

DIGITAL FINANCIAL ACCOUNTING TRANSFORMATION IN ENHANCING THE QUALITY OF FINANCIAL REPORTING AND THE PERFORMANCE OF MSMEs IN MEDAN CITY

Vina Winda Sari

Universitas Medan Area, Medan, Indonesia

E-mail: vinawindasari@staff.uma.ac.id

Received: 11/06/2026 | Revised : 20/06/2026 | Accepted: 10/07/2026 | Published :20/07/2026

Abstract

The rapid development of digital technology has transformed financial accounting practices among micro, small, and medium enterprises (MSMEs). This study examines the effect of digital financial accounting transformation on financial reporting quality and MSME performance in Medan City. A quantitative research design was employed using survey data collected from 200 MSME owners and managers who had adopted digital accounting applications in their business operations. Respondents were selected through purposive sampling, while the data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results indicate that digital financial accounting transformation has a positive and significant effect on financial reporting quality. The use of digital accounting systems improves the accuracy, timeliness, completeness, and accessibility of financial information. Financial reporting quality also has a positive effect on MSME performance by supporting more effective financial planning, cost control, and business decision-making. Furthermore, digital financial accounting directly contributes to improved operational efficiency and business performance. These findings confirm that financial reporting quality plays an important role in strengthening the relationship between digital accounting transformation and MSME performance. The study highlights the need for MSME owners, government institutions, and business-support organizations to improve digital infrastructure, accounting literacy, and technology-based financial management capabilities.

Keywords: Digital Financial Accounting; Financial Reporting Quality; MSME Performance; Digital Transformation

INTRODUCTION

The rapid development of digital technology has fundamentally changed how business entities record, process, analyze, and communicate financial information. Financial accounting activities that were previously conducted through manual bookkeeping are increasingly being replaced by digital accounting applications, cloud-based systems, automated transaction recording, and integrated financial reporting platforms. This transformation enables business owners to process a large volume of transactions more efficiently, reduce recording errors, and obtain financial information in real time. Digital accounting systems are therefore no longer regarded merely as administrative tools but as strategic resources that support operational control, business planning, and managerial decision-making (Lutfi et al., 2022). Empirical evidence also indicates that digital transformation can improve the effectiveness of cloud-based accounting and the quality of managerial decisions, which subsequently contribute to improved organizational performance (Hung et al., 2023).

The adoption of digital financial accounting is particularly important for micro, small, and medium enterprises (MSMEs). MSMEs commonly operate with limited financial resources, a small number of employees, and relatively simple administrative structures. In many cases, business owners directly manage production, marketing, cash flows, and financial records without adequate accounting assistance. Consequently, financial transactions are often recorded irregularly, business and personal finances are combined, and financial statements are not prepared in accordance with generally accepted accounting principles. These conditions reduce the reliability of financial information and make it difficult for owners to evaluate profitability, liquidity, cost efficiency, and overall business development. Weak financial administration can also create information asymmetry and restrict MSMEs' access to formal sources of financing.

Digital financial accounting offers a potential solution to these limitations. Through accounting software and mobile-based financial applications, MSMEs can systematically record sales, purchases, expenses, receivables, payables, inventory, and cash transactions. Digital systems can automatically classify transactions and generate income statements, statements of financial position, cash-flow reports, and other financial summaries. Such functions improve the accuracy, completeness, timeliness, consistency, and accessibility of accounting information. Recent research demonstrates that digital transformation can strengthen accounting information quality by reducing uncertainty and limiting opportunities for inaccurate or opportunistic financial reporting (Li *et al.*, 2025). High-quality accounting information provides a stronger basis for budgeting, cost control, financial evaluation, and strategic decision-making.

Financial reporting quality is essential because financial statements communicate the economic condition and performance of a business. High-quality financial reports should be relevant, faithfully represented, understandable, comparable, verifiable, and timely. For MSMEs, these reports are useful not only for fulfilling administrative responsibilities but also for evaluating business performance, determining product prices, managing working capital, identifying inefficient expenditures, and planning business expansion. Credible financial reports may also increase the confidence of banks, investors, suppliers, government agencies, and other external stakeholders. Thus, digital accounting transformation is expected to improve MSME performance both directly, through greater operational efficiency, and indirectly, through improved financial reporting quality.

Previous studies have reported a positive association between the implementation of accounting information systems and business performance. Lutfi *et al.* (2022) found that the effective use of digital accounting systems enabled SMEs to process transactions and generate information needed for business analysis, while system usage was positively associated with system performance. Hung *et al.* (2023) further showed that digital transformation enhanced cloud-based accounting effectiveness, decision-making quality, and firm performance. In the Indonesian context, accounting information systems, digital platform capabilities, and management knowledge have also been found to support MSME financial performance, particularly when digital resources are converted into meaningful business innovation (Maryanti *et al.*, 2026). These findings indicate that technology adoption must be accompanied by financial knowledge, user competence, and organizational readiness to produce sustainable benefits.

Nevertheless, the adoption of digital financial accounting among MSMEs remains uneven. Some business owners continue to perceive accounting applications as complicated, expensive, or unnecessary for small-scale businesses. Other barriers include limited digital literacy, inadequate accounting knowledge, lack of employee training, concerns about data security, unstable internet access, resistance to organizational change, and difficulties in selecting appropriate software. The implementation of technology without adequate knowledge may result in incorrect transaction classification, incomplete data entry, and inaccurate financial statements. Therefore, digital transformation should not be interpreted solely as the purchase or use of accounting software. It should involve changes in financial procedures, employee competencies, internal controls, data management practices, and the use of accounting information in business decisions.

This issue is relevant to MSMEs in Medan City, which operate in a dynamic urban economy characterized by intense competition, increasing use of digital payments, growing participation in online marketplaces, and rapidly changing consumer behavior. MSMEs in the city need accurate and timely financial information to manage cash flows, control operating expenses, determine business profitability, and respond to market changes. However, variations in business scale, owner education, accounting literacy, technological readiness, and access to digital infrastructure may produce different levels of digital accounting adoption. This situation creates an urgent need to examine whether digital financial accounting transformation has effectively improved the quality of financial reports and the performance of MSMEs in Medan City.

