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Analysis of Actor Strategies and Conflicts in the Implementation of Machine Learning in Accounting Management and Organizational Growth

Analisis Strategi dan Konflik Aktor dalam Penerapan Machine Learning pada Manajemen Akuntansi dan Pertumbuhan Organisasi

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Abstract

This study analyzes actor strategies and conflicts in the implementation of machine learning (ML) within accounting management and organizational growth. The research is grounded in a qualitative exploratory–descriptive approach involving expert interviews and systematic literature review. A total of 12 experts from accounting, artificial intelligence, and organizational management fields were selected using purposive sampling. The MACTOR (Matrix of Alliances and Conflicts: Tactics, Objectives, Recommendations) methodology was applied to identify actor relationships, strategic objectives, influence structures, and convergence–divergence patterns among stakeholders. The findings reveal that ML adoption in accounting generates both strategic alignment and conflict among actors. Dominant actors, such as business executives and financial managers, play a key role in driving digital transformation, while accountants and auditors tend to resist due to concerns about job displacement and algorithm reliability. Technology developers and regulators act as linkage actors facilitating interaction among stakeholder groups. The analysis also shows strong convergence toward efficiency and automation objectives, while significant divergence occurs in relation to human role preservation and regulatory concerns. Overall, the study highlights that ML implementation in accounting is shaped by complex power dynamics and competing interests among organizational actors.

Keywords

Machine Learning, Accounting Management, Actor Strategy, Conflict Analysis, MACTOR Methodology

Abstrak

Penelitian ini menganalisis strategi dan konflik antar aktor dalam penerapan machine learning (ML) pada manajemen akuntansi dan pertumbuhan organisasi. Penelitian ini menggunakan pendekatan kualitatif dengan desain eksploratif-deskriptif melalui wawancara pakar dan kajian literatur sistematis. Sebanyak 12 pakar dari bidang akuntansi, kecerdasan buatan, dan manajemen organisasi dipilih menggunakan teknik purposive sampling. Metode MACTOR (Matrix of Alliances and Conflicts: Tactics, Objectives, Recommendations) digunakan untuk mengidentifikasi hubungan antar aktor, tujuan strategis, struktur pengaruh, serta pola konvergensi dan divergensi antar pemangku kepentingan. Hasil penelitian menunjukkan bahwa implementasi ML dalam akuntansi menciptakan keselarasan sekaligus konflik antar aktor. Aktor dominan seperti eksekutif bisnis dan manajer keuangan berperan penting dalam mendorong transformasi digital, sedangkan akuntan dan auditor cenderung menunjukkan resistensi karena kekhawatiran terhadap penggantian pekerjaan dan keandalan algoritma. Pengembang teknologi dan regulator berperan sebagai aktor penghubung yang memfasilitasi interaksi antar kelompok. Analisis juga menunjukkan adanya konvergensi kuat pada tujuan efisiensi dan otomatisasi, sementara divergensi signifikan terjadi pada isu peran manusia dan regulasi. Secara keseluruhan, implementasi ML dalam akuntansi dipengaruhi oleh dinamika kekuasaan dan kepentingan yang kompleks antar aktor organisasi.

Kata Kunci

Machine Learning, Manajemen Akuntansi, Strategi Aktor, Analisis Konflik, Metode MACTOR

Introduction

The development of Artificial Intelligence (AI) and Machine Learning (ML) technologies has significantly transformed various fields of application, particularly in accounting practices and organizational management systems (Hasan, 2021). These technologies enable automation of processes, enhance the precision of financial forecasting, and support more effective strategic decision-making in accounting environments (Chakri et al., 2023). Through the digital transformation of accounting systems, organizations are increasingly able to perform real-time data analysis using advanced algorithms, which has become a key driver of change in managerial practices and organizational development (Ranta et al., 2023).

In this context, platforms such as ContaWeb-BI, developed through collaboration between the University of Cartagena and Colciencias, illustrate how ML-based tools can support accounting management and strategic decision-making. These systems utilize machine learning algorithms to identify financial patterns and detect potential risks, thereby improving the quality of financial analysis. However, despite these advantages, the adoption of such technologies often generates challenges related to interactions among organizational actors, including accountants, financial analysts, and managers, which may lead to conflicts in implementation processes (Tuzcuoğlu, 2023).

