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Corresponding author*GOVERNANCE IN FAMILY BUSINESSES AND THE ISSUE
OF MEASURING EARNINGS MANAGEMENT:
EXPLORING THE INTERACTION**

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Abstract. *The management of results in family businesses (FB) has been widely studied due to the specific governance structures that blend family ties and professional management practices. This research examines the role of governance in shaping earnings management practices, focusing on how family ownership and governance systems influence the use of discretionary accruals. By analysing different earnings management models, including those of Jones (1991), Dechow (1995), Kasznik (1999) and Kothari, Leone & Wasley, (2005), this work aims to identify the most effective approach to detect discretionary accruals. The study focused on data from 103 family businesses in Algeria, offering insights into the specific dynamics of earnings management. The results demonstrate that earnings management in family businesses is strongly influenced by governance factors such as board independence, ownership concentration, and board size. The results indicate that family businesses prioritize long-term sustainability and the preservation of legacy, which can lead to unique forms of profit.*

Keywords: *family business, earnings management, discretionary accruals, corporate governance.*

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Introduction

The fields of management research on family businesses are rich. Earnings management (EM) has been widely debated and studied in this context. Operating under differentiated governance mechanisms that blend familial ties and managerial models, these companies offer a unique framework for financial communication. Particularly concerning adherence to accounting and financial standards, family dynamics' impact on outcome management techniques shapes the knowledge of transparency management, responsibility, and regulatory compliance in this intricate system.

Unlike publicly traded companies, family businesses often prioritize long-term sustainability, the preservation of legacy, and succession planning, which can lead to a particular management of profits, balancing short-term financial results with long-term objectives.

This article aims to examine the role of governance in the development of earnings management practices within family businesses. The research explores the interaction between family ownership and governance systems specific to family firms, with particular attention to the characteristics of the board of directors and its influence on earnings management. The objective is to identify the most suitable framework for detecting discretionary accruals by analysing various earnings management models, including those developed by Jones (1991), Dechow (1995), Kasznik (1999), and Kothari et al. (2005). Furthermore, the study investigates how governance mechanisms, such as board independence and ownership concentration, affect these practices.

This article, based on an analysis of 103 family businesses in Algeria, enriches knowledge by providing insights into the specific dynamics of result management. It proposes a conceptual framework that integrates the specificities of family governance with result management theories.

Literature Review

Background of Family-Owned Businesses

In exploring the intricacies of earnings management within family-owned businesses, it becomes essential to consider how unique familial dynamics influence financial reporting practices. For instance, the interplay between family governance structures and earnings management can enhance transparency or create opportunities for manipulation, particularly when compliance with International Financial Reporting Standards (IFRS) is involved (Naz et al., 2024). Moreover, understanding these relationships necessitates a dual lens that examines both the business objectives and the emotional ties inherent in family business; such an approach could illuminate why specific corporate governance mechanisms may yield inconsistent results regarding integrity and accountability in financial disclosures (Safari et al., 2011). By acknowledging these complexities, future research can better address the gaps identified in current literature, paving the way for frameworks that not only measure earnings management but also account for the distinctive performance metrics relevant to family enterprises (Wang & Ahmed, 2010).

Importance of Earnings Management in Family Business

The significance of earnings management in family firms extends beyond mere compliance with regulations; it also intersects with the long-term strategic goals that families prioritize, such as legacy preservation and succession planning. This focus on sustainability may lead to a unique form of earnings management that balances short-term financial appearances to ensure business continuity across generations. Interestingly, research indicates that while agency theory predominantly guides understanding in this area, a notable gap exists regarding how different types of family governance structures — such as those characterized by varying levels of familial involvement — impact these practices (Paiva et al., 2013). Consequently, exploring the nuances of family dynamics could reveal critical insights into why some family businesses exhibit more transparent financial reporting than others, thereby enriching the discourse surrounding corporate governance and its effectiveness in mitigating earnings manipulation (Naz et al., 2024).

Overview of Governance in Family-Owned Businesses

Furthermore, external governance mechanisms, such as independent boards and audit committees, become increasingly significant in shaping earnings management practices within family-owned firms. While these structures are intended to enhance oversight and promote integrity, research indicates that their effectiveness can be compromised by familial ties and loyalties, leading to a paradox where greater familial involvement may diminish the monitoring capabilities of these entities (Adiguzel, 2013). This dynamic suggests that family businesses might benefit from tailored governance frameworks that align with their unique cultural and operational contexts, addressing compliance and fostering a culture of ethical financial reporting. Moreover, exploring how varying levels of professionalization among family firms influence their approach to earnings management could provide valuable insights into optimizing governance strategies for

long-term sustainability and transparency. Understanding the interplay between governance structures and professionalization will be crucial in developing best practices that safeguard against potential conflicts of interest and enhance overall organizational performance.

