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Enhancing e-accounting adoption: An analysis of the influence of relative advantage, management support and information system quality on organization

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Abstract: This study examines the key factors influencing e-accounting adoption among MSMEs in Malang City, focusing on its role in enhancing operational efficiency and financial transparency. The research explores the impact of six variables—Relative Advantage, Management Support, Competitive Pressure, System Quality, Information Quality, and Service Quality—on adopting e-accounting. Using Partial Least Squares - Structural Equation Modeling (PLS-SEM), the study identifies that Relative Advantage, System Quality, and Service Quality significantly influence adoption. However, their relationships are negatively directed, indicating a gap between user expectations and actual experiences. Conversely, Management Support, Competitive Pressure, and Information Quality do not show significant effects. The study concludes that improving system and service quality, alongside targeted education and training, is crucial for MSMEs to fully benefit from e-accounting. Practical implications suggest strategies for technology providers, policymakers, and MSMEs to optimize e-accounting for better business efficiency and sustainability.

Keywords: *Delone & Mclean ISSM, E-accounting, Information system, Technology adoption.*

1. Introduction

Digital transformation has become an integral part of major global changes, bringing significant impacts on various aspects of life and business [1-3]. One sector experiencing this impact is accounting, which has shifted from traditional manual processes to more automated and computerized systems. In the era of globalization, e-accounting systems have emerged as solutions that align technology with modern accounting needs. Using e-accounting offers higher efficiency and accuracy and supports transparency and data-driven decision-making [4].

In the Indonesian context, the role of digital transformation in accounting is crucial, especially for small and medium-sized enterprises (SMEs), which serve as the backbone of the national economy [5, 6]. With significant contributions to the Gross Domestic Product (GDP) and employment provision, SMEs face major challenges in maintaining their competitiveness amid increasingly fierce global pressure [7-9].

However, despite the well-recognized benefits of e-accounting systems, their adoption among SMEs still faces several obstacles. Many SMEs hesitate to transition to new systems due to a lack of understanding of technology, limited resources, and resistance to change. These factors create significant barriers to e-accounting adoption, ultimately hindering overall organizational effectiveness [10]. In an increasingly dynamic business environment, the ability to adopt new technologies such as e-accounting is vital to ensuring business continuity and sustainable growth. Therefore, this study aims to explore and understand the factors influencing e-accounting adoption, focusing on the technological, organizational, and environmental aspects.

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In this context, one of the primary issues SMEs face is the lack of understanding of the relative advantages of e-accounting compared to traditional manual systems. Many SME entrepreneurs still rely on time-consuming manual processes prone to errors without realizing that e-accounting systems can provide much greater efficiency.

The relative advantages of e-accounting include reducing operational costs, improving the accuracy of financial reports, and providing real-time access to relevant financial information. However, awareness of these benefits is often limited, thus hindering wider adoption [11]. Additionally, management support is another critical factor influencing e-accounting adoption. The lack of management commitment to providing necessary resources, such as employee training or investment in appropriate software, often becomes a major obstacle. Strong management support is required to drive organizational cultural change and ensure all team members understand the importance of transitioning to the new system. Without this support, efforts to implement e-accounting tend to face technical and organizational resistance [12].

Information system quality is another important aspect in determining the level of e-accounting adoption. A well-designed system must meet users' needs by providing an intuitive interface and relevant features [10]. However, among SMEs, it is often found that the available software does not fully meet their needs, ultimately reducing their interest in adopting the technology. Therefore, software developers must collaborate with SMEs to ensure their products are genuinely relevant and easily implementable [13].

Recognizing the importance of digital transformation in accounting, this study is designed to provide theoretically and practically meaningful contributions [14]. Theoretically, this research offers a holistic approach to understanding the determinants of e-accounting adoption using the TOE (Technology, Organization, Environment) Framework, Diffusion of Innovation (DOI) theory, and the DeLone & McLean Information Systems Success Model. These methods allow researchers to examine organizational, technological, and environmental elements that affect how well e-accounting implementation goes. By combining these three viewpoints, this study not only enriches existing literature but also provides a framework that can be used by other researchers in future studies [15].

On the practical side, this research provides useful guidance for SMEs and policymakers in designing more effective technology adoption strategies. For example, the findings of this study can be used to develop specialized training programs to enhance understanding of the benefits of e-accounting and provide the necessary tools and resources to facilitate the transition to new systems. Thus, this research is expected to help SMEs overcome the barriers they face in adopting technology while enhancing their competitiveness in the market and the small business sector; fintech can improve sustainability in the small business sector [5-7]. MSMEs can utilize fintech as a strategy to maintain their business, such as the use of digital payment systems (fintech payments) through e-wallet applications such as Go-Pay, OVO, and Shopee pay, with Electronic Data Capture (EDC), credit cards, and e-money. With fintech payments, it is easy for users to make all kinds of transactions anytime and anywhere [8]. It also provides benefits such as delivering transaction records without manual input to facilitate the recapitulation of outgoing and incoming transactions as a basis for making cash flow reports. Seeing the benefits of digital payments in facilitating payment transactions, it is essential to research the factors influencing the decision to use a digital payment system.

In accepting fintech payments in micro-businesses, perceived ease of use and usefulness are considered drivers. Still, in today's digital developments, environmental influence and Trust are other factors that encourage users to adopt fintech payments in micro businesses. Microbusiness actors look at the factors of ease and benefits in adopting fintech payments and consider social factors and Trust. Perceived ease of use refers to the extent to which customers perceive that they do not need to spend much time or effort to use FinTech tools effectively and that they are accessible across a variety of devices [7]. Previous studies have shown a positive relationship

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between perceived ease of use and adoption of financial technology [9, 10]. When customers believe that fintech services are convenient, easy to use, and accessible from various devices, they have a positive attitude toward their adoption.

2. Literature Review

An essential part of scientific research, the literature review offers a theoretical framework that directs analysis and clarifies the connection between the variables under investigation [16]. In the context of e-accounting system adoption, this literature review focuses on three main theoretical foundations: the TOE framework (Technology, Organization, Environment), the Diffusion of Innovation (DOI) theory, and the Delon & Mclean Information System Success Model. These three methods work well together to describe different aspects of technology adoption, especially in SMEs.