Previous literature highlights that the integration of ML in accounting improves the quality of financial reporting, enhances cost efficiency, and reduces the likelihood of fraud (Bertomeu et al., 2021). Furthermore, automation supported by ML algorithms has been shown to strengthen operational efficiency and increase organizational competitiveness in dynamic markets (Ding et al., 2020). Ranta et al. (2023) emphasize that ML technologies introduce new approaches in financial risk assessment and planning, while Van den Bogaerd and Aerts (2011) demonstrate how ML transforms the analysis of large-scale accounting data in managerial contexts.

Despite these advancements, the implementation of ML in accounting management is often accompanied by organizational tensions and conflicts among stakeholders. Differences in perspectives between accountants, managers, and technology developers can hinder effective adoption and decision-making processes (Lei et al., 2022). Resistance to change and limited technological competence among accounting professionals further complicate the integration of ML-based systems (Cai et al., 2019). Additionally, the automation of accounting tasks raises concerns regarding role redefinition and responsibility shifts, which may intensify internal organizational conflicts (Chae, 2024).

In analyzing these dynamics, the MACTOR (Matrix of Alliances and Conflicts: Tactics, Objectives, Recommendations) methodology has been widely applied in strategic studies to examine actor relationships, power structures, and conflict dynamics across various sectors (Quinteros & Hamann, 2017). For instance, Bendahan et al. (2004) explored actor interactions in technological decision-making, focusing on power relations, alliances, and conflicts within complex organizational systems. Similarly, Ben-Daoud et al. (2023) applied MACTOR to analyze stakeholder interactions in water resource management, revealing strategic divergences and policy implications for sustainability and inclusion.

Other studies have demonstrated the applicability of MACTOR in different contexts. Elmsalmi and Hachicha (2014) used the method to align actor strategies in supply chain management, improving efficiency and stability. Riadh (2022) applied MACTOR in tourism to analyze digital transformation strategies among stakeholders, while Makmun et al. (2024) utilized it to investigate power relations in agricultural industries, highlighting negotiation patterns and cooperation strategies among actors.

Overall, the MACTOR approach proves effective in identifying and analyzing conflicts, alliances, and strategic positions among actors in complex systems. In this study, its relevance lies in understanding the strategic interactions and conflicts that arise from the adoption of machine learning technologies in accounting management. Digital transformation in this field not only affects operational efficiency but also reshapes organizational structures and power relations among stakeholders (Duan et al., 2023). Therefore, this study aims to analyze the strategies and conflicts of

actors in the implementation of machine learning tools in accounting management and their impact on organizational growth.

Understanding these dynamics is expected to support the development of more effective strategies for integrating advanced technologies into accounting systems, reducing resistance among stakeholders, and fostering a more innovative organizational culture (Pozo-Antúnez et al., 2021). The findings of this study are intended to contribute to researchers, accounting practitioners, and organizational leaders engaged in digital transformation and the adoption of emerging technologies in financial management.

Method

This study is situated within a qualitative research framework and adopts an exploratory–descriptive design (Herrera, 2017). The use of a qualitative approach is justified by the need to deeply understand the underlying dynamics of machine learning (ML) implementation in accounting management, particularly the strategies and conflicts among involved actors (Ranta et al., 2023). The exploratory component is appropriate for examining an emerging phenomenon that has not yet been extensively studied, while the descriptive aspect enables a comprehensive representation of experts' perceptions and experiences regarding technological adoption in organizational contexts (Fieberg et al., 2022).

The study involved 12 experts drawn from three main fields: management accounting, artificial intelligence in finance, and organizational management. Participants were selected using purposive sampling based on their academic expertise and practical experience in implementing ML-based systems in accounting and business environments (Bhimani, 2020). This selection ensured an interdisciplinary perspective, allowing for a more comprehensive understanding of both the opportunities and challenges associated with ML adoption in accounting practices (Liaras et al., 2024).