Definition of Earnings Management

In addition to internal governance mechanisms, the influence of external stakeholders on earnings management practices in family-owned businesses warrants further exploration. Precisely, the perceptions and expectations of investors can shape how these firms approach financial reporting, often leading them to prioritize short-term profit visibility over long-term sustainability. For instance, evidence suggests that family firms may engage in riskier business decisions to maintain favourable stakeholder impressions, potentially exacerbating earnings management tendencies (Kartika & Kartikasari, 2023). Furthermore, understanding the role of corporate commitment to ethical standards could provide a pathway for mitigating these risks; as research indicates, such commitments can moderate the relationship between ownership structures and earnings manipulation, thus promoting more transparent financial behaviours (Kartika & Kartikasari, 2023). By integrating insights from both familial dynamics and stakeholder pressures, future frameworks for assessing earnings management in family enterprises can be better equipped to reflect the complexities inherent in their operational landscapes.

The Role of Governance in Earnings Management

Moreover, the impact of cultural factors on earnings management practices in family-owned businesses cannot be overlooked, as these elements often dictate not only operational norms but also ethical standards. For instance, research highlights that in cultures with high collectivism, familial ties may lead to a greater emphasis on preserving the family's reputation, potentially fostering an environment where earnings management is viewed as acceptable or even necessary for maintaining social harmony (Kartika & Kartikasari, 2023). This suggests that understanding local cultural contexts could illuminate why certain family firms engage more in earnings manipulation than others, thereby influencing their long-term sustainability and compliance behaviours. Additionally, examining how varying degrees of professionalization within family businesses intersect with cultural expectations can provide further clarity on governance effectiveness; such insights may ultimately guide the development of culturally sensitive frameworks that promote ethical financial reporting without compromising familial objectives.

Methods

The data related to the accounting and financial information of companies (including balance sheets and income statements), as well as information concerning the boards of directors, come from the electronic registry of the National Trade Register Center (NRC): <https://sidjilcom.cnrc.dz/>. This facilitated the identification of the company, its date of creation, its nationality, its sector of activity, its financial situation over several years, and its legal documents (including the statutes and information regarding the shareholders, the general director, and the board of directors). We gathered information on 150 joint-stock companies (JSCs) and retained 103 of them. The data associated with these 103 companies fully applies to a more in-depth analysis.

The family aspect was highlighted by adopting a definition of the family business based on components. We used the methodology of identifying family businesses through surname matching, called the “surname matching approach” (Hnilica & Machek, 2014; Machek et al., 2015; Diéguez-Soto et al., 2014).

Dechow et al. (1995, 1996) indicate that multiple accounting periods must be evaluated to verify and observe revenue management. Therefore, our research will cover six years, from 2011 (the year following the initial implementation of the SCF) to 2016 (the last fiscal year disclosed and accessible on the platform).

We extracted data from 150 companies and then retained 103 that were deemed usable. We classified these entities based on their respective sectors of activity. In total, 11 sectors have been identified, and the following table lists the number of companies by sector.

Table 1. Distribution of sample companies by sector of activity

Sectors of activity	Number of selected companies	Number of observations made per year by sector
Agri-food (Sector 1)	18	90
Chemistry, Plastics, Health (Sector 2)	13	65
Construction, Building, Wood, Habitat (Sector 3)	21	105
Energy, Environment (Sector 4)	3	15
Computer Science, Internet, R&D (Sector 5)	4	20
Leisure, Tourism, Culture (Sector 6)	5	25
Electrical, electronic, and optical equipment (Sector 7)	6	30
Metallurgy, mechanics, and subcontracting (Sector 8)	4	20
Trade, extensive distribution, retailers (Sector 9)	18	90
Transport and logistics (Sector 10)	6	30
Paper, printing, and publishing (Sector 11)	5	25
Total	103	515

Source: The author based on the CNRC database

The main action of the initial phase: determine the cumulative value of the charges to be paid

The aggregated payables were derived from the balance sheet and the income statement (the cash flow statement method was not applicable as it is absent from the NRC platform). We extracted the following values from the balance sheets: total assets (AIT), total fixed assets (PPE), accounts receivable (REC), and working capital requirements.

Using the income statements, we have gathered the essential data for calculating the values associated with reintegrations ($REINT = net\ profit + depreciation\ and\ provisions - amortization\ and\ provisions - capital\ gains\ resulting\ from\ asset\ disposals + losses\ related\ to\ asset\ disposals$) and the annual result (RESULT).

Integrating the balance sheet and income statement information allowed us to determine the cash flow (CFO) and return on fixed assets (ROA). Thanks to this information, we calculated the total cumulative value for each company and each financial year.

