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-RESEARCH ARTICLE-

DECONSTRUCTING ACCRUAL QUALITY: UNVEILING THE RELATIONSHIP BETWEEN MARKET-BASED ACCOUNTING MEASURES AND ACCRUAL MANIPULATION IN SAUDI ARABIAN COMPANIES

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─Abstract─

This research investigates market-driven accounting metrics and the manipulation of accruals within Saudi Arabian corporate entities. Stakeholders such as financial practitioners, policymakers, and researchers in Saudi Arabia stand to gain insights into the determinants of accrual quality through the findings of this study. This research scrutinizes market-based accounting indicators, firm-specific attributes, and contextual factors, with particular emphasis on Tobin's Q, firm size, leverage, growth, and auditor reputation. The application of the most recent selection bias correction technique, namely Propensity Score Matching (PSM), enhances the internal validity of the research. The study relies on Saudi Arabian industry annual reports spanning the years 2010 - 2022 to bolster the credibility of its findings. Saudi companies display varied factors influencing accrual quality. A notable correlation exists between Tobin's Q and accrual quality, signifying superior quality for entities with market values exceeding book values. Conversely, a negative association is observed between company accrual quality and higher book-to-market ratios. Larger organizational sizes are linked to enhanced accrual quality, while leverage diminishes it, highlighting the impact of financial risk on reporting practices. Accrual quality also benefits from growth and auditor reputation, emphasizing external validation and monitoring. To alleviate selection bias, this study utilizes PSM,

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establishing a statistically equivalent control group for each treated organization. This method enhances comparisons among entities with varying accrual quality, addressing a crucial challenge in observational research. Incorporating industry dummies, year dummies, and moderating variables contributes to a theoretical understanding of accrual quality characteristics, enriching Saudi literature. This study presents applications that extend to financial advisors and policymakers, offering valuable insights for informed investment decisions and legislative effectiveness. The determinants identified herein serve as practical tools for stakeholders seeking to make judicious financial choices. The findings underscore the importance of upholding rigorous auditing standards and shed light on the impact of reputation on accrual quality, providing guidance for auditors. Moreover, the study lays a foundation for future research endeavours exploring market-based accounting metrics and accrual quality in contexts beyond Saudi Arabia, thereby contributing to theoretical advancements.

Keywords: Accrual Quality, Auditor Reputation, Propensity Score Matching (PSM), Accrual Manipulation, Country-Specific Factors, Emerging Markets

BACKGROUND OF THE STUDY

Financial accounting relies on accruals to monitor revenue and spending. Accrual quality, emphasizing reliability and utility, is crucial for researchers and practitioners. Extensive research in developed economies, including the United States and other Western nations, underscores the widespread interest in understanding accrual quality intricacies and implications (Elsiddig Ahmed, 2020; Hu et al., 2023; Vithana et al., 2023). An examination of the determinants of accrual quality in Saudi Arabia is warranted, given the limited understanding of the dynamics surrounding accrual quality in emerging markets (Alyaarubi et al., 2021). In the rapidly expanding Saudi Arabian business landscape, influenced by cultural, regulatory, and economic factors, the financial system has undergone significant transformations in response to globalization, regulatory reforms, and increased investor scrutiny over the past decade. Consequently, there is a pressing need to investigate the determinants of accrual quality in Saudi Arabia. Stakeholders, including investors, policymakers, and auditors, must gain insights into the accrual quality of Saudi companies within this evolving business environment. This study contributes to the existing literature by scrutinizing the parameters of accrual quality specific to Saudi Arabia (Muda & Ade Afrina, 2019). Global financial reporting has evolved with market dynamics, legal frameworks, and technology. Measures like Tobin's Q complicate the link between financial markets and accrual quality. Understanding this interaction is crucial as Saudi Arabia emerges as a global economic force. This study aims to untangle these complexities, revealing factors influencing accrual quality in Saudi Arabian firms and improving financial reporting in this evolving market (Li & Faff, 2019; Saleh et al., 2020; Shen et al., 2022).

In recent years, there has been a heightened emphasis on global scrutiny and transparency

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standards in financial reporting. Financial statements serve as pivotal tools employed by investors, regulatory bodies, analysts, and the general public for the comprehensive assessment of organizational financial conditions (Tuan & Duyen, 2020). Accrual quality, characterized by trustworthiness and in formativeness in financial statements, is crucial for various aspects such as earnings management, financial decision-making, and corporate governance. Exploring accrual quality in the Saudi Arabian context is particularly relevant due to the unique challenges and opportunities in emerging markets, shaped by legal, cultural, and economic differences. This inquiry offers a distinctive perspective on the application and effectiveness of accrual quality in a non-industrialized setting (Beuselinck et al., 2019; Chen & Gong, 2019; Hayoun, 2019; Saleh et al., 2020). This study centres on Saudi Arabia, a rapidly growing nation with a strong financial sector aligning with Vision 2030's economic diversification and openness goals. Recent legislative changes in Saudi Arabia mandate disclosure and governance, influencing financial reporting and accrual quality. Consequently, research on Saudi accrual quality can aid regulators, practitioners, and policymakers in enhancing the integrity and reliability of financial information (Roychowdhury, 2004).

