Development of a Paradigmatic Model of Earnings Management in the Automotive and Parts Manufacturing Industry

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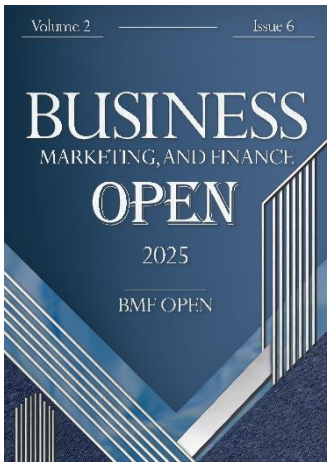

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Abstract: This study was conducted with the aim of developing a paradigmatic model of earnings management in the automotive and parts manufacturing industry. The data collection tool was semi-structured interviews with experts. For this purpose, using a purposive sampling approach (snowball sampling), interviews were conducted with 10 academic experts or senior managers of companies active in the automotive and parts manufacturing industry. The research data were analyzed using coding methods and the Strauss and Corbin approach, through which the main categories and concepts were extracted. The results indicate that based on the paradigmatic model of the study in the automotive and parts manufacturing industry, the causal factors include market efficiency, appropriate technology, production capability, competitive power, and government policy. The contextual factors include capital structure, competitive environment, environmental challenges, various risks, and managerial governance policies. The intervening conditions include innovation and creativity, customer orientation, human resources, professional ethics, knowledge and education, and the international system. The strategies involve sales capability and investment challenges, while the consequences pertain to profitability.

Keywords: Automotive and parts manufacturing industry, earnings management, paradigmatic model.

1. Introduction

In the evolving domain of corporate finance and strategic accounting, the concept of earnings management has drawn substantial attention due to its implications for financial transparency, investor trust, and organizational sustainability. Earnings management refers to the deliberate intervention by management in the external financial reporting process to either mislead stakeholders about the economic performance of the firm or influence contractual outcomes that depend on reported accounting numbers [1]. This practice, which may involve accrual-based adjustments or real activity manipulations, is often shaped by contextual pressures and institutional settings, making it both a technical and behavioral phenomenon [2, 3].

From a theoretical perspective, earnings management has been examined through various lenses. Agency theory is a foundational framework used to understand why managers, as agents, may engage in earnings manipulation to align with their own interests rather than those of the principals (i.e., shareholders). The divergence between

ownership and control creates incentives for earnings management when performance metrics tied to managerial rewards are based on accounting figures [4]. In capital-intensive industries such as automotive and parts manufacturing, these incentives are further intensified by debt covenants, performance benchmarks, and pressure to meet market expectations [5, 6].

The stakeholder theory expands the scope of analysis by emphasizing the firm's obligation to multiple constituencies beyond shareholders—including creditors, employees, governments, and customers. Within this framework, earnings management is not solely a tool of opportunism but may be strategically deployed to stabilize financial expectations and maintain relationships with key stakeholders [7]. However, excessive or unethical use of such tactics can erode stakeholder trust, distort resource allocation, and diminish the firm's long-term value.

Another relevant theoretical anchor is positive accounting theory (PAT), which posits that firms select accounting policies based on economic consequences rather than neutral representation. PAT suggests that management may choose specific earnings management strategies depending on whether the firm is facing political costs, capital market pressures, or regulatory scrutiny [8]. This theory helps explain why firms in highly regulated sectors like automotive manufacturing may strategically engage in income smoothing or deferral practices to navigate complex institutional environments.

The literature also highlights various internal and external determinants of earnings management. Internally, financial leverage has been frequently identified as a key driver. Firms with high leverage are more likely to manage earnings to comply with debt covenants and reduce perceived risk from creditors [5, 9]. Liquidity constraints and firm size also play a role, as larger firms may face more public scrutiny while smaller firms may manipulate earnings to attract investment [10, 11].

Externally, the role of audit quality and corporate governance mechanisms is widely acknowledged. Independent and competent audit committees can serve as effective monitors of earnings quality, thereby constraining managerial opportunism [12, 13]. The presence of reputable audit firms, along with regulatory frameworks such as IFRS adoption, has also been shown to reduce the incidence of aggressive earnings management practices [14].