Accounting data may present issues of endogeneity, heteroscedasticity, and autocorrelation. Therefore, we conducted a series of static tests before estimating the parameters of the models, including the F-test, the Hausman test, the Wooldridge autocorrelation test, the Breusch-Pagan Lagrange multiplier test, and the Pearson cross-sectional dependence test. By the results of these tests, the generalized least squares methodology was used.

We are moving on to the next step of the initial phase.

The secondary action of the initial phase: the verification of discretionary adjustments

We calculated the discretionary payables using four distinct estimation models for each sector.

The models implemented are as follows:

- The Jones model (1991). The model is defined as follows:

$$TA_{it}/A_{it-1} = \alpha_1 [1/A_{it-1}] + \alpha_2 [\Delta REV_{it}/A_{it-1}] + \alpha_3 [PPE_{it}/A_{it-1}] + \epsilon_{it} \quad (1)$$

Jones constructed his model for detecting discretionary accruals in such a way as to neutralise the effects of changes in the economic circumstances of the firms under study (such as variations in the components of fixed assets or fluctuations in revenue). In this model, i and t represent the firm and the financial year under consideration; TA denotes total accruals, A refers to total assets, REV is the change in the company's revenue between year t and $t-1$, and PPE represents the total fixed assets of the company. e denotes the error term, which corresponds to the portion of accruals not explained by the company's operations. All parameters in the equation are weighted by the value of the company's total assets at time $t-1$ in order to neutralise differences in the residuals of the examined variables (i.e., to correct for heteroscedasticity).

The parameters α_1 , α_2 , and α_3 are firm-specific and are estimated using the Ordinary Least Squares (OLS) method.

- The second model is that of Dechow 1995. The model is formulated as follows:

$$TA_{it}/A_{it-1} = \alpha_1[1/A_{it-1}] + \alpha_2[\Delta REV_{it} - \Delta REC_{it}/A_{it-1}] + \alpha_3[PPE_{it}/A_{it-1}] + \epsilon_{it} \quad (2)$$

The model developed by Dechow (1995) is one of the versions of the Modified Jones Model. Like the original, it distinguishes between an estimation period and an event period.

According to Dechow (1995), it is easier to manage earnings by exercising discretion over the recognition of credit sales revenue than over cash sales revenue. The model implicitly assumes that all changes in credit sales (i.e., accounts receivable) during the period under study result from earnings management. However, accounts receivable are often part of a company's normal operations. Assuming that all accounts receivable are discretionary accruals leads to an overestimation of these accruals. This assumption constitutes one of the main criticisms of the Dechow model.

Dechow et al. (1995) arrived at two major conclusions:

1. Operating cash flows are negatively correlated with discretionary accruals. This conclusion would later be incorporated by Kasznik (1999) in the development of his own discretionary accrual detection model. Consequently, Kasznik's model is known as the "CFO Modified Jones Model".

2. Financial performance is an important motivation for earnings management, and accounting for it would enhance the detection power of discretionary accrual measurement models. This finding would later inspire the research work of Kothari et al. (2005).

- The Kasznik model (1999) constitutes our third measure of earnings management. The terms of this model are as follows:

$$TA_{it}/A_{it-1} = \alpha_1[1/A_{it-1}] + \alpha_2[\Delta REV_{it} - \Delta REC_{it}/A_{it-1}] + \alpha_3[PPE_{it}/A_{it-1}] + \alpha_4[\Delta CFO_{it}/A_{it-1}] + \epsilon_{it} \quad (3)$$

Kasznik (1999) interprets the abnormal level of discretionary accruals as a motivation for issuing and disclosing earnings forecasts. The author goes further, explaining that the presence of abnormal accruals and the issuance of forecasts may be jointly determined within the framework of an overall reporting strategy. To address this issue, Kasznik (1999) estimates a simultaneous equation model in which the decision to issue a forecast and the earnings management activity are jointly determined.

Constructed in this way, the model incorporates the parameters of Jones (1991) and Dechow et al. (1995), and enhances them by adding operating cash flow (CFO) as an explanatory variable. Kasznik (1999) applies a cross-sectional estimation of the model in order to account for industry-level economic conditions affecting total accruals, and to allow the coefficients (α) to vary from year to year.

As a result of his research, Kasznik (1999) finds that managers use discretionary accruals to increase reported earnings when actual earnings fall short of forecasts. The findings also suggest that the extent of earnings management activity is positively associated with incentives to meet earnings forecasts and with the potential litigation costs linked to forecast errors.

The inclusion of CFO as an explanatory variable for accruals reduces concerns that the measurement of discretionary accruals may be mechanically correlated with operating cash flows, thereby minimising the risk of estimation errors. Taking into account changes in net cash flow from operating activities between period t and $t-1$ allows for: consideration of the firm's financial performance; assessment of the effects of growth; and evaluation of the firm's ability to generate cash in relation to accruals.

Operating cash flows may themselves be manipulated in the context of real earnings management. Including them in the model thus helps focus the analysis specifically on accounting-based earnings management.