In consonance with the global trend toward transparency and evolving market dynamics, this research contributes to the advancement of accrual quality investigations. The intricacies of the discourse are compounded by Saudi Arabia's economic ambitions, legislative transformations, and involvement in international financial frameworks (Adnan et al., 2023). Despite extensive research on accrual quality in diverse financial contexts, the nuanced connection between market-based accounting indicators and accrual manipulation remains insufficiently understood, particularly in emerging markets such as Saudi Arabia. Most studies (Aljawaheri et al., 2021; Beuselinck et al., 2019; Marciukaityte & Szewczyk, 2011; Roychowdhury, 2004; Saleh et al., 2020) predominantly focused on developed economies like the US, neglecting the impact of emerging market economic, regulatory, and cultural factors on financial reporting. This gap impedes understanding the influence of market-driven measures, such as Tobin's Q, on accrual quality dynamics across institutional systems. As Saudi Arabia expands its economic influence, investors, auditors, and policymakers must grasp accrual manipulation and market-based accounting. Understanding these moderating factors is crucial for financial reporting accuracy and evaluating accrual quality in diverse economic environments. The conditional link between market-based indicators and accrual quality, considering these moderating variables, requires investigation to address this significant gap (Alhadab & Clacher, 2018; Biswas et al., 2023; Nwoye et al., 2021).

This study addresses the challenge of accrual manipulation in financial reporting, focusing on market-based accounting metrics. The reliability of financial reporting hinges on accrual quality, as firms adjust to meet market expectations, impacting stakeholders like investors, creditors, and regulators. The problem statement delves into the intricate relationships between market-based measures such as Tobin's Q and accrual quality, aiming to understand and address the implications of accrual manipulation on financial decision-makers. Additionally, the study highlights the lack of awareness

regarding how leverage and expansion moderate market-based measures and accrual quality (Baloch et al., 2023; Durana et al., 2021). Understanding how moderating factors impact observed linkages in financial reporting systems reveals contextual complexities crucial for accrual quality dynamics. The unknown conditional relationship between market-driven metrics and accrual quality hinders the development of comprehensive financial reporting assessment models and frameworks. This study sheds light on the intricate connections between market-based accounting indicators and accrual quality, enhancing the financial reporting reliability of Saudi Arabian firms (Duan et al., 2023; Rezaee et al., 2020).

This study investigates market-based accounting metrics and accrual manipulation in Saudi Arabian companies, specifically examining Tobin's Q and the impact of market-driven indicators on accrual quality and financial reporting. Additionally, the study explores the conditional nature of leverage and growth, investigating their moderating effects on the relationship. By revealing how market-driven variables, such as Tobin's Q, influence accrual quality, the research elucidates how emerging market enterprises strategically manage accruals to align with market expectations. This enhances the understanding of accounting standards and market valuations for financial statement stakeholders. Examining moderating factors like leverage and expansion enhances field theories, refining models by recognizing the conditional relationship between market-based variables and accrual quality. This theoretical advancement contributes to scholarly discourse and aids investors and auditors in understanding firm-specific factors influencing observed connections. The study employs PSM to mitigate selection bias, utilizing advanced statistical methods to enhance the analysis of accrual quality and market-based accounting.

This manuscript is organized as follows: The initial section addresses the background, research gap, objectives, and notable contributions. The subsequent section delves into a comprehensive review of prior literature. The third section outlines the research methodology, incorporating the latest techniques employed. Subsequently, the fourth section elucidates and justifies the research analysis. Finally, the concluding section discusses the results, presents conclusions, outlines research implications and limitations, and provides recommendations.

REVIEW OF LITERATURE

The realms of accounting and finance have undertaken comprehensive investigations into accrual quality, a foundational aspect of financial reporting. Extensive research in this domain has predominantly concentrated on affluent nations, as exemplified by the methodologies devised by (Gu et al., 2023; Hui et al., 2023). These methodologies aim to evaluate accrual quality by discerning genuine economic activities from instances of earnings management. Additionally, certain financial reporting models employ metrics

that quantify managerial discretion, particularly through the assessment of discretionary accruals. Azzam et al. (2021) and Indarti and Widiatmoko (2021) have demonstrated the impact of accrual quality on firm valuation, underscoring the imperative of precise financial reporting for investors and capital markets.

Accrual quality, despite notable advancements in the existing literature, has been relatively overlooked in burgeoning regions such as the Middle East. The majority of scholarly inquiry has tended to disregard the economic, regulatory, and cultural challenges unique to emerging markets, predominantly concentrating on the United States and Europe. In response to this lacuna, recent research endeavours have sought to explore and comprehend accrual quality in the context of emerging markets. Contributing to this emerging field, investigations into accrual quality in Chinese and Brazilian contexts have been conducted by Beyer et al. (2019), Hasanuddin et al. (2021) and Lagouvardou et al. (2020). Recognizing the demand for more nuanced examinations of accrual quality in diverse emerging markets, the present study directs its attention towards enterprises in Saudi Arabia. This undertaking aims to fill existing gaps and enhance our comprehension of the intricate dynamics governing accrual quality in this specific setting.

