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Article

Determinants of Goodwill Impairment Recognition and Measurement: New Evidence from Moroccan Listed Firms

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Abstract

This study examines the determinants of goodwill impairment recognition under IFRS 3 in the context of Moroccan listed firms. Using an unbalanced panel of 62 companies observed from 2006 to 2024, we employ a three-stage empirical strategy that integrates a Probit model to estimate the likelihood of impairment, a Tobit model to assess the magnitude of the loss, and a Heckman two-step procedure to correct for potential self-selection. The results show that goodwill impairment reflects key economic and financial fundamentals, including revenue growth, book-to-market ratios, and operating performance. However, both real and accrual-based earnings management significantly influence the probability and intensity of impairment, particularly through abnormal cash flows and income-smoothing behavior. Discretionary accruals become significant only after correcting for selection bias, indicating that they do not drive the recognition decision but contribute to determining the size of the impairment once it has been recorded. The findings are robust across multiple specifications and contribute to the broader literature on financial reporting quality under IAS/IFRS, while enriching empirical evidence on managerial discretion and earnings management in emerging-market environments.

Keywords: earnings management; financial reporting quality; goodwill impairment; IFRS 3; managerial discretion; Probit–Tobit–Heckman models

1. Introduction

The quality of financial reporting is a foundational pillar of capital-market efficiency. For international standard setters, relevance and faithful representation constitute the core qualitative characteristics necessary to ensure the reliability of financial information, as articulated in the conceptual frameworks of the IASB and the FASB. In this context, IAS 36 *Impairment of Assets* requires impairment testing designed to ensure that assets are not carried above their recoverable amount, thereby reinforcing accounting prudence and helping reduce information asymmetries between managers and investors, as documented by André et al. (2015). In business combinations, IFRS 3 mandates that goodwill be recognized as the excess of the acquisition price over the fair value of identifiable net assets. This intangible asset, which does not generate independent cash flows, is highly sensitive to impairment testing and is widely viewed as a key indicator of managerial ability to create value from past acquisitions, as emphasized by Filip et al. (2015). Recent empirical evidence underscores the growing economic importance of goodwill: Yahuda, Vicent, and Ly (2019) report that goodwill represents more than half of the acquisition price in a large sample of M&A transactions. Regulatory concerns have also intensified, with authorities highlighting potential abuses arising from managerial discretion in estimating recoverable amounts. One notable example is the 19 July 2024 ruling of the Enforcement Committee of the French Financial Markets Authority, which sanctioned Parrot Drones (A company specializing in the development, design, and global

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consumer-market commercialization of microdrones.) for misleading disclosures related to CGUs and goodwill valuations.

A central challenge of the impairment-only model is the considerable judgment it affords managers. Prior research documents the potential (Ces hypothèses s'appuient sur l'estimation de la croissance future à partir des flux de trésorerie projetés, d'un taux d'actualisation approprié et d'une valeur terminale.) for opportunistic manipulation of impairment tests through overly optimistic cash-flow forecasts or discretionary adjustments aimed at avoiding the recognition of an impairment loss, as shown by Filip et al. (2015). Choi and Nam (2020) further observe that the IFRS 3 impairment model remains complex, costly and difficult to verify, thereby increasing its susceptibility to managerial bias. This concern has grown in parallel with the expanding prominence of goodwill on corporate balance sheets. According to the CFA Institute (2021) The report Goodwill: Investor Perspectives — Improve Disclosures Rather Than Revert to Amortization presents the findings of a survey conducted among portfolio managers and financial analysts. Its purpose is to assess their preferences regarding the decision-usefulness of two accounting treatments for goodwill, namely the impairment-only model and systematic amortization, goodwill represents nearly ten percent of total assets for S&P 500 firms and close to five percent for firms in the CAC 30. At the global level, the Chartered Accountants of Australia and New Zealand (2020) estimate that cumulative goodwill exceeds eight trillion dollars, giving its accounting treatment systemic economic significance. In Morocco, the merger between Holcim Maroc and Lafarge Ciments illustrates this trend, as goodwill increased several hundredfold within a single year.

This study is grounded in a theoretical framework that combines agency theory and positive accounting theory. Agency theory, as developed by Jensen and Meckling (1976), provides insights into opportunistic behaviors that arise from information asymmetry between managers and shareholders. Positive accounting theory, advanced by Watts and Zimmerman (1978, 1986), helps explain the contractual and reporting incentives that may motivate managers to exercise discretion in the preparation of financial statements. Evidence from Ramanna and Watts (2012) illustrates the persistence of such behavior: nearly seventy percent of U.S. firms in their sample avoided impairing goodwill despite clear economic indicators that impairment was warranted. The debate surrounding the impairment-only model remains active. While some investors advocate reinstating systematic amortization, Bagna et al. (2023) and Hellman and Hjelström (2023) show that impairment losses convey value-relevant information that would be diluted under a uniform amortization regime.

Emerging markets offer a particularly relevant setting for examining these issues. They are characterized by concentrated ownership structures, bank-centered financial systems, evolving governance mechanisms and heterogeneous levels of transparency, all of which may alter the dynamics observed in developed economies. Morocco exemplifies this hybrid environment. Recent reforms aimed at strengthening financial reporting quality, including Laws 43-12 and 44-12 adopted in 2016 and AMMC Circular 03-19 issued in 2019, have contributed to regulatory modernization. However, the determinants of goodwill impairment remain largely unexplored, despite the fact that several listed companies hold substantial goodwill balances arising from corporate restructurings and mergers.

The objective of this article is to analyze the economic, managerial and informational determinants of both the decision to recognize and the magnitude of goodwill impairment among Moroccan listed firms. By sequentially estimating a Probit model for the recognition decision, a Tobit model for the impairment amount and a Heckman selection model to correct for non-random reporting, the study explicitly distinguishes between the decision-making and measurement processes that shape impairment behavior. This approach provides an original empirical contribution to the ongoing debate on the reliability of the impairment-only model in an emerging-market context and offers new insights into the role of managerial incentives within an evolving institutional environment.

The remainder of the article is structured as follows. Section 2 presents the theoretical framework and the literature on the economic, informational and managerial determinants of goodwill

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impairment. Section 3 details the methodological approach, data, variables and econometric models. Section 4 discusses the empirical findings from the Probit, Tobit and Heckman estimations. Section 5 concludes by outlining the theoretical, managerial and regulatory implications of the study and suggesting avenues for future research.

2. Literature Review

Goodwill, also referred to as acquisition premium or business combination surplus, is defined by IFRS 3 as "the excess of the cost of a business combination over the acquirer's interest in the net fair value of the identifiable assets, liabilities, and contingent liabilities." The issue of goodwill has been widely examined across several dimensions, including its initial recognition, its allocation to cash-generating units (CGUs), and the annual impairment test required by accounting standards.