Although studies concerning digital transformation, accounting information systems, and MSME performance continue to develop, several research gaps remain. First, many previous studies have examined digital technology adoption and business performance without specifically positioning financial reporting quality as an explanatory mechanism. Second, studies conducted on large firms or SMEs outside Indonesia may not fully represent the characteristics of MSMEs in Medan City. Third, the direct and indirect effects of digital financial accounting transformation on MSME performance have not been sufficiently examined within a single empirical model. Therefore, this study proposes financial reporting quality as an important variable that may explain how digital accounting transformation generates improvements in business performance. The problem-solving framework proposed in this study begins with identifying the level of digital financial accounting implementation among MSMEs. It then evaluates whether digital accounting improves the accuracy, relevance, completeness, consistency, accessibility, and timeliness of financial reports. Finally, the study examines whether better financial reporting

supports improvements in operational efficiency, sales growth, profitability, cost control, financial stability, and business competitiveness. The findings are expected to provide an empirical basis for developing digital accounting training, financial literacy programs, technological assistance, and accounting system implementation strategies that are appropriate for the needs and capabilities of MSMEs. Accordingly, this study aims to analyze the effect of digital financial accounting transformation on financial reporting quality and MSME performance in Medan City. It also examines the effect of financial reporting quality on MSME performance and evaluates its mediating role in the relationship between digital financial accounting transformation and business performance. The study is expected to contribute theoretically by extending the literature on digital accounting and accounting information quality in the MSME context. Practically, the findings may assist MSME owners in selecting and utilizing digital accounting systems, while providing recommendations for government institutions, universities, financial institutions, and business-support organizations in designing effective digital accounting assistance programs.

LITERATURE REVIEW

Digital Financial Accounting Transformation

Digital financial accounting transformation refers to the systematic integration of digital technologies into the processes of recording, classifying, processing, storing, analyzing, and reporting financial transactions. It represents more than the replacement of manual bookkeeping with accounting software. Digital transformation requires changes in financial procedures, employee competencies, internal control mechanisms, data management, and the use of accounting information in managerial decision-making. Technologies commonly involved in digital accounting include cloud-based accounting applications, mobile bookkeeping systems, automated transaction processing, electronic payments, data analytics, artificial intelligence, and integrated financial information platforms.

The Resource-Based View explains that technology can become a strategic organizational resource when it is valuable, appropriately managed, and supported by complementary capabilities. In the MSME context, accounting software alone may not automatically improve performance. Its benefits depend on the knowledge of business owners, employee competence, organizational readiness, data quality, and the ability to translate financial information into business decisions. Digital accounting capability can therefore be viewed as an intangible organizational resource that improves information processing, financial control, and responsiveness to environmental changes.

Digital financial accounting provides several advantages for MSMEs. First, it reduces the time required to record and classify transactions. Second, it minimizes calculation and transcription errors associated with manual accounting. Third, digital systems provide real-time access to information concerning cash, sales, expenses, inventory, receivables, and liabilities. Fourth, digital accounting facilitates the automatic preparation of financial statements. Fifth, cloud-based systems allow financial information to be accessed from different locations and devices. Research on SMEs shows that effective use of digital accounting systems supports transaction processing, information availability, business analysis, and organizational performance (Lutfi *et al.*, 2022).

However, digital transformation among MSMEs is often constrained by limited capital, insufficient technological knowledge, low accounting literacy, resistance to change, inadequate infrastructure, and cybersecurity concerns. The OECD notes that SMEs frequently lag behind larger businesses in adopting digital technologies despite the potential of these technologies to improve productivity, competitiveness, and resilience. Digital adoption must therefore be supported by appropriate skills, infrastructure, finance, and institutional assistance.

In this study, digital financial accounting transformation is reflected in the extent to which MSMEs use digital systems to record transactions, integrate financial data, automate accounting processes, generate real-time information, protect financial data, and support managerial decisions. A high level of transformation indicates that digital accounting has become an integral part of the enterprise's financial management rather than merely an additional administrative application.

Financial Reporting Quality

Financial reporting quality refers to the extent to which financial reports provide useful, accurate, relevant, complete, and timely information about the financial condition and performance of a business. According to the Conceptual Framework for Financial Reporting, useful financial information must possess the fundamental qualitative characteristics of relevance and faithful representation. Its usefulness is enhanced by comparability, verifiability, timeliness, and understandability. Relevance means that financial information can influence users' decisions by providing predictive or confirmatory value. Faithful representation requires financial information to reflect the underlying economic substance of transactions as completely, neutrally, and accurately as possible.

Comparability enables users to identify similarities and differences across reporting periods or business entities. Verifiability increases confidence that the information represents the reported economic phenomena. Timeliness means that information is available before it loses its decision-making value, while understandability requires information to be classified and presented clearly.

For MSMEs, financial reporting quality is particularly important because owners often rely directly on accounting information when evaluating business operations. Accurate financial reports enable business owners to determine whether the enterprise is earning profits, maintaining adequate cash, controlling costs, managing debt, and using assets efficiently. Financial reports also help separate personal and business finances, which remains a common problem among small enterprises. Moreover, reliable reporting can strengthen the credibility of MSMEs when applying for bank loans, government assistance, investment, or commercial partnerships.

Digital accounting systems can improve financial reporting quality by standardizing transaction-recording procedures, automatically performing calculations, integrating data from different business activities, and reducing delays in report preparation. Digital transformation has also been associated with improvements in accounting information quality and comparability because integrated technologies can reduce information fragmentation and strengthen the consistency of financial data.

Nevertheless, the quality of digitally generated financial reports remains dependent on the quality of the data entered into the system. Incorrect transaction classifications, incomplete entries, weak access controls, or inadequate accounting knowledge may produce unreliable reports even when sophisticated software is used. Therefore, digital accounting systems must be accompanied by accounting competence, standardized procedures, data verification, internal control, and regular evaluation.

MSME Performance

MSME performance represents the extent to which a business achieves its financial and operational objectives. Performance may be measured objectively through sales, profits, assets, productivity, and market growth or subjectively through owners' assessments of business development, efficiency, competitiveness, and financial stability. Because many MSMEs do not maintain complete audited records, perceptual or self-reported measures are frequently used to evaluate their performance.

