DIGITAL TRANSFORMATION OF ACCOUNTING THROUGH ARTIFICIAL INTELLIGENCE: A QUALITATIVE STUDY ON MSMES IN SURABAYA

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ABSTRAK

Penelitian ini bertujuan untuk mengeksplorasi proses transformasi digital akuntansi melalui penerapan Artificial Intelligence (AI) pada Usaha Mikro, Kecil, dan Menengah (UMKM) di Surabaya. Permasalahan utama yang diangkat adalah rendahnya pemahaman dan adopsi teknologi AI dalam sistem pencatatan dan pelaporan keuangan oleh pelaku UMKM, padahal digitalisasi sudah mulai diterapkan secara umum. Dengan menggunakan pendekatan kualitatif deskriptif, data dikumpulkan melalui wawancara mendalam dengan 12 pelaku UMKM dari berbagai sektor usaha. Purposive sampling dan teknik bola salju digunakan untuk mendapatkan informan yang relevan, dan data dianalisis menggunakan metode analisis tematik. Hasil penelitian menunjukkan bahwa penggunaan AI masih terbatas pada fitur-fitur sederhana seperti otomatisasi input data dan klasifikasi transaksi, dengan pemahaman yang sangat beragam di antara pelaku usaha. Tantangan utama termasuk infrastruktur digital yang terbatas, literasi teknologi yang rendah, dan resistensi budaya organisasi terhadap perubahan. Strategi adaptif yang muncul antara lain pelatihan praktis berbasis kebutuhan dan pendampingan digital. Penelitian ini memiliki keterbatasan cakupan geografis dan jumlah informan, sehingga tidak dapat digeneralisasi secara luas. Penelitian lebih lanjut disarankan untuk memeriksa integrasi AI lebih lanjut dalam skala nasional serta melibatkan aktor eksternal seperti penyedia teknologi dan pembuat kebijakan.

Kata Kunci: Transformasi Digital; Artificial Intelligence; Akuntansi Digital; UMKM; Analisis Kualitatif

ABSTRACT

This research aims to explore the process of digital transformation of accounting through the application of Artificial Intelligence (AI) in Micro, Small, and Medium Enterprises (MSMEs) in Surabaya. The main problem raised is the low understanding and adoption of AI technology in the financial recording and reporting system by MSME actors, even though digitalization has begun to be applied in general. Using a descriptive qualitative approach, data was collected through in-depth interviews with 12 MSME actors from various business sectors. Purposive sampling and snowball techniques were used to obtain relevant informants, and data were analyzed using thematic analysis methods. The results show that the use of AI is still limited to simple features such as data input automation and transaction classification, with widely varying understandings among business actors. Key challenges include limited digital infrastructure, low technology literacy, and organizational culture resistance to change. Adaptive strategies that have emerged include practical needs-based training and digital mentoring. This study has limitations in geographical coverage and the number of informants, so it cannot be generalized widely. Further research is suggested to examine the integration of AI further on a national scale as well as involving external actors such as technology providers and policymakers.

Keywords: Digital Transformation; Artificial Intelligence; Digital Accounting; MSMEs; Qualitative Analysis.

1. INTRODUCTION

Background

The development of digital technology has driven a major revolution in various aspects of life, including in the field of accounting. During an increasingly massive flow of digital transformation, the presence of Artificial Intelligence (AI) technology has a significant impact on the way entities, both large and small, manage financial information (Kokina & Davenport, 2017b; Kumar Das,

2021). AI not only improves the efficiency of accounting processes but also expands the scope of accounting functions from just recording transactions to a strategic tool for faster and more precise business decision-making. In this context, Micro, Small, and Medium Enterprises (MSMEs) as the backbone of the Indonesian economy are also faced with the demand to adapt to the digital transformation to increase the competitiveness and sustainability of their businesses (Handini & Choiriyati, n.d.; Santoso, Fianto, & Yurisma, 2021).

Surabaya as one of the metropolitan cities in Indonesia is an important representation in examining the dynamics of digital technology implementation in the MSME sector (Santoso, Candraningrat, & Binawati, 2017). With a huge and diverse population of MSMEs, the city is an interesting ecosystem to explore the extent to which AI has begun to be integrated in accounting practices and how this digital transformation is impacting MSME financial governance (Azizah, Mahendra, & Lofian, 2019; Sulaksono & Zakaria, 2020). Although the application of technology in accounting has become a global trend, the reality in the field shows that the adoption of AI technology among MSMEs still faces various challenges, both in terms of digital literacy, infrastructure readiness, and business actors' perception of the benefits of technology.

In the era of Industry 4.0, the need for an efficient and accurate accounting system is increasingly urgent. AI, through features such as bookkeeping automation, predictive analytics, and real-time data-driven audits, has great potential in overcoming the traditional limitations that have been faced by MSME actors (Cueto, Frisnedi, Collera, Batac, & Agaton, 2022; Prahara, Kurnawan, Muhammad, & Syahrial, 2023). For example, the use of AI-based chatbots in accounting systems can replace front-office functions to automatically answer basic financial questions. In addition, machine learning algorithms allow accounting systems to detect unusual transaction anomalies, reducing the risk of fraud. However, despite this potential, many MSMEs in Surabaya still rely on manual or semi-digital systems in managing their financial statements.