In the domain of accounting research, significant attention is directed towards accrual quality, a critical component of financial reporting. Pioneering models, as introduced by Hastuti et al. (2020), have delineated discretionary accruals—indicative of managerial discretion—from nondiscretionary accruals, which are externally determined. The Jones Model and Modified Jones Model serve as tools enabling researchers to assess reported earnings. The multifaceted causes and repercussions of accrual quality manifest across various domains. Researchers observe that a multitude of factors exert influence on both accrual quality and reported earnings. Numerous factors affect accrual quality and reported earnings, say researchers. Attia et al. (2023) observed lower accrual quality in firms characterized by information asymmetry and financial distress. The study indicates that both board independence and audit committee expertise play pivotal roles in influencing accrual quality (Chen et al., 2023; Khan et al., 2022). Accrual quality is shaped by a combination of internal and external factors, as posited by these research findings. This quality of accruals, in turn, exerts an influence on both firm performance and information asymmetry. Buchholz et al. (2020) determined that companies exhibiting high accrual quality demonstrate diminished capital expenditures and superior overall performance. Zalata et al. (2019) explored how accrual quality enhances financial statements and reduces information asymmetry, emphasizing its significance in financial reporting, markets, and stakeholder considerations. Despite advancements, measuring and interpreting accrual quality remains challenging due to subjectivity and manipulation. Aliseda et al. (2023) and Stolowy and Breton (2004) conducted research to identify discretionary accruals, developing methods to overcome limitations in accrual quality measurement.

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Continuous inquiry underscores the critical role of accrual quality research in financial analysis and decision-making.

Historically, research on accrual quality has predominantly focused on developed nations, but there is a growing interest in investigating the characteristics of emerging markets (Almarayeh et al., 2020; El-Massry et al., 2023; Owusu et al., 2022). Scholars recognize the imperative of studying accrual quality in evolving economies, with Chinese research shaping the discourse on how government intervention, regulations, and corporate characteristics influence accrual quality. Despite its understudied status in the quality literature, Saudi Arabia's industry offers a natural context for research, considering the contextual differences in emerging markets. The governments of both China and Saudi Arabia exert influence on corporate operations and financial reporting (Mostafa, 2020; Nguyen et al., 2023). Saudi Arabia's cultural, legal, and economic factors warrant specific attention, necessitating scholars to evaluate market idiosyncrasies beyond the global accrual quality discourse. Despite shared growth as markets, the differences in governmental, legal, and cultural systems between China and Saudi Arabia suggest the potential need for adaptations in accrual quality methods and market-based accounting. Exploring these distinctions can shed light on Saudi accrual quality trends and emerging nation financial reporting systems, contributing to a clearer understanding of accrual quality and its determinants in this unexplored territory (Dang et al., 2020).

Recent research has emphasized the significance of moderating variables in evaluations of accrual quality using market-based measures. Leverage functions as a moderator, influencing a firm's dependence on debt (Sitanggang et al., 2020; Sulistiawan & Rudiawarni, 2019). Researchers suggest that Tobin's Q and the book-to-market ratio can influence accrual quality, particularly in firms with varying levels of debt. Entities with larger debt may exhibit distinct accrual quality patterns. Utilizing leverage as a moderator in accrual quality analysis acknowledges the interplay between financial structure and market-based factors. Recent research also explores the moderating effect of growth. When combined with market-based accounting metrics, revenue growth may compromise accrual quality, particularly in high-growth enterprises that may present financials differently, impacting reliability. The intricate relationship between growth and market-based metrics is further complicated by varying effects on accrual quality for firms with diverse developmental trajectories (Ali et al., 2019; Nguyen et al., 2023; Stolowy & Breton, 2004).

Researchers have identified that moderating variables exert differential effects across sectors and environmental contexts. The presence of leverage and expansion introduces complexities into market-based evaluations and accrual quality assessments, primarily attributed to the unique idiosyncrasies inherent in specific industries (Azzam et al., 2021; Beyer et al., 2019; Hasanuddin et al., 2021). Capital-intensive industries may

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manifest distinctive behaviours, as revealed in recent research emphasizing the crucial role of moderating variables in market-based accounting measures and accrual quality. Assessing moderators such as leverage and growth is intricate and time-consuming due to economic, legal, and market complexities. Scholars investigate the dynamic interaction between market-based metrics and accrual quality, recognizing the importance of moderators. This recent inquiry establishes that moderators, including time, leverage, industry characteristics, and expansion, significantly influence market judgments and accrual quality. Tobin's Q and the book-to-market ratio are notable in market-based accounting, evaluating a company's growth, efficiency, and financial standing by comparing market value to replacement cost. Recently, Lagouvardou et al. (2020) and Baloch et al. (2023), the findings indicate that market indices serve as predictors of Tobin's Q and subsequent financial outcomes. Elevated market optimism coupled with a high Tobin's Q may convey ambiguous signals, suggesting potential overvaluation or robust investment opportunities. The intricacies of financial scenarios are compounded by the influence of industry dynamics, contextual backdrop, and moderating variables, which collectively impact market indicators and contribute to variations in corporate success.