Strategic considerations are increasingly becoming a focal point in earnings management literature. Several studies emphasize that earnings management can be used not only to manipulate external perception but also to support internal decision-making processes, such as aligning earnings with long-term investment planning or managing employee incentive systems [15]. This is particularly evident in cyclical industries such as automotive manufacturing, where earnings volatility can have profound implications for workforce stability and R&D investment cycles.

Additionally, business strategy itself has been found to moderate the relationship between financial distress and earnings management. Firms pursuing aggressive growth or differentiation strategies may be more inclined to manage earnings to sustain investor confidence and competitive positioning [16, 17]. In contrast, firms with a conservative strategy may prioritize earnings stability and transparency over short-term gains.

Another growing area of research pertains to earnings management in the context of sustainability and corporate social responsibility (CSR). It has been observed that firms with high CSR engagement may still engage in earnings management, but with less intensity, due to reputational concerns and stakeholder pressure [15, 18]. However, the relationship between CSR and earnings management remains complex, with some scholars suggesting that CSR can also be used as a facade to mask earnings manipulation.

Contextual variables such as economic cycles, political environments, and industry structure further influence how and why earnings are managed. The automotive and parts manufacturing sector, characterized by its global supply chains, technological volatility, and regulatory oversight, presents a particularly relevant context for studying the dynamics of earnings management. The industry's sensitivity to external shocks, such as raw material price changes and geopolitical risks, necessitates a nuanced understanding of financial reporting behavior under uncertainty [19].

Within this industry, the strategic importance of earnings quality is underscored by the need for capital investments, especially in R&D and process innovation. Research has shown that firms with higher R&D intensity are more cautious in managing earnings, possibly to maintain financial credibility for future investment [18]. Simultaneously, the increasing adoption of digital technologies and automation has altered the financial architecture of firms, making traditional models of earnings management insufficient to capture the new complexities.

Human capital, ethical culture, and organizational learning also emerge as moderating factors in the earnings management literature. Firms with strong ethical codes and professional development systems are less likely to engage in deceptive accounting practices [20]. The availability of skilled personnel, ongoing training, and adherence to global standards contribute to a culture of compliance and financial discipline [9, 10].

In recent years, scholars have increasingly applied grounded theory and other qualitative methodologies to explore how earnings management practices emerge, evolve, and institutionalize within specific industries. Such approaches allow researchers to construct comprehensive models that integrate multiple factors—causal, contextual, intervening, strategic, and consequential. These models move beyond quantitative correlations to uncover the structural and processual dimensions of earnings management, particularly in industries where traditional financial metrics may not fully capture organizational behavior [3, 14].

Despite the growing body of research, gaps remain in understanding how these various dimensions interact to produce systematic earnings management behavior in a particular industrial setting. The automotive and parts manufacturing sector, while heavily studied from a production and supply chain perspective, has received less attention in the earnings management literature, particularly within emerging markets. This gap is especially important given the industry's economic significance, complexity, and susceptibility to both market and non-market forces. Moreover, there is a need to develop models that capture the industry-specific drivers and outcomes of earnings management, integrating perspectives from corporate strategy, governance, innovation, and stakeholder relations. Such integrative models can better inform regulators, investors, and organizational leaders about the mechanisms and consequences of earnings manipulation, thereby supporting more effective policy and managerial responses. Given the above theoretical and empirical context, the present study aims to develop a paradigmatic model of earnings management specific to the automotive and parts manufacturing industry using a grounded theory approach.

2. Methodology

From a scientific standpoint, research methodology refers to adherence to a systematic process that must be observed while applying statistical techniques and linking them to the variables related to the research subject. The objective of research is to discover the truth and answer questions that arise in the mind of the researcher. Research is defined as the objective and systematic analysis and recording of controlled observations that may lead to the development of general laws, principles, or theories, and ultimately result in prediction or control of events.

Scientific knowledge is characterized by its verifiability through reasoning and observation. Logical validity and empirical confirmation are the key criteria used in evaluating scientific claims.

In selecting the research topic and hypotheses, efforts were made to ensure both the practical significance of the study and the feasibility of its implementation and examination. This approach facilitates the measurement and testing of hypotheses while preserving the scientific value of the research.

The present study employed a qualitative research method. The Grounded Theory Method is one of the qualitative research methods, which emphasizes paradigmatic convergence and integration of dominant paradigms in the social sciences. This method involves a set of procedures for collecting, analyzing, and synthesizing both qualitative and quantitative data in a single study to understand the research problem.

