjoub and Miloudi, (2015) indicated that according to the Positive Accounting Theory, managers adopted two types of utilitarian and opportunistic behavior. **(Watts and Zimmerman, 1990)** showed that this theory was based on three assumptions. The first was the compensation plans by which managers exercised opportunistic behavior by using the accounting methods to increase the profits if there were compensation plans. The second is debt contracts by which managers increased profits to obtain favorable terms in debt contracts and to reduce the costs of failure. The third is the political process in which managers in large companies tend to use the accounting options to reduce profits because large companies attract the attention of the politicians.

Yimenu, K.S. and Surur. S.A. (2019) used the agency theory as it assumed that managers put their interests above those of the shareholders. Other studies used the signal theory under which managers tend to convey internal information to investors that reflects the direction of the profits in the future. **Spence, (1973)** stated that the signal theory suggested that managers have an incentive to disclose accounting information that serve as a signal to the capital market. **Ahmed et al., (1999); Darjezi (2016)** indicated that the signal theory assumed that bank managers used provisions as a positive signal tool to convey information to the stakeholders. **Ahmed and Courtis (1999)** showed that banks increased the allocations for loan losses to give a positive signal of

banks' profits in the future, and thus improve the shareholders' confidence in banks' profits. In addition, banks with poor financial performance engaged in earnings management practices by reducing the volume of the provisions and then increasing profits. **Katmon and Al Farooque, (2017)** indicated that the signaling theory assumes that the voluntary disclosure of accurate, complete, and reliable information reduced the phenomenon of the information asymmetry between the internal and the external users.

Despite of conducting several previous studies on earnings management in the Saudi Kingdom, for example, **Shetwi, M., (2020); Habeas, M. and Haddad, L. (2019); Habbash, M.; Alghamdi, S.A., (2015)**, none of them addressed the earnings management using allocations for loan losses. Therefore, as far as the researcher knows, this study is the first of its kind in the Kingdom of Saudi Arabia.

1.1 Research Problem

The problem of the study is the lack of the empirical evidence on the phenomenon of earnings management in the Saudi banks using the discretionary components of the loan and investment portfolios, in addition to identifying the determinants of the earnings management, considering the indigenous and the exogenous variables. The study is the first that deals with the phenomenon of the earnings management in Saudi banks. Therefore, it contributes to filling that gap in the current literature.

1.2. Research Questions:

This study attempts to answer the following questions:

- Do banks use the discretionary component of the allocations for loan losses in earnings management in the Saudi banks?
- Do banks use the discretionary component of the unrealized gains or losses of the investment portfolio in earnings management in the Saudi banks?
- What are the determinants of the earnings management in the Saudi banks?
- Do the discretionary components of the allocations for loan losses have impact on the profitability indicators of the Saudi banks?
- Do investors react to the discretionary component of the allocations for loan losses?

1.3. Research objective

The study aims to answer the research questions by studying the phenomenon of earnings management in the Saudi banks registered in the Saudi capital market to determine the determinants of this phenomenon and its impact on banks' performance indicators.

1.4. Research importance

The study gains its importance because it addresses the phenomenon of the earnings management for the first time in the Saudi banks through an integrated methodology to determine the determinants of the earnings management and its impact on banks' performance. In addition, the results of the study will have a significant impact on the stakeholders such as bank managers, investors, external auditors, and regulators.

2. Literature review

Salem, R. et al., (2020) conducted a study on the impact of the quality of voluntary disclosure on earnings management practices on a sample of banks in the Middle East and North Africa region during the period from 2006-2015. A framework with three-dimensional information was used. The results indicated that the quality of the voluntary disclosure led to a decline in earnings management practices in the sample banks.

Dung, T.V. (2020) conducted a study on earnings management under different levels of the information asymmetry by examining the extent to which public and private banks used discretionary provisions in managing earnings during the period 1986-2013. The results indicated that government banks are more engaged in earnings management than private banks using discretionary provisions.

Jin, J. et al., (2018) Conduct a study to verify whether banks used the loan provisions for efficiency or the earnings management. The results indicated that banks that had abnormal allocations for loan losses before the crisis period 2007-2008 engaged in less risk activities before the crisis period. Therefore, they were not exposed to the risk of failure during the crisis. The results also indicated that the abnormal allocations for loan losses were not associated with avoiding the loss of the next period. Therefore, the abnormal allocations for loan losses were not used in the earnings management.

Lassoued, N.; ET AL. (2017) conducted a study on the impact of the ownership structure on earnings management practices. An empirical study was conducted on 134 banks from 12 countries in the Middle East and North Africa. The results of the study indicated that banks with concentrated ownership structures used discretionary provisions in earnings management.

Alhadab1, M.; AL-Own, B. (2017) conducted a study to determine the impact of earnings management on the performance of the current year and the coming years. The relationship between earnings management using the discretionary provisions and the profitability proxied by the return on assets, and the return on equity was analyzed for (55) banks in Europe during the period from 2001-2015. The results of the study indicated that the banks most involved in earnings management using the discretionary provisions had poor performance in terms of the return on assets and the return on equity for the current and the future years.

Leventis, S. and Dimitropoulos. P, (2012) conducted a study to examine the role of the quality of the governance on the earnings management practices on a sample of US banks during the period from 2003-2008. The study used two measures of the earnings management. The first was to achieve a simple growth rate in the annual profits, and the second was the difference between the discretionary component of each of the loan allocations and realized profits and losses on securities. The results indicated that banks with efficient governance mechanisms reported a simple growth rate in the profits compared to banks with inefficient governance mechanisms.