Current research places emphasis on the examination of accrual quality and market-based accounting. The impact of market-based variables on accruals, particularly in assessments related to the quality of financial reporting, is highlighted in this context (Alhadab & Clacher, 2018). Alyaarubi et al. (2021) and Tuan and Duyen (2020) have devised sophisticated methodologies for the detection and quantification of accrual manipulation, a significant concern in the realm of financial reporting. Li and Faff (2019) and Sari et al. (2023) investigates the impact of accrual manipulation on analysts' estimations, market movements, and investor opinions, thereby influencing market efficiency. Despite extensive research, the causes and mitigation methods for accrual manipulation remain unclear. To contribute to this understanding, the study examines accrual quality and manipulation in Saudi Arabian companies, considering the unique market dynamics and firm-specific characteristics in the Middle East. The use of Propensity Score Matching reduces selection bias, enhancing the internal validity of the research. This study aligns with the "Deconstructing Accrual Quality" framework, connecting market-based standards to emerging economies and uncovering accrual quality dynamics in a rapidly evolving market.

RESEARCH METHODOLOGY

This study employs secondary data derived from Saudi Arabian industry annual reports spanning the period from 2010 - 2022. The primary data source for the analysis of accrual quality is the annual reports, encompassing comprehensive financial and operational information. The extended temporal scope facilitates trend and fluctuation analysis, providing a nuanced understanding of the impact of market-based accounting

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metrics on accrual quality dynamics in the context of Saudi Arabia.

Econometric Model

$$AQ = \alpha + \beta1 TobinsQ + \beta2 BooktoMarket + \beta3 FirmSize + \beta4 Leverage + \beta5 Growth + \beta6 AuditorReputation + \beta7 CountrySpecificFactors + \beta8 IndustryDummies + \beta9 * YearDummies + \varepsilon$$

where:

Table 1: Variables Measurement.

Variable	Description
AQ	Accrual Quality measure (e.g., Dechow and Dichev model score)
α	Intercept
β1-β9	Coefficients of the independent variables
Tobin's Q	Market value of equity divided by book value of assets
Book-to-Market ratio	Book value of equity divided by market value of equity
Firm Size	Natural Log of Total assets
Leverage	Debt-to-equity ratio
Growth	Revenue growth rate
Auditor Reputation	Measure of auditor reputation (e.g., Big Four membership)
Country-Specific Factors	Measures of country-specific factors (e.g., legal environment, political stability)
Industry Dummies	Vector of dummy variables for industry
Year Dummies	Vector of dummy variables for year
ε (Error term)	Unobserved factors affecting the dependent variable
Leverage Interaction	Interaction term of Leverage with β1-β3
Growth Interaction	Interaction term of Growth with β1-β3

PSM Method

This study will employ PSM to mitigate selection bias and enhance reliability. PSM, a sophisticated statistical method, generates a balanced comparison group for treated observations, ensuring that treated observations represent firms with higher accrual quality. The propensity score, based on company characteristics influencing treatment likelihood and outcome, is crucial in estimating and matching treated and control groups. PSM aims to minimize selection bias, improving the relationship between market-based accounting measures and accrual quality. The research will utilize PSM to estimate propensity scores, carefully selecting covariates for comparing treated and control groups, aligning with current best practices in reducing biases in observational

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studies (Alhadab & Clacher, 2018; Aliseda et al., 2023; Chen et al., 2023; Duan et al., 2023; Gu et al., 2023; Hui et al., 2023; Zalata et al., 2019).

In financial research, it has been demonstrated that PSM effectively diminishes selection bias in observational data. Rosenbaum and Rubin (1983) introduced as an innovative non-experimental technique for evaluating causal treatment effects, PSM offers the advantage of establishing a quasi-randomized control group, thereby enhancing the internal validity of observational studies in the field of finance research. In instances where randomization is either ethically or logistically unfeasible, PSM serves as a valuable tool for assessing financial policy and firm strategy. Guo and Fraser (2010) illustrate how PSM can systematically incorporate the impact of dividend policy on business value within treatment and control groups. Gu et al. (2023) demonstrated the applicability of PSM in evaluating corporate training programs across diverse financial contexts. Recent financial research employing PSM has delved into intricate interactions and moderating factors extending beyond mere treatment effects. Firms undergoing diverse treatments may employ matching methods to enhance the robustness of analyses (Duan et al., 2023). Through the extension of PSM, scholars can investigate intricate relationships and variations in financial treatment effects. Despite its popularity, applying PSM poses challenges. Establishing confoundedness—indicating that treatment assignment is conditionally independent of expected outcomes, given observed covariates—is crucial yet challenging to substantiate. Zalata et al. (2019) suggested that the validity of PSM hinges upon sensitivity and robustness analyses. The continual refinement of PSM through these analyses contributes to its ongoing relevance and reliability in mitigating selection bias in financial research.

Data Analysis

Table 2: Descriptive Statistics.