The TOE framework plays a central role in understanding technology adoption by categorizing the key factors influencing an organization's decision to adopt a technological innovation. The technology component includes relative advantage, compatibility, and complexity of the technology to be adopted [17]. Regarding e-accounting, its relative advantage lies in higher efficiency, financial transparency, and data-driven analysis capabilities. However, technological complexity, such as the need for training or system integration, often becomes a barrier to implementation. Meanwhile, the organizational component includes internal characteristics such as organization size, management structure, and human resources readiness [18]. In SME management, support is crucial for ensuring the success of e-accounting adoption, especially due to limited resources, which often pose a major challenge. The last component of the TOE framework, environmental factors, includes competitive pressure and external regulations, which can either drive or hinder technology adoption. Competitive pressure from rivals who have already implemented e-accounting can encourage SMEs to follow suit to maintain their competitiveness [19].

The DOI theory also provides a valuable framework for understanding technology adoption. According to this theory, adopting innovation depends on several characteristics of the innovation itself and social and communicative factors supporting its dissemination. Innovation characteristics include relative advantage, compatibility, complexity, trialability, and observability [20]. In the case of e-accounting, relative advantage and observability are key factors influencing its adoption. The system's ability to demonstrate higher operational efficiency than traditional systems can convince SME owners to switch to this technology. Meanwhile, social factors such as communication networks and inter-organizational influence also drive the spread of technology [21]. In this context, DOI theory helps explain why some SMEs adopt e-accounting faster than others and how the adoption process can be accelerated through strategic approaches [22].

Besides the TOE framework and the DOI theory, the Delone & McLean information system success model provides a more specific perspective on the factors influencing the successful implementation of information technology, including e-accounting. This model identifies three key dimensions that contribute to the success of an information system: system quality, information quality, and service quality [15].

Information system quality encompasses technical aspects such as reliability, security, and ease of use. In the case of e-accounting, the system must be able to meet the specific needs of SMEs, such as ease of generating financial reports and the ability to integrate data from various sources. If system quality is inadequate, users will likely face difficulties operating the system, ultimately reducing adoption rates [4]. Meanwhile, information quality includes the system-generated data's accuracy, relevance, and completeness. An e-accounting system providing accurate and relevant information can help SMEs make better decisions and improve their operational efficiency. The final dimension of the Delone & Mclean Model, service quality, involves technical support and assistance the system vendor provides. In the context of SMEs, adequate support is crucial to ensuring that users can overcome technical issues and effectively understand the system's features [23].

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Relative advantage is an important concept in understanding a new system or technology adoption. This variable highlights the benefits an organization perceives in implementing an innovation compared to existing methods or alternatives [24]. One of its indicators, operational costs, refers to financial efficiency gained through implementing an e-accounting system, particularly by reducing operational expenditure [10]. Relative security underscores the enhancement of data protection and financial information, making it attractive to organizations prioritizing information security. Competitiveness reflects how the system strengthens a business's market position by providing superior operational tools and decision-making capabilities. Efficiency, the fourth indicator of relative advantage, focuses on improving productivity and creating a more structured and efficient workflow, demonstrating tangible value in simplifying complex tasks [25].

Management support is crucial in successfully adopting technology, emphasizing leadership's role in encouraging acceptance and integration. The provision of resources demonstrates management's commitment to allocating funds, tools, and labor necessary for e-accounting system implementation. Commitment reflects active involvement and dedication of leadership to the project's success. Effective communication is key to this variable, showcasing how clear and consistent messaging from management can create alignment and understanding across all levels of the organization, ensuring stakeholders receive adequate information and motivation [26].

Competitive pressure illustrates the external forces that drive businesses to adopt innovations like e-accounting systems. The influence of competition highlights the broader market dynamics pushing organizations to stay relevant and competitive. Pressure from competitors presents direct challenges from rival businesses that have more quickly adopted new technologies. Additionally, competitors' adoption of similar applications serves as a benchmark or catalyst that compels organizations to take similar steps to maintain their position within the industry [27].

System quality refers to the technical aspects and operational capabilities of an e-accounting system. System reliability is key, ensuring confidence that the system functions consistently without disruptions or failures. Performance measures how efficiently the system processes data and performs tasks, delivering results quickly and accurately [28]. Ease of use emphasizes the intuitive nature of the system, allowing users to operate it effortlessly. Scalability evaluates the system's flexibility to adapt to evolving business needs, ensuring its relevance as the organization grows. Finally, integration assesses how seamlessly the system functions with other software or platforms, which is crucial for organizations prioritizing system compatibility [29].

Information quality is a highly important variable, emphasizing the value and usability of the system-generated data. Accuracy ensures that the information provided by the e-accounting system is free of errors, increasing users' trust in the data. Completeness covers the breadth of information provided, ensuring no important details are overlooked. Relevance assesses whether the information aligns with users' specific needs. Timeliness refers to the speed of information delivery, ensuring data is available for decision-making. Consistency evaluates the alignment of data across different contexts and formats, further reinforcing the reliability of the generated information [30].

Service quality relates to the support provided by the system or its operators. Responsiveness describes the speed at which the service responds to user needs, creating a positive user experience. Empathy reflects the service provider's understanding of user needs and challenges. Service reliability indicates the consistency of high-quality support, fostering trust and satisfaction [31]. Technical competence highlights the expertise and ability of service providers to resolve system-related issues. Accessibility ensures that users can easily obtain assistance when needed, strengthening their trust in the system and its support network [32].

E-accounting adoption examines the extent to which organizations have accepted and utilized the system. Transaction value focuses on operational benefits, such as efficiency in processing transactions. Strategic value assesses the system's role in supporting decision-making and long-term planning. Transformational value emphasizes fundamental changes brought by the system, such as improved organizational value, which highlights the quality of insights and data generated, supporting the

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organization's operational and strategic goals. Together, these indicators provide a comprehensive overview of the multidimensional impact of e-accounting system adoption on business, demonstrating its role in driving efficiency, competitiveness, and innovations [33].

In the context of SEMs in Indonesia, this literature review offers a solid framework for understanding the dynamics of accounting adoption. By integrating these three approaches, this study enriches existing literature and provides practical insights that SMEs and policymakers can use to develop more effective technology adoption strategies. For example, the findings of this study can be used to design training programs especially aimed at enhancing understanding of e-accounting benefits, as well as to provide tools and resources needed to facilitate the transition to a new system. Thus, this literature review is relevant for academics and practitioners interested in understanding the factors influencing technology adoption in the SME context. Based on the literature review, the following research hypotheses have been developed:

H_1: Relative Advantage has a significant positive effect on E-Accounting Adoption.
H_2: Management Support has a significant positive effect on E-Accounting Adoption.
H_3: Competitive Pressure has a significant positive effect on E-Accounting Adoption.
H_4: System Quality has a significant positive effect on E-Accounting Adoption.
H_5: Information Quality has a significant positive effect on E-Accounting Adoption.
H_6: Service Quality has a significant positive effect on E-Accounting Adoption.