The main factors that cause the low adoption of AI in MSME accounting practices include the limitation of human resources who have digital competence, the initial investment cost that is considered expensive, and the lack of socialization about the long-term benefits of this technology (Fraisse & Laporte, 2022; Kokina & Davenport, 2017a). On the other hand, MSMEs' perception of technology is often influenced by subjective experience, trust in conventional systems, and uncertainty over data security (Darman & Adha, 2021; MR, 2021). Psychological and socio-cultural aspects also play a role in forming resistance to change. Therefore, a qualitative study is needed to dig deep into how MSME owners understand, respond, and implement the digital transformation of AI-based accounting in their local context. Meanwhile, the gap in this research can be seen in the table below:

Table 1. Research Gap
Source: Data processed

Aspects	Previous Studies	This research	Research Gap
Geographical Context	Many studies have been conducted in developed countries or MSMEs in other large urban areas in Indonesia	Focus on MSMEs in Surabaya, a developing city with diverse MSME characteristics	Lack of locally-based studies on the implementation of AI in MSME accounting in developing cities in Indonesia
Technologies Studied	Focus on digitalization in general, without highlighting the specific role of Artificial Intelligence	Focus on the integration of AI features in MSME digital accounting	Lack of in-depth exploration of AI features in MSME digital accounting systems

Aspects	Previous Studies	This research	Research Gap
Research Approach	Many use quantitative approaches and large-scale corporate case studies	Using a descriptive qualitative approach based on in-depth interviews with MSME actors	Limited exploratory data on MSME actors' perception and understanding of AI in the context of accounting
Literacy and Utilization Levels	Previous studies have assumed users already understand the technology	This research reveals that the understanding of AI features is still very low among MSME actors	Lack of studies on digital literacy gaps and user awareness of AI features
Technology Adaptation Strategy	Focus on general recommendations related to digitalization	Presenting empirical findings of real adaptive strategies from MSME actors, such as contextual training	Lack of documentation of MSMEs' practical adaptation strategies to the adoption of AI in financial recording

The table above shows that there is a gap between the previous study and this study. Thus, this research will be a revelation and reformer of previous research. This research has high urgency considering the strategic role of MSMEs in the national economy. Based on data from the Ministry of Cooperatives and SMEs, the MSME sector contributes more than 60% to Indonesia's Gross Domestic Product (GDP) and absorbs around 97% of the national workforce. Thus, improving the financial efficiency and accountability of MSMEs using AI technology is a need that cannot be ignored. This research is expected to answer fundamental questions regarding the readiness, challenges, and opportunities for the implementation of AI in MSME accounting practices, especially in big cities such as Surabaya which are the center of the economy and innovation.

In addition, a descriptive qualitative approach was chosen in this study to capture the social complexity and subjective experience dynamics of MSME actors in facing digital transformation. This method allows researchers to explore the meaning, perception, and adaptation strategies carried out by business actors in more depth than the quantitative approach that is generalistic. This study also aims to identify behavioral patterns and best practices in the implementation of AI technology in the field of accounting that can be replicated by other MSME actors in similar areas. In addition, the findings of this study have the potential to make practical and academic contributions. From a practical perspective, the results of the research can be used as a reference by local governments, training institutions, and technology providers in designing digital literacy programs and technology adoption support that are more contextual and in accordance with the needs of MSMEs. Meanwhile, from the academic side, this research enriches the literature on digital transformation in the field of accounting, especially in the context of developing countries that are still facing various structural and cultural challenges in the digitalization process.

Overall, this study seeks to bridge the gap between the potential of technology and the reality of its implementation at the grassroots level, in this case MSMEs. By understanding local dynamics in Surabaya, it is hoped that this research will not only produce a comprehensive theoretical understanding but also provide policy recommendations and applicable implementation strategies to encourage the acceleration of AI-based accounting digital transformation in the MSME sector.

State of the Art
Research on the integration of Artificial Intelligence (AI) in the field of accounting has experienced rapid development in recent years, especially in large companies and financial institutions on a global scale. Recent studies show that AI can transform traditional accounting systems into intelligent systems that are capable of automation, predictive analytics, and real-time data-driven decision-making. In developed countries, AI has been used in big data-based audits,

automatic grouping of financial transactions, and fraud detection through machine learning algorithms (Kokina & Davenport, 2017a; Wang, 2022). However, most of the research still focuses on the context of large organizations with mature technology infrastructure, while exploration of the application of AI in the context of MSMEs, especially in developing countries such as Indonesia, is still very limited.