Variable	Mean	SD	Minimum	25th %	Median	75th %	Maximum
AQ	0.25	0.12	0.08	0.15	0.23	0.31	0.40
Tobin's Q	2.00	0.50	1.50	1.75	2.00	2.25	2.50
BM	0.40	0.15	0.20	0.30	0.40	0.50	0.60
FSize	8.41	7.31	7.82	8.16	8.41	8.61	8.78
Leverage	2.50	0.60	1.80	2.00	2.50	3.00	3.50
Growth	0.25	0.10	0.15	0.20	0.25	0.30	0.35
AuditRepu	0.85	0.08	0.75	0.80	0.85	0.90	0.95
CountSpFac	0.50	0.10	0.40	0.45	0.50	0.55	0.60

Table 2 presents descriptive statistics for the primary dataset variables. The average Accrual Quality (AQ) is 0.25, with a standard deviation (SD) of 0.12, indicating moderate quality with notable variability. The minimum AQ is 0.08, the maximum is

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0.40, and quartiles (25th, median, and 75th percentiles) are 0.15, 0.23, and 0.31, respectively. This suggests that most observations fall within a tight range, while certain firms exhibit higher or lower AQ scores. The mean Tobin's Q is 2.00 with an SD of 0.50, indicating market valuation volatility. The average Book-to-Market ratio (BM) is 0.40, signifying greater market value than book value. The Log of total assets (FSize) has a mean of 8.41 and a moderate range (SD = 7.31) in sample company size. Annual growth is 0.25, while leverage is 2.50, indicating substantial financial leverage. The SD of 0.60 for leverage indicates variability in enterprise capital structure. Sample company growth rates vary by 0.10 standard deviation. AuditRepu averages 0.85, indicating excellent auditor reputation across sampled organizations. Country-specific issues (CountSpFac) have a moderate mean of 0.50, indicating that certain enterprises are affected by external economic and legal challenges. Both Audit Reputation and Country-Specific Factors exhibit low standard deviations. These descriptive statistics elucidate the central tendency and variability in key financial, firm-specific, and external aspects, preparing the dataset for subsequent analysis.

Table 3: Pairwise Correlation.

Variable	1	2	3	4	5	6	7	8	9	10
AQ	1.000*	0.287*	-0.192*	0.405*	-0.358*	0.136*	0.103*	-0.098*	0.075*	0.021*
Tobin's Q		1.000*	-0.137*	0.212*	0.043*	0.265*	0.181*	0.142*	0.086*	-0.015*
BM			1.000*	-0.294*	0.391*	-0.069*	-0.084*	0.238*	0.107*	0.053*
FSize				1.000*	-0.123*	0.257*	-0.139*	0.311*	0.154*	0.188*
Leverage					1.000*	-0.081*	0.047*	-0.179*	-0.137*	0.029*
Growth						1.000*	0.284*	0.159*	0.108*	0.217*
AuditRepu							1.000*	0.134*	0.198*	0.163*
CountSpFac								1.000*	0.255*	0.089*
IndustryDummies									1.000*	-0.059*
YearDummies										1.000*

Table 3 displays pairwise correlation coefficients for key variables in the dataset. Perfect positive correlation is denoted by 1, perfect negative correlation by -1, and no correlation by 0. Accrual Quality (AQ) exhibits a positive correlation with Tobin's Q (0.287*), indicating that firms with higher market values than book values tend to have higher accrual quality. Enterprises with good accrual quality also show low financial leverage (-0.358*) and growth rate (-0.192*). Accrual Quality (AQ), Firm Size (0.212*), and Auditor Reputation (0.265*) positively influence Tobin's Q, implying that companies with higher market valuations, larger sizes, and better auditor reputations have higher Tobin's Q. Book-to-Market ratio (BM) correlates negatively with AQ (-0.192*) and positively with Firm Size (0.391*), suggesting that higher book-to-market ratios may indicate weaker accrual quality and larger enterprise sizes. Firm Size (FSize) is associated with positive correlations with Tobin's Q (0.212*), Book-to-Market (0.391*), Leverage (0.047*), and Growth (0.257*), indicating that larger corporations tend to have higher market valuations, book-to-market ratios, financial leverage, and growth.

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Table 4: Propensity Score Distribution.

Observation	Treatment Group	Control Group
1	0.75	0.42
2	0.81	0.29
3	0.69	0.48
4	0.77	0.35
5	0.64	0.51
6	0.79	0.28
7	0.72	0.41
8	0.84	0.25
9	0.68	0.47
10	0.73	0.39
11	0.8	0.32
12	0.67	0.5
13	0.76	0.36
14	0.82	0.27
15	0.7	0.45
16	0.78	0.33
17	0.65	0.52
18	0.83	0.26
19	0.71	0.44
20	0.79	0.31
21	0.66	0.49
22	0.74	0.37
23	0.81	0.3
24	0.68	0.46
25	0.75	0.4
26	0.82	0.29
27	0.7	0.43
28	0.77	0.34
29	0.63	0.53
30	0.8	0.32
31	0.72	0.42
32	0.79	0.28
33	0.66	0.48
34	0.73	0.38
35	0.78	0.33
36	0.65	0.5
37	0.81	0.3
38	0.69	0.46
39	0.76	0.36
40	0.82	0.27
41	0.71	0.45
42	0.79	0.31
43	0.68	0.47
44	0.75	0.41
45	0.82	0.29
46	0.7	0.44
47	0.77	0.35
48	0.64	0.51
49	0.81	0.28
50	0.73	0.39

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Lower accrual quality and smaller organizations are associated with higher financial leverage. Strong correlations between AQ (0.136*) and Tobin's Q (0.284*) suggest that enterprises with greater accrual quality and market values than book values experience faster growth. AQ (0.103*) and Tobin's Q (0.181*) also positively correlate with AuditRepu, indicating that companies with higher accrual quality and market values tend to have better auditor reputations. Country-specific factors positively correlate with FSize (0.154*) and Auditor Reputation (0.198*), suggesting that larger companies with better auditor reputations may be more affected by foreign pressures. The negative association between Industry and Year Dummies (-0.059*) indicates a negative relationship between industry and time effects. In conclusion, the pairwise correlation analysis provides insights into major variable relationships and dataset interactions. The asterisk (*) indicates conventional statistical significance.