By measuring the difference between current and prior year operating cash flows, Kasznik's model assesses the evolution of the firm's financial performance. Consequently, the model may also be referred to as a performance-matched discretionary accrual model.

A firm's financial performance can be measured in various ways. Traditionally, it is assessed using the following indicators: ROI (Return on Investment), ROA (Return on Assets), ROE (Return on Equity), and EVA (Economic Value Added).

• The fourth model is the one by Kothari et al. (2005), also known as “The performance based Jones modified model”.

$$TA_{it}/A_{it-1} = \alpha_1[1/A_{it-1}] + \alpha_2[\Delta REV_{it} - \Delta REC_{it}/A_{it-1}] + \alpha_3[PPE_{it}/A_{it-1}] + \alpha_4 ROA_{it} \text{ or } it-1 + \epsilon_{it} \quad (4)$$

Kothari et al. (2005) argue that existing models do not accurately capture discretionary accruals. Consequently, they propose models that enhance those of Jones (1991) and Dechow et al. (1995) by incorporating the explanatory variable *ROA* (Return on Assets). Kothari et al. (2005) vary their analysis by considering either the return on assets for the current financial year (ROA_{it}) or for the previous year (ROA_{it-1}).

The model developed by Kothari et al. (2005) integrates return on assets, a ratio that reflects the profitability of assets. It indicates how efficiently a firm uses its assets to generate earnings and expresses the company's ability to produce income from its resources. Linking a firm's performance to its asset base improves the reliability of accruals measurement, especially under the assumption that earnings management does not vary with performance.

Kothari et al. (2005) justify the use of this variable with two key arguments:

1. Dechow et al. (1995) suggested that ROA could help reduce estimation error by controlling for the effect of past performance.

2. ROA has the capacity to detect abnormal operating performance.

We conducted this analysis because there is no definitive consensus regarding the most effective model for detecting discretionary payables. Furthermore, factors specific to each country and to particular sectors of activity significantly impact the model's explanatory effectiveness (Gurkan, 2016; Bešlić et al., 2015).

The most relevant model for detecting discretionary accumulations in different sectors is determined using widely used statistical methodologies: adjusted R^2 , the Akaike information criterion, the logarithmic probability, and the F-test.

Discretionary payables are derived from the differential between each company's total payables and the payables considered non-discretionary according to the most applicable model.

$$DIS.AC Jones = TA_{it}/A_{it-1} - (\alpha_1[1/A_{it-1}] + \alpha_2[\Delta REV_{it}/A_{it-1}] + \alpha_3[PPE_{it}/A_{it-1}]) \quad (5)$$

$$DIS.AC Dechow = TA_{it}/A_{it-1} - (\alpha_1[1/A_{it-1}] + \alpha_2[\Delta REV_{it} - \Delta REC_{it}/A_{it-1}] + \alpha_3[PPE_{it}/A_{it-1}]) \quad (6)$$

$$DIS.AC Kasznik = TA_{it}/A_{it-1} - (\alpha_1[1/A_{it-1}] + \alpha_2[\Delta REV_{it} - \Delta REC_{it}/A_{it-1}] + \alpha_3[PPE_{it}/A_{it-1}] + \alpha_4[\Delta CFO_{it}/A_{it-1}]) \quad (7)$$

$$DIS.AC Kothar_i = TA_{it}/A_{it-1} - (\alpha_1[1/A_{it-1}] + \alpha_2[\Delta REV_{it} - \Delta REC_{it}/A_{it-1}] + \alpha_3[PPE_{it}/A_{it-1}] + \alpha_4 ROA_{it}) \quad (8)$$

The next phase of the analysis: examination of the influence of board characteristics on discretionary adjustments

The examination is based on a residual regression *.DIS.AC* concerning the parameters of the board of directors. It aims to determine which variables inherent to each company's board of directors influence the practice of earnings management.

We conducted relevant statistical analyses for our research using the TANAGRA software. This free data exploration tool is designed for educational and research purposes. It facilitates data exploration and is distinguished by its relatively simple architecture.

Results

We explain the statistical results from the two analysis phases, comment on them, and analyse them sequentially and sector by sector.

Presentation of the results related to earnings management

The Kasznik model is the most effective framework for understanding profit management in the food and beverage industry. It reports an R^2 of 0.31. Discretionary payables are calculated on

average at 4.7% of total assets. In this sector, profit management shows a downward trend.

The variable ΔCFO (change in cash flows between periods t and $t-1$) is the most significant, with a p-value extremely close to 0. The sign of this variable corresponds to the literature's predictions; it is negatively correlated with discretionary accruals.