Leventis, S. et al., (2011) conducted a study to determine whether the commercial banks registered in the European stock exchanges are still practicing earnings management behavior using allocations for loan losses after the application of IFRS. The study included (91) commercial banks for 10 years. The results indicated that the application of IFRS reduced earnings management behavior using provisions. Therefore, the application of IFRS improved the quality of earnings.

Anandarajan, A., et al., (2007) conducted a study on Whether Australian banks were using allocations for loan losses for managing capital and managing earnings and giving a positive signal to investors regarding the future of earnings. The results indicated that banks used allocations for loan losses in capital management in addition to managing earnings, but registered banks were more involved in the earnings management than unregistered banks. The results also indicated that banks did not use the allocations for loan losses to signal any positive signals about the future of profits.

Liu, C.; Rayan, S.G. (2006) conducted a study on a sample of US and non-US banks in (21) countries. Results indicated that banks with a low profitability tend to manage income to a higher level by postponing the recognition of the allocations for loan losses on homogeneous loans. In contrary, during the economic boom in the 1990s, profitable banks managed income to a lower level by accelerating the rate of the provisions on homogeneous loans or accelerating the rate of debt write-off to compensate for what was collected from the previously written off debts. Moreover, the results indicated that the Value of provision for loan losses is a function of a set of determinants and the estimation of the loan provisions was sensitive to income before provisions in all samples. For US banks, another determinant was the value of written-off debts.

Baker, J. et al., (2005) conducted a study on the behavior of the provisions in banks within the economic cycle. The study conducted on (29) banks in different countries. The results indicated that the loan provisions in banks were linked to the economic cycle, as loan provisions were high when the economic growth rate decreased due to the high risks inherent in the loan portfolio. However, this negative effect can be somewhat reduced by increasing provisions in years of the increased profits. **Hassan, wall & I. D., (2004)** showed that many measures were used to identify and detect earnings management practices, as one of them was to use small positive earnings as a target of the earnings management.

Kanagaratnam, T., et al., (2004) Pointed out that stock prices reflected the risk premium associated with fluctuations in profits. Therefore, it was possible to increase share prices and reduce the cost of capital by reducing fluctuations in profits. The results indicated that banks that had high profits before the earnings management had a greater ability to increase the discretionary component in the allocations for loan losses and vice versa in the case of banks with low profitability before the earnings management.

DeGeorge, et al., (1999) conducted a study to reveal the practices of managing earnings through the Allocations for loan losses. They defined the latent profits, as the profits appear when the allocations for loan losses were at the correct value. They indicated that the latent profits reflected three situations. The first situation is when the profits of the period were less than the targeted profits, banks in this situation remain at a level of profits less than the latent if the earnings management practices were costly and this is called “saving for better tomorrow”. The second situation was when the profits of the year were less than the targeted profits, but it was possible to reach the targeted profits without a high cost, banks, in this case, disclose high profits and this was called “borrowing for a “better today”. The third situation, if the profits of the year were greater than the target, banks in this case reduced the profits to a certain level to support the profits in the next year, and this was known as “reining in”

Beatty et al., (2002); Burgstahler and Dichev.S. (1997) pointed out that banks disclose a small decline in profits compared to disclosing slight increases in profits by comparing the results of the private and the government banks. They indicated that there was evidence that government banks manage earnings to avoid lower profits.

Sutton, (1997) indicated that the amount of the allocations for loan losses consisted of two parts. The first was the non-discretionary, which reflected specific characteristics in the quality of the loan portfolio pertaining to the non-performing loans to which the accrual basis was not applied. The second was the discretionary part that related to the loan portfolio.

Burgstahler and Dichev, (1997); Barth et al. (2008) conducted a study to show how many times small positive net earnings as measure of the earnings management. That is, managers aimed at reporting small positive net earnings and not reporting negative net earnings for many reasons, such as the avoidance of debt guarantees, and realizing the earnings targets for attaining bonuses **Leventis et al., (2013).**

Anandarajan et al., (2007); Beatty et al., (2002); Leventis and Dimitropoulos (2012) used the allocations for loan losses and the realized security gains and losses as a tool for excessive earnings management. They mentioned that the allocations for loan losses and the realized security gains and losses had a nondiscretionary part, which make the allocations for loan losses to an acceptable level, and a discretionary part that could be regulated (Cornett et al., 2009). Therefore, the discretionary component of the allocations for loan losses and the realized security gains and losses should be calculated. **Yasuda et al. (2004)** used the discretionary accruals-based model and its modifications to calculate the discretionary component of banks' total accruals.

3. Measuring the Expected Credit Losses in the Saudi Banks

The Saudi banks used the internal ratings and the external ratings for major credit rating agencies to measure credit risks. Saudi banks estimate the expected credit losses by estimating the following three parameters, namely probability of default, loss

given default, exposure at default (Annual financial reporting by Saudi banks).

Saudi banks adopt IFRS (9) which adopted an approach with a forward-looking. Banks must consider historical events, current events, and future events when calculating the expected credit losses. Therefore, IFRS (9) ensured that expected credit losses have been recognized in a timely manner either individually or collectively. There are three stages under IFRS (9) as follows:

First stage Included loans purchased from other banks or originated by banks, where the expected credit losses were calculated and recognized over the next (12) months, as well as the recognition of the loan provision. This stage included the existing loans that did not witness a noticeable increase in credit risk since the initial recognition. The same rule applied to them by calculating the expected loan losses during the next (12) months, where the interest income was calculated based on the total book value of the loan. This stage also included loans witnessed an improvement in credit risks and were reclassified from the second and third stages.