Grounded theory is considered a research strategy through which theory is developed based on the core concepts derived from data. This strategy adopts an inductive approach, meaning that theory formation progresses from specific observations to general concepts. The primary aim of grounded theory is to explain a phenomenon by identifying its key elements (concepts, categories, and propositions) and then classifying the relationships among these elements within the context and process of that phenomenon. In other words, the objective is to proceed from particular instances to broader generalizations without losing sight of the central focus of the investigation. In this study, interviews were conducted with industry and academic experts, and the data were analyzed using coding techniques.

In the first stage, the statistical population consisted of all articles, academic research, theses, and sources related to the topic of earnings management. In the next stage, the statistical population included all academic experts, financial specialists, professionals in the money and capital markets, and experts in the automotive and parts manufacturing industry familiar with earnings management.

Qualitative researchers rarely select a representative sample from a large population for in-depth study. For qualitative researchers, the relevance of individuals to the research topic determines participant selection rather than their representativeness. Therefore, qualitative researchers tend to use non-probability or non-random sampling methods. This means they rarely determine the sample size in advance and often have limited information about the larger group or population from which the sample is drawn.

Due to the broad scope of the statistical population, identifying and engaging with all individuals in the population is not feasible. Thus, selecting a statistical sample as a representative of the target population is unavoidable. Since the data collection model in grounded theory differs, and data collection and analysis occur simultaneously, the data were collected through structured interviews with an exploratory approach. Sampling continued until theoretical saturation was achieved.

It is commonly believed that theoretical saturation occurs when no new categories emerge from the data. However, in essence, theoretical saturation goes beyond this. In other words, the goal of this type of analysis is not merely to arrive at a set of categories; rather, theoretical saturation refers to the development of categories based on their properties and dimensions, including their variations and potential relationships with other concepts.

In this study, a number of knowledgeable individuals with sufficient education and experience related to the research topic were initially selected using snowball sampling. At the end of each interview, participants were asked to introduce other informed and knowledgeable individuals relevant to the topic. In some cases, when expert insights were required to complete the model or formulate the theory, or within specific contexts, interviewees were asked to refer experts with relevant experiences. Based on the above explanations, efforts were made to

interview individuals who had personally experienced the research topic and possessed substantial knowledge and expertise in the field.

According to the grounded theory approach of Strauss and Corbin (1990), an appropriate sample size ranges from 10 to 25 participants, and this number may increase depending on the point of theoretical saturation—that is, the process of data collection continues until no new data or information is obtained from the interviewees.

The sample used in the present study consisted of 10 academic experts or senior managers from companies active in the automotive and parts manufacturing industry, selected through purposive sampling (snowball method).

3. Findings and Results

Based on interviews conducted with experts and specialists in the field under study, the interview data were analyzed qualitatively through line-by-line and phrase-by-phrase content analysis. In this process, general concepts were first extracted. Then, through conceptualization and categorization, open codes were identified and classified based on similarities and shared features. Finally, these codes and concepts were organized into main and subcategories, forming the analytical framework of the study.

This qualitative content analysis method, by focusing on identifying patterns and relationships among concepts, enables a deeper and more systematic understanding of qualitative data. Using this approach, the researcher achieved a more accurate understanding of the structure of the studied phenomenon and provided a coherent framework for explaining influential factors.

Table 1. Concepts and Categories Derived from Open Coding (Three Coding Phases) in the Automotive and Parts Manufacturing Industry