According to this model, the regression terms are articulated as follows:

$$AC.DIS = TA_{it}/A_{it-1} - (-0.08054181 + 134610566[1/A_{it-1}] - 0.07098305[\Delta REV_{it} - \Delta REC_{it}/A_{it-1}] + 0.00548126[PPE_{it}/A_{it-1}] - 0.2725081[\Delta CFO_{it}/A_{it-1}]) \quad (9)$$

For the chemical, plastic, and health sectors, earnings management is captured very significantly by the Kasznik model. The model records an R^2 of 0.63. The terms of the model are written as follows:

$$AC.DIS = TA_{it}/A_{it-1} - (-0.07356495 + 5782032.9[1/A_{it-1}] + 0.03856263[\Delta REV_{it} - \Delta REC_{it}/A_{it-1}] + (-0.14484668)[PPE_{it}/A_{it-1}] + (-0.486853)[\Delta CFO_{it}/A_{it-1}]) \quad (10)$$

The trend is downward earnings management. Discretionary accruals represent an average of -8% of total assets, and the model estimates that the downward management is at least -71% of total assets.

The construction, building, wood, and housing sector: the coefficient of determination R^2 of the quartet of detection models related to result management shows remarkably high values. Thus, all the models are deemed worthy of being retained. The Kasznik model, in particular, shows a slightly higher significance than its counterparts, with an R^2 value of 0.98.

The construction sector is considered a distinct field. The standard for long-term contracts applies in this sector. In Algeria, progressive methodologies should be implemented. The variable $REV - REC$ is statistically significant, as evidenced by a p-value of 0.003.

The analysis of this variable allows us to deduce that the aforementioned method is underutilized because a significant portion of the revenues is still not collected (the importance of the values of accounts receivable is paramount). The average ratio of accounts receivable to revenue (REV) is calculated at 0.84. The trajectory of profit management observed in this sector reflects a trend towards upward management, estimated on average at 23% of total assets. Furthermore, the extent of upward earnings management reached the highest value in this sector compared to the global sample, quantified at 18.07.

Regarding the environmental and energy sector, the effectiveness of the Kasznik and Kothari models in detecting the extent of earnings management is similar. Each model is recognized as significant. The Kasznik model has an R^2 value of 0.56, while the Kothari model records an R^2 value of 0.49.

In the Kasznik model, the Chief Financial Officer (CFO) appears as the variable that exerts the most significant influence on earnings management, with a p-value of 0.01. This variable reaches significance at the 1% level. It shows a negative correlation with discretionary adjustments, corroborating the forecasts in the existing literature.

For the Kothari model, return on assets (ROA) is the most significant variable. The p-value associated with ROA is significant at the 2% level.

The payables trend identified by the two models indicates a tendency towards downward management. In both frameworks, downward revenue management is estimated to an average of -2.6% of total assets. The Kasznik model identifies a minimum threshold for downward management at -20% of total assets, while the Kothari model indicates a minimum threshold for downward management estimated at -18% of total assets.

In the IT sector, which encompasses the Internet, research, and development, the performance indicators of the four models used to identify financial performance management show a striking similarity. The four models are considered valid for retention. The Kasznik model is slightly more significant, with an R^2 value of 0.99. Earnings management in this sector reaches a lower limit of -110% of total assets. The trend in profit management in this sector is classified as downward; however, the average recorded discretionary liabilities are positive due to the model

documentation concerning a maximum estimated AC DIS value of 700% of total assets. This value is recorded in a company that has only existed for 12 years.

For the leisure, tourism, and culture sector: the four detection models used for earnings management show exceptionally high R^2 values, thus justifying their retention. The Kasznik model indicates a downward trajectory in earnings management, estimated at at least 55% of total assets. Although the general trend in profit management in this sector is negative, the average discretionary payables remain positive, with the model estimating the maximum of this value at 290%. This peak is observed in the youngest entity in the sample, which has only been in operation for 8 years.

For the electrical, electronic, and optical equipment sector, the Kasznik model is the most crucial. The trajectory of revenue management reflects a downward trend, estimated at an average of 27% of total assets. The model estimates the minimum value of this earnings management at a proportion equivalent to -159% of total assets. The model parameters are articulated as follows:

$$AC.DIS = TA_{it}/A_{it-1} - (-0.29878546 + 17797576.2[1/A_{it-1}](-0.19327153)[\Delta REV_{it} - \Delta REC_{it}/A_{it-1}] + (0.5357628)[PPE_{it}/A_{it-1}](-0.61976789)[\Delta CFO_{it}/A_{it-1}]) \quad (11)$$

The field of metallurgy, mechanics, and subcontracting: the Jones model and the model with the highest R^2 value, which is 0.82. The effectiveness of the alternative models is also remarkable.