Based on the developed hypotheses, we have formulated the following research model:

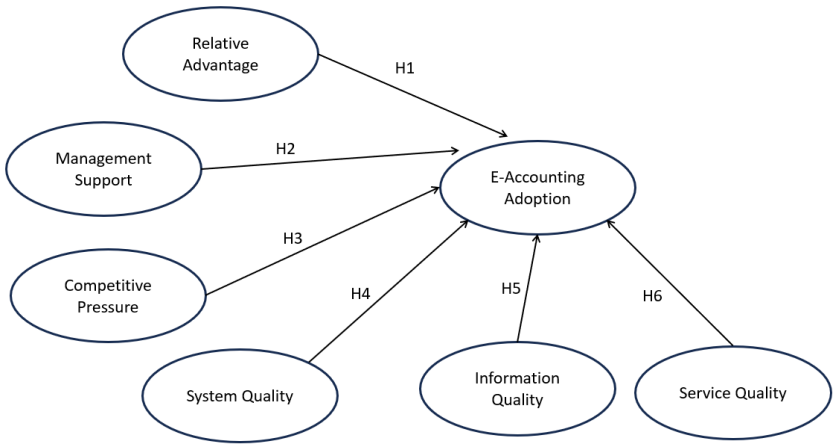

Figure 1.
Research Model.

3. Research Method

This research method is designed to explore factors influencing SMEs' adoption of e-accounting systems in Malang City, integrating both quantitative and qualitative approaches to provide comprehensive results. Malang City was chosen as the research location due to its unique characteristics, with diverse and growing SME sectors contributing to the local economy. Additionally, the level of urbanization and business innovation in the region makes SMEs a relevant subject for studying digital technology adoption. This study identifies the variables contributing to e-accounting system adoption, including relative advantage management support, competitive pressure, system quality, information quality, service quality, and adoption value.

The research population includes all SMEs in Malang City that have the potential to adopt an e-accounting system. The selection of this population considers the diversity of business sectors, such as culinary businesses (cafes and restaurants), retail trade, and other sectors. SMEs play a crucial role in the local economy due to their flexibility and adaptability to changes in the business

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environment. The study sample comprises 378 respondents, selected using purposive sampling and proportional random sampling techniques. Purposive sampling is applied to ensure that the included SMEs are relevant to the research objective—specifically, those with a high potential for implementing e-accounting systems. Proportional random sampling is used to maintain a representative proportion among business sectors within the population, providing data that accurately reflects population characteristics. Most respondents come from the culinary sector, such as cafes and restaurants, as well as retail trade, which are dominant sectors in Malang City's SME structure.

Data collection is conducted through a five-point Likert scale questionnaire. This questionnaire evaluates respondents' perceptions of research variables, including relative advantage, management support, competitive pressure, system quality, information quality, service quality, and the value of e-accounting adoption. Each variable has specific indicators used to measure its theoretical construct. For example, relative advantage is measured through operational efficiency, relative security, competitiveness, and system efficiency indicators. Management support involves indicators of resource provision, commitment, and effective communication, reflecting the managerial role in supporting technology adoption. Competitive pressure is evaluated based on the influence of competition, pressure from competitors, and the level of application adoption by competitors. System quality includes indicators of reliability, performance, ease of use, scalability, and integration, as well as assessing the technical aspects of e-accounting systems. Information quality is evaluated using accuracy, completeness, relevance, timeliness, and consistency indicators to measure the quality of information output. Service quality is determined by indicators of responsiveness, empathy, service reliability, technical competence, and accessibility, reflecting user experience in using the system. Finally, e-accounting adoption value is measured using indicators of transaction value, strategic value, transformational value, and informational value, identifying the impact of technology implementation on SMEs. Table 1 presents the description of variables and indicators.

Table 1.
Description of Variable and Indicators.

Variable	Indicator	Operational Definition	Scale
Relative Advantage	Operational Cost	Reduction in operational costs through the use of the e-accounting system.	Likert 1-5
	Relative Security	Improvement in data and financial information security.	Likert 1-5
	Competitiveness	Strengthening the competitive edge through efficiency and innovation.	Likert 1-5
	Efficiency	Enhancing work efficiency by structuring processes and speeding operations.	Likert 1-5
Management Support	Provide Resources	Allocation of necessary resources for the implementation of e-accounting.	Likert 1-5
	Commitment	The level of managerial commitment to supporting the adoption of technology.	Likert 1-5
	Communication	Effectiveness of managerial communication in facilitating e-accounting adoption.	Likert 1-5
Competitive Pressure	Influence on Competition	Impact of competitive pressures on the need for innovation.	Likert 1-5
	Pressure from Competitors	Pressure from competitors to adopt similar systems.	Likert 1-5
	Competitors' Adoption of Application	Adoption of applications by competitors influencing the decision-making process of MSMEs.	Likert 1-5
System Quality	Reliability of System Quality	The reliability of the e-accounting system in supporting business processes.	Likert 1-5
	Performance	System performance in efficiently and quickly performing tasks.	Likert 1-5
	Ease of Use	User-friendliness of the e-accounting system.	Likert 1-5

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	Scalability	The ability of the system to scale according to business needs.	Likert 1-5
	Integration	The capability of the system to integrate with other software or systems.	Likert 1-5
Information Quality	Accuracy	Precision of the information generated by the system.	Likert 1-5
	Completeness	The comprehensiveness of information provided by the system.	Likert 1-5
	Relevance	The alignment of information with user needs.	Likert 1-5
	Timeliness	Timely presentation of information.	Likert 1-5
	Consistency	Consistency of information across various contexts and formats.	Likert 1-5
Service Quality	Responsiveness	The ability of the service to respond quickly to user needs.	Likert 1-5
	Empathy	Service providers' proactive attitude in understanding user needs.	Likert 1-5
	Reliability of Service Quality	Reliability of the service in consistently delivering high-quality support.	Likert 1-5
	Technical Competence	Technical knowledge or skills of service providers in solving system-related problems.	Likert 1-5
	Accessibility	Ease of accessing support or services provided by the system.	Likert 1-5
E-Accounting Adoption	Transactional Value	Improved transactional efficiency resulting from e-accounting implementation.	Likert 1-5
	Strategic Value	Strategic benefits gained through decision-making based on the system.	Likert 1-5
	Transformational Value	Fundamental changes in business operations due to the adoption of e-accounting systems.	Likert 1-5
	Informational Value	Enhanced information quality supporting daily business operations.	Likert 1-5

Instrument validation was conducted in this study to ensure the quality of the collected data. Convergent validity was tested using Average Variance Extracted (AVE) with a minimum threshold of 0.50, ensuring that the indicators within each variable accurately represent their theoretical constructs. The Fornell-Larcker criteria, which guarantees that the model's constructs can be easily distinguished from one another, was used to evaluate discriminant validity. Additionally, instrument reliability was tested through Composite Reliability (CR) with a minimum threshold of 0.70, ensuring internal consistency among the indicators within each variable. These tests were designed to ensure that the resulting data had adequate accuracy and consistency to support analysis.