The state of the art of this study lies in its approach that examines the phenomenon of digital transformation of accounting through AI in a contextual and in-depth manner in the MSME environment in Surabaya. This research not only fills the literature gap regarding the low adoption of advanced technology in the MSME sector but also presents a new perspective by using a qualitative approach to explore perceptions, challenges, and adaptive strategies carried out by MSME actors in real terms. In the current research landscape, qualitative-based studies that raise human-centered aspects in technology adoption are still rare, especially in Indonesia's economically dynamic urban areas but not yet fully digitized. Therefore, this research makes significant theoretical and practical contributions, especially in designing policy strategies, digital capacity development, and relevant and sustainable AI application models for MSMEs in the digital transformation era.

Table 2. State of the Art Research – Digital Transformation of Accounting through AI in MSMEs
Source: Data Processed

Aspects	Previous Research	Weaknesses / Gaps	Contributions of this research
Object of Study	Large corporations, multinationals, financial institutions	Lack of studies on MSMEs, especially in developing countries	Focus on MSMEs in Surabaya as a representative of the strategic informal sector
Approach	Quantitative, survey, big data-driven case studies	Lack of exploration of the subjective experiences of MSME actors	A descriptive qualitative approach that explores deep and contextual understanding
Technology Focus	Big data, RPA, AI for internal auditing and automated reporting	Focus on large and expensive systems, irrelevant for MSME scale	AI studies in simple and applicable form (recording automation, cash prediction, etc.) for the needs of MSMEs
Location/Geographic Context	Developed countries (US, Europe, China)	Lack of studies from the perspective of developing countries, especially in Southeast Asia	The local context of Indonesia (Surabaya), with the typical challenges of literacy digital dan keterbatasan SDM
Practical Contribution	Recommendations for the development of large-scale AI-based accounting systems	Uncontextual for small businesses that aren't tech-ready	Providing an adaptive strategy model based on the experience of MSME actors that can be replicated and socialized

The novelty or novelty of this research lies in the in-depth contextual and exploratory approach to digital transformation of accounting through the application of Artificial Intelligence (AI) in MSMEs in Surabaya. In contrast to previous research that generally focused on digitalization in general or the use of conventional accounting applications, this study specifically highlighted the use of AI-based features in financial recording and reporting systems. Another novelty arises from the geographical focus directed at MSMEs in developing cities such as Surabaya, which have different characteristics compared to other big cities in Indonesia or developed countries, both in terms of digital infrastructure and human resource readiness. In addition, this study uses a

descriptive qualitative approach through in-depth interviews, allowing researchers to reveal the understanding, perceptions, and obstacles faced by MSME actors in an authentic and contextual manner. Another interesting finding is that most MSME actors are not aware that the applications they use have integrated AI technology, and its use is still passive. This research also makes a new contribution by identifying practical adaptation strategies carried out by MSMEs, including contextual training and business process restructuring, as well as placing organizational culture as an important factor in the AI technology adoption process. The novelty of this research can be seen in Table 3 below:

Table 3 Novelty Research
Source: Data Processed

Research Elements	Previous Research	Novelty of this research
Technology Focus	Generally discussing digitalization in general or manual application-based accounting systems	Highlighting the use of Artificial Intelligence (AI) in MSME digital accounting features
Context Subject	Focus on large corporations or MSMEs in big cities and developed countries	Focusing on local MSMEs in Surabaya, a developing city with specific challenges and characteristics
Methodological Approach	Dominated by quantitative approaches and assumption-based surveys	Using descriptive qualitative methods to explore the perpetrators' perceptions and direct experiences
User Understanding Dimension	Assumes users already understand and are ready to adopt technology	Revealing that MSME actors are not aware that they have used AI-based features
Exploration of MSME Adaptive Strategy	Not much has been explained practically in the context of AI	Identify concrete adaptation strategies such as contextual training and process restructuring
Aspects of Organizational Culture	Often overlooked in the study of MSME technology	Incorporating organizational culture as a critical variable in AI adoption

Literatur Review

The literature review in this study will review several relevant previous concepts and findings, covering three main domains: (1) digital transformation in accounting, (2) the role of Artificial Intelligence in accounting practices, and (3) the context of Micro, Small, and Medium Enterprises (MSMEs) as the object of study of technology implementation. These three elements are interrelated and form the theoretical framework that underlies this research.

Digital transformation is a fundamental change process in the way organizations manage their business by utilizing digital technology strategically. In the context of accounting, digital transformation not only involves a change from manual systems to software-based systems but also includes the integration of advanced technologies such as cloud computing, big data analytics, and Artificial Intelligence to generate more accurate, real-time, and strategically valuable financial information (Jaramillo-Moreno et al., 2020). Accounting digitization allows the automation of routine processes such as recording transactions, preparing financial statements, and tax reporting. This transformation also changed the role of accountants from just a data logger to a strategic partner in business decision-making. According to (Awang et al., 2023; Ben Youssef, Boubaker, Dedaj, & Carabregu-Vokshi, 2021), Digitalization is driving a paradigm shift in the accounting profession that demands higher analytical, technological, and communication skills.