The second stage included loans that showed a significant increase in the credit risk since the initial recognition, but they were not considered as impaired loans. The expected credit losses were calculated based on the life of the loan and Interest income was calculated based on the book value of the loan. In addition, this stage included loans witnessed an improvement in credit risks and were reclassified from the third stage.

The third stage included loans that showed significant increases in the credit risk that were considered impaired loans. The expected credit losses were calculated over the lives of the loan and the recognition of a loan provision. The interest income was calculated based on the net book value after excluding the allowance for loan losses. The expected credit losses over the life of the loan were an indicator of the present value of the expected credit losses, i.e., the shortage in future cash flows, although the banks expect to collect these flows later after the maturity date.

4. Methodology and Empirical Results

4.1. Sample and Data Collection

This study was conducted on all (10) banks registered in the Saudi Stock Exchange during the period from 2013 to 2022. The data required to measure the variables of the regression models were obtained from the annual financial reports of the sample banks. As for the stock price information, it was obtained from the official website of the Saudi Stock Exchange, and the researcher calculated the annual returns on the stocks based on stock prices during the study period.

This study used two metrics for earnings management. The first metric took into account both the discretionary component of the allocations for loan losses and the realized earnings and losses on the financial investment portfolio that contained debt instruments and equity instruments, as the two discretionary components were complementary to each other. The second metric used only the discretionary component of the allocations for loan losses to manage earnings. The study used the panel data method and the quantitative method using regression and correlation models.

4.2. First Metric for Earning Management

Anandarajan et al., (2007); Beatty et al., (2002); Leventis and Dimitropoulos (2012) used the discretionary component of the allocations for loan losses as it was the most common metric for earnings management in the banking industry. According to **Cornett et al., (2009)** both the allocations for loan losses, realized earnings, and losses on stocks contain a discretionary component controlled by banks and a non- discretionary component that determined the appropriate level of the allocations for loan losses.

4.3. Research hypothesis

1. Bank-specific variables have statistically significant impacts on the earnings management metric.
2. Macro-economic - specific variables have statistically significant impacts on the earnings management metric.

Hypotheses 1, 2 will be tested by model (4)

$$ALL = \alpha + \beta X1LLA_{i,t} / TL_{i,t-1} + \beta X2 \Delta NPL_{i,t} + \beta X3 LCO + \epsilon \quad (1)$$

4.4. Variables Specifications –Model (1)

X1	$\beta X1NPL_{i,t-1} / TL_{i,t-1}$	It is the balance of the non-performing loans at the beginning of the year for the bank i for the period t divided by the balance of the loan portfolio at the beginning of the year
X2	$\beta X2 \Delta NPL_{i,t}$	It is the non-performing loans for the bank i at t- t-1 deflated by the balance of the loan portfolio at the beginning of the year
X3	LCO	It is the loan charge-offs for year t, deflated by the loan portfolio at the beginning of the year
Y	$ALL / TL_{i,t-1}$	It is ALL/ divided by total loan portfolio at the beginning of the year.

According to **Kanagaretnam et al., (2010)** net loan charge-off has a direct relationship with the allocations for loan losses because loan charge-offs gave information about the collection of the loans in the future. The discretionary component of the allocations for loan losses was the residuals from model (1) and standardized by the ratio of total loans to total assets as suggested by **Leventis and Dimitropoulos (2012)**.

Baltira, I., (2009) indicated that the accounting treatments gave an opportunity to practice earnings management. Banks classify the financial investment portfolio into trading and available-for-sale portfolios. In the event of a need to increase profits, banks sell securities with unrealized gains reported on the statement of the comprehensive income. On the other hand, in the event of a need to reduce profits, banks sell securities with unrealized losses reported on the statement of the comprehensive income. There was another way to manage earnings by changing the intention through which securities can be transferred from the trading category to the available-for-sale category and vice versa.

$$RGL, IT = \alpha + X1\beta TA + X2\beta URGL + \epsilon \quad (2)$$

Whereas:

RSR =realized stock returns deflated by total assets and they are taken from the income statement.

TA=natural logarithm of total assets

URSR=unrealized stocks gains and losses deflated by the total assets, and they are taken from the statement of the comprehensive income.

(ε) The error term of model (2) is the discretionary component of the realized security gains and losses.

The first metric for the earnings management is the difference between the discretionary component from model (1) and the discretionary component from model (2)

If the difference is large, this indicates the banks' involvement in earnings management practices largely, and vice versa. The first metric for earning management is estimated by the following model:

$$EM = DALL - DRGL \quad (3) \text{ See Appendix (1)}$$

The earnings management metric from Model (3) becomes a dependent variable in Model (4) to determine factors affecting earnings management .Following (Cornett et al., 2009) (Beatty et al., 2002)

$$EM = A + X1\beta SIZE + X2\beta FL + X3\beta CAR + X4\beta NOP + X5\beta DUMMY + X6\beta RL + X7\beta CO + X6\beta 8GDP + \epsilon \quad (4)$$

4.5. Variables Specifications –Model (4)

X1	Bx1 SIZE	It is the natural logarithm of the total assets.
X2	$\beta X2 CAR$	It is calculated by banks according to Basel iii rules.
X3	$\beta X3 lev$	It is the total liabilities divided by the total assets
X4	$\beta X4EPTP$	It is the operating profits before taxes and loss for impairment.
X5	Bx5Dummy	Years after Covid 2019 take (1) and years before the pandemic take zero to reflect the impact of the pandemic on earnings management.
X6	RL/L	It is retail loans divided by / Total Loans.
X7	CO/L	It is corporate loans divided by / Total Loans
X8	GDP %	It is the growth rate of gross domestic production to reflect the impact of cyclicity on earnings management.
Y	EM	it is the earnings management metric estimated by model (3)

Determinants of earning management are bank specific variables and macroeconomic specific variables as follows:

According to **Cornett et al., (2009)** Bank size variable was introduced as an explanatory variable, measured by the natural logarithm of the total assets, since banks with a large size are less involved in earnings management practices Therefore, we expect that the parameter of this variable will be negative on the earnings management.