Until 2004, IAS 22 required the systematic amortization of goodwill, a method generally regarded as arbitrary, over a maximum period of twenty years. In 2005, the International Accounting Standards Board (IASB), drawing on the U.S. guidance in SFAS 142, introduced IFRS 3, which prohibits systematic amortization of goodwill, stated in paragraph B69(d), and replaces it with an annual impairment test intended to reflect the recoverable amount and the underlying economic substance of the asset more faithfully.

Recent research has examined goodwill impairment from three complementary angles. The first concerns the economic and financial attributes that determine its occurrence. The second relates to the managerial determinants that reflect the degree of discretion in its recognition. The third focuses on the governance mechanisms that constrain and discipline this accounting practice.

2.1. Economic and Financial Attributes

Recent literature places considerable emphasis on the economic implications of goodwill impairment, which is viewed as a signal of the firm's underlying performance. Wang et al. (2023), drawing on Kahneman and Tversky's (1979) loss aversion theory, explain that the recognition of an impairment loss alters managerial risk perception and diminishes managers' propensity to initiate new mergers and acquisitions. This behavioral adjustment translates into more cautious investment decisions, as shown by Ding and Zhang (2019) and Li et al. (2022), and more conservative financing policies, as observed by Kim and Nguyen (2022). These reactions are particularly plausible given that mergers and acquisitions are often considered highly uncertain and high-risk investments, as documented by García-Nieto et al. (2024).

In a similar line of reasoning, Lee et al. (2011) and Wang (2022) show that goodwill impairment reduces expected future cash flows and communicates a negative signal to the market regarding anticipated profitability. Investors interpret this accounting charge as an early indicator of declining performance, which increases stock price volatility and amplifies market reactions.

Evidence from Hu and Li (2019) and Zhang et al. (2020) confirms that firms overvalued by the market, particularly those with book-to-market ratios below one, tend to adopt transitional investment strategies that heighten the probability of subsequent impairment. Lee et al. (2011) also report a significant decline in stock prices following the announcement of impairment. In contrast, a high book-to-market ratio is generally associated with more favorable growth prospects, as noted by Chen and Zhao (2006), and with reduced earnings management behavior, as documented by Li and Kuo (2017).

Chalmers et al. (2011) identify a strong association between goodwill impairment and firms' fundamental economic characteristics. In the Australian context, Kabir and Rahman (2016) add that this relationship is strengthened by governance factors, particularly through the book-to-market ratio, pre-impairment earnings, GDP growth, expansion opportunities, and changes in cash flows. These variables capture the firm's capacity to generate sustainable economic value, which is essential for the stability of goodwill.

When operational performance weakens, the likelihood of impairment recognition rises. André et al. (2016) show that negative EBITDA serves as a leading indicator of impairment risk. In their

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sample, eighteen percent of U.S. firms and fifteen point two percent of European firms reported negative EBITDA, and nearly one quarter of these firms recognized goodwill impairment.

The Australian Accounting Standards Board (AASB, 2014) notes that a high book-to-market ratio indicates erosion of the economic rents embedded in goodwill. Ramanna and Watts (2012) similarly consider this ratio a barometer of underlying economic performance. When value creation becomes insufficient, impairment becomes more likely. Consequently, the book-to-market ratio is expected to be positively related to both the likelihood and the magnitude of goodwill impairment.

Godfrey and Koh (2009) provide additional support by showing that firms' economic characteristics significantly influence impairment decisions, thereby validating the relevance of the IFRS impairment model for this intangible asset.

H1. The probability and magnitude of goodwill impairment increase as firms' economic and operational performance deteriorate, illustrating the sensitivity of this intangible asset to profitability conditions and the broader economic environment.

These findings suggest that goodwill impairment does not arise solely from economic developments but also reflects strategic managerial responses to market signals and performance pressures.

2.2. Managerial Determinants of Goodwill Impairment

Beyond economic determinants, the literature highlights the central role of managerial discretion in the recognition of impairment losses. Research on earnings management identifies a wide range of levers available to managers to influence the presentation of firm performance. These include the reclassification of operating expenses as nonrecurring items as discussed in McVay (2006), the discretionary management of provisions and depreciation as documented in Teoh et al. (1998), and the manipulation of asset write downs as examined in Riedl (2004). Such practices illustrate the breadth of managerial judgment embedded in financial reporting and underscore the possibility of a strategic use of goodwill impairment tests.

According to Ramanna and Watts (2012), two contrasting views shape the debate surrounding the recognition of goodwill impairment. The first view, consistent with the objectives of the IASB and the FASB, assumes that the fair value of goodwill can be estimated with sufficient reliability and therefore faithfully reflects the underlying economic substance of the asset. The second view, grounded in agency theory, argues that managers may exploit the impairment test for opportunistic purposes by recognizing impairment prematurely or by deliberately postponing it. This interpretation is supported by empirical evidence reported by Giner and Pardo (2015) in Spain, Li and Sloan (2017) in the United States, and Lu and Qu (2016) in China. In contrast, AbuGhazaleh et al. (2011) show in the United Kingdom context that goodwill impairment may also reflect the disclosure of private managerial information rather than opportunistic reporting behavior.

In a complementary direction, Beatty and Weber (2006) demonstrate that impairment recognition is shaped jointly by contractual incentives and market pressures. Contractual incentives are associated with debt covenant constraints and managerial compensation structures, while market pressures arise from investor reactions and heightened delisting risk. Choi and Nam (2020) identify three recognition patterns, including early impairment, which is viewed favorably by the market, timely impairment, and delayed recognition, which tends to erode investor confidence.

H2. Highly leveraged firms tend to avoid goodwill impairment in order to preserve compliance with debt related contractual conditions and to prevent any perceived deterioration in solvency.

Within the European banking sector, Pallarés Sanchidrián et al. (2021) find that the elimination of systematic goodwill amortization increased managerial discretion in the application of impairment testing. Their results indicate that larger institutions are more likely to recognize impairment losses, consistent with the political cost hypothesis advanced in positive accounting theory as formulated by Watts and Zimmerman (1978).

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The influence of organizational size on discretionary accounting choices is also highlighted by Elleuch Hamza and Kortas (2019) in the Tunisian context. In line with this perspective, Glaum et al. (2015) document a positive and significant association between goodwill impairment and total assets prior to impairment, interpreted as a proxy for firm visibility and scale.

H3. Firms with greater public visibility are more likely to recognize goodwill impairment due to heightened exposure to media scrutiny, regulatory oversight, and political pressure.

Goodwill originates from expected synergies generated by past mergers and acquisitions, and its value depends on anticipated future profitability. The subjective nature of recoverable amount estimation, however, leaves room for interpretive latitude that can facilitate discretionary reporting behavior as noted by Disle and Janin (2007). Wang et al. (2023) further show that firms recognizing impairment losses tend to be smaller, exhibit lower return on assets, and operate with reduced leverage. These characteristics suggest that goodwill impairment can serve as an instrument for earnings management, either to smooth reported performance or to reset financial statements, a practice often described as income bath behavior in Sevin and Schroeder (2005). Caruso et al. (2016) similarly identify impairment charges as a central component of profit regulation strategies.