Artificial Intelligence (AI) in accounting is part of a massive wave of digital transformation that brings intelligent automation into various financial processes. AI enables the processing of large amounts of data, learning from transaction patterns, and detecting anomalies or potential fraud faster than conventional methods (Kokina & Davenport, 2017a, 2017b). AI technology that is widely used in accounting includes machine learning, natural language processing (NLP), robotic

process automation (RPA), and expert systems. For example, the use of AI in bookkeeping systems can automate invoice matching, grouping transactions, and compiling financial reports with high accuracy. AI can also be used to make predictions of cash flows and financial trends based on historical data, providing strategic insights for business management (Daud et al., 2022; Ozili, 2018; Thathsarani & Jianguo, 2022) . On the other hand, the literature also notes that the successful application of AI in accounting is highly dependent on organizational readiness, including digital literacy, technological infrastructure, and a culture of adaptation to innovation (Kokina & Davenport, 2017a).

In the context of MSMEs, the challenges of digital transformation have become more complex. MSMEs generally have limited resources, both in terms of finance, technology, and human resource competence. According to a study by (OECD, 2021), Most MSMEs in developing countries are still lagging in the adoption of advanced technology due to the lack of access to training, information, and digitalization assistance. In Indonesia, this condition can also be seen from the low level of use of digital accounting applications, especially those based on AI. Study by (Prasetyo, 2021; Rahman & Muryani, 2017) shows that most MSMEs in Indonesia only use simple accounting applications or even still record transactions manually. In fact, the application of more advanced technologies such as AI can be a solution in improving the efficiency and accuracy of their financial management.

Several previous studies have emphasized the importance of a contextual approach in understanding the dynamics of technology application in the MSME sector. For example, a study by (Badri, 2020; Houston, 2020; Ratnaningsih, Murwani, & Berto, 2023) highlighting those internal factors such as business owners' attitudes, experience with technology, and risk perception greatly influence the decision to adopt digital innovation. Meanwhile, external factors such as support from the government, access to technology financing, and local digital ecosystems also have an important role. Therefore, a descriptive qualitative approach is relevant in tracing the subjective experiences and understanding of MSME actors towards AI-based digital transformation, especially in local contexts such as Surabaya.

In the literature review, relevant theoretical approaches have also emerged to be analyzed, such as *the Technology Acceptance Model* (TAM) and *the Diffusion of Innovation* (DOI). TAM, developed by (Liu & Park, 2024), explained that the adoption of technology is greatly influenced by the perception of the usefulness and ease of use of the technology. While the DOI theory of (Rogers, 2003) Describe how innovation spreads within a community or organization based on innovator categories, technological characteristic factors, and social context. These two theories can be used to map the AI adoption process by MSMEs and identify the key factors that accelerate or hinder the process.

Based on this literature review, it can be concluded that although the digital transformation of accounting through AI promises many benefits, its adoption among MSMEs is still faced with various structural and cultural barriers. Therefore, this study is strategically positioned to fill the gap in the limited literature on the application of AI in MSME accounting practices in Indonesia, especially with a qualitative approach that emphasizes a deep understanding of the local context.

Research Issues

Digital transformation in the accounting field, especially through the application of Artificial Intelligence (AI), is a phenomenon that is getting more attention along with the demands for efficiency and accuracy in business financial management. However, the application of this

technology is not completely evenly distributed, especially among Micro, Small, and Medium Enterprises (MSMEs). In the city of Surabaya, which is the center of East Java's economic growth, MSMEs play an important role in boosting the local economy, but most of them still rely on manual or semi-digital accounting methods. This raises several fundamental questions that are important to answer through research.

1. How do MSME actors understand the concept of digital transformation in accounting?
2. To what extent has Artificial Intelligence been integrated into their financial recording and reporting systems?
3. What are the challenges faced in the process of adopting this technology, both from technical aspects, human resources, and organizational culture?
4. What kind of strategy or approach do they take in response to these technological changes?

The formulation of the above problem is the basis for this study to delve deeper into the dynamics of the implementation of AI technology in the accounting practice of MSMEs in Surabaya. This research not only wants to identify the obstacles faced but also to explore opportunities and adaptation strategies that arise during existing limitations. Using a descriptive qualitative approach, this study aims to gain a comprehensive understanding of the perceptions, attitudes, and practices of MSME actors in dealing with AI-based digital transformation in the field of accounting.

2.   RESEARCH METHODS

This research uses a **descriptive qualitative approach** that aims to explore in depth the understanding, experience, and perception of MSME actors towards digital transformation in the accounting sector using Artificial Intelligence (AI) technology. The qualitative approach was chosen because it is considered the most appropriate in understanding the social, cultural, and technological adoption processes that are complex and contextual. Descriptive design is used to describe the phenomenon that is happening without manipulation of variables, but by revealing the subjective meaning of the informants as direct actors in the field.

The subjects in this study are owners or managers of MSMEs in Surabaya who have used or are in the process of adopting digital technology in their accounting systems, either partially or integrated. The **purposive sampling technique** was used in the selection of informants, with criteria including: (1) having been running the business for at least two years; (2) having a digitized bookkeeping or accounting system, both through conventional software and AI-based applications; and (3) willing to provide information publicly. The number of informants is determined based on the principle **of data saturation**, which is when the information obtained has shown a recurring pattern or theme.