No.	Selective Code	Axial Code (Category)	Sample Open Codes (Concepts)
1	Causal Conditions	Market Efficiency	Information transparency, reduced information asymmetry, accessible and reliable market data, no misuse of private info, predictable performance
2		Appropriate Technology and Innovation	Use of up-to-date tech, investment in innovation, R&D focus, electric vehicle readiness, tech adaptability
3		Production Capability	Efficient resource allocation, access to raw materials, uninterrupted supply chains, local parts production, reduced production costs
4		Competitive Ability	Capacity to compete with foreign brands, quality improvement motivation, international standard compliance
5		Government Policy	Incentives, consistent regulations, support for private sector, avoidance of market intervention, economic-policy alignment
6	Core Phenomenon	Earnings Management	Transparent reporting, compliance with GAAP/IFRS, timely financial corrections, regular auditing, expert financial advising
7	Contextual Conditions	Competitive Environment	Fair market conditions, access to open markets, equal competition opportunities, no foreign lag
8		Environmental Issues	Pollution reduction, reduced road accidents, sustainable energy use, protection of natural resources
9		Capital Structure	Transparent capital structure, access to low-cost finance, accurate financial forecasting, liquidity management
10		Risk Types	Liquidity risk, market risk, operational risk, supply chain risk, technological and geopolitical risk
11		Managerial Governance Policy	Strategic leadership, expert managers, stable planning, decision-making in crises, agility to adapt to change
12	Intervening Conditions	Innovation and Creativity	Employee ideation, innovation support, creative workspaces, focus on EV research, idea-to-product efficiency
13		Customer Orientation	Effective CRM, after-sales service, customer trust, product customization, fair pricing
14		Human Resources	Skilled recruitment, employee satisfaction, psychological safety, participatory decision-making

15		Professional Ethics	Reduced corruption, consumer rights, transparent sourcing, ethical management
16		Knowledge and Training	Specialized training, technical skill-building, experience-sharing, practical learning, knowledge transfer
17		International System	Increased exports, global collaboration, foreign investment, reduced import costs
18	Strategic Factors	Sales Capability	Branding strength, customer connection, market segmentation, reasonable pricing
19		Investment Challenges	Capital attraction, foreign investment, investor trust, intrinsic value assessment, rational investment decisions
20	Outcome	Profitability	Profit growth aligned with inflation, reduced cost of goods sold, controlled expenses, improved margins

Sales Capability as a strategic factor has a significant impact on earnings management in the automotive and parts manufacturing industry, as it plays a vital role in achieving financial goals, enhancing competitiveness, and expanding market presence. In an industry constantly under competitive pressures, technological change, and market demand fluctuations, strong sales capabilities not only lead to increased revenue and profitability, but also serve as a key tool in shaping companies' financial and operational strategies.

One of the primary reasons for this relationship is the direct impact of sales capability on customer acquisition and revenue generation. Companies with professional and capable sales teams are better able to attract customers, accurately meet their needs, and consequently increase their market share. This revenue growth enables managers to employ earnings management strategies aligned with the company's developmental objectives, attract greater financial resources, and allocate more effectively toward research, development, and innovation initiatives.

Moreover, sales capability is directly linked to improved customer relations and trust in the marketplace. In an industry such as automotive and parts manufacturing, customers seek high quality, competitive pricing, and reliable after-sales service. A high-performing sales function and effective customer communication enable companies to gain customer trust and enhance loyalty. This trust and loyalty assist managers in shaping financial policies, including earnings management, to present more favorable financial outcomes and strengthen the firm's competitive position.

Additionally, sales capability significantly influences the firm's flexibility in responding to market changes. Companies with skilled and capable sales teams can adapt to sudden shifts in market demand, competitor pricing strategies, or economic conditions in ways that reduce the negative impact on profitability. Under such conditions, earnings management serves as a strategic tool for maintaining financial equilibrium and adhering to long-term organizational goals.

Ultimately, sales capability as a strategic factor creates an environment in which earnings management operates as a mechanism for achieving overarching organizational objectives. This capability not only increases revenues and improves profitability but also enables firms to function more effectively and sustainably in a dynamic and challenging competitive landscape. The importance of sales capability in the automotive and parts industry highlights its key role in shaping financial and managerial policies and establishing a strategic framework for organizational growth and development.

Investment Challenges, as a strategic factor, also play a significant role in earnings management in the automotive and parts manufacturing industry. These challenges are crucial in shaping financial decisions, infrastructure development, and the strategic direction of firms. Due to its capital-intensive nature and reliance on

advanced technologies, this industry demands substantial investments in R&D, new product development, and process optimization.

One of the main reasons for this relationship is the necessity of securing financial resources to achieve strategic objectives. Investment in this industry typically entails high expenditures for equipment, advanced machinery, and cutting-edge technologies. These costs exert considerable financial pressure on companies, prompting managers to use earnings management as a tool to build investor trust and secure funding for major projects. In such circumstances, earnings management may function as a financial strategy to present a more favorable performance image and attract additional capital.