This study also employed in-depth interviews to complement the quantitative data obtained from the questionnaire. This qualitative approach aimed to explore SME actors' perspectives regarding barriers, opportunities, and factors influencing the adoption of e-accounting systems. Interviews were conducted with SME representatives from various business sectors to provide a richer perspective on the research findings. This triangulation approach allowed for a more holistic analysis, integrating quantitative and qualitative data to understand the studied phenomenon better.

Data analysis in this study was conducted using the Partial Least Squares-Structural Equation Modelling (PLS-SEM) method. This method was chosen for its flexibility in handling models with numerous variables and its ability to analyze non-normality distributed data. Analysis was performed using SmartPLS software, which provides tools for estimating measurement and structural models. The measurement model was used to evaluate the validity and reliability of variable indicators, while the structural model was used to test causal relationships between variables. Bootstrapping techniques were applied to estimate the statistical significance levels of the tested relationships, providing t-statistic and p-value as the basis for analysis. This approach enabled a thorough evaluation of variable relationships, addressing research questions and providing insights into the factors influencing technology adoption in SMEs.

Using this thorough method, the study seeks to address the issue of what variables influence SMEs in Malang City to use e-accounting systems. By leveraging quantitative and qualitative data, accurate

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instrument validation, and in-depth statistical analysis, this research is expected to significantly contribute to the literature on technology adoption while offering practical insights for SME actors and policymakers in supporting the digital transformation of small and medium-sized enterprises. Figure 2 presents the Conceptual Framework.

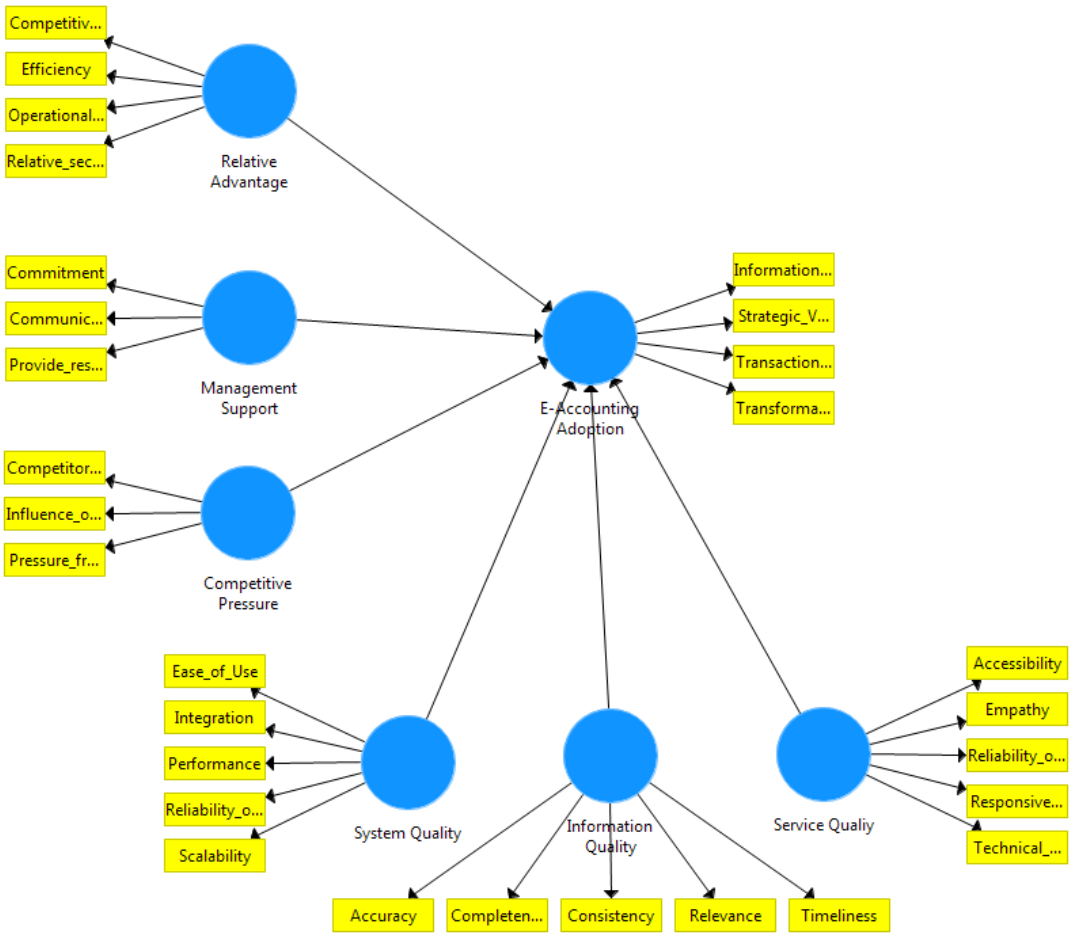

Figure 2.
The Conceptual Framework.

4. Results

This study explores the factors influencing SMEs' adoption of e-accounting systems in Malang City. The analysis begins by describing the respondent profile, which serves as a basis for a deeper understanding of the SME involved in the study. Table 2 presents the Respondent Description.

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Table 2.
The Respondent Description.

Category	Frequency	Percentage (%)
Business Sector		
Culinary (café/restaurant)	210	55.56
Retail Trade	98	25.93
Services	45	11.90
Small Industry	25	6.61
Number of Employees		
1–5 employees	182	48.15
6–10 employees	125	33.07
>10 employees	71	18.78
Business Duration		
1 year	52	13.76
2–5 years	185	48.94
>5 years	141	37.30

Table 2 provides an overview of the respondents involved in this study, including their business sector, number of employees, and duration of business. This data is crucial for understanding the profile of SMEs that are the subject of this research and how these factors may influence the adoption of e-accounting systems.

Regarding the business sector, the majority of respondents - 55.56 percent of all respondents - come from the culinary industry, including cafes and restaurants. The result indicates that the culinary sector is the dominant segment in this study, likely due to the need for efficient financial management and accurate transaction records. Retail trade ranks second, comprising 25.93% of respondents, another sector highly dependent on operational efficiency. The service sector and small industries contribute 11.90% and 6.61%, respectively, demonstrating smaller yet relevant involvement, particularly for businesses requiring simplified financial management.