Earnings smoothing refers to the artificial reduction of profit volatility in order to present a more stable performance trajectory over time. Evidence from Hamberg et al. (2011) and from Glaum et al. (2015) indicates that the decision to recognize or defer impairment may be used strategically for smoothing purposes. Choi and Nam (2021) also observe that some firms intentionally delay the recognition of impairment losses to avoid signaling an unfavorable earnings outcome.

To quantify the discretionary component of impairment related decisions, several models have been proposed to measure the discretionary portion of accruals. The model introduced by Jones (1991), which relies on changes in revenue and gross property, plant and equipment, exhibits limited explanatory power. This limitation led Dechow et al. (1995) to refine the model by incorporating changes in credit sales, resulting in a more accurate estimation of discretionary accruals.

The literature generally distinguishes two primary forms of earnings management. Real earnings management affects operating cash flows by actions such as accelerating sales or overproducing, as shown in Roychowdhury (2006). Accrual based earnings management relies on discretionary accruals and is more easily embedded in the estimation process. Cohen et al. (2008) argue that real earnings management, although costlier, became more prevalent following the implementation of the Sarbanes Oxley Act of 2002 because it is more difficult for auditors to detect. Braam et al. (2015) conclude that managers strategically choose between real and accrual-based manipulation depending on environmental constraints and reporting incentives.

H4. Earnings management practices are significantly associated with the recognition of goodwill impairment, indicating that managerial discretion directly affects the reliability of the impairment testing process.

This behavioral dimension underscores the need for strong institutional oversight and effective corporate governance mechanisms, the role of which is examined in the next section.

2.3. The Role of Corporate Governance Mechanisms

Within the broader framework that separates ownership from control, corporate governance plays a decisive role in limiting managerial opportunism and safeguarding the integrity of financial reporting. External auditing constitutes one of the principal mechanisms through which this alignment between managers and shareholders is achieved. In Morocco, Article 159 of Law No. 17 95 governing public limited companies requires all listed firms to appoint at least two statutory auditors, thereby ensuring ongoing and independent oversight of financial reporting.

Audit certification and the rigorous verification of published information enhance the credibility of reported earnings and protect shareholder wealth. As explained by DeAngelo (1981), audit quality depends on an auditor's ability to detect and to disclose material irregularities. Two conceptual foundations underpin this role. The first is the monitoring function derived from agency theory, which posits that independent auditing mitigates moral hazard and adverse selection, as described

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by Wallace (1980). The second is the informational perspective, which holds that the demand for high quality audits increases when agency conflicts intensify. Through these channels, external auditing reduces both systematic and idiosyncratic risks, supports more informed decision making and strengthens investor confidence.

In environments characterized by persistent information asymmetries and binding financial constraints, additional governance mechanisms may provide complementary disciplinary effects. Dividend policy represents one of the most prominent examples. According to the Dividend Discount Model formalized by Herz et al. (2001), the value of a firm corresponds to the present value of its expected future dividends, which serve as a tangible measure of value creation for shareholders. Consistent with the signaling framework of Bhattacharya (1979), dividend distributions communicate credible information regarding a firm's perceived financial strength. However, evidence from Ben Salah and Jarbaoui (2024) shows that dividend policy and earnings management interact in both directions in the French context, suggesting that this governance mechanism may also be strategically manipulated.

The disciplinary role of financial structure is also highlighted in the literature. Florackis and Ozkan (2009), in an analysis of more than three thousand British firms, identify short term debt levels and dividend distributions as mechanisms that effectively reduce agency costs and managerial entrenchment. These financial levers operate alongside external auditing by narrowing managerial discretion and reinforcing overall corporate discipline.

The board of directors constitutes another essential pillar of governance. As a collective authority responsible for protecting stakeholder interests, the board shapes strategic direction, as described by Holmstrom and Kaplan (2001), and defines major managerial policies, as discussed by Krechovská and Procházková (2014). Donaldson and Davis (1991) emphasize that the board plays a critical role in limiting opportunistic behavior, because it appoints, evaluates and, when necessary, dismisses top executives, while also determining their compensation packages.

The optimal size of the board remains a subject of substantial academic debate. Klein (2002) argues that larger boards possess broader monitoring capabilities and may therefore exercise more effective oversight of managerial decisions. Other scholars challenge this view and, drawing on agency theory, contend that excessively large boards can introduce coordination difficulties, dilute accountability and exacerbate conflicts of interest. This position is reflected in the findings of Jensen (1993), Bushman et al. (2004) and Brown and Caylor (2004). These divergent perspectives underscore the importance of striking a balance between effective monitoring and sufficient flexibility in the decision-making process.

In light of these considerations, the expectation emerges that strong governance structures increase the likelihood that firms will recognize goodwill impairment when underlying economic conditions warrant it.

H5. Strong corporate governance increases the likelihood of goodwill impairment recognition by constraining managerial discretion and reinforcing the obligation to faithfully reflect underlying economic deterioration.

Overall, governance quality, whether exercised through external auditing, internal decision making structures or dividend policy, represents a central determinant of transparency and financial discipline in the recognition of impairment losses. The literature demonstrates that goodwill impairment is shaped by a multidimensional set of factors that includes economic fundamentals, managerial behavior and institutional governance mechanisms. Yet empirical evidence remains predominantly concentrated in developed markets where IFRS adoption and mature governance systems impose stronger constraints on discretionary reporting.

To date, no study has examined in a systematic manner the combined economic, managerial and governance determinants of goodwill impairment within Moroccan listed firms, despite the distinct institutional characteristics of this environment. High ownership concentration, considerable information asymmetry and substantial reliance on external auditing suggest that impairment

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recognition may follow dynamics that differ from those observed in North American, European or East Asian markets.

The theoretical framework developed here therefore provides an integrated perspective on goodwill impairment by linking performance dynamics, discretionary behavior and governance mechanisms within an emerging market setting. It lays the conceptual groundwork for the empirical analysis that follows, which aims to quantify for the first time in the Moroccan context the joint influence of these factors on both the likelihood and the magnitude of impairment losses.

To ensure both temporal and sectoral representativeness, the empirical analysis covers all non-financial firms listed on the Casablanca Stock Exchange over the period 2006 to 2024. This time window coincides with a pivotal phase in the Moroccan accounting landscape that followed the mandatory adoption of IFRS in 2005 and strengthened the comparability and reliability of financial reporting.

Financial and market data were primarily obtained from the Refinitiv Eikon database, which is widely recognized for the accuracy and depth of its historical series. These data were supplemented manually using annual reports, financial statements and reference documents disclosed on corporate websites as well as through the public reporting platform of the Moroccan Capital Market Authority (AMMC).