The research procedure was conducted in several stages. First, a systematic review of relevant scientific literature was carried out focusing on the application of ML in accounting and its implications for organizational growth. Keywords such as "machine learning in management accounting" and "AI in financial management" were used to identify relevant studies (Ranta et al., 2023). Second, insights obtained from the literature review were used to develop a semi-structured interview guide, which was then applied during expert interviews. All interviews were recorded to support further analysis and interpretation (Ionescu, 2022).

To enhance the robustness and validity of the findings, the study incorporated the use of ContaWeb-BI, an integrated accounting and business intelligence platform equipped with advanced machine learning capabilities. This tool supported data collection and contextual analysis by simulating real organizational environments, allowing the identification of actor roles, strategic positions, and conflict patterns related to ML adoption in accounting management (Chowdhury, 2023). Thus, ContaWeb-BI served as a bridge between theoretical insights and practical application in organizational settings, strengthening the overall validity of the study.

Data analysis was conducted using the MACTOR methodology, which is designed to map relationships of power, alliances, and conflicts among different actors within a system (Van den Bogaerd & Aerts, 2011). This approach was considered suitable for identifying strategic interests, divergences, and interaction patterns among stakeholders involved in accounting decision-making processes (Nielsen, 2022). MACTOR also enabled a structured interpretation of how actor strategies influence the adoption and effectiveness of machine learning technologies in organizational management.

However, this study acknowledges several limitations. First, despite efforts to recruit highly qualified experts, some potential participants were unable to contribute due to time constraints and organizational confidentiality policies (Chowdhury, 2023). Second, qualitative data interpretation may involve subjectivity; however, this limitation was mitigated through triangulation with literature review findings (Ding et al., 2020). Finally, due to the relatively small sample size, the results cannot be

generalized to all organizational contexts, although they provide valuable exploratory insights that may serve as a foundation for future quantitative research (Bertomeu, 2020).

Results

The findings of this study indicate that the adoption of machine learning (ML) in accounting management produces both strategic benefits and organizational conflicts among stakeholders. Through MACTOR analysis, the study identifies key actors, their objectives, influence structures, and strategic interactions shaping organizational digital transformation.

1. Identification of Key Actors in ML Adoption

Based on document analysis and expert interviews, stakeholders were grouped into three categories: innovation supporters, resistance actors, and neutral actors. Innovation supporters emphasize efficiency and automation benefits, while resistance actors highlight risks such as job displacement and algorithmic uncertainty. Neutral actors aim to balance innovation with governance and compliance.

Table 1. Classification of Actors in ML-Based Accounting Transformation

Code	Actor	Role in the System
A1	Software developers	Develop and optimize ML-based accounting systems
A2	Technology companies	Promote digital accounting transformation and platforms
A3	Business executives	Decide and lead adoption of ML technologies
A4	Traditional accountants	Perform conventional accounting and resist automation changes
A5	Auditors	Evaluate financial reports and question algorithm reliability
A6	Financial managers	Assess risks and benefits of ML in financial decision-making
A7	Government regulators	Establish rules and supervise technology implementation
A8	Training providers	Provide ML and digital accounting training programs

2. Strategic Objectives of Actors

Each actor holds different strategic goals regarding ML adoption in accounting systems.

Table 2. Strategic Objectives of Actors

Code	Objective	Actor
O1	Develop ML algorithms for accounting automation and efficiency	Software developers
O2	Promote digital accounting platforms such as ContaWeb-BI	Technology companies
O3	Improve profitability and efficiency through AI-based decisions	Business executives
O4	Preserve human role and minimize job displacement	Traditional accountants
O5	Ensure accuracy and reliability of financial data	Auditors
O6	Balance automation with financial security and risk control	Financial managers
O7	Regulate ethical and legal use of AI in accounting	Government regulators
O8	Provide training for digital and ML transformation	Training providers

3. Direct Influence Matrix (MDI)

The MACTOR MDI analysis reveals hierarchical influence among actors. Executives and financial managers dominate decision-making, while accountants and auditors have lower influence.