Financial performance includes revenue growth, profitability, cash-flow stability, return on investment, and the ability to meet financial obligations. Operational performance includes cost efficiency, transaction speed, inventory management, service quality, employee productivity, and customer responsiveness. Strategic performance refers to the capacity of an enterprise to innovate, expand its market, respond to competition, and maintain business continuity.

Digital transformation can improve MSME performance by increasing process efficiency, reducing administrative costs, strengthening communication, improving access to information, and enabling faster decision-making. Digital tools may also help SMEs overcome limitations associated with business size and limited human resources. The contribution of MSMEs to employment, productivity, innovation, and competitiveness can be strengthened when enterprises successfully adopt digital technologies and develop the capabilities required to use them productively.

Within financial management, digital accounting provides owners with more immediate knowledge of their business condition. Real-time information about cash flows, expenses, receivables, inventory, and profitability enables managers to identify financial problems earlier and take corrective action. Evidence from SME research indicates that digital accounting system usage is positively related to organizational performance. Cloud-based accounting effectiveness and improved decision-making have also been identified as mechanisms through which digital transformation contributes to business performance.

In this study, MSME performance is evaluated through indicators of sales development, profitability, operational efficiency, cost control, cash-flow stability, customer growth, market competitiveness, and business sustainability.

Digital Financial Accounting Transformation and Financial Reporting Quality

Digital financial accounting transformation is expected to improve the quality of financial reporting by increasing the accuracy, speed, consistency, and completeness of accounting processes. In manual systems, financial reports are vulnerable to recording errors, duplicated transactions, missing documentation, delayed reconciliation, and inconsistent classification. Digital accounting applications can automate calculations, apply standardized account classifications, store supporting documents, and consolidate transactions into structured reports.

Digital systems also allow transactions to be recorded close to the time at which they occur. This function increases the timeliness of financial information and enables business owners to monitor current financial conditions. Integrated databases can improve consistency because the same transaction data are used in different reports without repeated manual entry. Automation and system-based validation can further reduce arithmetical errors and identify incomplete records.

Recent studies demonstrate that digital transformation can improve accounting information quality by reducing information uncertainty and strengthening the transparency and comparability of accounting data. The development of artificial intelligence, blockchain, cloud computing, and automated reporting systems is also reshaping financial reporting by increasing processing efficiency, reliability, and auditability.

Based on this theoretical explanation and empirical evidence, the following hypothesis is proposed:

H1: Digital financial accounting transformation has a positive and significant effect on the financial reporting quality of MSMEs in Medan City.

Digital Financial Accounting Transformation and MSME Performance

Digital financial accounting transformation may directly improve MSME performance by increasing administrative efficiency and strengthening financial control. Automated recording reduces the amount of time spent on repetitive accounting activities and allows owners or employees to focus on production, marketing, customer service, and business development. Digital systems also reduce the cost of storing and processing paper-based financial documents.

The availability of real-time financial information enables MSME owners to respond more quickly to declining sales, increasing costs, overdue receivables, excessive inventory, or cash shortages. Digital accounting also supports budgeting, profit analysis, product-pricing decisions, and working-capital management. These capabilities can improve resource allocation and reduce the risk of financially unsustainable decisions.

From the Resource-Based View, digital accounting capability may generate competitive value when the enterprise combines technology with accounting knowledge, management capability, and organizational learning. Research involving Indonesian MSMEs indicates that accounting information systems, managerial knowledge, and digital platform capabilities are important for improving financial performance when they are transformed into meaningful organizational innovation.

Earlier empirical research also found that digital accounting system usage positively supports SME performance because it improves information processing and the usefulness of accounting information for decision-making (Lutfi *et al.*, 2022). Accordingly, the following hypothesis is formulated:

H2: Digital financial accounting transformation has a positive and significant effect on the performance of MSMEs in Medan City.

Financial Reporting Quality and MSME Performance

High-quality financial reports provide a rational foundation for business planning, monitoring, and decision-making. When financial reports are accurate and timely, business owners can compare actual results with planned targets, evaluate the profitability of products, identify inefficient expenditures, and estimate future financing needs. Conversely, poor-quality information may cause owners to misunderstand their financial condition and make inappropriate investment, borrowing, pricing, or expansion decisions.

Financial reporting quality can also improve accountability and external credibility. Banks and other financial institutions require reliable information when evaluating repayment capacity and credit risk. Suppliers may use financial credibility when determining payment terms, while investors and business partners require adequate information before committing resources. Financial reporting quality may therefore indirectly enhance performance by improving access to external financing and commercial opportunities.

Accounting information quality also reduces information asymmetry between business managers and external stakeholders. Evidence indicates that higher-quality accounting information contributes to better operating decisions and more accurate evaluations of organizational performance. For MSMEs, the effective use of financial reports can improve cost management, cash-flow planning, resource allocation, and strategic responsiveness.

Based on these arguments, the third hypothesis is proposed:

H3: Financial reporting quality has a positive and significant effect on the performance of MSMEs in Medan City.

The Mediating Role of Financial Reporting Quality

Digital financial accounting transformation does not necessarily improve business performance immediately. The use of technology first changes the manner in which transactions are processed and financial information is produced. The resulting improvement in information quality then influences the effectiveness of managerial decisions and business control. Therefore, financial reporting quality can function as an explanatory mechanism linking digital accounting transformation with MSME performance.

This mediation process begins when digital systems improve transaction accuracy, data integration, reporting speed, and information accessibility. High-quality financial reports then enable MSME owners to evaluate business conditions, manage costs, control cash flows, identify risks, and make evidence-based decisions. Better decisions subsequently contribute to improved financial and operational performance. In this relationship, technology provides the accounting infrastructure, whereas financial reporting quality represents the informational value generated by that infrastructure.

The Information Systems Success perspective supports this reasoning by explaining that system quality and information quality influence system benefits and organizational outcomes. A digital accounting system becomes valuable when its outputs are accurate, relevant, timely, understandable, and useful to decision-makers. Research on digital accounting systems similarly emphasizes that system use, information quality, user satisfaction, and decision-making quality are closely connected to organizational benefits.

Cloud-based accounting research also suggests that digital transformation contributes to business performance through improved accounting effectiveness and decision-making capability. Thus, the effect of digital accounting transformation on MSME performance may occur partly through the quality of the financial information generated. The final hypothesis is therefore formulated as follows:

H4: Financial reporting quality mediates the effect of digital financial accounting transformation on the performance of MSMEs in Medan City.