According to **Cornett et al., (2009); Leventis and Dimitropoulos (2012)** the financial leverage is an explanatory variable measured by the ratio of total liabilities to total assets, as banks with a high leverage tend to overestimate their profits to achieve capital requirements. Therefore, it is expected that the parameter of this variable to be positive in relation to earnings management.

According to **Cornett et al., (2009); Leventis and Dimitropoulos) 2012)** the capital adequacy ratio is an explanatory variable calculated according to Basel iii. As banks with a high capital adequacy ratio are less supervised by the Central Bank. Therefore, those banks have a greater opportunity to manage earnings. However, banks with a lower capital adequacy ratio have more incentive to manage earnings to avoid sanctions (Anandarajan et al., 2007). Therefore, the capital adequacy ratio parameter was not uniform. The Saudi banks abide by the instructions of the Central Bank of Saudi Arabia regarding calculating capital adequacy ratios effective as of January 1, 2013, which consider the requirements of Basel III, as the capital adequacy ratios cover the credit risks, the market risks, and the operating risks.

Net operating profit before provisions and taxes is an independent variable, as it is expected that the parameter of this variable to be positive in relation to earnings management. The levels of the operating profits before the loan allowances determine the direction of the earnings management through provisions. High levels of net operating profit before provisions and taxes provide opportunities for managing earnings to down, i.e., overestimate provisions, while low levels of operating profits before provisions provide opportunities for managing profits to up, i.e., underestimate loan provisions.

The structure and components of the loan portfolio determine the size of the risks inherent in the portfolio. Retail loans are characterized by diversification, while corporate loans are characterized by concentration. Therefore, the ratio of retail loans to total loans and the ratio of corporate loans to total loans were included among the determinants of the earnings management, especially since each of them has a different risk structure and hence the size of the allowances varied for each of them.

4.6 Analysis of Results

The results of the correlation analysis indicated that there was a strong and positive correlation between the allocation for loan losses, the balance of non-performing loans, and the value of the provisions for loan losses charged to the income statement as correlation coefficient was 88.6%, and 89.4%, respectively. While there was a very weak correlation between the changes in the loan portfolio balance during the period with the allocation for loan losses. See Table (1)

Table (1) Correlation Analysis Model (1)

	Change in NPL	Change In Loans	Non-Performing Loans t-1/Loans t-1	Charge OFF %	ALL/LOANS
Change in NPL	1				
Change In Loans	0.202394	1			
Non-Performing Loans t-1/Loans t-1	-0.11024	0.046	1		
Charge OFF %	0.098134		0.765566	1	
ALL/LOANS	0.073707	0.109	0.886142	0.893	1

Outputs of SPSS

The results of the regression analysis indicated that the model is statistically significant as it explained 93.7% of the change in the allocations for loan losses. The results also indicated that all the model explanatory variables had statistically significant and positive impacts. That is, these variables represent the main determinants for building allocations for loan losses. See Table (2)

Table (2) Regression Model. (1)

Regression	
Multiple R	0.97398723
R Square	0.94865113

Adjusted R Square	0.93662981			
Standard Error	0.00863601			
F	443.391063			
Significance F	1.61733E-60			
ANOVA	Coefficients	Standard Error	t Stat	P-value
Change in NPL	3.06404E-09	1.04775E-09	2.924393493	0.00430585
CHANGE IN LOANS	6.48878E-11	3.35504E-11	1.93403679	0.05605355
Non-Performing Loans t-1/Loans t-1	0.824365953	0.06952206	11.8576163	1.64343E-20
Charge OFF %	1.15657564	0.14249198	8.11677687	1.60743E-12

Predictor: Allocations /total loans t-1- Significance Level 5%

The results of the correlation analysis indicated that there was a weak and positive correlation between unrealized gains and losses and realized gains and losses as the correlation coefficient was 11.7. See Table (3)

Table (3) Correlation Model (2)

	Realized Gains or Loss	Unrealized Gains or Loss	Total Assets
Realized Gains or Loss	1		
Unrealized Gains or Loss	0.117577	1	
Total Assets	0.064298	-0.2603	1

Outputs of SPSS

The results of the regression analysis indicated that the model was statistically significant as it explained 20.8 % of the change in realized gains and losses. The results also indicated that all the model explanatory variables had statistically significant and positive impacts. That is, the higher the unrealized profits and losses, the higher the realized profits and losses, which indicated using unrealized gains and losses in earning management. See Table (4)

Table (4) Regression Model (2)

Regression				
Multiple R	0.47592884			
R Square	0.22650826			
Adjusted R Square	0.20841141			
Standard Error	0.00169669			
F	14.34909337			
Significance F	3.47514E-06			
ANOVA	Coefficients	Standard Error	t Stat	P-value

Unrealized Gains or Loss	0.09295678	0.0472590	1.966961006	0.05201552
Total Assets	3.22038E-12	6.16445E-13	5.224120591	9.85553E-07

Predictor: Realized Gains or Loss- Significance Level 5%

The results of the correlation analysis indicated that there was a weak and inverse correlation between the earnings management metric, financial leverage, assets volume, the capital adequacy ratio, the dummy variable, and the ratio of the corporate loans to the total loan portfolio. While there was a weak and positive correlation between the earnings management metric and the net operating income before taxes zakat and provisions for loan losses, the ratio of corporate loans to total loans and GDP growth. See Table (5)