The Jones model delineates a downward trajectory of earnings management, quantified at an average of -2% of total assets. The minimum value of discretionary accruals in this sector should be -18% of the total asset value. The parameters of the Jones model are articulated as follows:

$$AC.DIS = TA_{it}/A_{it-1} - ((-0.04839261) - 12435837.4[1/A_{it-1}] + 0.22139857[\Delta REV_{it}/A_{it-1}] + 0.00707821[PPE_{it}/A_{it-1}]) \quad (12)$$

Retail trade and the retail sector: the Kasznik model is paramount, with an R^2 value of 0.8. In this sector, the observed trend indicates a decrease in profit management, estimated at -8% of total assets on average. The model estimates the minimum value of this earnings management at -91% of total assets.

The model parameters are defined as follows:

$$DIS.AC \text{ Kasznik} = TA_{it}/A_{it-1} - ((-0.10084691) + 6403012.46[1/A_{it-1}] + (0.05807608)[\Delta REV_{it} - \Delta REC_{it}]/A_{it-1}] + (-0.29531873)[PPE_{it}/A_{it-1}](-0.53246875)[\Delta CFO_{it}/A_{it-1}]) \quad (13)$$

In the paper, printing, and publishing industries, the Kasznik model represents the framework with the highest R^2 value, 0.79. The trend in revenue management is characterized by a downward trajectory, estimated by the model to represent an average of -5% of total assets. The minimum value of discretionary liabilities, as captured by the model, is approximately -28.8% of total assets.

The model parameters are defined as follows:

$$DIS.AC = TA_{it}/A_{it-1} - (-0.03805111) + 30505829.2[1/A_{it-1}] + 0.1369772[\Delta REV_{it} - \Delta REC_{it}/A_{it-1}] + (-0.29485845)[PPE_{it}/A_{it-1}] + (-0.55606312)[\Delta CFO_{it}/A_{it-1}] \quad (14)$$

The prevailing trend indicates a propensity for downward management of financial results.

The initial phase of our analysis allowed us to verify the existence of earnings management practices among the companies included in our sample. This finding is consistent with the results documented in the studies conducted by Chi et al. (2015).

The predominant trend associated with this practice is characterized by downward management. Previous research shows that a reduction in earnings management is primarily evident in jurisdictions with a strong correlation between accounting standards and tax regulations (for example, countries governed by codified law, such as Algeria). The sector displaying the lowest level of discretionary payables is metallurgy, mechanics, and subcontracting, which shows a value of -0.18. Conversely, the highest value is recorded in the construction sector, which shows an approximate positive discretionary cumulative value of 18.07.

The influence of board characteristics on the management of financial results

During the preliminary phase, we gathered 22 distinct characteristics related to the boards of directors, which were used as explanatory variables. Moreover, we have included 2 control variables: the company's age and size.

Proposed model (Appendix A: Description of the model variables):

$$\begin{aligned}
 DI.AC = & \alpha + \beta_1 F.SIZ + \beta_2 F.AGE + \beta_3 OWN.CON + \beta_4 OWN.PH + \beta_5 OWN.PM + \beta_6 BO.SIZ \\
 & + \beta_7 BO.PM + \beta_8 BO.PH + \beta_9 BO.OUT + \beta_{10} BO.INS + \beta_{11} BO.MAL + \beta_{12} BO.FEM + \beta_{13} CEO.dual \\
 & + \beta_{14} CEO.dual.STAT + \beta_{15} CEO.GENDER + \beta_{16} CHAIRMAN.STAT + \beta_{17} CHAIRMAN.GENDER \\
 & + \beta_{18} CEO.STATUT + \beta_{19} CEO.GENDER + \beta_{20} RSH.BRD + \beta_{21} NOMINATION.NW.CEO \\
 & + \beta_{22} NOMINATION.NW.DR + \beta_{23} NOMINATION.NW.CHR + \beta_{24} INCORPORATION.NW.PAR + \epsilon_{IT}
 \end{aligned} \quad (15)$$

Models selected for the analyses:

$$AC.DISC = \beta_1 F.SIZ + \beta_2 F.AGE + \beta_3 OWN.CON + \beta_4 OWN.PH + \beta_5 BO.SIZ + \beta_6 BO.PH + \beta_7 BO.OUT + \epsilon_{IT} \quad (16)$$

Theoretically, it is essential to take these variables into account because the other variables exhibit a high degree of autocorrelation.

The importance of these variables for elucidating outcome management depends on the sector in question and the specific model used for outcome detection. Therefore, we also describe the results by sector during this subsequent phase.

According to the chosen model, the variables of paramount importance for the agri-food industry sector include the size of the company, its age, and the ratio of physical members on the board of directors. The p-value associated with these two variables is significant at the 1% level, while the company's age is significant at the 10% level. Size and age show a negative correlation with earnings management. This indicates that as the company ages and grows, it adopts less effective learning management practices.

The Kasznik model is the most effective for capturing the nuances of earnings management in the chemical, plastic, and health sectors. However, when applied to evaluate the influence of governance mechanisms, the results proved inconclusive, as no variable showed a significant p-value.