Conceptual Framework

The conceptual framework positions digital financial accounting transformation as the independent variable, financial reporting quality as the mediating variable, and MSME performance as the dependent variable. Digital financial accounting transformation is expected to directly improve financial reporting quality and MSME performance. Financial reporting quality is also expected to directly improve MSME performance and transmit part of the effect of digital financial accounting transformation on business performance.

RESEARCH METHOD

Research Design

This study employed a quantitative research approach with an explanatory design to examine the relationships among digital financial accounting transformation, financial reporting quality, and MSME performance. The study was cross-sectional because the data were collected from respondents at a single period. The explanatory design was selected to test the direct and indirect effects among the research variables and to evaluate the mediating role of financial reporting quality in the relationship between digital financial accounting transformation and MSME performance.

Research Location and Period

The research was conducted among micro, small, and medium enterprises operating in Medan City, North Sumatra, Indonesia. Medan City was selected because it has a diverse and rapidly developing MSME sector covering trade, culinary businesses, services, fashion, handicrafts, and small-scale manufacturing. Data collection was carried out from January to March 2026.

Population and Sample

The population consisted of MSME owners and managers in Medan City who had used digital technology in conducting financial recording or accounting activities. The unit of analysis was the individual owner or manager responsible for financial management and business decision-making.

A purposive sampling technique was employed to ensure that respondents had relevant experience with digital financial accounting. Respondents were required to meet the following criteria:

1. They were owners or managers of MSMEs located in Medan City.
2. Their businesses had operated for at least one year.

3. They were directly involved in financial recording and business decision-making.
4. They had used digital accounting applications, spreadsheet-based bookkeeping, point-of-sale systems, mobile financial applications, or other electronic financial-recording systems for at least six months.
5. They were willing to complete the questionnaire voluntarily.

A total of 220 questionnaires were distributed through direct visits and online forms. Following the screening process, 20 questionnaires were excluded because they were incomplete or did not meet the respondent criteria. Therefore, 200 valid questionnaires were used in the final analysis. This sample size was considered adequate for Partial Least Squares Structural Equation Modeling because it exceeded the minimum sample requirement based on the number of structural paths directed toward the endogenous variables.

Data Collection Technique

Primary data were collected using a structured questionnaire. The questionnaire was distributed directly to MSME owners and managers and electronically through Google Forms. Before completing the questionnaire, respondents received an explanation concerning the purpose of the study, the voluntary nature of participation, data confidentiality, and their right to discontinue participation at any time. The questionnaire consisted of two sections. The first section collected respondents' demographic and business information, including gender, age, education, business sector, length of business operation, number of employees, annual turnover category, and type of digital accounting system used. The second section measured the research constructs using statements adapted from relevant literature and adjusted to the MSME context.

All items were measured using a five-point Likert scale:

- 1 = strongly disagree
- 2 = disagree
- 3 = neutral
- 4 = agree
- 5 = strongly agree

Operational Definition and Measurement of Variables

Digital Financial Accounting Transformation

Digital financial accounting transformation was defined as the extent to which MSMEs integrated digital technology into their financial recording, processing, storage, reporting, control, and decision-making activities. This variable was measured using six indicators:

1. The business regularly records financial transactions using digital applications.
2. Digital systems accelerate the processing of accounting transactions.
3. Financial data from different business activities are integrated electronically.
4. Digital accounting systems generate financial information in real time.
5. Digital systems reduce errors in financial recording and calculations.
6. Digital financial information is used to support business decisions.

Financial Reporting Quality

Financial reporting quality was defined as the extent to which financial reports produced by MSMEs were relevant, accurate, complete, timely, understandable, and comparable. This variable was measured using six indicators:

1. Financial reports accurately reflect the business's financial condition.
2. Financial information is complete and supported by adequate transaction records.
3. Financial reports are prepared and available on time.
4. Financial information is relevant to business decision-making.
5. Financial reports are presented clearly and are easy to understand.
6. Financial information can be compared across accounting periods.

MSME Performance

MSME performance was defined as the achievement of financial and operational outcomes resulting from the effective management of business resources. This variable was measured using eight indicators:

1. Sales have increased during the most recent business period.
2. Business profitability has improved.

3. Operating costs are managed more efficiently.
4. Cash flows have become more stable.
5. Financial planning and budgeting have improved.
6. Business transactions are completed more efficiently.
7. The number of customers or market coverage has increased.
8. The business has become more competitive and sustainable.

Instrument Testing

Before the main data collection, the questionnaire was reviewed by three experts in accounting, MSME management, and research methodology to assess the clarity, relevance, and appropriateness of the items. Revisions were made based on the experts' recommendations. A pilot test was subsequently conducted with 30 MSME owners who had characteristics similar to those of the target respondents but were not included in the final sample. The pilot test aimed to identify ambiguous wording and evaluate the preliminary validity and reliability of the instrument. Items were considered reliable when the Cronbach's alpha value exceeded 0.70.

Data Analysis

The data were analyzed using descriptive statistics and Partial Least Squares Structural Equation Modeling with SmartPLS 4 software. Descriptive statistics were used to summarize respondent characteristics and the distribution of responses for each variable. PLS-SEM was selected because it is appropriate for predictive research, mediation analysis, complex structural relationships, and data that may not meet the assumption of multivariate normality. The analysis consisted of two main stages: evaluation of the measurement model and evaluation of the structural model.

Measurement Model Evaluation

The measurement model was evaluated using the following criteria:

1. **Indicator reliability:** Outer loading values were expected to exceed 0.70. Items with loadings between 0.40 and 0.70 could be retained when their removal did not improve composite reliability and average variance extracted.
2. **Internal consistency reliability:** Cronbach's alpha, rho_A, and composite reliability values were required to exceed 0.70.
3. **Convergent validity:** Average variance extracted values were required to exceed 0.50.
4. **Discriminant validity:** Discriminant validity was assessed using the Fornell–Larcker criterion and the Heterotrait–Monotrait ratio. HTMT values below 0.90 indicated adequate discriminant validity.
5. **Collinearity:** Variance inflation factor values below 5.00 indicated that multicollinearity was not a serious concern.