Table (5) Correlation Analysis Model (4)

	EM	FL	TA	CAR	NPBTP	Dummy	GDP %	Retail %	Corporate %
EM	1								
FL	-0.061	1							
TA	-0.089	-0.09	1						
CAR	-0.008	-0.005	-0.106	1					
NPBTP	0.04	-0.08	0.92	-0.11	1				
Dummy	-0.05	-0.06	0.29	0.08	0.21	1			
GDP %	0.15	-0.01	0.11	0.17	0.07	0.076	1		
Retail %	0.04	0.787	0.214	0.01	0.29	0.011	-0.01	1	
Corporate %	-0.10	0.96	-0.19	-0.01	-0.21	-0.0893	-0.02	0.61	1

Output SPPS

According to Table (6), the results of the regression analysis indicated that the model was statistically significant as it explained 17.8 % of the change in the earnings management metric. The results of the regression analysis indicated that there was a statistically significant and direct impact of the financial leverage on the earnings management metric, meaning that banks with high financial leverage tend to engage in earnings management practices.

There was a statistically significant and inverse impact of the size of the bank on the earnings management metric, meaning that banks with large size were less involved in earnings management.

There was a statistically significant and direct impact of the levels of net operating profits before loan losses, taxes, and zakat on the earnings management metric. That is, the higher the levels of those profits, the more banks engage in earnings management practices by storing profits via controlling the discretionary component of the allocations for loan losses.

There was a statistically significant and direct impact of the GDP growth on the earnings management metric. That is, the higher the GDP growth the more banks get involved in earnings management practices via storing profits by controlling the discretionary component in allocations for loan losses.

There was a statistically insignificant impact of the dummy variable on the earnings management metric. That is, there were no differences in the earnings management practices by banks whether before or after the Corona pandemic. There was no a statistically significant impact of the capital adequacy ratio on the earnings management metric .That is, it was not one of the determinants of the earnings management in Saudi banks.

There was a statistically significant and inverse impact of the ratio of retail loans to total loans and the ratio of corporate loans to total loans on the earnings management metric. Both ratios have had the same impact on earnings management practices despite the different characteristics and risk profiles of each.

Based on the results of the regression model (4) the alternative hypothesis (1) was accepted for the financial leverage, total assets, and net operating profit before taxes and zakat and loan provision, , and loan portfolio components as they were the most influential determinants of the earnings management. While the alternative hypothesis was rejected for the capital adequacy ratio. As it was not one of the determinants of earnings management. In addition, the alternative hypothesis (2) was accepted, as GDP was one of the determinants of earnings management.

Table (6) Regression Model (4)

Regression				
Multiple R	0.496305657			
R Square	0.246319305			
Adjusted R Square	0.178104469			
Standard Error	0.00526758			
F	3.758451055			
Significance F	0.000762998			
ANOVA	Coefficients	Standard Error	t Stat	P-value
Financial Leverage	0.022615444	0.00840351	2.69118965	0.00845718
Total Assets	-2.69798E-	8.48868E-	-3.17832698	0.00201788
CRA	-0.000135941	0.00022542	-0.60305874	0.54795342
NPBTP	8.09253E-10	3.15541E-10	2.564657231	0.01194681
Dummy	-1.32089E-	0.00122876	-0.010749728	0.9914464
GDP %	0.036533257	0.01706712	2.140562571	0.03495399
Retail %	-0.015053134	0.00763312	-1.972080689	0.05160365
Corporate %	-0.017927002	0.00640111	-2.80060441	0.00621669

Predictor: Earning Management Metric-Significance Level 5%

4.7. The Second Measure for Earning Management

Dechow et al., (2010) explained that the previous studies used several indicators as a measure of the earnings management in non-banking companies, such as loss avoidance, investor response, and the discretionary accruals. However, for banks many previous studies such as Cheng et al. 2011; Zoubi et al. (2007); Kanagaratnam et al. (2004); Beaver and Engel, (1996) have used the discretionary component of the allocations for loan losses as a metric for the earnings management. Therefore, Analyzing the allocations for loan losses into the discretionary and the non-discretionary was required. Following Ben Othman and Mersni (2014); Cheng et al., (2011); Zoubi et al., (2007) the study used the following model to separate the two components:

$$ALL = \alpha + \beta X1NPL_i, t-1 + \beta X2 \Delta NPL_i, t + \beta X3 \Delta TL_i, t + \epsilon (1)$$

4.8. Variables Specifications –Model (1)

Y	ALL it/TL, I, t-1	It is the total allocations for loan losses for the bank i for the period t deflated by the balance of the loan portfolio at the beginning of the year.
X1	$\beta X1NPL_i, t-1 / TL, IT-1$	It is the balance of the non-performing loans at the beginning of the year for the bank i for the period t divided by the balance of the loan portfolio at the beginning of the year
X2	$\beta X2 \Delta NPL_i, t$	It is the non-performing loans for the bank i t- t-1 deflated by the balance of the loan portfolio at the beginning of the year
X3	$\beta X3 \Delta TL_i, t$	It is the total loan portfolio for the bank i t- t-1 deflated by the balance of the loan portfolio at the beginning of the year

4.9. Study Hypothesis

The discretionary component of the allocation for loan losses has statistically significant impacts on the performance metrics. This hypothesis is tested by models (2, 3, 4, 5, and 6).