Regarding the number of employees, nearly half of the respondents (48.15%) have 1–5 employees, indicating micro-SME dominance in this sample. This category represents business units with limited resources, yet they stand to gain substantial benefits from the efficiency offered by e-accounting technology. 33.07% of respondents have 6–10 employees, reflecting the presence of small SMEs with more organized structures. Only 18.78% of respondents have more than 10 employees, suggesting that most SMEs in Malang are still within the small and micro-business scale.

Business duration also provides important insights into the maturity of the respondents' businesses. Most respondents (48.94%) have been running their businesses for 1–5 years, indicating a high level of adaptability to technological changes, as they are still in a flexible growth phase. Respondents with businesses operating for more than 5 years account for 37.30%, representing more established and sustainable businesses, which may face different challenges in technology adoption. Meanwhile, 13.76% of respondents have businesses operating for less than 1 year, reflecting new entrepreneurs who may be more open to technology but have limited resources. Table 3 presents the validity and reliability of variable indicators.

Table 3.
The Validity and Reliability of Variable Indicators.

Construct	Cronbach's Alpha (CA)	rho_A	Composite Reliability (CR)	Average Variance Extracted (AVE)
Competitive Pressure	0.731	0.745	0.801	0.572
E-Accounting Adoption	0.780	0.795	0.837	0.563
Information Quality	0.715	0.730	0.820	0.541
Management Support	0.721	0.738	0.812	0.531
Relative Advantage	0.712	0.725	0.805	0.525
Service Quality	0.742	0.753	0.817	0.560
System Quality	0.754	0.765	0.827	0.578

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According to test results, all of the constructs in this study have good validity and reliability, as indicated by the validity and reliability table for variable indicators. The CA values indicate strong internal consistency for each indicator in assessing its construct, which ranges from 0.712 to 0.780. These values exceed the 0.7 threshold, which is generally used as the minimum criterion for confirming that indicators consistently represent their respective constructs. This result is reinforced by rho_A values, all above 0.7, demonstrating a stable link among indicators and the constructs they measure.

Every variable's CR value is higher than the 0.7 cutoff point, ranging from 0.801 to 0.837. The result indicates that the overall indicators are highly reliable when measuring each construct. Additionally, all variables have AVE values of more than 0.5, indicating that the corresponding constructs account for more than half of the overall variability in the indicators. The highest AVE value is found in System Quality (0.578), followed by Competitive Pressure (0.572) and Service Quality (0.560), indicating that indicators within these variables strongly contribute to construct validity.

All things considered, these findings demonstrate that the research tool has sufficient convergent validity and reliability. This result provides a solid foundation for proceeding with structural model analysis to test relationships between variables. Meeting these validity and reliability criteria ensures that the data obtained is trustworthy and representative of explaining the studied phenomenon in e-accounting adoption among SMEs. With robust validity and reliability results, further analysis can be conducted confidently, knowing that the interpreted results reflect the phenomenon. Table 4 presents Descriptive Statistics.

Table 4.
Descriptive Statistics.

Variable	Indicator	Mean	Standard Deviation	Minimum	Maximum
Relative Advantage	Operational Cost	4.23	0.54	3.00	5.00
	Relative Security	4.15	0.61	3.00	5.00
	Competitiveness	4.30	0.48	3.00	5.00
	Efficiency	4.35	0.50	3.00	5.00
Management Support	Provide Resources	4.20	0.58	3.00	5.00
	Commitment	4.25	0.60	3.00	5.00
	Communication	4.18	0.63	3.00	5.00
Competitive Pressure	Influence on Competition	4.00	0.65	2.00	5.00
	Pressure from Competitors	3.85	0.70	2.00	5.00
	Competitors' Adoption	3.95	0.68	2.00	5.00
System Quality	Reliability of System	4.10	0.56	3.00	5.00
	Performance	4.25	0.58	3.00	5.00
	Ease of Use	4.28	0.52	3.00	5.00
	Scalability	4.12	0.55	3.00	5.00
	Integration	4.22	0.57	3.00	5.00
Information Quality	Accuracy	4.30	0.49	3.00	5.00
	Completeness	4.18	0.54	3.00	5.00
	Relevance	4.35	0.52	3.00	5.00
	Timeliness	4.28	0.50	3.00	5.00
	Consistency	4.22	0.55	3.00	5.00
Service Quality	Responsiveness	4.12	0.60	3.00	5.00
	Empathy	4.00	0.65	2.00	5.00
	Reliability of Service	4.15	0.62	3.00	5.00
	Technical Competence	4.22	0.57	3.00	5.00
	Accessibility	4.25	0.54	3.00	5.00
E-Accounting Adoption	Transactional Value	4.35	0.53	3.00	5.00
	Strategic Value	4.28	0.50	3.00	5.00
	Transformational Value	4.22	0.56	3.00	5.00
	Informational Value	4.30	0.49	3.00	5.00

Table 4 presents descriptive statistics for each indicator within the research variables, providing an

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overview of respondents' average perceptions (mean), data dispersion (standard deviation), and minimum and maximum values based on the Likert scale. Interpreting this table helps identify the relative strength of each indicator and the variation in respondents' perceptions. In the Relative Advantage variable, the Efficiency indicator has the highest average (4.35) compared to the others, indicating that respondents consider efficiency the primary benefit they experience from the e-accounting system. The Competitiveness indicator also has a high average (4.30), suggesting that respondents believe this system helps improve their business competitiveness. The relatively low data dispersion (standard deviation ranging from 0.48 to 0.61) indicates a shared understanding or consistent perception among respondents regarding this variable.

For Management Support, the Commitment indicator holds the highest average (4.25), highlighting the importance of managerial commitment in supporting technology adoption. The standard deviation for indicators in this variable ranges from 0.58 to 0.63, indicating moderate variation in respondents' perceptions of management support. The Competitive Pressure variable shows lower average values than other variables, with Influence on Competition having the highest average (4.00) among indicators, while Pressure from Competitors has the lowest average (3.85). A higher standard deviation range (0.65–0.70) indicates a greater variation in perceptions regarding competitive pressure.

In System Quality, the ease of use indicator has the highest average (4.28), demonstrating that respondents consider ease of use as a crucial element of system quality. The low standard deviation (0.52) indicates that respondent's perceptions of the system's ease of use are fairly consistent. Other indicators, such as integration and performance, also have high averages (4.22 and 4.25, respectively), reflecting the system's reliability in supporting business operations.

The relevance indicator in the Information Quality variable shows the highest average (4.35), followed by accuracy and informational value (4.30). This result indicates that respondents highly value the relevance and accuracy of information generated by the e-accounting system. The standard deviation for indicators in this variable is low (0.49-0.55), showing a strong consensus among respondents.