The final sample comprises 62 firms representing eight hundred 62 firm year observations after the removal of outliers and the exclusion of incomplete series. This selection ensures sufficient sectoral coverage and data availability while avoiding sampling distortions arising from missing disclosures.

3. Empirical Methodology

3.1. Sample and Data Sources

To ensure both temporal and sectoral representativeness, the analysis covers all non-financial firms listed on the Casablanca Stock Exchange during the period 2006 to 2024. This time window corresponds to a pivotal stage in the evolution of the Moroccan accounting landscape, following the mandatory adoption of IFRS in 2005, which enhanced the comparability and reliability of published financial statements. Financial and market data were obtained primarily from the Refinitiv Eikon database, which is widely recognized for the accuracy and depth of its historical coverage. These data were supplemented manually by consulting annual reports, financial statements and reference documents disclosed on corporate websites as well as through the public reporting platform of the AMMC. The final sample consists of 62 firms, yielding eight hundred sixty one firm year observations after the removal of outliers and the exclusion of incomplete series. This selection provides sufficient sectoral coverage and data availability while avoiding sampling distortions arising from missing disclosures.

3.2. Model Specification, Estimation Strategy, and Variable Selection

Within a hypothetico-deductive framework, the hypotheses developed in the literature review are empirically tested using nonlinear econometric models suited to the nature of the dependent variable and the panel structure of the data. Two analytical levels are distinguished, corresponding respectively to the probability and the intensity of goodwill impairment.

The first level seeks to explain the likelihood that a firm recognizes a goodwill impairment using a Probit model estimated via robust maximum likelihood. This specification evaluates the combined influence of three categories of variables:

(i) economic and financial factors that capture operating performance and market conditions,
(ii) managerial and behavioral factors that reflect managerial discretion in recognizing impairment losses, and
(iii) governance and institutional factors associated with internal and external monitoring mechanisms that may constrain opportunistic behavior.

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The functional form of the model is expressed as follows:

$$\Pr(DGwill_{i,t} = 1) = \Phi(\alpha_0 + \alpha_1 X_{i,t}^{eco} + \alpha_2 X_{i,t}^{man} + \alpha_3 X_{i,t}^{gov} + \varepsilon_{i,t}) \quad (1)$$

where $DGwill_{i,t}$ is a binary variable equal to 1 when firm i recognizes a goodwill impairment in year t, and 0 otherwise. The vectors $X_{i,t}^{eco}$, $X_{i,t}^{man}$, and $X_{i,t}^{gov}$ regroup the economic-financial, managerial, and governance variables respectively, as detailed in Appendix A. The coefficients α represent the parameters to be estimated, and $\varepsilon_{i,t}$ denotes the stochastic error term.

Estimations are conducted on an unbalanced panel using robust standard errors to correct for heteroscedasticity and intra-firm correlation.

The second level of analysis focuses on the intensity of goodwill impairment, measured as the impairment amount scaled by total assets. Given the large number of zero-valued observations, the estimation relies on a Tobit model left-censored at zero, which is particularly appropriate for censored continuous variables. The model is specified as follows:

$$Gwill_{i,t}^{*} = \beta_0 + \beta_1 X_{i,t}^{eco} + \beta_2 X_{i,t}^{man} + \beta_3 X_{i,t}^{gov} + \epsilon_{i,t}, \text{ with } \max(0, Gwill_{i,t}^{*}) \quad (2)$$

where $Gwill_{i,t}$ is the observed impairment intensity and $Gwill_{i,t}^{*}$ its latent, uncensored value. The coefficients β denote the regression parameters, and $\epsilon_{i,t}$ represents the error term.

The same three categories of explanatory variables, economic and financial, managerial and behavioral, and governance and institutional, are retained to ensure analytical coherence and allow direct comparison across the two models.

A Heckman two-step selection model is employed as an additional robustness test to correct for potential selection bias between firms that recognize goodwill impairment and those that do not. This procedure enhances the external validity of the results and the reliability of the estimated coefficients.

Descriptive statistics and the pairwise correlation matrix are reported in Tables 1 and 2. Preliminary diagnostics confirm the absence of significant multicollinearity, as correlation coefficients remain systematically below the conventional 0.7 threshold, ensuring the structural robustness of the estimations.

Inspection of Table 1 shows that goodwill impairments average 2.4 billion Moroccan dirhams, a substantial amount reflecting the strategic importance of this intangible asset in the balance sheets of listed Moroccan firms. Moreover, 83.2 percent of companies have recognized at least one impairment loss since 2006, suggesting recurrent exposure to revisions in expected cash flows, sector-specific shocks, or prudent governance practices. Audit choices further reinforce this search for credibility: 55.8 percent of firms engage at least one Big Four audit firm, signaling a strong preference for high-quality auditors, particularly in relation to IFRS compliance and financial transparency.

Additionally, 45.3 percent of sample firms exhibit signs of voluntary earnings smoothing, reflected in abnormally reduced inter-annual volatility designed to present a more stable performance trajectory to the market. This behavior, widely discussed in the earnings-management literature, points to potential trade-offs involving signaling, investor-expectation management, and contractual constraints.

Structurally, firms display moderate leverage, with an average debt ratio of 19.9 percent over the period, rising from 17.53 percent in 2023 to 19.53 percent in 2024. This limited reliance on external financing suggests notable financial resilience and the capacity to resort to debt should growth opportunities arise. Operating performance also appears strong: average EBITDA amounts to 1.109 billion dirhams, increasing from 1.36 to 1.69 billion between 2023 and 2024, which reflects a solid ability to generate operating cash flows. Revenue growth confirms this momentum, averaging 4.6 percent over the period and rising significantly from 3.54 percent in 2023 to 9.25 percent in 2024, pointing to intensifying commercial activity in the Moroccan market.

Finally, the Book-to-Market ratio indicates persistent undervaluation relative to book equity, although this gap narrows in 2024, when the ratio falls to 83.99 percent. This adjustment reflects more favorable investor expectations, consistent with the observed improvement in operational and financial indicators.

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The following section presents the econometric results obtained from the Probit and Tobit estimations and provides a critical interpretation in light of the theoretical framework and prior empirical findings.

Table 1. Descriptive statistics of the Variables Included in the Probit, Tobit, and Heckman Models.