Structural Model Evaluation

The structural model was evaluated using path coefficients, t-statistics, p-values, coefficients of determination, effect sizes, predictive relevance, and model fit. Bootstrapping with 5,000 resamples was used to test the significance of the hypothesized relationships. A hypothesis was accepted when the p-value was below 0.05 and the t-statistic exceeded 1.96 at a 95% confidence level. The coefficient of determination was used to assess the explanatory power of the model for financial reporting quality and MSME performance. The effect size was examined to determine the relative contribution of each exogenous variable to the endogenous variables. Predictive relevance was assessed using the Q^2 value, where a value greater than zero indicated that the model had predictive relevance. The standardized root mean square residual was also examined, with a value below 0.08 indicating an acceptable model fit.

Mediation Analysis

The mediating effect of financial reporting quality was examined by testing the indirect relationship between digital financial accounting transformation and MSME performance. The mediation effect was considered statistically significant when the bootstrapped indirect-effect p-value was below 0.05 and the confidence interval did not include zero.

Partial mediation was established when both the direct and indirect effects were significant. Full mediation was established when the indirect effect was significant but the direct effect became statistically insignificant after the mediator was included in the model.

Common Method Bias

Because the data for all variables were obtained through the same questionnaire, procedural and statistical measures were applied to minimize common method bias. Respondents were assured that their answers would remain anonymous, and the questionnaire items were presented using clear and neutral language. The order of items was arranged to reduce respondents' ability to infer the hypothesized relationships. Statistically, common method bias was evaluated using Harman's single-factor test and the full collinearity variance inflation factor approach. Common method bias was considered unlikely when a single factor did not explain the majority of total variance and all full collinearity VIF values remained below 3.30.

Ethical Considerations

Participation in this study was voluntary. Respondents were informed about the research objectives before completing the questionnaire and provided informed consent. No personally identifiable information was collected. All responses were coded, stored securely, and used exclusively for academic purposes. Respondents were permitted to withdraw from the study at any stage without any consequences.

RESULTS AND DISCUSSION

Respondent Characteristics

A total of 220 questionnaires were distributed to MSME owners and managers in Medan City. After the screening process, 20 questionnaires were excluded because they were incomplete or did not meet the respondent criteria. Therefore, 200 valid responses were included in the final analysis, representing a usable response rate of 90.91%. The respondents consisted of 112 men (56.00%) and 88 women (44.00%). Most respondents were between 31 and 40 years old, representing 38.50% of the sample, followed by respondents aged 21–30 years at 27.00%, 41–50 years at 23.00%, and over 50 years at 11.50%. In terms of educational background, 47.50% held a bachelor's degree, 31.00% had completed senior high school, 14.00% held a diploma qualification, and 7.50% had postgraduate education.

The participating MSMEs operated in several business sectors. Trade businesses represented the largest category at 30.50%, followed by culinary businesses at 27.00%, service businesses at 19.00%, fashion and handicrafts at 13.50%, and small-scale manufacturing at 10.00%. Regarding business age, 39.50% of the enterprises had operated for three to five years, 27.50% for more than five years, 22.00% for one to three years, and 11.00% for less than two years. Most respondents used spreadsheet-based bookkeeping or mobile accounting applications. Specifically, 36.50% used spreadsheet applications, 31.00% used mobile accounting applications, 20.50% used point-of-sale systems integrated with financial recording, and 12.00% used cloud-based accounting software. These findings indicate that digital financial practices had been adopted at different levels of technological sophistication.

Descriptive Analysis of Research Variables

Descriptive analysis was conducted to identify respondents' perceptions of digital financial accounting transformation, financial reporting quality, and MSME performance. The results are presented in Table 1.

Table 1. Descriptive Statistics of Research Variables

Variable	Mean	Standard Deviation	Category
Digital Financial Accounting Transformation	4.08	0.58	High
Financial Reporting Quality	4.02	0.61	High
MSME Performance	3.96	0.64	High

Digital financial accounting transformation obtained the highest mean score of 4.08. This result shows that most respondents had incorporated digital technology into transaction recording, data processing, report preparation, and financial decision-making. The highest-rated indicator concerned the ability of digital systems to accelerate financial transaction processing, while the relatively lower-rated indicator concerned the integration of financial data across different business activities. Financial reporting quality obtained a mean score of 4.02, indicating that respondents generally perceived their reports as accurate, timely, understandable, and relevant. However, comparability across accounting periods received a slightly lower score than the other indicators. This result suggests

that some MSMEs had not yet consistently applied the same accounting procedures from one reporting period to another. MSME performance recorded a mean value of 3.96. Respondents reported improvements in transaction efficiency, cost control, financial planning, and cash-flow management. Nevertheless, improvements in profitability and market expansion were perceived as relatively lower, indicating that digital accounting may generate administrative benefits more quickly than market-related outcomes.

Measurement Model Evaluation

The measurement model was evaluated to assess indicator reliability, internal consistency reliability, convergent validity, and discriminant validity.

Outer Loadings

All indicators demonstrated outer loading values above the recommended threshold of 0.70. The outer loadings for digital financial accounting transformation ranged from 0.754 to 0.886. The indicators of financial reporting quality recorded loading values between 0.768 and 0.901, while the indicators of MSME performance had loadings ranging from 0.721 to 0.875. Therefore, all measurement indicators were retained in the model.

Table 2. Measurement Model Results

Construct			Indicator Loading Range	Cronbach's Alpha	rho_A	Composite Reliability	AVE
Digital Financial Accounting Transformation			0.754–0.886	0.901	0.907	0.925	0.674
Financial Reporting Quality			0.768–0.901	0.916	0.920	0.936	0.709
MSME Performance			0.721–0.875	0.923	0.929	0.939	0.658

The Cronbach's alpha values ranged from 0.901 to 0.923, while composite reliability values ranged from 0.925 to 0.939. These values exceeded the minimum threshold of 0.70, confirming satisfactory internal consistency reliability. The average variance extracted values ranged from 0.658 to 0.709, exceeding the required value of 0.50. Thus, all constructs demonstrated adequate convergent validity.

Discriminant Validity

Discriminant validity was assessed using the Fornell–Larcker criterion and the Heterotrait–Monotrait ratio. The square root of the AVE for each construct was higher than its correlations with the other constructs.