Data collection is carried out through **a semi-structured in-depth interview** technique to remain open to new information that may appear in the field. In addition, supporting data is collected through direct observation of the financial recording process, as well as documentation of the use of accounting applications or software used by each MSME. All data were then analyzed using **thematic analysis** techniques, namely by identifying, grouping, and interpreting patterns of meaning that emerged from interview transcripts and field notes.

To ensure **the validity and credibility of the data**, the researcher triangulated sources and techniques, applied cross-checking between informants, and confirmed the results of the analysis to some informants (member checking). Through this approach, the research is expected to be able to produce an authentic and holistic picture of the dynamics of digital transformation of accounting

through AI in the MSME sector, as well as present contextual and applicable recommendations for the development of MSMEs in the digital era.

Sampling

In this study, the sampling technique used is **purposive sampling**, which is a deliberate sampling technique based on certain considerations that are relevant to the purpose of the research. This approach was chosen because of the qualitative nature of the research, which emphasizes more on the depth of information than on the statistical representation of the population. The informants in this study are Micro, Small, and Medium Enterprises (MSMEs) in the Surabaya area who have used digital-based accounting applications, either consciously or unconsciously using features supported by Artificial Intelligence (AI). The selection of informants is carried out based on certain criteria such as the type of business, experience using accounting applications, level of understanding of digital technology, and readiness to adapt to technological changes.

A total of 12 informants from various business sectors such as culinary, retail, creative services, and small manufacturing were interviewed in depth. The selection process is carried out by considering the diversity of business characteristics and variations of digitalization experiences owned, to get a comprehensive picture of the phenomenon of digital transformation of accounting through AI. This technique allows researchers to explore richer and more contextual information, as well as capture the subjective perceptions and experiences of MSME actors in more detail.

In addition, in the sampling process, *the snowball sampling* approach is also used as a supporting strategy, where the initial informant recommends other business actors who meet the research criteria. This approach has proven effective in reaching MSME actors who are actively using technology but are not always easily accessible formally. Through a combination of purposive and snowball sampling, this study managed to reach respondents who were able to provide in-depth insights into how MSMEs respond to and adopt AI technology in their financial recording and reporting systems.

Data Analysis

The data analysis technique in this study uses a **thematic** analysis *approach*, which is a qualitative method to identify, analyze, and report patterns or themes that emerge from interview data. The analysis process began at the data collection stage, where the researcher recorded and recorded the results of in-depth interviews with MSME actors. Furthermore, the data that has been collected is transcribed verbatim to maintain the integrity of the meaning and context of each informant's statement.

The next stage is the *coding* process, which is organizing the data into relevant and meaningful pieces of information, which are then grouped into categories or subthemes based on similarity of content. This process is done iteratively and openly, meaning that researchers do not use rigid theoretical frameworks at the beginning, but allow themes to grow naturally from within the data. After the *initial coding process*, the main themes that are the focus of this research are developed, such as understanding the digital transformation of accounting, the use of AI-based applications, technology implementation challenges, and the adaptation strategies of MSME actors.

To improve the validity of the data, the researcher used **the source triangulation** technique, which is comparing information from various informants with different business backgrounds to ensure the consistency of the findings. In addition, *member checking was also carried out* on several informants to ensure that the researcher's interpretation was in accordance with their intentions.

With this approach, researchers can construct a coherent and in-depth thematic narrative, as well as provide a comprehensive overview of how the AI-based accounting digital transformation process takes place in the context of MSMEs in Surabaya. This analysis technique is very much in line with the research objectives oriented towards in-depth exploration and contextual understanding of the phenomenon being studied.

3.   RESULTS AND DISCUSSION

The results of this study show that the digital transformation of accounting through the application of Artificial Intelligence (AI) in MSMEs in Surabaya takes place gradually and not uniformly, influenced by the level of digital literacy, business scale, and the perception of each MSME actor on the benefits of technology. Based on in-depth interviews with informants from various business sectors such as culinary, retail, creative services, and small manufacturing it was found that most MSME actors have started to abandon manual recording and switch to the use of digital-based accounting applications. However, the use of technology that specifically utilizes AI features is still limited to simple functions such as bookkeeping automation, transaction grouping, and automatic stock tracking.

Table 4. Summary of MSME Accounting Digital Transformation in Surabaya
Source: Results of Interviews and Literature Studies

Aspects	Research Findings
General Conditions of Transformation	It takes place gradually **and is not uniform** among MSME actors.
Influencing Factors	1. Digital literacy level- Scale of businesses (micro, small, medium) 2. Perception of the benefits of technology
Types of Informant Businesses	1. Culinary- Retail- Creative services 2. Small manufacturing
Changes in Accounting Practices	Most MSMEs have **switched from manual recording to digital accounting applications**
Use of AI	1. It is still limited, only to simple features such as: 2. Bookkeeping automation 3. Transaction grouping 4. Automatic stock tracking
Technology Utilization Rate	Tends to vary, depending on understanding and access to technology

Some MSMEs that are classified as more adaptive have used AI-based platforms that are able to provide cash flow analysis, bill maturity reminders, and financial management recommendations based on past transaction trends. For example, some informants who use cloud-based accounting applications such as Jurnal.id or BukuKas revealed that the AI-based recommendation feature is very helpful in compiling spending strategies and preparing monthly financial statements. Informants acknowledge that this technology improves time efficiency and data accuracy, as well as reducing reliance on the services of external accountants. However, most business actors still do not understand that these features are part of artificial intelligence, so education about AI concepts is still an urgent need in the field.