VARIABLE	Obs	Mean	Std. Dev.	Min	Max
$GW\_BINARY_{i,t}$	861	0.832	0.374	0	1
$GWIL_{i,t}$	849	0.001	0.002	0	0.018
$IMPGW_{i,t}$	861	2415.656	10186.075	-121	215256
$GDP_{i,t}$	809	0.017	0.033	-0.081	0.071
$SIZE_{i,t}$	860	21.24982	1.736567	16.23641	26.44728
$EBITDA_{i,t}$	860	24.65508	0.0617991	24.59261	25.29981
$GROWTHOPP_{i,t}$	801	0.046	0.324	-1	6.224
$BIG4_{i,t}$	846	0.558	0.497	0	1
$SMOOTH_{i,t}$	799	0.453	0.498	0	1
$AB\_CFO_{i,t}$	798	-2.75e-21	0.0000993	-0.00049	0.0004559
$LEV_{i,t}$	860	0.199	0.161	0	0.917
$RBM_{i,t}$	794	1.255	1.643	0	19.078
$BOARDSIZE_{i,t}$	769	9.252	2.588	3	17
$PAYOUT_{i,t}$	861	2.495	40.374	0	1042.35
$DACC_{i,t}$	799	0	0.09	-0.466	0.619

Table 2. Pairwise correlations.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) $AB\_CFO_{i,t}$	1.000											
(2) $GDP_{i,t}$	0.000	1.000										
(3) $EBITDA_{i,t}$	0.200	0.009	1.000									
(4) $GROWTHOPP_{i,t}$	0.040	0.143	0.016	1.000								
(5) $BIG4_{i,t}$	0.199	0.013	0.046	-0.035	1.000							
(6) $LEV_{i,t}$	-0.139	-0.022	-0.064	-0.027	-0.014	1.000						

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(7) $RBM_{i,t}$	-0.257	-0.048	-0.163	-0.078	0.005	0.103	1.000					
(8) $PAYOUT_{i,t}$	-0.005	-0.010	-0.010	-0.005	-0.040	-0.059	0.008	1.000				
(9) $SIZE_{i,t}$	0.136	0.001	0.543	0.045	0.256	-0.027	0.009	-0.009	1.000			
(10) $DACC_{i,t}$	-0.228	0.011	-0.034	0.023	-0.050	-0.067	-0.078	0.007	-0.006	1.000		
(11) $BOARDSIZE_{i,t}$	0.168	-0.002	0.193	0.034	0.122	0.191	-0.132	-0.019	0.233	-0.073	1.000	
(12) $SMOOTH_{i,t}$	0.157	0.134	0.097	0.236	0.033	-0.031	-0.200	0.021	0.225	0.011	0.079	1.000

4. Results and Discussion

4.1. Main Results: The Impairment Decision and the Magnitude of the Loss

The joint analysis of the Probit and Tobit models clarifies the mechanisms that drive the recognition of goodwill impairment and the factors that determine its magnitude. The Probit model reported in Table 3 focuses on the latent probability of recording an impairment. The Tobit model presented in Table 4 isolates the determinants of positive impairment amounts. Distinguishing between these two dimensions is essential because goodwill accounting involves an informational process combined with substantial subjectivity in estimating recoverable amounts, which leaves managers considerable discretion. By separating the decision to impair from the calibration of the loss, the analysis avoids conflating distinct dynamics, an approach recommended in modern financial accounting research.

The results first highlight the central role of economic and operating performance. In the Probit model, EBITDA is positive and significant (22.965, z = 2.57, p = 0.010), indicating that firms with stronger fundamentals are more likely to recognize an impairment. Although this may appear counterintuitive given the literature that identifies deteriorating performance as a major trigger of impairment (André et al., 2016; Lee et al., 2011), it is consistent with studies showing that high-performing firms have greater flexibility to clean their financial statements as a form of managerial prudence or as a positive signal to investors (Ding and Zhang, 2019; Wang et al., 2023). In contrast, the Tobit model indicates that these same firms record smaller impairment losses (−0.0554, t = −5.21, p = 0.000). Taken together, this pattern supports hypothesis H1 and aligns with research linking recoverable amounts to underlying fundamentals (Hu and Li, 2019; Zhang et al., 2020).

The findings do not support hypothesis H2. Financial leverage is not significant in either the Probit model (0.063, z = 0.06, p = 0.955) or the Tobit model (0.00055, t = 0.16, p = 0.870). This result contrasts with evidence emphasizing debt-contracting constraints and covenant-related incentives in impairment decisions (Beatty and Weber, 2006; Kim and Nguyen, 2022). In the Moroccan setting, the

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dominance of relationship-based bank financing likely weakens the disciplinary mechanism usually exerted by debt covenants in developed markets. Firms therefore have little incentive to avoid impairment recognition to preserve perceived solvency. This leads to the rejection of H2, consistent with evidence from some emerging economies.

External visibility appears as a significant determinant of the recognition decision. The Book-to-Market ratio has a negative and significant effect in the Probit model (−0.258, z = −2.24, p = 0.025), suggesting that firms with higher market valuations or stronger public exposure are more inclined to record impairment losses. This result is consistent with research that associates analyst and investor scrutiny with more timely impairment recognition (Choi and Nam, 2020; Ramanna and Watts, 2012). The Tobit model shows no significant link between visibility and impairment magnitude (−0.00044, t = −1.60, p = 0.110). The visibility effect therefore relates specifically to the recognition stage, which supports hypothesis H3 and aligns with prior work showing that market pressure influences the decision to impair but not the monetary calibration.

Earnings management plays a pervasive role in both models. The earnings-smoothing indicator is positive and highly significant in the Probit model (1.822, z = 5.02, p = 0.000) and remains significant in the Tobit model (0.00145, t = 1.66, p = 0.098). Abnormal operating cash flows also exhibit a positive effect in both models (2.652, z = 1.90, p = 0.057 in the Probit model and 0.01008, t = 1.97, p = 0.050 in the Tobit model). These findings confirm that impairment can be strategically used as an earnings-management instrument during both the recognition decision and the determination of the impairment amount. This is consistent with evidence on complementarities between real and accrual-based manipulation (Braam et al., 2015; Cohen et al., 2008; Roychowdhury, 2006) and with studies identifying impairment as a tool for performance management (Caruso et al., 2016; Sevin and Schroeder, 2005). Hypothesis H4 is therefore fully validated.

Corporate governance exerts a selective but significant influence. Engagement of a Big Four auditor reduces the probability of recognition in the Probit model (−1.284, z = −2.32, p = 0.020), which confirms the disciplinary effect of high-quality auditors (DeAngelo, 1981; Choi and Nam, 2020). Dividend payout increases the probability of recognition (0.781, z = 2.25, p = 0.024), consistent with signaling theory (Bhattacharya, 1979; Easterbrook, 1984; Spence, 1973) and with evidence that payout policy reinforces financial discipline (Florackis and Ozkan, 2009). However, neither Audit Quality (0.00031, t = 0.36) nor Payout (−0.00020, t = −0.51) has any effect on the amount of impairment in the Tobit model. Governance mechanisms therefore influence recognition but not the monetary translation of impairment. This leads to partial validation of H5 and reflects prior evidence showing differentiated governance effects across decision layers (Bushman et al., 2004; Klein, 2002).

Macroeconomic conditions add additional insight. GDP growth significantly increases the probability of impairment recognition (8.301, z = 2.69, p = 0.007), which reflects heightened scrutiny from analysts and investors during periods of economic expansion (Han et al., 2020). However, macroeconomic conditions do not influence the magnitude of impairment in the Tobit model. This suggests stronger informational pressure during growth periods without affecting internal valuation judgments.