In Service Quality, the accessibility indicator records the highest average (4.25), showing that the ease of respondents highly appreciate access to service support. On the other hand, empathy has the lowest average in a variable (4.00), which may indicate room for improvement. Perception variation within this carriable is moderate, with a standard deviation ranging from 0.54 to 0.65. Finally, the e-accounting adoption variable highlights the transactional value indicator as the most prominent, with the highest average (4.35), followed by the informational value (4.30). This result suggests that transactional and informational benefits are the primary reasons SMEs adopt this system. The low variation in perceptions (standard deviation 0.49-0.56) indicates that respondents have similar views regarding the benefits of e-accounting adoption.

The table shows that respondents assess measured variables and indicators positively, with high average values in almost all categories. However, certain areas exhibit greater variation in perceptions, such as competitive pressure and service quality, indicating differences in respondents' experiences. These findings provide valuable insights for further developing the e-accounting system and its implementation strategy.

Table 5.
The Structural Model Testing Results.

Relationship Between Variables	Path Coefficient (PC)	t-Stat.	p-Value	Significance
Relative Advantage → E-Accounting Adoption	-0.132	2.345	0.019	Significant
Management Support → E-Accounting Adoption	-0.112	1.951	0.051	Marginal
Competitive Pressure → E-Accounting Adoption	0.059	1.243	0.214	Not Significant
System Quality → E-Accounting Adoption	-0.140	2.123	0.034	Significant
Information Quality → E-Accounting Adoption	-0.011	0.246	0.806	Not Significant
Service Quality → E-Accounting Adoption	-0.273	3.465	0.001	Significant

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The results of the structural model testing presented in Table 5 provide important insights into the relationships between variables in this study. Based on these findings, some variables show a significant relationship with the adoption of e-accounting by SMEs, while others exhibit a Not Significant influence. Figure 3 presents the Structural Model Testing Results.

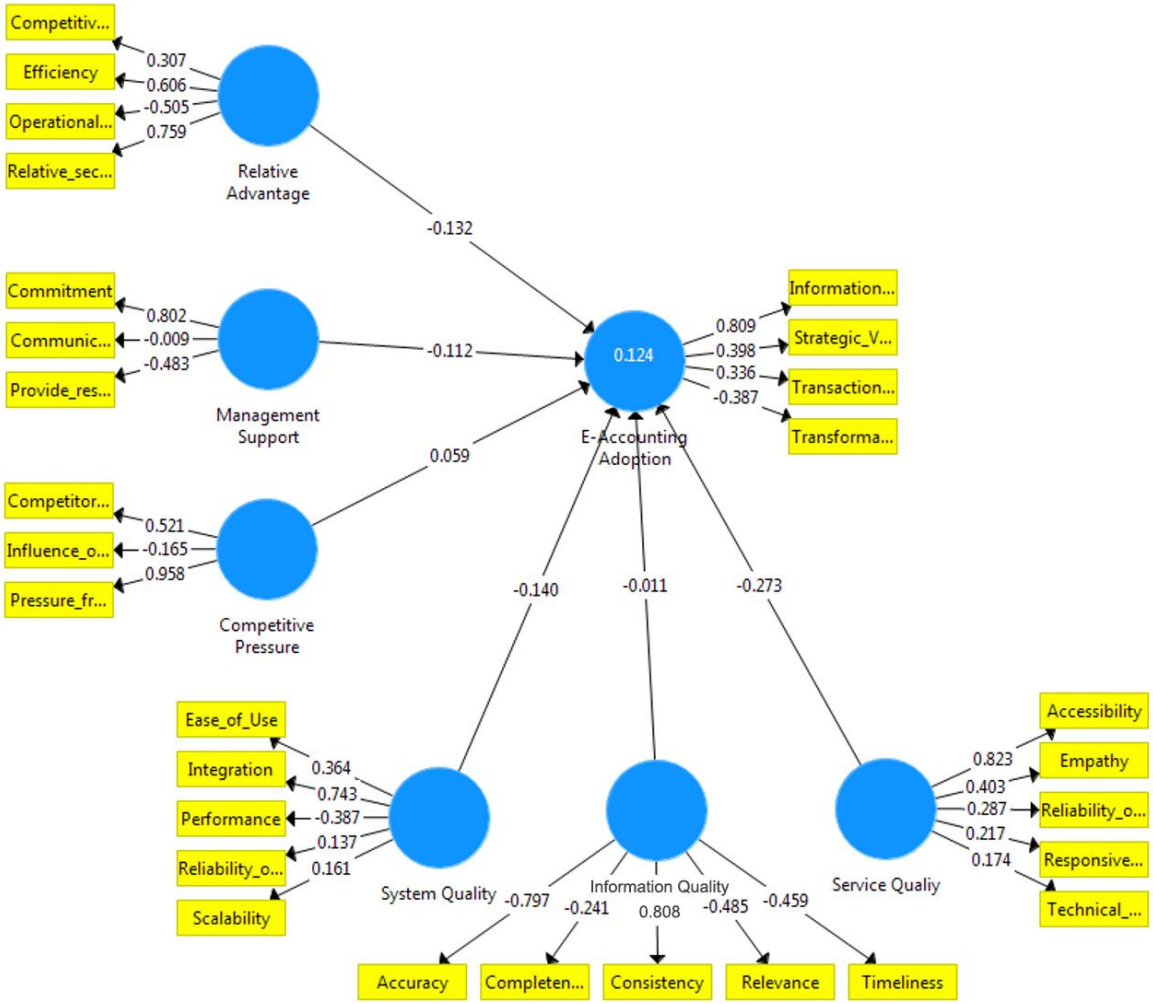

Figure 3.
The Structural Model Testing Results.

Figure 3 illustrates the results of the Structural Model Testing, indicating that although some variables show a significant relationship with e-accounting adoption, the negative direction of the relationship is a primary concern. This finding suggests a gap between users' expectations of the technology and their experience.

Relative Advantage's path coefficient (PC) value of -0.132, t-stat value of 2.345, and p-value of 0.019 indicate a significant but negative association. Although relative Advantage is typically a key driver of technology adoption, these results suggest that users perceive the e-accounting system as not delivering the expected benefits. This could signal that implementation improvements or the system's value communication are needed.

Management Support has a PC of -0.112, with a t-statistic of 1.951 and a p-value of 0.051. While it is Marginally Significant, the negative direction of the relationship indicates that management support

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does not contribute positively to technology adoption. This may be due to low effectiveness or commitment from management to support the implementation of e-accounting.