4.10. Model Specifications

Alsahawneh, (2016); Akram et al., (2015) measured the impact of the earnings management using the discretionary component of the allowances of loan losses on banks' profits metrics and market metrics. The following regression models were estimated as the earning management metric was used as independent variable and the return on assets, the return on equity, and the earnings per share as the dependent variables. In addition, the price per share and the returns on share were used as proxies for market performance as dependent variables. In addition, some independent variables were included as control variables that might affect the profitability and market metrics such as the size of the bank, the financial leverage, and the capital adequacy ratio, the net operating income before taxes and loan provisions, and dummy variable to capture the impact of corvid 2019 on profitability and market metrics.

$$ROA = \alpha + \beta X1DALL i, t + \beta X2 SIZE i, t + \beta X3 CAR i, t + Bx4 lev, i, t + \beta X5EPTP i, t + Dummy + \epsilon \quad (2)$$

$$ROE = \alpha + \beta X1DALL i, t + \beta X2 SIZE i, t + \beta X3 CAR i, t + Bx4 lev, i, t + \beta X5EPTP i, t + \beta X6 Dummy + \epsilon \quad (3)$$

$$EPS = \alpha + \beta X1DALL i, t + \beta X2 SIZE i, t + \beta X3 CAR i, t + Bx4 lev, i, t + \beta X5EPTP i, t + \beta X6 Dummy + \epsilon \quad (4)$$

$$SP = \alpha + \beta X1DALL i, t + \beta X2 SIZE i, t + \beta X3 CAR i, t + Bx4 lev, i, t + \beta X5EPTP i, t + \beta X6 Dummy + \epsilon \quad (5)$$

$$SR = \alpha + \beta X1DALL i, t + \beta X2 SIZE i, t + \beta X3 CAR i, t + Bx4 lev, i, t + \beta X5EPTP i, t + \beta X6 Dummy + \epsilon \quad (6)$$

4.11 Variables Specification –Models (2, 3, 4, 5, 6)

X1	$\beta X1DALL$	It is the discretionary component of the allowances for loan losses and was calculated using the residuals of Model (1)
X2	$\beta X2 SIZE$	It is the natural logarithm of the total assets
X3	$\beta X3 CAR$	It is calculated by banks according to Basel (3) rules.
X4	$\beta X2 lev$	It is the total liabilities divided by the total assets
X5	$\beta X5EPTP$	It is the operating profits before taxes and loss for impairment.
X6	Dummy	Years after Covid 2019 take (1) and years before the pandemic take zero.
Y1	ROA	It is net income / total assets.
Y2	ROE	It is net the income after excluding dividends to preferred stocks / end-of-year total equity.
Y3	EPS	It was taken from bank annual reports.
Y4	SP	It is the share price for bank i for the period t
Y5	SR	I is the net annual returns on shares based on daily returns $SR = \frac{\text{the price for day } t - \text{the price for day } t-1}{\text{the price for day } t-1}$

4.12 Analysis of Results

The results of the correlation analysis of the variables of Model (2) indicated that there was a positive and strong correlation between the non-performing loans balance and the allocations for loan losses, as the correlation coefficient amounted to 88.6%. See Table (7)

Table (7) Correlation Analysis Model (1)

	Change in NPL	CHANGE IN LOANS	ALL/LOANS	Non-Performing Loans t-1/Loans t-1
Change in NPL	1			
CHANGE IN LOANS	0.2023942	1		
ALL/LOANS	0.0737068	0.1095037	1	
Non-Performing Loans t-1/Loans t-1	-0.11023957	0.0462153	0.8861423	1

SPSS outputs.

The results of the correlation analysis indicated that there was a weak and inverse correlation between the discretionary components of the allocations for loan losses and the total assets, as the correlation coefficient was - 23.6. See Table (8)

The results of the correlation analysis of models (2, 3, 4, 5, and 6) indicated that there was a strong and direct correlation between the share price and net operating profit before taxes, zakat, and loan provision. , as the correlation coefficient was 77.3%.See Table (8)

The results of the correlation analysis indicated that there was an average and direct correlation between the earnings per share and the total assets, as the correlation coefficient was 58.3% See Table (8)

The results of the correlation analysis indicated that there was a strong and direct correlation between the return on assets, the return on equity, and the earnings per share. See Table (8)

Table (8) Correlation Analysis Model 2,3,4,5, 6

	ROA	ROE	EPS	Share Price	Share Return	DC	FL	TA	CAR	NPBTP
ROA	1									
ROE	0.9	1								
EPS	0.7	0.8	1							
Share Price	0.3	0.4	0.55	1						
Share Return	0.2	0.1	0.08	0.03	1					
DC	0.3	0.4	0.1	-0.08	0.118	1				
FL	-0.06	0.0	-0.0	-0.08	-0.024	0.07	1			
TA	0.33	0.3	0.58	0.73	-0.072	-0.23	-0.09	1		
CAR	-0.15	-0.1	-0.10	-0.13	0.304	-0.04	-0.0	-0.1	1	
NPBTP	0.52	0.5	0.71	0.77	-0.055	-0.04	-0.08	0.9	-0.1	1

Outputs of SPSS

The results of the regression analysis indicated that the model (1) is statistically significant as it explained 91% of the change in the allocations for loan losses. The results also indicated that all the model explanatory variables have statistically significant and positive correlation. That is, these variables represent the basic determinants for building the allocations for loan losses. See Table (9)

Table (9) Regression Model (1)

Regression				
Multiple R	0.95572			
R Square	0.91341			
Adjusted R Square	0.90131			
Standard Error	0.01115			
F	341.0819896			
Significance F	4.7641E-51			
ANOVA	Coefficients	Standard Error	t Stat	P-value
Change in NPL	5.38624E-09	1.30211E-09	4.13655922	7.5059E-05
CHANGE IN LOANS	8.14853E-11	4.32617E-11	1.883543666	0.062622266
Non-Performing Loans t-1/Loans t-1	1.307964273	0.046282465	28.26047134	1.29245E-48