Furthermore, investment challenges are associated with risks related to return on investment. In an industry subject to market volatility, regulatory changes, and competitive pressures, investors may be uncertain about the returns on their capital. By utilizing earnings management, managers can mitigate the financial risks of such investments and present a more stable and reliable financial outlook, thereby gaining investor confidence.

Investment challenges also influence companies' competitive advantage. Firms capable of attracting substantial investments and optimizing financial resources can foster more innovation in products and production processes. This capability not only strengthens the company's competitive position but also allows managers to align earnings management with long-term organizational goals and ensure financial sustainability.

Ultimately, investment challenges, as a strategic factor, create an environment in which earnings management becomes one of the key tools for managers to adapt to market conditions, maintain liquidity, and achieve developmental goals. These challenges not only impose constraints but also offer opportunities for growth and development—opportunities in which earnings management can play a pivotal role. The significance of investment challenges in the automotive and parts manufacturing industry illustrates how this factor can shape financial and strategic policies and guide firms toward sustainable growth.

If company managers utilize the causal conditions from the research model (Strauss & Corbin, 1990) to strengthen and enhance earnings management, and if they manage and control contextual and intervening conditions that influence strategic paths, they are likely to witness the anticipated organizational outcome: profitability.

Accordingly, the paradigmatic model of the research was designed as Figure 1.