Therefore, we have adopted an analysis of the impact of governance mechanisms on outcome management using the *AC DIS* metric, as defined by the Kothari model.

This analysis reveals that the most significant variables are the company's age, shareholding concentration, and physical members on the board of directors. The concentration of shareholding and the presence of individuals are significant at the 1% level.

The age and concentration of owners are negatively correlated with earnings management, while the presence of physical members positively influences this practice.

For the construction, wood, and building sector, the variables influencing earnings management in this field include the age, size of the company, and the presence of external members. All these variables show a positive correlation with earnings management. The company's size is statistically significant, with p-value of 0, while the presence of external members is significant at the 3% level.

Critical determinants in the energy and environment sector include the size and longevity of the company, the size of the board of directors, and the presence of male members. The level of statistical significance of these determinants ranges from 1% to 5%, which is considered very significant in statistical terms.

The company's longevity, the size of the board of directors, and the presence of male members show a negative correlation with earnings management. Therefore, these three determinants reduce the proportion of discretionary accruals.

In computer science, the Internet, and research and development, no governance parameter clarifies the management of results, regardless of the detection model used for result management.

In the tourism, leisure, and culture sector, using the proportion of discretionary payables derived from the Kasznik model, no definitive conclusion can be drawn regarding the influence of

governance mechanisms on earnings management. However, the analysis conducted using the Kothari model was conclusive.

The control variables, ownership concentration, board size, and the presence of legal entities on the board, are significant. Their significance ranges from 1% to 5%, which is considered statistically robust.

Variables such as the size of the company, the size of the board of directors, and the presence of legal entities on the board of directors show a negative correlation with earnings management. Conversely, the age and concentration of shareholders exacerbate earnings management.

In the electrical, electronic, and optical equipment sectors, earnings management, as defined by the Kasznik model, cannot be explained by any parameters associated with the board of directors. When the analysis is conducted using the Kothari model, only one criterion is significant: the company's size. This variable shows a negative correlation with earnings management, with a significance level of 0%, which is statistically very robust.

In the metallurgy, mechanics, and subcontracting sector, the analysis conducted using the management of results as captured by the Jones model does not allow for any conclusive inference. That is why we opted for an analysis using the other three models. Once again, no analysis yields conclusive results.

No parameter in the table in the retail sector is conclusive, regardless of the earnings management detection model used.

For the transport and logistics sector, the degree of ownership concentration, the presence of physical members and external members, and the dimensions of the board of directors are critical variables. The concentration of ownership shows a negative correlation with performance management. Conversely, the other variables have a positive influence on this practice. The significance of these variables is markedly high, with p-values approaching 0%.

In the context of the paper, printing, and publishing sectors, no results are conclusive, regardless of the model used to detect performance management.

Discussion

As shown by agency theory and the research conducted by Sundvik (2017), Bonacchi et al. (2017) regarding private family businesses, Algerian private family businesses primarily engaged in managing declining revenues.

In many cases, the general trend towards the reduction of profit management within family businesses is diminishing, especially as the businesses age and develop. The practice of performance management in family businesses has evolved over generations. This observation aligns with the conclusions of Stockmans et al. (2010) and Wang (2006), which indicate that the age and size of the company are inversely correlated with the practice of profit management. This implies that once firmly established in the market, Algerian family businesses show a reduced propensity to manage their results.

The study by Stockmans et al. (2010), which examines Flemish companies and investigates the motivations of certain types of private family businesses in profit management across generations, reveals that first-generation private family businesses under the founder's leadership demonstrate higher performance management levels than their successors. The marked performance management in nascent family businesses can be attributed to the aspiration for sustainability and their preference for significantly longer investment horizons.

Furthermore et al. (2010) assert that significant family involvement, combined with potentially deficient governance structures, places founding families in a unique status, granting them considerable power to seek private benefits at the expense of external stakeholders.

Bettinelli (2011) state that the structure and operational dynamics of the board of directors can exhibit considerable variability in family businesses, influenced by the company's age and size.

The scientific contributions of Prencipe and Bar-Yosef (2011) and Bromilow & Morrow (2014) confirm that family businesses rarely have independent boards of directors. Our survey in

the Algerian context corroborates this assertion. More specifically, 65 entities in the sample have boards of directors composed solely of internal members. Therefore, 63% of the sample's board of directors comprises initiated members.

Numerous previous studies' empirical results generally support the hypothesis that board independence helps mitigate earnings management practices. This research, therefore, shows that the inclusion of external directors in the composition of boards of directors significantly influences the effectiveness of the board as a governance mechanism. Kao & Chen (2004) postulate that an increase in the number of external directors is correlated with a reduction in the propensity for earnings management.