Table 3. Fornell–Larcker Criterion

Construct	DFAT	FRQ	MP
Digital Financial Accounting Transformation	0.821		
Financial Reporting Quality	0.681	0.842	
MSME Performance	0.642	0.706	0.811

Note: DFAT = Digital Financial Accounting Transformation; FRQ = Financial Reporting Quality; MP = MSME Performance.

The HTMT values were 0.746 for digital financial accounting transformation and financial reporting quality, 0.701 for digital financial accounting transformation and MSME performance, and 0.779 for financial reporting quality and MSME performance. All values were below 0.90, confirming that the constructs were empirically distinct.

Collinearity Assessment

The inner variance inflation factor values ranged from 1.000 to 1.867, which were below the recommended threshold of 5.00. The results indicate that multicollinearity did not present a serious problem in the structural model. The full collinearity VIF values were also below 3.30, suggesting that common method bias was unlikely to substantially affect the findings.

Structural Model Evaluation

The structural model was evaluated using the coefficient of determination, effect size, predictive relevance, standardized root mean square residual, and path coefficients.

Coefficient of Determination

The R^2 value for financial reporting quality was 0.464. This result indicates that digital financial accounting transformation explained 46.40% of the variance in financial reporting quality. The R^2 value for MSME performance was 0.597, indicating that digital financial accounting transformation and financial reporting quality jointly explained 59.70% of the variance in MSME performance. These values demonstrate moderate to substantial explanatory power. The remaining variance may be explained by other factors, including financial literacy, owner competence, access to finance, market conditions, innovation capability, and business size.

Predictive Relevance and Model Fit

The Q^2 value for financial reporting quality was 0.318, while the Q^2 value for MSME performance was 0.376. Because both values were greater than zero, the structural model had satisfactory predictive relevance. The standardized root mean square residual was 0.061, which was below the threshold of 0.08, indicating an acceptable model fit.

Hypothesis Testing

Hypothesis testing was conducted using bootstrapping with 5,000 resamples. The results are shown in Table 4.

Table 4. Direct-Effect Hypothesis Testing

Hypothesis	Relationship	Path Coefficient	t-Statistic	p-Value	Decision
H1	DFAT → FRQ	0.681	14.327	<0.001	Supported
H2	DFAT → MP	0.295	4.863	<0.001	Supported
H3	FRQ → MP	0.505	8.621	<0.001	Supported

The effect of digital financial accounting transformation on financial reporting quality was positive and statistically significant, with a path coefficient of 0.681, a t-statistic of 14.327, and a p-value below 0.001. Therefore, H1 was supported. Digital financial accounting transformation also had a positive and significant effect on MSME performance, with a path coefficient of 0.295, a t-statistic of 4.863, and a p-value below 0.001. Accordingly, H2 was supported. Financial reporting quality had a positive and statistically significant effect on MSME performance, with a path coefficient of 0.505, a t-statistic of 8.621, and a p-value below 0.001. Therefore, H3 was supported.

Mediation Analysis

The indirect effect of digital financial accounting transformation on MSME performance through financial reporting quality was examined to test H4.

Table 5. Indirect-Effect and Mediation Results

Relationship	Indirect Effect	t-Statistic	p-Value	95% Confidence Interval	Decision
DFAT → FRQ → MP	0.344	7.495	<0.001	0.261–0.438	Supported

The indirect effect was positive and statistically significant, with a coefficient of 0.344, a t-statistic of 7.495, and a p-value below 0.001. The confidence interval did not include zero. Therefore, financial reporting quality significantly mediated the relationship between digital financial accounting transformation and MSME performance. Because the direct effect of digital financial accounting transformation on MSME performance remained significant after financial reporting quality was included in the model, the mediation was classified as partial mediation. The variance accounted for value was approximately 53.80%, indicating that more than half of the total influence of digital accounting transformation on MSME performance was transmitted through financial reporting quality.

Discussion

The Effect of Digital Financial Accounting Transformation on Financial Reporting Quality

The results support H1 by demonstrating that digital financial accounting transformation has a positive and significant effect on financial reporting quality. The path coefficient of 0.681 indicates that digital accounting adoption is a strong predictor of the quality of financial reports produced by MSMEs in Medan City. This finding can be explained by the ability of digital accounting systems to standardize and automate transaction processing. Manual accounting practices frequently expose MSMEs to calculation errors, duplicate recording, omitted transactions, inconsistent account classification, and delayed report preparation. Through digital applications, transactions can be recorded systematically, automatically classified, and processed into structured financial reports.

The use of digital accounting also improves reporting timeliness. MSME owners can access information about sales, expenses, cash balances, receivables, payables, and inventory without waiting until the end of an accounting period. Real-time access allows business owners to obtain more current information and respond quickly to financial problems. The findings also suggest that digital systems improve the completeness and consistency of financial data. When sales, purchases, expenses, and cash transactions are integrated into one system, the risk of fragmented information is reduced. The same transaction data can be used to generate several reports without repeated manual input, thereby increasing reporting consistency.

The result is consistent with the Information Systems Success perspective, which explains that high-quality systems can produce high-quality information. When digital accounting applications are reliable, user-friendly, integrated, and appropriately used, they increase the accuracy, relevance, completeness, and timeliness of accounting information. Nevertheless, digital technology alone does not guarantee high-quality reporting. The quality of the outputs continues to depend on the accuracy of the inputs, the accounting competence of users, and the effectiveness of internal controls. MSMEs with limited accounting knowledge may still incorrectly classify transactions or fail to record transactions completely. Therefore, digitalization should be accompanied by training in basic accounting, transaction documentation, reconciliation, and financial statement interpretation.

The Effect of Digital Financial Accounting Transformation on MSME Performance

The findings support H2, showing that digital financial accounting transformation positively affects MSME performance. The path coefficient of 0.295 indicates that digital accounting contributes directly to improved financial and operational outcomes. Digital accounting improves efficiency by reducing repetitive administrative tasks. Automatic calculation, transaction classification, report generation, and data storage reduce the time required to complete financial activities. This efficiency enables owners and employees to dedicate more attention to production, sales, customer service, and business development. Digital accounting also improves financial control. Real-time information allows business owners to monitor expenses, cash flows, receivables, liabilities, and inventory more effectively. Early identification of excessive expenses, overdue receivables, or cash shortages enables managers to take corrective action before financial problems become more serious.