Table 3. Actor Influence Structure (MDI Summary)

Actor Type	Actors	Influence Level
Dominant actors	A3, A6	High decision-making power
Link actors	A2, A7, A8	Moderate influence and mediation role
Autonomous actors	A1	Independent with limited strategic control

Dependent actors	A4, A5	Low influence, high dependency

4. Actor Strength Ranking

Table 4. Strength Level of Actors

Rank	Actor	Strength Level
1	A6	Very high
2	A3	Very high
3	A8	High
4	A2	High
5	A7	Moderate
6	A1	Low
7	A4	Low
8	A5	Low

5. Strategic Positioning of Actors

The MACTOR 2MAO and 3MAO analyses indicate that efficiency and automation objectives (O2, O3, O6) receive strong support, while human-role preservation (O4) and audit reliability concerns (O5) face resistance.

6. Convergence and Divergence Among Actors

Table 5. Convergence Summary

Actor Pair	Level	Interpretation
A3 – A6	High	Strong strategic alignment
A2 – A3	Moderate	Shared innovation goals
A1 – A4	Low	Weak alignment

Table 6. Key Divergence Pairs

Actor Pair	Divergence Level	Meaning
A3 – A5	High	Conflict on automation vs audit reliability
A3 – A4	High	Human role vs automation tension
A1 – A2	Moderate	Different technological priorities

Discussion

The MACTOR-based findings provide a comprehensive understanding of how actors interact, align, and conflict in the implementation of ML technologies in accounting management. The results confirm that digital transformation in accounting is shaped by complex power relations and competing strategic interests among stakeholders.

The MDI results demonstrate a clear hierarchical structure of influence, where dominant actors such as executives and financial managers guide strategic direction, while accountants and auditors remain in more dependent positions. This aligns with previous studies emphasizing that digital transformation in accounting is primarily driven by actors with strong technological and financial authority (Yi et al., 2023; Gomber et al., 2018).

The analysis of strategic objectives reveals strong support for automation and efficiency-related goals, while resistance emerges regarding the reduction of human involvement in accounting tasks. This pattern is consistent with findings by Grosu et al. (2023), who highlight ongoing professional resistance to automation in accounting systems.

Furthermore, actor mobilization results indicate that dominant stakeholders actively support transparency and risk management objectives, which aligns with the growing role of AI in fraud detection and financial auditing (Kamuangu, 2024). However, divergence patterns suggest ongoing tensions between innovation-driven actors and those focused on regulation and employment protection, consistent with Obeng et al. (2024).

The convergence and divergence analyses further highlight the dual nature of digital transformation: while some actors form strategic alliances to accelerate ML adoption, others generate resistance due to concerns about job security, system reliability, and ethical governance. This confirms that accounting digitalization is not purely technological but deeply socio-organizational in nature.

Finally, the net distance analysis emphasizes the existence of significant strategic gaps among actors, which may hinder effective collaboration. These findings reinforce the importance of developing integrative governance mechanisms that balance innovation, regulation, and human capital adaptation. Such balanced strategies are essential to ensure sustainable organizational growth through ML adoption in accounting systems.

Conclusions

This study concludes that the implementation of machine learning in accounting management and organizational growth is a complex socio-technical process shaped by strategic interactions among multiple actors. The MACTOR analysis demonstrates that actor influence is unevenly distributed, with business executives and financial managers occupying dominant positions in decision-making, while accountants and auditors exhibit lower influence and higher resistance to change.

The study also finds that there is strong strategic convergence among actors toward objectives related to efficiency, automation, and digital transformation. However, significant divergences persist, particularly regarding the preservation of human roles, data reliability, and regulatory oversight. These conflicting interests indicate that the adoption of machine learning is not merely a technological shift but also a transformation of organizational power structures and professional roles.

Overall, successful implementation of machine learning in accounting requires a balanced strategy that integrates technological innovation, regulatory compliance, and human resource adaptation. Strengthening collaboration among actors and reducing strategic gaps are essential to support sustainable organizational growth in the era of digital accounting transformation.

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