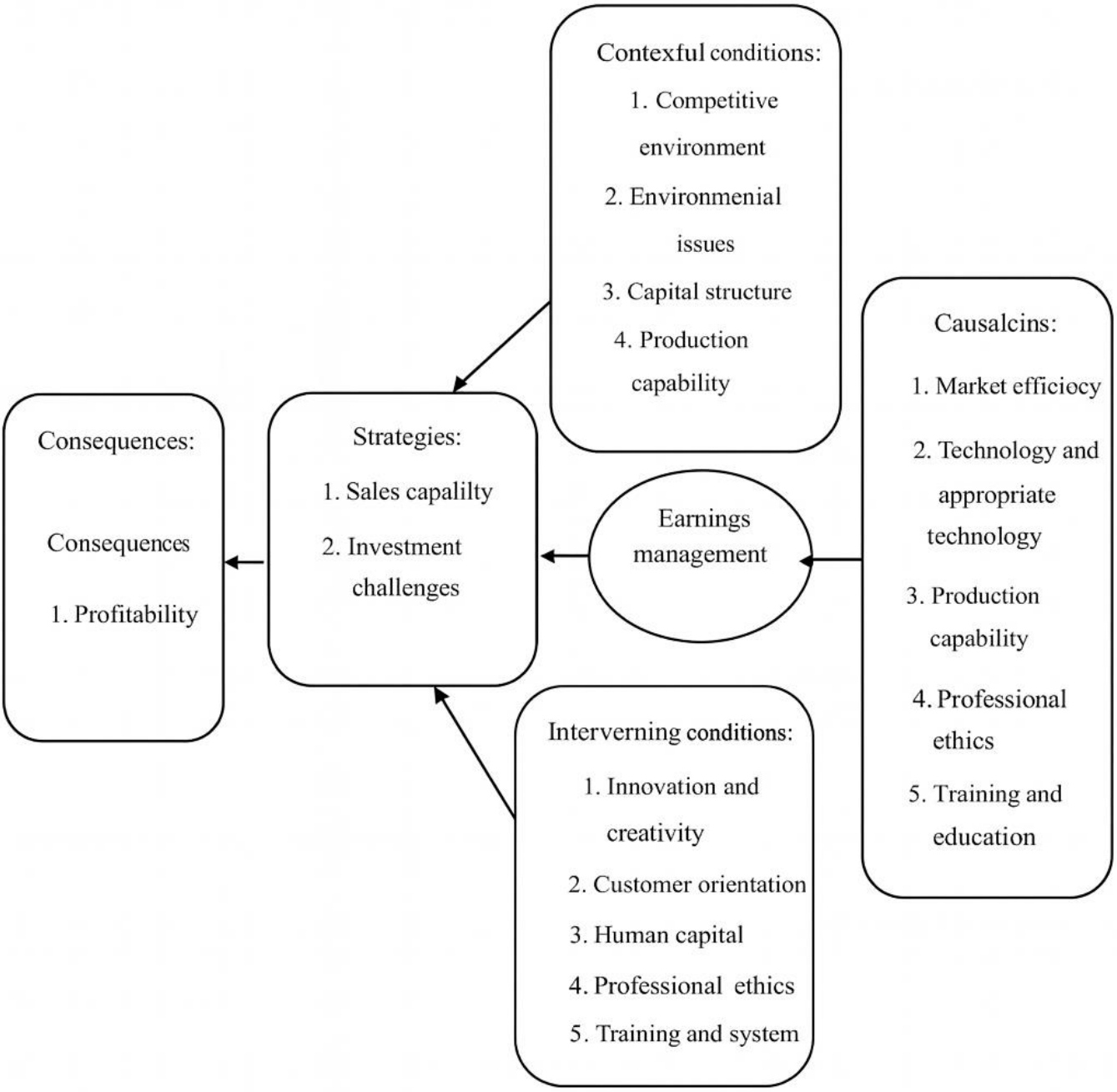

Figure 1. The Paradigmatic Model of Earnings Management in the Automotive and Parts Manufacturing Industry

Based on interviews and the extracted codes and categories, earnings management in the automotive and parts industry refers to the adjustment of corporate financial outcomes through real or accrual-based accounting techniques. Due to the industry's dependence on global supply chains, high production costs, and ongoing need for investment in advanced technologies, it faces numerous challenges. Managers in this sector use earnings management to present more favorable financial performance, maintain investor confidence, and respond to competitive pressures.

Earnings management may also serve as a financial control and strategic navigation tool in conditions such as exchange rate fluctuations, increased import costs, and long-term development planning. Factors such as market

efficiency, appropriate technology, production capability, competitive ability, and government policy provide the necessary conditions for the existence of earnings management in this industry.

In addition, competitive environment, capital structure, risk types, managerial governance, and environmental challenges form the contextual background for the emergence of earnings management strategies in the automotive and parts sector. Intervening conditions such as innovation and creativity, customer orientation, human resources, professional ethics, knowledge and training, and the international system influence the effectiveness of these strategies in shaping earnings management.

Finally, sales capability and investment challenges are strategic factors that directly influence earnings management in the automotive and parts manufacturing industry, ultimately leading to the desired organizational outcome: profitability.

4. Discussion and Conclusion

The paradigmatic model developed in this study reveals a multi-dimensional framework of earnings management within the automotive and parts manufacturing industry. Through grounded theory methodology and qualitative coding, the findings illustrate how causal conditions (market efficiency, technology, production capability, competitiveness, and government policy), contextual conditions (competitive environment, capital structure, risk types, environmental challenges, and governance policy), and intervening factors (creativity, customer orientation, human capital, ethics, training, and internationalization) interact to shape earnings management strategies. These strategies—particularly sales capability and investment challenges—ultimately lead to profitability as the desired organizational outcome.

One of the most salient findings is the centrality of sales capability as a strategic enabler of earnings management. Firms with high sales performance possess not only stronger cash flows but also enhanced legitimacy in the eyes of investors and creditors. This enables managers to employ earnings management more strategically—whether through accruals or real activities—to align reported performance with expected growth trajectories. This aligns with previous research suggesting that firms with stronger market positioning are more likely to use earnings management to sustain investor confidence and competitive advantage [17]. The ability to anticipate consumer demand, customize offerings, and deliver post-sale service improves predictability in revenues, thereby allowing for greater flexibility in managing earnings without compromising stakeholder trust [7].

Investment challenges emerged as another core strategic driver influencing earnings management. In the automotive industry, high capital intensity and technological volatility require consistent and substantial investment in R&D, production innovation, and compliance. When facing financial constraints, managers may turn to earnings management to present an image of stability and growth, thus attracting external funding or maintaining existing financing lines. This mirrors findings from prior studies that show firms with significant capital expenditure often resort to managing earnings as a signaling tool to reduce perceived investment risk [16, 18]. Furthermore, the interaction between capital structure and financial reporting incentives underscores the importance of internal resource optimization, as firms with higher leverage face more pronounced pressure to meet financial targets [5, 6].

The model also highlights the foundational role of causal conditions—especially market efficiency and appropriate technology—in shaping earnings management behavior. A transparent and efficient market reduces information asymmetry and increases external monitoring, which in turn constrains opportunistic earnings management. This finding is consistent with the work of [8], who demonstrated that firms in more transparent

markets tend to adopt conservative earnings management strategies. Similarly, access to cutting-edge technologies not only enhances production efficiency but also improves the accuracy and timeliness of financial reporting systems, reducing the need for manipulative practices [11].