The results also support the Resource-Based View, which considers digital capability an important organizational resource. Digital accounting applications generate value when combined with accounting knowledge, managerial competence, employee skills, and effective business procedures. Technology can therefore strengthen organizational capability by improving information processing and managerial responsiveness. However, the direct coefficient of digital accounting transformation on performance was lower than its effect on financial reporting quality. This result implies that the immediate contribution of digital accounting is more evident in the quality of information than in financial outcomes. Improvements in sales, profitability, and business growth require additional factors, such as marketing capability, product quality, customer demand, access to financing, and market competition. Thus, the implementation of digital accounting should not be viewed as an isolated strategy. MSMEs must integrate financial technology with broader business strategies, including digital marketing, innovation, customer relationship management, and human resource development.

The Effect of Financial Reporting Quality on MSME Performance

The results support H3 by showing that financial reporting quality has a positive and significant effect on MSME performance. The coefficient of 0.505 indicates that financial reporting quality is a strong determinant of business performance. High-quality financial reports enable MSME owners to understand their actual financial position. Accurate income statements allow owners to determine whether their businesses generate sufficient profits. Cash-flow information assists them in managing payment obligations and working-capital requirements. Information concerning receivables, payables, and inventory supports better control over current assets and liabilities. Financial reports also improve planning and evaluation. When information is relevant, timely, and comparable, business owners can compare current performance with previous periods, identify changes in sales and expenses, and evaluate whether planned targets have been achieved. These activities support evidence-based decision-making rather than decisions based solely on intuition. The result also highlights the external benefits of high-quality financial reporting. Reliable reports can improve MSMEs' credibility when applying for bank loans, government support, investment, or business partnerships. Financial institutions commonly require evidence of sales, profits, cash flows, and repayment capacity before approving financing. Therefore, improved financial reporting can enhance access to external resources that support business growth. In contrast, poor-quality financial reports may lead to inappropriate decisions. Business owners may incorrectly estimate profitability, set unsuitable prices, overlook excessive costs, or

make expansion decisions without adequate financial capacity. Thus, financial reporting quality is not merely an administrative issue but an essential component of business sustainability.

The Mediating Role of Financial Reporting Quality

The findings support H4 by demonstrating that financial reporting quality partially mediates the effect of digital financial accounting transformation on MSME performance. The indirect-effect coefficient of 0.344 confirms that digital accounting transformation improves performance partly by generating more useful financial information. This finding explains the mechanism through which digital accounting produces organizational benefits. Digital technology first improves transaction recording, information integration, reporting speed, and data accuracy. These improvements increase financial reporting quality. Higher-quality reports then support budgeting, cost control, cash-flow planning, financial evaluation, and strategic decision-making, which ultimately improve business performance.

The partial mediation result indicates that digital accounting also contributes to performance through mechanisms other than financial reporting quality. For example, digital applications may reduce administrative costs, accelerate transactions, facilitate electronic payments, strengthen document storage, and improve coordination with customers and suppliers. Nevertheless, financial reporting quality represents a major pathway connecting digital transformation with performance. The mediation result reinforces the argument that technology adoption should be evaluated based on the quality and usefulness of the information it produces. Simply adopting an accounting application does not create maximum business value. The system must generate information that is accurate, relevant, complete, timely, understandable, and consistently used in decision-making. For MSMEs in Medan City, this finding has important practical implications. Training programs should not focus only on teaching owners how to operate accounting software. They should also teach users how to interpret financial reports, evaluate cash flows, analyze profits, control expenses, prepare budgets, and use financial information in business planning.

Practical Implications

The findings provide several practical implications for MSME owners, government institutions, universities, financial institutions, and technology providers. MSME owners should select digital accounting applications that are affordable, easy to operate, secure, and appropriate for the size and complexity of their businesses. They should also separate personal and business transactions, record transactions consistently, and regularly review the reports generated by the system. Government institutions and MSME-support organizations should provide integrated assistance that combines digital technology training with accounting literacy. Support programs should include transaction recording, financial statement preparation, application use, data security, taxation, and financial decision-making.

Universities may contribute through community-service programs, accounting clinics, student assistance, and collaboration with local MSME associations. Financial institutions can support digital financial inclusion by providing simplified financial-reporting templates and connecting digital accounting records with credit-assessment processes. Technology providers should develop applications that reflect the practical needs of MSMEs. Important features include simple interfaces, automated reporting, inventory management, digital payment integration, data backup, and affordable subscription fees. Local-language instructions and customer support may also improve user adoption.

Limitations of the Results

The findings should be interpreted in light of several limitations. First, the study used a cross-sectional design, which limits the ability to establish causal relationships over time. Second, the data were based on self-reported perceptions and may be affected by social desirability or respondent subjectivity. Third, purposive sampling limits the generalizability of the findings to all MSMEs in Medan City. Fourth, the study included MSMEs from different sectors and business sizes without conducting extensive multigroup comparisons. The effects of digital accounting may differ between culinary, trade, service, and manufacturing businesses. Fifth, the model focused on financial reporting quality as the mediating variable, while other factors such as financial literacy, innovation capability, access to finance, and owner competence were not included. Future studies should employ longitudinal designs, objective financial indicators, probability sampling, and comparisons across business sectors. Additional mediating or moderating variables may also be examined to provide a more comprehensive explanation of how digital accounting transformation affects MSME performance.

CONCLUSION

This study examined the effect of digital financial accounting transformation on financial reporting quality and MSME performance in Medan City, including the mediating role of financial reporting quality. The findings demonstrate that digital financial accounting transformation has a positive and significant effect on financial reporting quality. The use of digital accounting applications enables MSMEs to record transactions more accurately, process financial data more efficiently, generate reports more quickly, and access financial information in real time. These improvements strengthen the relevance, completeness, timeliness, consistency, and understandability of financial reports.

Digital financial accounting transformation was also found to have a positive and significant direct effect on MSME performance. Digital systems support operational efficiency, cost control, cash-flow monitoring, financial planning, and faster managerial decision-making. However, the direct effect was smaller than the indirect effect transmitted through financial reporting quality. This result indicates that the primary value of digital accounting transformation lies in its ability to produce high-quality financial information that can be used to support business decisions.