Predictor: Allocations /total loans t-1- Significance Level 5%

The results of the second regression model indicate that the model (2) was statistically significant, as it explained 78.6% of the change in the return on assets, and all the model variables were statistically significant except for the capital adequacy ratio, net operating profits before taxes and zakat and the provision for loans, as well as the dummy variable. See Table (9)

Table (9) Regression Model (2)

Regression				
Multiple R	0.898398284			
R Square	0.807119477			
Adjusted R Square	0.786221576			
Standard Error	0.008059786			
F	65.55805416			
Significance F	2.97023E-31			
ANOVA	Coefficients	Standard Error	t Stat	P-value
Discretionary Component	0.35660467	0.0837406	4.25843938	4.87742E-
Financial Leverage	0.00427577	0.00086517	4.94209551	3.36012E-
Total Assets	3.99396E-	1.3259E-11	3.01227051	0.0033312
Capital Adequacy Ratio	0.00033352	0.00033273	1.002373906	0.3187364
Profits Before Tax and Provisions for Loan Losses	1.46885E-	4.6814E-10	0.31376174	0.7439722
Dummy	-0.002936244	0.0018622	-1.57670209	0.1182237

Predictor ROA- Significance Level 5%

The results of the regression model (3) indicate that the model was statistically significant, as it explained 80.6% of the change in the return on equity. All the model variables are statistically significant except for the capital adequacy ratio, net operating profits before taxes and zakat, and the provision for loans, as well as the dummy variable. See Table (10)

Table (10) Regression Model (3)

Regression				
Multiple R	0.908711			
R Square	0.825755			
Adjusted R Square	0.805848			
Standard Error	0.05302			
F	74.24504763			
Significance F	2.72881E-33			
ANOVA	Coefficients	Standard Error	t Stat	P-value
Discretionary Component	3.082512	0.55087	5.595713	2.16E-07
Financial Leverage	0.028386	0.005691	4.987605	2.79E-06
Total Assets	2.5E-10	8.72E-11	2.868408	0.005094
Capital Adequacy Ratio	0.001048	0.002189	0.478627	0.633315
Profits Before Tax and Provisions For Loan Losses	1.84E-09	3.08E-09	0.598476	0.550962

Dummy	-0.01523	0.012251	-1.24335	0.216832
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Predictor: ROE- Significance Level 5%

The results of the regression model (4) indicated that the model is statistically significant, as it explains 84.2% of the change in the earnings per share, and that all the model variables are statistically significant except for the capital adequacy. See Table (11)

Table (11) Regression Model (4)

Regression				
Multiple R	0.927568831			
R Square	0.860383935			
Adjusted R Square	0.842319251			
Standard Error	1.063041826			
F	96.54582623			
Significance F	9.7396E-38			
ANOVA	Coefficients	Standard Error	t Stat	P-value
Discretionary Component	43.40569174	11.0449414	3.92991595	0.00016225
Financial Leverage	0.503841536	0.11411175	4.41533404	2.69275E-5
Total Assets	4.47832E-09	1.74879E-	2.56081667	0.01203499
Capital Adequacy Ratio	0.053485002	0.04388617	1.21872100	0.22599983
Profits Before Tax And Provisions For Loan Losses	1.36966E-07	6.17452E-	2.21824591	0.02894610
Dummy	-0.695976241	0.24562321	-2.83351170	0.00563474

Predictor EPS- Significance Level 5%

The results of the regression model (5) indicated that the model was statistically significant, as it explained 86.7% of the change in the Share Price. All the model variables are statistically significant except for the capital adequacy ratio. See Table (12)

Table (12) Regression Model (5)

Multiple R	0.9403881			
R Square	0.88432977			
Adjusted R Square	0.86753880			
Standard Error	10.4408763			
F	119.7758556			
Significance F	1.60972E-			
ANOVA	Coefficients	Standard Error	t Stat	P-value
Discretionary Component	213.039593	108.48008	1.96385900	0.05250078
Financial Leverage	3.49529063	1.12077130	3.11864751	0.00241180
Total Assets	4.38235E-08	1.71761E-08	2.55142811	0.01234199
Capital Adequacy Ratio	-0.13999196	0.43103677	-0.32477964	0.74606954
Profits Before Tax and	1.24561E-06	6.06442E-07	2.05395570	0.04275675

Provisions For Loan Losses				
Dummy	11.1515208	2.41243713	4.62251251	1.20614E-05

Predictor Share Price- Significance Level 5%

The results of regression model (6) indicated that the model was statistically significant, as it explained 20.2% of the Annual Share Returns. All the model variables are statistically significant except for net operating profits before taxes zakat, and the provision for loans, as well as the dummy variable See Table (13)

Table (13) Regression Model (6)

Regression				
Multiple R	0.5031406			
R Square	0.2531505			
Adjusted R Square	0.2027861			
Standard Error	0.2366329			
F	5.3103399			
Significance F	9.52194E-05			
ANOVA	Coefficients	Standard Error	t Stat	P-value
Discretionary Component	4.8908583	2.4586020	1.98928	0.049576
Financial Leverage	0.0198010	0.0254012	0.77953	0.437625
Total Assets	5.59048E-	3.8928E-10	1.43610	0.154291
Capital Adequacy Ratio	0.0345847	0.0097690	3.5402	0.00062
Profits Before Tax and Provisions For Loan Losses	-1.2702E-08	1.37445E-08	-0.9241	0.357773
Dummy	-0.03906116	0.0546756	-0.71441567	0.4767405

Predictor: Annual Share Returns - Significance Level 5%

Results of Regression models (5, 6) indicated that there were statistically significant and direct correlations between the discretionary component of the allocations for loss losses and the share price and annual returns on shares. That is, investors in the stock exchange are aware of the existence of the discretionary component of the allocations for loan losses, and this component was viewed in a positive way when investors value shares and determining the expected returns. See Tables (12, 13)

Based on the results of models (2, 3, 4, 5, and 6) the alternative hypothesis was accepted as the discretionary component of allowances for loan losses had positive impacts on profitability and market performance metrics.