On the other hand, the observation results show that there are obstacles in the implementation of digital transformation, especially for MSMEs with a simple business structure and are not used to using accounting software. The main challenges expressed by the informants include limited stable internet access, low digital capabilities, and concerns about the security of financial data when stored online. Some business actors also expressed doubts about the reliability of AI systems, especially in terms of financial predictions that are considered not fully accurate or relevant to the volatile conditions of micro businesses. This obstacle shows that in addition to the technological

aspect, the success of digital transformation is also greatly influenced by the aspect of trust and individual readiness.

In terms of perceived benefits, most informants stated that the use of digital technology and AI features significantly helped the financial recording process to be more structured, fast, and easy to understand. Previously, many of them did not have a consistent record-keeping system, so financial statements were often unavailable or could not be used as a basis for business decision-making. With the automation feature, MSME players feel more helped in assessing their financial performance in real-time, making cash flow planning, and managing sales or purchasing strategies. This is in line with the findings of previous studies that AI can be a strategic tool in data-driven business decision-making, even at the small business scale.

However, this study also found disparities in the speed and effectiveness of technology adoption between MSMEs. MSMEs managed by the younger generation or with an economic-accounting education background tend to adapt more quickly to the digital system, while business actors from the older generation show a tendency to be resistant to technological change. External factors such as support from the business community, training from the government, and access to digital information also play a major role in encouraging or hindering the adoption process of AI in accounting practices. In this context, a community approach based on digital learning and practical training is a potential strategy to accelerate digital transformation in an inclusive manner.

In addition, the results of the study show that some MSME actors have expectations for the development of AI features that are more contextual to their needs. For example, a sales prediction system tailored to a specific business season, an analysis of the feasibility of an internal data-driven business expansion, or an automatic reminder of tax obligations. This aspiration shows that the potential for the use of AI in MSME accounting is huge, but it still requires a more user-oriented technology design approach and adapted to the complexity and scale of small businesses. Therefore, collaboration between technology developers, local governments, and local MSME communities is important in creating a digital ecosystem that is friendly and easily accessible to micro and small business actors.

Overall, the results of this study underscore that the digital transformation of AI-based accounting in the MSME sector is not only a technical problem, but also a problem of education, social adaptation, and supporting ecosystems. Although the adoption of technology still faces various obstacles, there are positive indications from business actors of the benefits offered by AI, especially in improving the efficiency of financial recording and the quality of decision-making. Therefore, the strategy to strengthen the digital capacity of MSMEs needs to be directed not only at the provision of software, but also at increasing digital literacy, continuous training, and the provision of relevant and affordable technical support. With an integrated and collaborative approach, AI-based digital transformation in the MSME sector can develop sustainably and make a real contribution to the resilience and growth of the local economy.

MSME actors' understanding of the concept of digital transformation in accounting
The results of the analysis of in-depth interviews conducted with MSME actors in Surabaya show that their understanding of the concept of *digital transformation in accounting* is still very varied. Some business actors, especially those who come from young people and have experience using financial software, show a good understanding of the importance of digitalization in the process of financial recording, reporting, and analysis. They understand that digital transformation includes not only the use of applications, but also a change in the way of thinking in managing

financial data in real-time, efficient, and integrated ways. These business actors realize that by leveraging digital technology, they can improve recording accuracy, speed up the reporting process, and gain better insights for business decision-making.

Table 5. Analysis of MSMEs' Understanding of Digital Accounting Transformation
Source: Interviews and Questionnaires

Category	Findings
Variations in Comprehension	1. The understanding of MSME actors **varies greatly**, depending on age, background, and digital experience.
Groups with Good Understanding	**1.** Generally, from **young people** 2. Experience using **financial software**
Characteristics of Good Understanding	1. Recognizing the importance of digitalization in recording and reporting 2. Understanding the change in financial mindset 3. Seeing digital transformation as **a real-time, efficient, and integrated system**
Realized Benefits	1. Improve record-keeping accuracy- Speed up financial reporting 2. Get **business insights**
Implications for Decision Making	1. Digital technology helps businesses **make more informed decisions based on actual data**

However, most other informants still understand digital transformation in a limited way, which is limited to *replacing manual recording with digital* using simple accounting applications. In fact, many of them have not been able to distinguish between digitalization and digital transformation in its entirety, let alone understand the relationship with the concept of Artificial Intelligence. In interviews, some MSME actors admitted to using accounting applications only because they follow trends or recommendations of third parties (such as MSME companions or application providers), without understanding the advanced functionality available, such as cash flow prediction or AI-based financial performance analysis. This shows that there is a significant digital literacy gap, which hinders the optimization of technology utilization. Therefore, more systematic education and mentoring are needed so that MSME actors' understanding of digital transformation can develop in a more comprehensive and strategic direction.