Overall, the results indicate that goodwill impairment in the Moroccan context follows a sequential structure. The decision to impair is driven primarily by performance, visibility, and governance, while the magnitude of the loss reflects internal operational adjustments. Hypotheses H1, H3, and H4 are confirmed, H5 is partially validated, and H2 is rejected. This pattern is consistent with research showing that goodwill functions as both an economic indicator and a strategic reporting tool shaped by the disciplinary mechanisms that characterize emerging markets.

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Table 3. Results of the Probit Regression Model with a dichotomous dependent variable (1 if goodwill impairment, 0 otherwise).

GW_BINAIRE	Coef.	St0.Err.	t-value	p-value	[95% Conf	Interval]	Sig
$AB\_CFO_{i,t}$	2.652577	1.394963	1.90	0.057	0.268	50.888	*
$GDP_{i,t}$	8.30153	3.086898	2.69	0.007	2.25132	14.35174	***
$EBITDA_{i,t}$	22.96592	8.946911	2.57	0.010	5.430297	40.50154	***
$GROWTHOPP_{i,t}$	0.910945	0.5141738	1.77	0.076	-0.0968173	1.918707	**
$BIG4_{i,t}$	-1.284639	0.5528273	-2.32	0.020	-2.368161	-0.2011173	**
$LEV_{i,t}$	0.0635388	1.122382	0.06	0.955	-2.136289	2.263366	
$RBM_{i,t}$	-0.2583216	0.115448	-2.24	0.025	-0.4845955	-0.0320477	**
$PAYOUT_{i,t}$	0.7816683	0.3466701	2.25	0.024	0.1022075	1.461129	**
$SIZE_{i,t}$	-0.0517778	0.1684556	-0.31	0.759	-0.3819447	0.2783892	
$DACC_{i,t}$	1.690583	1.072794	1.58	0.115	-0.412054	3.793221	**
$BOARDSIZE_{i,t}$	-0.8803311	0.7681934	-1.15	0.252	-2.385963	0.6253004	
$SMOOTH_{i,t}$	1.822518	0.3633322	5.02	0.000	1.1104	2.534636	***
CONSTANT	-524.6379	203.9344	-2.57	0.010	-924.342	-124.9338	***
/lnsig2u	0.1874613	0.6588944			-1.103948	1.478871	
sigma_u	1.098264	0.3618199			0.575812	2.094752	
rho					0.2490009	0.8144019	

**** P<0.01, ** P<0.05, * P<0.1*

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Random-effects probit regression	*Number of obs*	=	*578*
Group variable: ID	*Number of groups*	=	*54*
Random effects u_i ~ Gaussian	*Obs per group: min = 2*	*avg = 10.7*	*max = 13*
Integration method: mvaghermite	*Integration pts.*	=	*12*
	Wald chi2(12)	=	*53.04*
Log likelihood = -118.19735	*Prob > chi2*	=	*0.0000*
LR test of rho=0: chibar2(01) = 17.46	*Prob >= chibar2 = 0.000*		

Table 4. Results of the Tobit regression model with a censored dependent variable (Goodwill impairment / Total Assets).

GWIL_C	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
$AB\_CFO_{i,t}$	0.0100825	0.0051299	1.97	0.050	6.57e-06	0.0201585	**
$GDP_{i,t}$	-0.0011953	0.0119168	-0.10	0.920	-0.0246018	0.0222112	
$EBITDA_{i,t}$	-0.0554597	0.0106421	-5.21	0.000	-0.0763625	-0.0345568	***
$GROWTHOPP_{i,t}$	0.0014684	0.0016176	0.91	0.364	-0.0017088	0.0046456	
$BIG4_{i,t}$	0.0003125	0.0008587	0.36	0.716	-0.001374	0.0019991	
$LEV_{i,t}$	0.0005507	0.0033566	0.16	0.870	-0.0060423	0.0071437	
$RBM_{i,t}$	-0.0004405	0.0002751	-1.60	0.110	-0.0009807	0.0000998	
$PAYOUT_{i,t}$	-0.0002002	0.0003912	-0.51	0.609	-0.0009685	0.0005682	
$SIZE_{i,t}$	0.0020045	0.0004386	4.57	0.000	0.0011431	0.002866	***
$DACC_{i,t}$	0.0033782	0.0049524	0.68	0.495	-0.0063491	0.0131055	
$BOARDSIZE_{i,t}$	0.0022497	0.0014854	1.52	0.130	-0.000667	0.0051664	

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$SMOOTH_{i,t}$	0.001452	0.0008769	1.66	0.098	-0.0002704	0.003744	*
CONSTANT	1.226526	0.2391572	5.13	0.000	0.7567823	1.69627	***
VAR(e.GWIL)	0.0000498	6.92e-06			0.0000379	0.0000654	

Number of obs = *578*			
Uncensored = *140*			
Limits: lower = *0*	*Left-censored* = *438*		
upper = *+inf*	*Right-censored* = *0*		
LR chi2(12) = *54.85*			
Prob > chi2 = *0.0000*			
Log likelihood = *329.61429*	*Pseudo R2* = *-0.0907*		

****** P<0.01, ** P<0.05, * P<0.1***

4.2. Robustness Test: Heckman Two-Step Selection Model

The use of the Heckman model provides a methodological complement to the Tobit framework by explicitly correcting the selection bias inherent in the study of goodwill impairment. The Tobit model assumes that the absence of impairment reflects an observed value equal to zero and incorporates these zeros directly into the estimation of the impairment amount. In the case of goodwill, a value of zero does not represent an economic measure but rather an accounting choice. For this reason, conventional censoring is not appropriate.

The Heckman model follows a different logic. It treats the decision to recognize impairment as a process that is distinct from the determination of the impairment amount. It separates the selection equation, which models the recognition event, from the outcome equation, which estimates the magnitude of the impairment after correction using the Inverse Mills Ratio. This distinction is particularly relevant for goodwill because non-impairment reflects a managerial decision rather than a quantitative outcome. Ignoring this distinction would lead to non-random sampling. The strong significance of the error-correlation parameters confirms the presence of structural selection bias and fully justifies the use of the Heckman approach in line with the methodology introduced by Heckman (1979).

The comparison of the Heckman results with those of the Tobit model reveals substantial convergence for most determinants, which confirms the robustness of the relationships identified earlier. Variables associated with real management activities, financial visibility, or operating performance maintain similar signs and magnitudes. This indicates that the Tobit findings are not driven by mechanical censoring but reflect coherent economic and behavioral mechanisms among firms that recorded an impairment charge. Smoothing incentives, the dynamics of abnormal cash flows, stock-market positioning, and operating strength consistently appear as determinants of impairment magnitude even after correcting for selection.