The results of our analysis reveal that among the 11 sectors examined, only 2 demonstrate a significant degree of independence in terms of advisory. However, this influence is exceptionally favourable. Therefore, within the sampled population, external members on the board of directors correlate with an increase in earnings management practices. This result can be explained by assertions by Abdullah & Ismail (2016) and Arosa et al. (2010). Therefore, in some family businesses, the main objective of appointing independent directors is not to supervise and regulate the executives but to leverage their expertise and advice regarding management and strategic trajectories (using external resources for their specialized knowledge).

The characteristic related to the size of the board of directors is significant in 7 sectors, with a notable positive impact on earnings management observed in 4 cases. As the size of the board of directors increases, its disciplinary effectiveness decreases. This phenomenon intensifies even further in scenarios where there is a duality in the Chief Executive Officer (CEO) role. This result is consistent with the research conducted by Kao & Chen (2004) and Lam & Lee (2008).

The ownership concentration characteristic, called OWN COM, is significant in 5 cases. Overall, its influence is deemed detrimental to earnings management practices in 3 out of 5 cases.

This suggests that increased shareholder concentration helps reduce the incidence of earnings management by aligning interests and coherence of objectives within family businesses. This phenomenon, which is common in family businesses, can be elucidated using agency theory.

Conclusion

The most relevant model for most sectors is the Kasznik 1999 model.

Thus structured, this framework facilitates the neutralization of revenue manipulations by correlating its fluctuations with those of customer receivables. Such manipulations are considered a reflection of genuine financial performance management. The term neutralized means that the observed phenomenon concerns the accounting of financial results. The statement of cash flows (SCF) illustrates an accounting paradigm that endorses accrual accounting. Therefore, an increase in revenue can result from actual manipulations (such as providing extended payment terms or uncollected sales that are subsequently cancelled).

Moreover, this model also incorporates the change in operating cash flows (ΔCFO) as a relevant explanatory variable. Kasznik's 1999 model includes four explanatory variables; our statistical assessments reveal that the most important variable (with the highest coefficient and p-value) is the *CFO* variable. This means that discretionary accruals are influenced by the dynamics of cash flows for the companies in the sample.

Furthermore, the identified trend in earnings management was characterized by a downward trajectory of earnings manipulation.

The discretionary accruals relevant to each sector were then closely examined, as identified by the most pertinent model. This second phase of analysis was conducted using a regression analysis of (*DI.AC*) about the board of directors' characteristics. Such an analysis allowed the determination of specific variables intrinsic to the company that influence its earnings management practices.

Seven of the twenty-four identified board parameters were found to exert a significant influence on earnings management. The other variables exhibited pronounced autocorrelation issues.

The seven influential variables include control variables, particularly the age and size of the company, the presence of external members indicating the independence of the board of directors, shareholder consultation, the presence of individual directors, and the overall size of the board.

Although the other parameters did not demonstrate significance in the context of outcome management, they provided valuable information on the characteristics of the boards of directors of Algerian family businesses. (Many research studies focus on characterizing boards of directors in various contexts).

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Appendix A

Description of the explanatory variables and control variables

F.SIZ: Firm size: measured by the natural logarithm of total assets.

F.age: Age of the company

OWN.CON: Shareholder concentration measured by the number of the company's shareholders

OWN. PH: Number of individual shareholders

OWN. PM: Number of shareholders, legal entity

BO.SIZ: Size of the board of directors: number of board members

BO. PM: Member of the board of directors of a legal entity

BO. PH: Individual member of the board of directors

BO.OUT: Number of external administrators

BO.INS: Number of internal administrators

BO.MAL: Number of male administrators

BO FEM: Number of female administrators

CEO dual: Binary variable, it takes the value 1 if there is a CEO, otherwise 0.

CEO DUAL STAT: Shareholder CEO: Binary variable, it takes the value 1 if the CEO is a shareholder, otherwise 0.

CEO GENDER: Binary variable, it takes the value 1 if the CEO is a man, otherwise 0.

Chairman STAT: Binary variable, it takes the value 1 if the chairman of the board is an internal member, otherwise 0.

Chairman gender: Binary variable, it takes 1 if the chairman of the board is a man, otherwise 0

CEO statut: Binary variable, it takes 1 if the CEO is an internal candidate, otherwise 0

CEO gender: Binary variable, it takes 1 if the CEO is a man, otherwise 0

RESH BRD: Binary variable, it takes 1 if there was a reshuffle of the board of directors, otherwise 0

Nomination Nw CEO: Binary variable, it takes 1 if there was an appointment of a new CEO, otherwise 0

Nomination Nw DR: Binary variable, it takes 1 if there was an appointment of a new CEO, otherwise 0

Nomination Nw CHR: Binary variable, it takes 1 if there was an appointment of a new chairman of the board of directors, otherwise 0

Incorporation Nw PAR: Binary variable, it takes 1 if there was an incorporation of new partners, otherwise 0



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