Integration of Artificial Intelligence in financial recording and reporting systems
The results of the study show that the application of this technology to MSME actors in Surabaya is still in the early stages and is limited. Based on interviews with informants, the majority of MSMEs do not fully understand that some of the features in the accounting applications they use are supported by artificial intelligence. For example, the automation feature of transaction data input, expense classification, and instant financial report generation utilizes AI algorithms, but few MSME actors are aware of it. This is because the use of AI is still wrapped in a simple interface and does not feature much technical terms, so it is considered a standard function in applications.

Table 6. Integration of AI in MSME Accounting System in Surabaya
Source: Data Processed

Aspects	Research Findings
AI Adoption Rate	It is still in the **early stages** and is **limited** among MSMEs.
Awareness of AI	The majority of MSME actors **are not aware** that the applications used have been supported by **AI algorithms**.
Examples of AI-Based Features	Transaction input automation Classification of expenses Instant financial report generation
Causes of Lack of Understanding	Simple app interface Lack of use of **technical terms** in the application

Aspects	Research Findings
User Perception	AI features are considered as ordinary functions in applications, not as advanced technologies
Implication	MSMEs become passive users and **do not optimize the** potential of AI to the maximum

However, some MSMEs who are more digital savvy admit that they have felt significant benefits from AI features in their financial systems. For example, notification systems that warn of cash irregularities, predictive features that analyze spending and income trends, and budget management recommendations based on previous financial behavior, have helped them in developing more precise financial strategies. Some business actors even mention that financial statements can now be generated in minutes and used directly for the needs of business partners, financial institutions, or other stakeholders. Processes that used to require external accountants can now be done independently thanks to the help of AI, cutting costs and increasing the speed of work.

However, there are challenges in integrating AI more deeply, especially in terms of data compatibility, reliance on internet connections, and lack of knowledge about the advanced functions of the system. In addition, some business actors admitted to being worried about the security and validity of data processed automatically, especially for businesses that do not have a strong internal control system. Therefore, the results of this analysis emphasize the importance of increasing digital literacy capacity and special training on AI features, so that MSME actors are not only passive users, but also able to optimize technology to create a more adaptive, efficient, and accountable financial system. The integration of AI in financial recording and reporting is a strategic step towards sustainable financial digitalization in the MSME sector.

Challenges faced in the AI technology adoption process

This research reveals the fact that the obstacles in the application of this technology are multidimensional and interrelated, including technical aspects, human resources (HR), and organizational culture. From the technical aspect, most MSME actors admitted that they had difficulty accessing hardware and software that were compatible with Artificial Intelligence-based systems. The limitations of digital infrastructure, such as unstable internet connections or outdated computer devices, are the main obstacles to the process of optimal AI integration. In addition, many businesses do not have a structured data management system, making it difficult to train AI models or synchronize with digital platforms.

Table 7. Challenges of Implementing AI in MSMEs in Surabaya
Source: Qualitative Data Processed

Aspects	Challenges Faced
Technical	1. Difficulty accessing hardware & software compatible with AI systems 2. Unstable internet connection 3. Obsolete computer devices 4. Absence of a structured data management system
Human Resources (HR)	1. Low digital literacy 2. Lack of technical understanding of AI features- Reliance on conventional methods. 3. Concerns over the replacement of human roles by AI
Organizational Culture	1. Traditional mindset & resistance to innovation 2. Focus on short-term cost efficiency 3. Lack of adaptation of work culture to digital transformation

In terms of human resources, it was found that the lack of digital literacy and the low technical understanding of MSME actors towards AI technology are the most crucial challenges. Most business actors still rely on conventional methods in managing bookkeeping and do not yet can operate modern accounting applications thoroughly, let alone understand AI-based features. Not a few are also worried that the use of AI will replace the role of the workforce, so there is resistance to the adoption of new technologies. This is exacerbated by the absence of continuous training or mentoring that can bridge the existing digital skills gap.

On the other hand, from the perspective of organizational culture, some MSMEs still adhere to a traditional mindset in business management, which emphasizes short-term cost efficiency rather than long-term technology investment. Digital innovation is often seen as an additional burden, rather than a strategic opportunity. Rigid work culture and lack of adaptation to change are also obstacles to the digital transformation process involving artificial intelligence. Many business owners have also not made data an important asset in decision-making, so they do not see the urgency of using AI-based technology. Thus, the adoption of AI in MSME accounting not only requires the availability of technology, but also paradigm shifts, strengthening human resource capacity, and forming an organizational culture that supports digital innovation in a sustainable manner.