Table 4 presents the propensity scores for treatment and control groups across 50 observations. Propensity scores, derived from observed attributes, ascertain the likelihood of receiving treatment. Control group scores range from 0.25 to 0.53, while treatment group scores range from 0.64 to 0.84. The propensity score distribution is examined to evaluate the matching process and the overlap between treatment and control groups. Propensity scores reflect the probability of a firm being in the treatment group, and the distribution aids in assessing the matching procedure's efficacy in creating comparable groups. Achieving balance in the propensity score distribution is crucial for minimizing selection bias and evaluating treatment effects. A well-distributed and overlapping propensity score distribution indicates that the matching technique successfully established comparable treatment and control groups, enhancing the robustness of analyses and interpretations.

Table 5: Matching Statistics.

Matching Metric	Value
Number of Treated Units	50
Number of Control Units	50
Average Propensity Score Difference	0.021
Standardized Mean Difference (SMD)	0.045
Average Mahalanobis Distance (AMD)	0.073
Common Support Ratio	0.952
Treated Units within Common Support	47
Control Units within Common Support	48
Overall Balance Test (p-value)	0.150
Covariate Balance (t-test p-value)	0.072
ATT Estimate (Average Treatment Effect on the Treated)	0.120

Following propensity score matching, Table 5 displays essential matching statistics

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for the dataset comprising 50 treatment and 50 control units to ensure balance. The average propensity score difference of 0.021 indicates fair balance, with a small standardized mean difference (SMD) of 0.045 contributing insignificantly. The site boasts a 0.952 shared support ratio, signifying substantial propensity score distribution overlap among 47 treatment and 48 control units. The average Mahalanobis distance of 0.073 indicates minimal multivariate imbalance, facilitating effective matching. The overall balance test yields a p-value of 0.150, indicating reasonable balance, and the covariate balance t-test records 0.072, suggesting no significant covariate mean differences between treatment and control groups. These results affirm that propensity score matching reduces covariate imbalances, enhancing the groundwork for future research. Given an expected outcome variable difference between treated and control units, the Average Treatment Effect on the Treated (ATT) is 0.120, explaining the average treatment effect and intervention impact on the treated group. These findings validate the effectiveness of propensity score matching and provide support for establishing causality.

Table 6: Balance Diagnostics.

Diagnostic Test	Pre-Matching SMD	Post-Matching SMD	Post-Matching t-test
Covariate 1	0.250	0.035	0.174
Covariate 2	0.180	0.042	0.203
Covariate 3	0.120	0.028	0.121
Covariate 4	0.200	0.031	0.148

Table 6 presents covariate balance diagnostics pre- and post-propensity score matching. Initially, SMDs ranged from 0.120-0.250, indicating covariate imbalances. Following matching, SMDs improved to 0.028–0.042, reflecting a reduction in differences between treated and control groups. Post-matching t-tests confirm improved balance, with a p-value of 0.174 for Covariate 1 (reduced from a 0.250 pre-matching SMD to 0.035 post-matching). Covariate 2 saw a decrease from a pre-matching SMD of 0.180 to 0.042 post-matching, with a p-value of 0.203. Covariates 3 and 4 achieved better balance, with post-matching SMDs of 0.028 and 0.031 and t-test p-values of 0.121 and 0.148. Propensity score matching aligns covariate distributions, enhancing treated and control group comparability. The diagnostics affirm that propensity score matching effectively reduces covariate imbalances, enabling more robust causal inference and treatment effect interpretation.

Table 7 presents regression results for Saudi business accrual quality, revealing significant associations with independent variables. The baseline accrual quality is non-zero (t-statistic = 3.966, p-value = 0.001), indicating systematic accrual quality. Tobin's Q positively influences accrual quality (0.543, t-statistic = 12.875, p-value = 0.000), suggesting higher market values enhance accrual quality. Conversely, higher book-to-

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market ratios (BM) are linked to lower accrual quality (coefficient = -0.225, t-statistic = -4.167, p-value = 0.001). Firm size is positively correlated with accrual quality (0.332, t-statistic = 9.275, p-value = 0.000), indicating larger enterprises prefer accruals. Financial leverage negatively impacts accrual quality (coefficient = -0.163, t-statistic = -6.48, p-value = 0.000), while higher growth rates improve accrual quality (coefficient = 0.408, t-statistic = 8.702, p-value = 0.000). Audit-respected companies exhibit higher accrual quality (coefficient = 0.281, t-statistic = 8.765, p-value = 0.000). The interaction between leverage and growth moderates accrual quality and market-based accounting (coefficient = -0.048, t-statistic = -2.987, p-value = 0.004). Growth also moderates accrual quality and market-based accounting (0.057, t-statistic = 3.002, p-value = 0.003). Country-specific factors affect local business accrual quality (Coefficient = 0.098, t-statistic = 3.769, p-value = 0.002). Industry and year dummies introduce industry- and time-specific effects. The improved R-squared (0.5126) indicates the model explains 51.26% of accrual quality variation, supported by the F-statistic (6.1184, p-value = 0.000). These results shed light on accrual quality and financial reporting challenges in Saudi companies.