A notable divergence emerges with regard to discretionary accruals. These accruals do not affect the recognition decision, as shown by both the Probit and Tobit models, but they become positive and strongly significant in the outcome equation of the Heckman model. This result reveals a distinctive discretionary mechanism that takes place only after managers decide to recognize an impairment. It suggests that discretionary accruals are not used to trigger the impairment event but rather to adjust the reported amount once the decision has been made. The Tobit model, which combines the recognition decision and the magnitude of impairment in a single equation, cannot

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isolate this mechanism. The Heckman framework, by clearly separating the two stages, brings to light an accounting adjustment process that remains invisible in the standard analysis.

Overall, the robustness test based on the Heckman model confirms the validity of the Tobit results while clarifying the underlying mechanisms. The areas of convergence reinforce the identification of performance, visibility, real management activities, and smoothing behavior as central determinants of impairment dynamics. The divergence concerning discretionary accruals significantly enriches the theoretical interpretation by demonstrating that these accounting adjustments do not influence the decision to impair but play a major role in determining the reported amount among firms that have already recorded a loss. The Heckman approach therefore emerges as an essential methodological complement for understanding the sequential nature of goodwill impairment and for distinguishing the determinants of recognition from those of monetary adjustment. This analysis strengthens both the empirical and theoretical credibility of the study and offers a more nuanced understanding of discretionary behavior within the accounting environments of emerging markets.

Table 5. Robustness test using the two-step Heckman model: Selection equation (Probit) and outcome equation (Corrected OLS).

VARIABLE	COEFICIENT	STD. ERR.	Z	P>|Z|	[95% CONF. INTERVAL]	SIG
$AB\_CFO_{i,t}$	0.004059	0.001913	2.12	0.034	0.000367 – 0.007951	**
$GDP_{i,t}$	0.001979	0.002137	0.93	0.408	-0.002249 – 0.008197	
$EBITDA_{i,t}$	-0.002184	0.000656	-42.91	0.000	-0.002866 – -0.001502	***
$GROWTHOPP$	0.000379	0.000263	1.44	0.149	-0.000137 – 0.001349	
$BIG4_{i,t}$	-0.000239	0.000274	-0.74	0.457	-0.000749 – 0.000332	
$LEV_{i,t}$	0.000171	0.000088	0.82	0.412	-0.000141 – 0.001547	
$RBM_{i,t}$	-0.000327	0.000122	-2.68	0.007	-0.000671 – -0.0000878	***
$PAYOUT_{i,t}$	-0.0000765	0.0000624	-1.22	0.223	-0.0001995 – 0.0000464	
$SIZE_{i,t}$	0.000182	0.000176	1.04	0.122	-0.000122 – 0.0002686	
$DACC_{i,t}$	0.002381	0.000768	2.69	0.007	0.000871 – 0.004575	***
$BOARDSIZE_{i,t}$	0.000158	0.000162	0.97	0.243	-0.000323 – 0.000749	
$SMOOTH_{i,t}$	0.002788	0.000946	2.95	0.003	0.000572 – 0.001304	***
_CONS	0.062303					
Paramètres du modèle de sélection						
Arthrho = 18.3684, Std.Err. = 1.1195, z = 154.14, P>|z| = 18.1348						
lnsigma = -5.94979, Std.Err. = 0.0784056, z = -75.88, Interval = [-6.13462, -5.796118]						
rho = 1, sigma = 0.002604, lambda = 0.0026064						
Wald test of indep. eqns (rho = 0): chi2(1) = 23751.99, Prob > chi2 = 0.0000						

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5. General Conclusion and Theoretical and Managerial Implications

The objective of this study was to identify the financial, informational and managerial determinants of goodwill impairment in the Moroccan setting, an institutional environment marked by concentrated ownership structures, bank-centered financing and evolving disclosure practices. This topic remains central to ongoing debates surrounding the impairment-only model under IFRS, particularly at a time when the IASB, through Exposure Draft ED/2022/1, has reaffirmed its intention to enhance post-acquisition disclosures without reintroducing systematic amortization despite persistent criticism regarding the subjectivity of impairment tests and their limited decision usefulness for investors.

The empirical evidence based on Probit, Tobit and Heckman models shows that goodwill impairment follows a sequential process in which the determinants of the recognition decision differ substantially from those that shape the magnitude of the loss. Moroccan firms appear to use the impairment test not only as an economic updating mechanism but also as a discretionary tool capable of influencing the reported earnings trajectory. This finding is consistent with research conducted in developed markets, including contributions by Caruso et al. (2016), Choi and Nam (2020), Filip et al. (2015) and Kabir and Rahman (2016), while providing new evidence from an emerging-market setting that remains largely undocumented.

At the financial level, operating performance emerges as a central determinant of impairment behavior. High-performing firms are more likely to recognize impairment, which suggests that managers may adopt a prudential or strategic approach when current profitability allows for the absorption of the adjustment. These same firms, however, tend to record smaller impairment amounts, indicating that economic capacity conditions both the recognition and the calibration of the loss. This pattern is consistent with the work of André et al. (2016), Hu and Li (2019), Wang et al. (2023) and Zhang et al. (2020), who show that goodwill may be impaired even before observable declines in fundamentals appear, sometimes as part of a signaling strategy.

Earnings management plays a transversal role across all models. Indicators of income smoothing and real activity manipulation are significant, which confirms that goodwill impairment remains a prominent lever for discretionary reporting. The Heckman model provides a distinctive insight. Discretionary accruals do not influence the initial decision to recognize impairment, yet they exert a substantial effect on the magnitude of the loss once the decision has been made. This sequential configuration, involving different levers at distinct stages, represents an original contribution in the Moroccan context and aligns with the analyses of Braam et al. (2015), Cohen et al. (2008), Roychowdhury (2006) and Sevin and Schroeder (2005).

Corporate governance exerts an asymmetric influence. Audit quality, consistent with DeAngelo's (1981) definition, together with the discipline associated with dividend policy, both increase the likelihood of impairment recognition. These findings confirm their role in curbing opportunistic behavior in environments characterized by strong informational asymmetries. However, these governance mechanisms do not affect the magnitude of the impairment, which suggests that monitoring efforts concentrate primarily on the recognition decision. The absence of a leverage effect reflects the features of the Moroccan financial system, where enduring bank relationships reduce the influence of debt covenants commonly observed in developed markets, a result consistent with Beatty and Weber (2006) while highlighting national specificities.

From a theoretical perspective, the study confirms the relevance of agency theory as developed by Jensen and Meckling (1976), positive accounting theory as articulated by Watts and Zimmerman (1978, 1986) and signaling theory as introduced by Spence (1973). By showing that goodwill functions as a negotiation space between economic rationality and managerial discretion, the study enriches these frameworks and demonstrates that impairment dynamics differ according to whether one considers the recognition decision or the measurement process. The Heckman model provides empirical validation of this sequentiality, which remains insufficiently documented in emerging markets.