5. Discussions and Results

The study aimed to address the phenomenon of earnings management in the Saudi banks to determine its determinants, whether internal or external factors, especially since the previous studies did not address this phenomenon. The study also aimed to determine the impact of the earnings management variable on the performance of banks using the traditional financial ratios and performance indicators based on market data, to find out whether

the investors were aware of the existence of this phenomenon and what their reactions was. To achieve the goal of the study, an indicator was calculated as a proxy for earnings management using the discretionary component of the allocations for loan losses and the discretionary component of the realized gains and losses of the investment portfolio. The study used bank-specific variables and macroeconomic variables to determine the internal and external determinants of the earnings management in the Saudi banks during the period 2013-2022

The study used the quantitative method as the study used the correlation analysis and regression models to test the research hypotheses and answer the research questions. The results of the study indicated that the size of the bank had a statistically significant inverse impact on the earnings management index, as large banks engage in earnings management to a lesser extent than small banks (Cornett et al., 2009). Financial leverage also had a positive impact on the earnings management, as banks with the high financial leverage engage to a greater extent in earnings management practices (Cornett et al., 2009) (Leventis and Dimitropoulos, 2012). In addition, net operating income before loan provisions had a positive impact on the earnings management index, as the increase in those profits promote earnings management practices. GDP had a positive impact on the

earnings management index. As in the times of high economic growth, banks tend to increase the level of provisions (Reserve (Bank of Atlanta, 2000)

Regarding the impact of the earnings management index on the return on assets, the return on equity, and the earnings per share indicators, the results indicate that the discretionary component of the allocations for loan losses had a positive impact on all profitability metrics and on the share price and the annual share returns. That is, the investors' reaction was positive regarding the use of the discretionary component in managing earnings, and they are aware of this when pricing the shares.

Earning Management Metric -Second Metric - Residuals from Models (1)	Earning Management Metric -First Metric (Differences between Residuals from Models (1 And 2)
-0.012254352	-0.007526038
0.003462782	-0.001263826
0.001511228	-0.00239607
0.006761262	0.000110619
0.002922862	-0.002391685
0.001810067	-0.00038749
0.002788435	0.00011011
0.001293266	-0.002215406
-0.003468539	-0.00017419
-0.00535147	-0.000869167
-0.019421862	-0.011873583
0.001969682	-0.003436056
0.003128446	-0.005048728
0.009380811	-0.002668071
0.02192624	-0.001846173
0.005789768	0.005579832
0.00257787	0.002714318
0.022394792	-0.00339508
0.016584138	0.008780843
0.014130714	0.01129485
0.002505151	0.000790333
0.00529799	-0.00084543
0.004326422	0.001408428
0.003345299	0.001643535
-0.003649994	-0.0004754
0.002556827	0.0051985
-0.016159364	-0.011464268
-0.017053925	-0.006131965
0.007936246	0.006298875
0.005054217	0.009199733
0.004870108	0.003773732
	0.003713512

0.004176184	0.01476498
0.006385759	0.004227022
0.008487812	0.005239966
0.000338044	0.003717135
-0.004354005	-0.001894096
-0.007554616	-0.008561641
-0.000631656	0.001254614
-0.003334778	-0.001143476
-0.002914063	0.002166797
0.001050861	0.002413447
0.003170291	0.00256671
0.00351518	0.001954219
0.006676494	0.004072613
0.010215564	0.012936627
0.01158577	-0.010346486
-0.021645759	-0.009705644
-0.03504927	-0.006242261
-0.033477338	-0.007197435
-0.03218919	0.001842309
0.005478401	0.006284274
0.010201946	0.006717929
0.010846308	0.005854422
0.010584612	-0.000954226
0.005919533	0.001852244
0.006162691	0.004410937
0.006400421	0.000828268
-0.001820793	-0.005450216
-0.009659973	0.004131416
0.004198984	-0.004739736
-4.43539E-05	0.000890718
0.006860126	0.003537735
0.007204852	0.005585622
0.01180168	0.006940384
0.013093278	0.012777703
0.02004542	0.008976727
0.015285894	0.006327337
0.011192078	0.004374171
0.004208401	0.00215467
-0.000865225	0.002472959
-0.003417183	-0.005993321
0.008909635	0.009490168
0.009373341	0.007179958
0.009336736	0.007192266
0.015002951	0.010061854
0.021132532	0.009342632

0.017597017	0.012281994
0.021368179	0.013043461
0.019599844	0.010779348
0.01651913	-0.003980183
0.002901195	-0.001764052
-0.001314118	-0.000915065
-0.000226226	-0.000694895
-0.001529458	-0.002689404
0.000221928	0.008459479
0.01246455	0.003600905
0.006654043	-0.000815194
0.001951421	0.001910342
0.004484339	0.000619553
0.002567999	0.000584714
-0.000389529	0.002889969
0.004475311	0.000812845
0.001101604	9.93997E-05
0.002817991	0.001747363
0.002162144	0.002623345
0.00072398	0.001206178
-1.05877E-05	-0.000627595
-0.003383377	-0.006605202
-0.014335655	-0.000764771
-0.007327541	

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