Competitive Pressure has a PC of 0.059, meaning that the relationship between competitive Pressure and e-accounting adoption is positive but very weak with a t-stat. Of 1.243 and a p-value of 0.214, this relationship is Not Significant. This suggests that competitive Pressure, such as competitors' influence or their adoption of technology, is not a major factor driving SMEs to adopt the e-accounting system.

System Quality has a PC of -0.140, with a t-stat. of 2.123 and a p-value of 0.034, explaining a Significant but negative relationship. This result reflects that technical aspects of the system, such as reliability, ease of use, and integration capabilities, do not fully meet user expectations, thus hindering the adoption process.

Information Quality has a negative PC value of -0.011, suggesting that it does not positively impact e-accounting adoption. The very low t-stat. value (0.246) and the p-value of 0.806 confirm that this relationship is Insignificant. This result may indicate that users feel the information quality provided by the system does not sufficiently meet their needs or that other factors influence their decision to adopt the technology.

Service Quality has a PC of -0.273, a t-stat of 3.465, and a p-value of 0.001. This relationship is Significant but negative, explaining that the perceived quality of service is still inadequate. Issues such as delayed responses, lack of empathy, or limited accessibility to support services may reduce SMEs' trust and motivation to adopt the system.

The results of the Structural Model Testing highlight the need for improvements in system quality, service, and clearer communication of benefits to enhance technology adoption among SMEs. Better implementation strategies and communication approaches can help address these challenges.

Table 6.
The Goodness-of-Fit Test Results.

Measure	Value	Description
SRMR	0.065	Below the ideal threshold (< 0.08), indicating good model fit.
d_ULS (Squared Euclidean Distance)	0.895	Low value, indicating a small distance between the estimated model and observed data.
d_G (Geodesic Distance)	0.645	Very small discrepancy, showing model estimates that closely match empirical data.
Chi-Square	125.324	Lower value, signaling improved fit between the estimated model and observed data.
NFI (Normed Fit Index)	0.912	Above the threshold (> 0.90), indicating a very good model fit.

The table's goodness-of-fit test results indicate that the research model has a very good level of fit with the observed data. The SRMR value of 0.065 is below the ideal threshold (<0.08), indicating that the average difference between the estimated and observed correlations is very small. The model can effectively represent the relationships between variables, demonstrating a high degree of model and data fit.

The d_ULS index of 0.895 indicates a small distance between the model estimation and the observed data. This value suggests that the model structure does not exhibit significant discrepancies. The d_G index, with a value of 0.645, shows an even smaller discrepancy than d_ULS, indicating that the model estimation closely aligns with the empirical data. These two indices confirm that the relationships between variables in the model are well-structured and align with observed data.

The Chi-Square value of 125.324 indicates that the model successfully reduces discrepancies between the observed data and estimates. This value is significantly lower than typical test results that often show significant differences, indicating that the model's estimation has improved in terms of fit. This improvement increases confidence in the model's ability to analyze variable relationships with sufficient accuracy.

With a score of 0.912, the NFI index is over the 0.90 cutoff, suggesting that the model fits the

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observed data extremely well. NFI measures how well the estimated model performs compared to a baseline model without variable relationships. This high NFI value provides further evidence that the research model has an optimal fit and is reliable.

Overall, these Goodness-of-Fit results confirm that the research model possesses strong structural validity and can effectively represent the data. This result provides a solid foundation for further analysis of the model and interpretation of variable relationships with confidence that the model reflects real phenomena. Table 7 presents a Comparison of Groups.

Table 7.
Comparison of Groups.

Business Sector	Frequency	Percentage (%)	Average of Key Indicator (E-Accounting Adoption)	Related Path Coefficient	t-Statistic	p-Value	Significance
Culinary	210	55.56	4.38	Relative Advantage (-0.132)	2.345	0.019	Significant
Services	45	11.90	4.22	Service Quality (-0.273)	3.465	0.001	Significant
Retail Trade	98	25.93	4.28	System Quality (-0.140)	2.123	0.034	Significant
Small Industry	25	6.61	4.15	Management Support (-0.112)	1.951	0.051	Marginal

Table 7 shows that business sectors exhibit significant differences in e-accounting adoption based on frequency, average adoption rate, and tested variable relationships. The culinary sector, with the largest proportion of respondents (55.56%), shows the highest average adoption rate (4.38). This result confirms that culinary business owners perceive the benefits of technology more effectively. However, their perception of competitive advantage (Relative Advantage) significantly negatively impacts their decision to adopt the system.

On the other hand, the service sector, which accounts for only 11.90% of respondents, faces the biggest challenge in service quality (Service Quality), which significantly negatively affects e-accounting adoption. With an average adoption rate of 4.22, this sector still requires technical support and service improvements to encourage technology implementation.

Meanwhile, the retail trade sector, with a frequency of 25.93% and an average adoption rate of 4.28, indicates that system quality (System Quality) is the main obstacle. The system's reliability and ease of use are crucial factors that need enhancement in this sector.

Lastly, the small-scale industry sector, which comprises only 6.61% of total respondents, records the lowest average adoption rate (4.15). The primary challenge in this sector is the lack of management support (Management Support), which has only a marginal impact on adoption. These findings highlight the need for more specific approaches for each sector, such as enhancing the perception of competitive advantage in the culinary sector, improving service quality for the service sector, refining system quality in the retail trade sector, and strengthening management support in the small-scale industry sector. This understanding offers essential guidance for creating more efficient implementation strategies customized to meet each industry's specific requirements.

5. Discussion

This research offers important perspectives on the elements that affect the adoption of e-accounting among SMEs, highlighting both supportive and opposing evidence to initial hypotheses. A review of existing literature led to the formulation of six hypotheses, stating that Relative Advantage (H1), Management Support (H2), Competitive Pressure (H3), System Quality (H4), Information Quality (H5), and Service Quality (H6) have a significant positive impact on technology adoption. These hypotheses

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are based on theories such as innovation diffusion and the information system success model by Delone & Mclean, which emphasize the importance of these variables in driving technology implementation. However, the test results show that not all hypotheses are supported by empirical data.

For Relative Advantage (H1), although it has a significant relationship (t-statistic = 2.345; p-value = 0.019), the path coefficient shows a negative direction (-0.132). This result contradicts the initial hypothesis that relative advantage would increase technology adoption. This result is similar to the findings of Ahmad [21] which indicate that technology adoption is not always directly related to relative advantage, especially if business actors perceive that implementing technology requires greater costs and time than its benefits. However, studies such as Al Hadwer, et al. [24] emphasize that relative advantage remains a strong driver in other contexts, particularly in cloud-based technology adoption.