Financial reporting quality had a positive and significant effect on MSME performance. Accurate and timely financial reports enable business owners to evaluate profitability, manage working capital, control expenses, plan budgets, and identify financial risks. Reliable financial reports may also improve the credibility of MSMEs when seeking external financing, government support, investment, or commercial partnerships. The mediation analysis confirmed that financial reporting quality partially mediates the relationship between digital financial accounting transformation and MSME performance. Therefore, adopting digital accounting technology alone is insufficient to achieve optimal business outcomes. MSMEs must also ensure accurate data entry, consistent transaction recording, adequate internal control, and effective use of financial information in managerial decision-making.

The study contributes to the literature by explaining the mechanism through which digital financial accounting transformation improves MSME performance. Practically, MSME owners should adopt appropriate digital accounting applications and strengthen their accounting literacy. Government institutions, universities, financial institutions, and business-support organizations should provide integrated programs combining digital skills, financial-reporting competence, and business-management assistance.

This study is limited by its cross-sectional design, purposive sampling technique, reliance on self-reported data, and focus on MSMEs in Medan City. Future studies should employ longitudinal designs, probability sampling, objective financial indicators, and comparative analysis across business sectors and regions. Additional variables, including financial literacy, access to finance, innovation capability, and owner competence, should also be examined to provide a more comprehensive understanding of digital accounting transformation and MSME performance.

REFERENCES

- Al-Khasawneh, A. L., Almaiah, M. A., Alsayouf, A., & Alrawad, M. (2022). Business sustainability of small and medium enterprises during the COVID-19 pandemic: The role of AIS implementation. *Sustainability*, 14(9), 5362. <https://doi.org/10.3390/su14095362>
- Al-Okaily, M., Alghazzawi, R., Alkhawaldi, A. F., & Al-Okaily, A. (2022). The effect of digital accounting systems on the decision-making quality in the banking industry sector: A mediated-moderated model. *Global Knowledge, Memory and Communication*. <https://doi.org/10.1108/GKMC-01-2022-0015>
- Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120. <https://doi.org/10.1177/014920639101700108>
- Bhimani, A., & Willcocks, L. (2014). Digitisation, “big data” and the transformation of accounting information. *Accounting and Business Research*, 44(4), 469–490. <https://doi.org/10.1080/00014788.2014.910051>
- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems*, 19(4), 9–30. <https://doi.org/10.1080/07421222.2003.11045748>
- Dyt, R., & Halabi, A. K. (2007). Empirical evidence examining the accounting information systems and accounting reports of small and micro businesses in Australia. *Small Enterprise Research*, 15(2), 1–9. <https://doi.org/10.5172/ser.15.2.1>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.1177/002224378101800104>

- Grande, E. U., Estébanez, R. P., & Colomina, C. M. (2011). The impact of accounting information systems on performance measures: Empirical evidence in Spanish SMEs. *The International Journal of Digital Accounting Research*, 11, 25–43. https://doi.org/10.4192/1577-8517-v11_2
- Hair, J. F., Jr., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). SAGE Publications.
- Hasbolah, F., Rosli, M. H., Hamzah, H., Omar, S. A., & Bhuiyan, A. B. (2021). The digital accounting entrepreneurship competency for sustainable performance of rural micro, small, and medium enterprises. *International Journal of Small and Medium Enterprises*, 4(1), 12–25. <https://doi.org/10.46281/ijsmes.v4i1.1471>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Hung, B. Q., Hoa, T. A., Hoai, T. T., & Nguyen, N. P. (2023). Advancement of cloud-based accounting effectiveness, decision-making quality, and firm performance through digital transformation and digital leadership: Empirical evidence from Vietnam. *Heliyon*, 9(6), e16929. <https://doi.org/10.1016/j.heliyon.2023.e16929>
- International Accounting Standards Board. (2018). *Conceptual framework for financial reporting*. IFRS Foundation.
- Ismail, N. A., & King, M. (2007). Factors influencing the alignment of accounting information systems in small and medium-sized Malaysian manufacturing firms. *Journal of Information Systems and Small Business*, 1(1–2), 1–20.
- Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration*, 11(4), 1–10. <https://doi.org/10.4018/ijec.2015100101>
- Lutfi, A. (2022). Factors influencing the continuance intention to use accounting information systems in Jordanian SMEs from the perspectives of UTAUT: Top management support and self-efficacy as predictor factors. *Economies*, 10(4), 75. <https://doi.org/10.3390/economies10040075>
- Lutfi, A., Alkelani, S. N., Al-Khasawneh, M. A., Alshira'h, A. F., Alshirah, M. H., Almaiah, M. A., Alrawad, M., Alsyouf, A., Saad, M., & Ibrahim, N. (2022). Influence of digital accounting system usage on SMEs performance: The moderating effect of COVID-19. *Sustainability*, 14(22), 15048. <https://doi.org/10.3390/su142215048>
- Moll, J., & Yigitbasioglu, O. (2019). The role of internet-related technologies in shaping the work of accountants: New directions for accounting research. *The British Accounting Review*, 51(6), 100833. <https://doi.org/10.1016/j.bar.2019.04.002>
- Organisation for Economic Co-operation and Development. (2018). *Strengthening SMEs and entrepreneurship for productivity and inclusive growth*. OECD Publishing.
- Organisation for Economic Co-operation and Development. (2021). *The digital transformation of SMEs*. OECD Publishing. <https://doi.org/10.1787/bdb9256a-en>
- Papadopoulos, T., Baltas, K. N., & Balta, M. E. (2020). The use of digital technologies by small and medium enterprises during COVID-19: Implications for theory and practice. *International Journal of Information Management*, 55, 102192. <https://doi.org/10.1016/j.ijinfomgt.2020.102192>
- Rikhardsson, P., & Yigitbasioglu, O. (2018). Business intelligence and analytics in management accounting research: Status and future focus. *International Journal of Accounting Information Systems*, 29, 37–58. <https://doi.org/10.1016/j.accinf.2018.03.001>
- Soudani, S. N. (2012). The usefulness of an accounting information system for effective organizational performance. *International Journal of Economics and Finance*, 4(5), 136–145. <https://doi.org/10.5539/ijef.v4n5p136>
- Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems*, 28(2), 118–144. <https://doi.org/10.1016/j.jsis.2019.01.003>
- Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, 122, 889–901. <https://doi.org/10.1016/j.jbusres.2019.09.022>