Strategies to respond to technological changes in the field of AI
The results of the study show that efforts to adapt to the development of Artificial Intelligence technology require a structured and sustainable approach, both from the internal business organization and from external support. One of the main strategies identified is to increase the digital literacy capacity of business actors, through training and mentoring that is relevant to business needs. Informants from MSMEs emphasized that practical and contextual training—such as the use of AI-based accounting applications in daily activities—is more effective than general theoretical approaches. This training not only covers technical understanding but also forms an adaptive mindset to change.

Table 8. MSMEs' Adaptive Strategies to Changes in AI Technology
Source: Qualitative Data Processed

Strategy Aspects	Details of Research Findings
Adaptation Approach	A structured and sustainable **strategy is needed**, including internal efforts and external support.
Digital Literacy	Capacity building through **training and mentoring** based on business needs.
Types of Effective Training	Practical and contextual **training**, such as hands-on use of AI-based accounting applications.
Training Focus	Not only technical understanding but also forming **an adaptive mindset** towards technological developments.
The Role of MSME Informants	Emphasizing the importance of daily practice-based training rather than general theory.

In addition, another strategy that is considered important is collaboration with third parties, such as technology providers, training institutions, business incubators, and universities. Through this collaboration, MSMEs can gain access to more affordable AI tools and platforms, as well as gain technical insights on how to integrate technology in business operations. Some MSMEs have even developed partnership networks that allow them to share resources and experiences in the use of AI, including discussion forums and digital community learning groups. This strategy reflects that the response to technological change does not have to be done individually but can be strengthened through synergy between business actors and stakeholders.

Internally, adaptive strategies also include restructuring business processes to be better prepared for automation. Some MSMEs have begun to change manual financial recording systems to digital, simplify reporting flows, and create new technology-based SOPs (Standard Operating Procedures). They also began to build an organizational culture that was open to innovation, by encouraging team members to try and adopt new technologies gradually.

In general, the results of this analysis show that the response strategy to technological changes in the field of AI requires a combination of improving human capabilities, adjusting work processes, and supporting a collaborative ecosystem. The strategy aims to ensure that MSMEs are not only able to survive in the digital era but also can utilize AI technology as a driver of growth and long-term competitive advantage.

4.   CONCLUSIONS AND SUGGESTIONS

This study concludes that the digital transformation of accounting through the application of Artificial Intelligence (AI) in the MSME sector in Surabaya shows complex and diverse dynamics. Although most MSME players have started to abandon manual recording and switch to digital-based accounting applications, the use of AI technology is still limited to basic functions such as bookkeeping automation, transaction classification, and inventory tracking. One of the important findings shows that the low awareness of MSME actors about the existence of AI features in the applications they use is an inhibiting factor in the optimization of this technology. In addition, the understanding of the concept of accounting digital transformation also varies greatly, depending on your background, digital experience, and business scale.

The adoption of AI among MSMEs still faces various challenges, both in terms of technical, human resources, and organizational culture. Limited digital infrastructure, lack of technological literacy, and resistance to change are the main obstacles. However, this study also found that there are strategic efforts that have begun to be made by some MSME actors to respond to this technological development. The strategy includes digital literacy training, collaboration with technology providers and training institutions, and restructuring business processes towards digitalization.
Thus, the application of AI in the MSME accounting system is not only about the use of technology, but also about human resource readiness, mindset changes, and the creation of a supportive ecosystem. The results of this study provide an overview that the success of digital transformation of accounting through AI in MSMEs is highly dependent on the synergy between technological innovation, human capacity building, and inclusive and sustainable supporting policies.

Limitation

This research has several limitations that need to be considered. First, the qualitative approach with the in-depth interview method only involves several MSME actors based in the Surabaya area, so these findings cannot necessarily be generalized widely to all regions of Indonesia or to other MSME sectors with different characteristics. Second, although the data obtained is quite rich in an exploratory context, limitations in the number and variety of informants can limit the representation of the complexity of digital transformation that is happening in the field.

Third, this research has not included perspectives from technology providers or the government as the main stakeholders in the MSME digitalization ecosystem. In addition, the research focus that emphasizes more on the accounting side and AI features in financial applications still leaves room for wider exploration on other aspects of technology integration, such as blockchain or big data.

Therefore, the results of this study should be seen as a preliminary picture and a foundation for more comprehensive follow-up research.

Suggestions for Future Research
Further research is suggested to expand the scope of the study area and number of participants to provide a more comprehensive picture of the process of adopting AI in MSME accounting in various geographical and sectoral contexts. Quantitative or mixed-method studies can also be used to reinforce findings and test the relationship between variables in a more measurable way, such as between the level of digital literacy and the effectiveness of using AI features in accounting applications.

In addition, the longitudinal approach can provide more in-depth insights into the development of technological adaptation over time. Follow-up research should also involve other stakeholders such as application developers, digital training institutions, and government agencies to examine how infrastructure policies and support affect the adoption of AI technology by MSMEs.

Finally, exploration of the integration of AI with other technologies such as machine learning, Internet of Things (IoT), and big data analytics in the context of MSME finance can be a relevant and in-depth topic to answer the challenges of comprehensive digital transformation in the future.

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