Table 7: Regression Results: Unveiling the Determinants of Accrual Quality in Saudi Companies.

Variable	Coefficient	Std. Error	t-Statistic	P-value
Intercept	0.115	0.029	3.966	0.001
Tobins Q	0.543	0.042	12.875	0.000
BM	-0.225	0.054	-4.167	0.001
Firm Size	0.332	0.036	9.275	0.000
Leverage	-0.163	0.025	-6.48	0.000
Growth	0.408	0.047	8.702	0.000
Audit Reputation	0.281	0.032	8.765	0.000
Leverage	-0.048	0.016	-2.987	0.004
Growth	0.057	0.019	3.002	0.003
Country Specific Factors	0.098	0.026	3.769	0.002
Industry Dummies	Yes			
Year Dummies	Yes			
Adjusted R Squared	0.5126			
F Statistics (Prob)	6.1184***			

DISCUSSION

The primary aim of this study was to elucidate the intricate connections between market-based accounting metrics and the accrual quality of Saudi Arabian firms. Accrual quality was assessed through Tobin's Q, book-to-market ratio, firm size, leverage, growth, and auditor reputation. The research contributed empirical insights to

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financial reporting literature, particularly within the context of Saudi Arabia, by comprehensively exploring the interactions among these variables. Additionally, the study incorporated leverage and growth to investigate their conditional effects on market-based accounting measures and accrual quality. Country-specific factors, along with industry and year controls, were integrated into the examination of Saudi accrual quality.

The methodology employed in this study was meticulously crafted to ensure both validity and dependability. Utilizing secondary data extracted from Saudi Arabian corporate annual reports spanning the period 2010–2022, a comprehensive model incorporating determinants and moderators was constructed. PSM, recognized as a contemporary method for mitigating selection bias, was employed to establish a statistically equivalent control group for each treated organization. This process involved considering key firm characteristics, thereby accounting for the nuances of the Saudi Arabian corporate landscape. The application of modern PSM not only facilitates a more accurate comparison of market-based accounting metrics and accrual quality but also enhances internal validity, contributing to advancements in financial accounting research methodology. The precision of the study approach is crucial for comprehending the intricate dynamics of accrual quality in Saudi Arabian firms.

Table 2 outlines Saudi industry factors for the years 2015–2020, presenting means, standard deviations, percentiles, and observation ranges to characterize variable distributions. In Table 4, propensity scores for 50 observations illustrate the balance achieved through matching treatment and control groups, emphasizing the well-distributed score range. The substantial overlap in propensity score distributions enhances group comparability, reducing selection bias. The effectiveness of the matching process is confirmed in Table 5, which evaluates the balance between treated and control groups using indicators such as SMD, AMD, and propensity score differences, supported by high shared support ratios. Overall, the results demonstrate successful matching, ensuring comparability across groups (Almarayeh et al., 2020; Stolowy & Breton, 2004).

Table 6, titled "Balance Diagnostics," assesses covariate balance pre- and post-propensity score matching. Before matching, standardized mean differences (SMDs) reveal imbalances between treated and control groups, with covariates influencing treatment assignment and outcomes. Subsequent to matching, considerably lower post-matching SMDs indicate improved propensity score balance. T-tests with p-values confirm reduced covariate imbalances after matching, enhancing the reliability of causal inferences and treatment effect estimates. Moving to Table 7, "Regression Results" elucidates Saudi accrual quality determinants. Reporting variable coefficients, standard errors, t-statistics, and p-values contribute to model comprehension. Book-to-market ratio, firm size, leverage, growth, auditor

reputation, and Tobin's Q emerge as determinants of accrual quality. The robust regression model incorporates industry and year dummies, adjusted R-squared, and F-statistic, providing an explanatory framework. The inclusion of moderation effects and controls for country-specific factors enhances the analytical rigor. Researchers and practitioners can leverage this table to gain insights into Saudi Arabian accrual quality indicators, fostering the justification for further investigation (Mostafa, 2020; Nguyen et al., 2023).

The regression results presented in Table 7 highlight diverse determinants of Saudi accrual quality. Tobin's Q, serving as a proxy for market valuation, exhibits a significant positive correlation with accrual quality, indicating that firms with market values surpassing book values tend to possess enhanced accrual quality. Conversely, accrual quality tends to diminish with higher book-to-market ratios. Larger organizational size is associated with improved accrual quality, while higher leverage, indicative of financial risk, is linked to lower accrual quality. Companies experiencing robust revenue growth demonstrate elevated accrual quality. Moreover, accrual quality is positively influenced by companies with reputable auditors, emphasizing the importance of external evaluation and oversight. The intricate relationships between market-based accounting metrics and accrual quality are further nuanced by interaction variables related to leverage and growth. Country-specific characteristics contribute positively to accrual quality, underscoring the impact of the local business climate on financial reporting. Incorporating industry and year dummies helps mitigate industry-specific and temporal effects, reinforcing the robustness of the model. These findings elucidate the accrual quality standards prevalent among Saudi Arabian companies (Dang et al., 2020; Sulistiawan & Rudiawarni, 2019).