Government policy also plays a significant role in either enabling or deterring earnings management. Supportive fiscal policies, consistent tax regulations, and effective oversight mechanisms create a stable business environment that may reduce managerial incentives for aggressive earnings manipulation. As suggested by [3], inconsistent or overly burdensome regulations can push managers toward earnings management as a defensive mechanism. In this context, governments that promote transparency, investor protection, and capital market development can indirectly improve earnings quality across industries, especially those as sensitive as automotive manufacturing.

The contextual conditions such as capital structure, risk types, and the competitive environment influence how earnings management strategies are developed and implemented. For example, firms with high liquidity and balanced capital structures are less likely to engage in opportunistic earnings management, as they have access to other financial levers [10]. Conversely, in highly competitive environments, managers may feel compelled to smooth earnings to appear stable and outperform rivals—a pattern observed in both developing and developed markets [12]. Risk exposure also plays a moderating role; firms facing significant operational, supply chain, or market risks may use earnings management to hedge against volatility in performance reporting [14].

Intervening factors such as innovation, customer orientation, and professional ethics were identified as influential in shaping the extent and nature of earnings management. Organizations that foster a culture of innovation are often more capable of sustainable performance and thus rely less on aggressive financial tactics [15]. Ethical norms within the firm and industry also serve as deterrents against manipulative practices. This supports the findings of [13], who emphasized the importance of corporate governance and ethical conduct in mitigating earnings manipulation. Similarly, firms that emphasize customer orientation and employee training are likely to invest in long-term value creation, reducing the short-termism often associated with earnings management [9, 20].

The integration of international exposure as an intervening factor reflects the increasing globalization of the automotive sector. Companies engaged in international markets face stricter standards of financial reporting and are subject to higher levels of scrutiny from global investors and regulators. This creates both a constraint and an incentive: while such firms are discouraged from opportunistic earnings management, they may still adopt subtle forms of income smoothing to meet cross-border performance expectations [2]. This dual effect highlights the need for firms to balance international compliance with strategic financial signaling.

Taken together, the paradigmatic model constructed in this study aligns with and extends the theoretical and empirical foundations of existing literature. It synthesizes prior research on earnings management across dimensions of capital structure, governance, strategy, and stakeholder relations. The model affirms the multi-causal and context-sensitive nature of earnings management and underscores the necessity of an integrated approach to understanding its drivers and implications. It also highlights the need for adaptive financial behavior in high-stakes, capital-intensive, and globally connected industries like automotive manufacturing.

This study, while comprehensive in its theoretical depth and qualitative design, is subject to several limitations. First, the sample size—though sufficient for grounded theory—was limited to a specific national context and expert pool. This may restrict the generalizability of the model to other regions with different institutional and economic structures. Second, the reliance on self-reported interview data may introduce response bias, especially in discussing sensitive issues like earnings manipulation. Third, while grounded theory offers rich conceptual

insights, it does not quantify the strength or direction of relationships among variables. Future research could build on these limitations by incorporating mixed methods and larger datasets.

Future studies could expand the scope of this model by applying it to other industries with similar structural characteristics, such as aerospace, telecommunications, or pharmaceuticals. Cross-country comparative analyses could also shed light on how legal, regulatory, and cultural contexts influence the nature and prevalence of earnings management. Furthermore, quantitative validation of the model's components—using structural equation modeling or panel data analysis—would enhance its empirical robustness. Investigating the moderating role of macroeconomic factors, such as inflation or interest rates, could also provide a more dynamic understanding of earnings behavior over time.

Practitioners—particularly financial managers and internal auditors—should utilize the insights from this model to proactively identify and manage the conditions under which earnings manipulation is likely to occur. Enhancing sales capabilities and mitigating investment challenges through transparent planning and ethical financial practices can reduce the temptation for earnings management. Policymakers should also consider tailoring industry-specific regulations and support mechanisms that address the root causes of financial misreporting. Additionally, companies should invest in ethical training, internal control systems, and stakeholder engagement strategies to foster a culture of transparency and accountability that discourages manipulation and supports sustainable profitability.

Authors' Contributions

Authors equally contributed to this article.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

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Conflict of Interest

The authors report no conflict of interest.

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