For Management Support (H2), the relationship shows a marginal effect (t-statistic = 1.951; p-value = 0.051) with a negative path coefficient (-0.112). Contradicting literature such as Achmadi and Siregar [23] indicates that management support is one of the key success factors in implementing e-learning systems. However, other studies Fanelli [13] note that management support is often insufficient to drive significant change without clear incentives for staff to use the technology.

Competitive Pressure (H3), which was initially hypothesized to have a significant positive influence, turned out to be Not Significant in the test (p-value = 0.214) with a path coefficient of 0.059. This finding aligns with research such as Fanelli [13] which states that competitive pressure in the context of SMEs in rural areas is not strong enough to drive technology adoption. Conversely, Chittipaka, et al. [17] show that pressure from competitors can be a significant driver for technology innovation in more competitive markets.

System Quality (H4) shows a significant effect (t-statistic = 2.123; p-value = 0.034) but with a negative path coefficient (-0.140). This result is supported by the findings of Jiang, et al. [30] which state that suboptimal system quality, such as difficult navigation or integration failures, can create barriers to technology adoption. Conversely, research by Al Hadwer, et al. [24] finds that reliable system quality increases satisfaction and trust in new technology adoption.

For Information Quality (H5), the findings indicate a relationship that is not statistically significant (t-statistic = 0.246; p-value = 0.806), with a path coefficient of -0.011. The result is consistent with research by Kabir, et al. [11] which found that many SMEs have not fully understood the strategic value of accurate information produced by technology systems. Conversely, research by Latifah, et al. [22] emphasizes the importance of good information quality in improving organizational performance.

Service Quality (H6) has a significant impact (t-statistic = 3.465; p-value = 0.001) with a negative path coefficient (-0.273). This conclusion is corroborated by the study conducted by Alfarizi, et al. [7] which indicates that inadequate service quality frequently hinders the adoption of digital technology in SMEs. On the other hand, Rane, et al. [26] note that responsive and supportive service significantly encourages the adoption of AI-based technology.

These research findings provide important implications for SMEs, technology providers, and policymakers in promoting e-accounting adoption. First, the results show that some variables theoretically supporting technology adoption are barriers in this research context. This highlights the importance of technology providers understanding SMEs' specific expectations and needs. Providers should demonstrate direct benefits (Relative Advantage), such as efficiency and cost savings, relevant to SME characteristics. Relevant trial programs or case studies can enhance user understanding and reduce resistance to change.

Second, system and service quality must be improved to better suit user needs. E-accounting systems should be designed to be user-friendly, reliable, and flexible for various SMEs. Service quality, including training, technical support, and accessibility, should also be enhanced to increase user trust and satisfaction. This is particularly crucial given the significant negative findings for system and service quality. For the service sector, improving service responsiveness can help overcome perceived barriers.

Third, the lack of significant Management Support suggests a need for a more strategic approach to

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engaging management in the implementation process. SME actors need more targeted guidance and support from management to increase technology adoption. This may include resource allocation, incentives for employees using the system, or investment in training and development. Active management support can create a conducive environment for technology implementation.

Fourth, from a policy standpoint, governments and associated institutions can significantly contribute to addressing SMEs' challenges.

Initiatives such as technology subsidy programs, complimentary training, and policies that encourage digital innovation can assist in reconciling the disparity between SME stakeholders' expectations and actual experiences. For example, awareness and access improvement programs can help SMEs understand the strategic value of information quality generated by e-accounting, which in this study was Not Significant.

Fifth, strategies tailored to sector-specific needs are essential for successful technology adoption. This research shows that the culinary sector has the highest adoption rate but faces challenges related to Relative Advantage. The service sector struggles the most with Service Quality, while retail trade requires improvements in System Quality.

Small industries need more management support to increase technology acceptance. By understanding the unique needs of each sector, implementation strategies can be designed more effectively to encourage e-accounting adoption.

The results of this study offer a comprehensive understanding of the obstacles and prospects associated with adopting e-accounting by SMEs. With a data-driven approach, collaboration between technology providers, governments, and SMEs can ensure successful technology implementation on a broader scale. Inclusive, targeted, and contextually relevant strategies will help improve efficiency, transparency, and business performance.

6. Conclusion

This research uncovers the causal links among critical factors that affect the adoption of e-accounting by SMEs. The findings demonstrate that Relative Advantage, System Quality, and Service Quality significantly influence technology adoption; however, their negative correlation indicates potential challenges in the implementation process.

The gap between user expectations and real experiences with this technology is a major barrier, including perceptions that the relative benefits of e-accounting are insufficient, system quality is not optimal, and the provided services do not meet user needs.

Additionally, management support, competitive pressure, and information quality do not significantly influence adoption. This highlights that, in the SME context, these factors have not yet become primary drivers for technology adoption decisions.

The low significance of these variables may reflect a lack of managerial involvement, competitive pressure that is not perceived as urgent, and a still-low appreciation for the value of information generated by the system.

Overall, the findings of this study reinforce that e-accounting plays a crucial role in improving efficiency and performance in SMEs. However, to realize the full potential of this technology, strategies are needed to address negative perceptions and enhance system and service quality.

By aligning the benefits of technology with the specific needs of SMEs, e-accounting can become an effective tool in supporting digital transformation, transparency, and the sustainability of their business in the future. Targeted interventions and collaboration between technology providers, governments, and SME operators are key to optimizing the adoption of this technology.

7. Limitation

The present study does have several limitations that should be recognized. First, the study was conducted in one city, Malang, which restricts the generalization of its results to SMEs in other regions with different economic, social, and cultural backgrounds. We were also limited by time, which

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constrained the size and diversity of our sample, which may have resulted in a less appropriate sample for the data collection. Using a solely quantitative survey approach also limits our ability to investigate qualitative aspects of this phenomenon, such as personal experiences or motivations for adopting e-accounting. The interpretation of results may also have been impacted by technical constraints in the data analysis, such as the sensitivity of structural model outcomes to indicator validity and model assumptions. Future studies should broaden their geographic focus and incorporate SMEs from different industries and geographical areas to increase generalizability in light of these constraints. A mixed-methods approach that includes focus groups or in-depth interviews is advised to get deeper, context-specific insights. Furthermore, future research could be more robust and policy-relevant if sophisticated analytical tools like big data techniques or more intricate statistical models are used. This would better contribute to the conversation on SMEs' digital transformation.

Institutional Review Board Statement:

This study involved human participants and was conducted in accordance with ethical standards. All respondents were fully informed about the purpose and nature of the research, and their participation was entirely voluntary. Informed consent was obtained from all participants prior to data collection. Confidentiality and anonymity were ensured throughout the study.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

Copyright:

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