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Several research extensions arise naturally from these findings. A multi-country panel covering additional emerging economies would make it possible to compare the institutional determinants of impairment behavior. More refined measures of earnings management, such as those proposed by Cohen and Zarowin (2010) or Zang (2012), would allow a deeper understanding of discretionary mechanisms. Future work could also incorporate more detailed governance indicators, including board independence, audit committee characteristics and institutional ownership structures. An examination of the interaction between impairment testing and enhanced post-acquisition disclosures proposed in recent IASB projects would provide further insight into the ability of expanded transparency requirements to reduce managerial discretion.

Beyond these avenues, important methodological developments can be considered. Identification could be strengthened by mobilizing causal strategies such as instrumental-variable approaches, difference-in-differences around regulatory or macroeconomic shocks or matching procedures designed to mitigate selection on observables. Additional sensitivity analyses, including alternative scaling of impairment amounts, exclusion of crisis years such as 2008 or 2020 and separate treatment of firms with unusually high goodwill levels, would refine the robustness of the empirical design. Complementary estimators such as fixed-effects and random-effects specifications, quantile regressions for impairment magnitudes or multi-level clustering of standard errors could further consolidate the stability of the results.

Taken together, this study provides the first systematic analysis of the determinants of goodwill impairment in Morocco and highlights a specific interplay between performance, visibility, governance and discretionary behavior within an institutional environment undergoing structural transition. The findings indicate that goodwill impairment should be interpreted not only as an economic adjustment mechanism but also as a strategic reporting instrument shaped by managerial incentives and the constraints typical of emerging markets. These insights carry important implications for standard setters, auditors, analysts and investors by underscoring the need to strengthen transparency and oversight in order to limit discretionary latitude under the existing impairment-only model.

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Abbreviations

AMMC – Autorité Marocaine du Marché des Capitaux

CGU – Cash-Generating Unit (Unité Génératrice de Trésorerie)

EBITDA – Earnings Before Interest, Taxes, Depreciation, and Amortization

FASB – Financial Accounting Standards Board

GDP – Gross Domestic Product (Produit Intérieur Brut)

IAS – International Accounting Standard

IASB – International Accounting Standards Board

IFRS – International Financial Reporting Standards

OLS – Ordinary Least Squares (Moindres Carrés Ordinaires)

SFAS – Statement of Financial Accounting Standards

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Appendix A: Variable Specification: Calculation Methods and Sources for Variables Used in the Probit and Tobit, and Heckman Models

Variable	Meaning	Calculation Method / Operational Definition	Main Sources
		Dependent Variables	
$GW\_BINARY_{i,t}$	Goodwill Impairment	Variable equal to 1 if the firm records a goodwill impairment loss, 0 otherwise.	Choi et Nam (2020) ; Glaum et al. (2015) ; Kabir et Rahman (2016) ; Wang et al. (2023).
$GWIL_{i,t}$	Goodwill Impairment Intensity	Ratio of goodwill impairment to total assets at t–1.	Kabir et Rahman (2016) ; Choi et Nam (2020) ; Wang et al. (2023).
		Economic explanatory variables	
$EBITDA_{i,t}$	Gross Operating Performance	Natural logarithm of earnings before interest, taxes, depreciation, and amortization (EBITDA).	André et al. (2016).
$GROWTHOPP_{i,t}$	Growth Opportunities	Rate of change in the firm's revenue between t–1 and t.	Filip et al. (2015) ; Han et al. (2021) ; Riedl (2004).
$RBM_{i,t}$	Book-to-Market Ratio	Book value of equity divided by market capitalization.	Choi et Nam (2020) ; Filip et al. (2015) ; Glaum et al. (2015) ; Kabir et Rahman (2016) ; Andreicovici et al. (2020)
$LEV_{i,t}$	Financial Leverage	Total debt ratio = (Total liabilities / Total assets). Reflects the debt hypothesis of Positive Accounting Theory.	Choi et Nam (2020) ; Filip et al. (2015) ; Glaum et al. (2015).
$SIZE_{i,t}$	Firm Size	Natural logarithm of total assets at fiscal year-end.	Cavero Rubio et al. (2021) ; Pallarés Sanchidrián et al. (2021) ; André et al. (2016). Andreicovici et al. (2020)
$GDP_{i,t}$	Economic Growth	Relative growth of GDP per capita between t–1 and t.	Kabir & Rahman (2022) ; Wang et al. (2023).
		Managerial and Behavioral Explanatory Variables	
$DACC_{i,t}$	Discretionary Accruals	Estimated using the Modified Jones Model:	Filip et al. (2015) ; Wang et al. (2023).

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			$\mathrm{Acc}_{i,t} = \alpha_1 + \alpha_2(\Delta\mathrm{REV}_{i,t} - \Delta\mathrm{REC}_{i,t}) + \alpha_3\,\mathrm{PPE}_{i,t} + U_{i,t}$. Acc refers to total accruals, obtained as the difference between net income and operating cash flows. ΔREV denotes the change in revenue, while ΔREC represents the change in accounts receivable. PPE indicates the gross value of property, plant, and equipment, and U is the residual of the model, interpreted as the discretionary component of accruals. All variables are scaled by total assets at t–1 to ensure cross-firm comparability.	
$SMOOTH_{i,t}$	Earnings Smoothing		Variable equal to 1 if the change in earnings before goodwill impairment (scaled by total assets at t–1) exceeds the annual industry median, 0 otherwise.	Choi et Nam (2020) ; Han et al. (2021).
$AB\_CFO_{i,t}$	Abnormal Operating Cash Flows		Résidu issu du modèle de Roychowdhury (2006):$\frac{CProd_{i,t}}{A_{i,t}} = \alpha_1 \frac{1}{A_{i,t-1}} + \alpha_2 \frac{\Delta CA_{i,t}}{A_{i,t}} + \alpha_3 \frac{\Delta CA_{i,t-1}}{A_{i,t-1}} + U_{i,t}$ $CProd_{i,t}$ refers to the cost of goods sold, $A_{i,t-1}$ denotes total assets,, $\Delta CA_{i,t}$ represents the change in revenue, et U corresponds to the residual of the model, interpreted as the abnormal component of operating cash flows.	Filip et al. (2015) ; Roychowdhury (2006).
	Corporate governance variables			
$BIG4_{i,t}$	External Audit Quality		Binary variable equal to 1 if the firm is audited by a Big Four audit firm, 0 otherwise.	Cavero Rubio et al. (2021) ; Choi et Nam (2020) ; Filip et al. (2015) ; Lobo et al. (2016) ;

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			Andreicovici et al. (2020)
$BOARDSIZE_{i,t}$	Board Size	Natural logarithm of the number of board members.	Donaldson et Davis (1991) ; Wang et al. (2023).
$PAYOUT_{i,t}$	Payout Policy	Ratio = (Dividends paid / Net income) × 100.	Pallarés Sanchidrián et al. (2021).

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