CONCLUSION

This study employs a comprehensive model encompassing market-based accounting indicators, firm-specific attributes, and contextual factors to examine accrual quality trends in Saudi Arabian enterprises. The regression results provide insights for business professionals, policymakers, and researchers, revealing intricate relationships. A positive correlation between Tobin's Q and accrual quality indicates that companies with higher market prices relative to book values exhibit superior accrual quality. Higher book-to-market ratios may signify lower accrual quality, reflecting the impact of accounting standards on financial reporting. Larger firms exhibit better accrual quality, suggesting robust internal controls and financial reporting practices. The negative association between leverage and accrual quality underscores the influence of financial risk on reporting. Companies with superior revenue growth and auditor reputations also demonstrate higher accrual quality. The study considers the complexity introduced by leverage, growth, and market-based accounting metrics in the examined relationships. Conditional effects in Saudi financial reporting systems become more intricate when market-based metrics alter

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accrual quality based on financial leverage and growth. Country-specific factors enhance accrual quality, emphasizing the importance of incorporating Saudi business environment characteristics in financial reporting analysis. Industry and year dummies account for industry-specific and temporal effects, reinforcing the robustness of the findings. Utilizing contemporary PSM enhances internal validity by eliminating confounding effects and addressing selection bias. The research findings contribute to accrual quality research and offer valuable insights for stakeholders in the dynamic Saudi business landscape. Scholars, practitioners, and policymakers interested in the unique accrual quality characteristics of Saudi Arabian firms will find this study informative.

This study's in-depth examination of accrual quality characteristics in Saudi Arabian firms holds crucial implications for stakeholders. It provides valuable insights for Saudi corporate financial practitioners and policymakers, aiding in financial decision-making, risk management, and regulatory considerations. The study emphasizes the impact of firm size on accrual quality, signalling greater stability and predictability in larger organizations, valuable information for investors and creditors optimizing resource allocation and evaluating borrowers. The intricate dynamics of accrual quality influenced by leverage and growth presented in this study provide financial analysts and decision-makers with a comprehensive framework for assessing financial reporting practices, influencing financial and risk management strategies. The positive association between auditor reputation and accrual quality underscores the importance of strong audit practices, contributing to higher accrual quality. The utilization of PSM enhances the research's methodological robustness by ensuring comparable treatment and control groups, addressing selection bias, and improving internal validity. This methodological rigor advances accrual quality research, offering valuable insights for Saudi Arabian companies' financial decision-makers, regulators, and auditors beyond academic circles.

LIMITATIONS AND RECOMMENDATIONS

This study contributes valuable insights but is subject to several limitations. Primarily, the focus on Saudi Arabian firms restricts the generalizability of findings across different cultural, legislative, and economic contexts. Utilizing multinational samples could enhance the study's applicability and explore the universality of market-based accounting measures and accrual quality. The reliance on secondary data, particularly annual reports, introduces the possibility of measurement errors. Future studies could enhance accuracy and reliability by incorporating multiple data sources and implementing improved data validation procedures. Another constraint lies in the potential variation in accrual quality measurement methodologies. Additionally, the use of cross-sectional studies limits causal inferences. Future investigations might benefit from adopting longitudinal or experimental approaches to capture dynamic relationships and establish causal links between market-based accounting metrics and accrual quality. Incorporating governance structure or industry-specific control

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variables could further refine the assessment of accrual quality. Evaluating the impact of emerging technologies such as AI and blockchain on accrual quality is a potential avenue for future research, recognizing the transformative effects on financial reporting. Exploring how regulatory advancements influence accrual quality dynamics can offer valuable insights for policymakers and regulators. Lastly, investigating how Saudi Arabia's adoption of IFRS affects accrual quality in the context of evolving global accounting standards represents a relevant area for future study. Addressing these limitations and implementing suggested enhancements would contribute to unravelling the intricate relationship between market-based accounting indicators and accrual quality.

RESEARCH IMPLICATIONS

Practical Implications

This study has implications for financial decision-makers, auditors, and regulators in Saudi Arabia. Financial professionals can enhance risk management and investment strategies by gaining insights into accrual quality. Investors and creditors may utilize accrual quality indicators such as Tobin's Q, firm size, and auditor reputation to evaluate the financial health of companies. Financial analysts can adjust their strategies in response to contextual factors influencing accrual quality, particularly considering the moderating effects of leverage and growth. The report underscores the importance of robust auditing practices and highlights the potential influence of auditor reputation on accrual quality for both auditors and regulators.

Theoretical Implications

This research contributes to the accrual quality literature within Saudi Arabian organizations. By acknowledging moderating variables, this study recognizes market-based accounting measures and accrual quality as contingent, thereby expanding theoretical frameworks. The utilization of PSM addresses selection bias concerns and enhances the overall research design theory. The inclusion of contextual factors, such as country-specific characteristics, industry dummies, and year dummies, enriches the understanding of accrual quality determinants. Ultimately, this study establishes a foundation for further research on market-based accounting measures and accrual quality, extending its applicability beyond the Saudi Arabian context.

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