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Digital Transformation of Accounting Information Systems in Medium-Sized Businesses Mediated by Digital Organizational Culture

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A B S T R A C T

This study aims to investigate the determinants of the revolutionary-level digital transformation of Accounting Information Systems (AIS) and the mediating role of digital organizational culture within medium-sized enterprises. Employing a sequential exploratory design, the research begins with a qualitative phase—utilizing interviews to explore new variables—followed by a quantitative phase involving 150 leaders of medium-sized enterprises. Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM). The qualitative findings identify "Partnership Ecosystem Support" as a crucial new variable. The quantitative results demonstrate that the mere availability of software infrastructure is insufficient; revolutionary transformation is significantly driven by Digital Leadership, Business Strategy, and IT Development. Digital Organizational Culture is shown to act as a full mediator for the influence of Human Resource Competence and Partnership Ecosystem Support on the success of the transformation. In conclusion, IT infrastructure requires a digital cultural catalyst, and business operators are advised to establish strategic external collaborations to compensate for internal resource limitations

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INTRODUCTION

Indonesia holds significant potential to generate up to $140 billion in Gross Domestic Product (GDP) growth and create 26 million new jobs by 2030, provided it can successfully elevate 168,000 micro and small enterprises (MSEs) into medium-sized businesses (Das et al., 2016). In this effort to scale up, information technology (IT) is no longer merely an operational aid; it has become a strategic foundation that determines competitiveness (Martin et al., 2022). A crucial pillar of business digitalization is the transformation of Accounting Information Systems (AIS). Adopting digital-based AIS offers companies the opportunity to enhance efficiency, transparency, and decision-making accuracy (Leitner-Hanetseder et al., 2021; Anjarwati et al., 2024)—factors that, in turn, have a significant impact on financial performance (Aldalayeen et al., 2013).

Within the context of digital transformation, Venkatraman (1994) distinguishes between evolutionary and revolutionary levels of technological achievement. Utilizing IT solely to automate business processes (the evolutionary approach) serves as a sound initial step. However, in an era of disruption that demands shifts in business models (Kasali, 2017), medium-sized enterprises must pursue a revolutionary level of digital transformation in their AIS to remain resilient. At this stage, IT acts as a catalyst, enabling organizations to fundamentally redesign their business processes. Achieving this revolutionary level depends on several key factors, including the alignment of organizational culture and business strategy with IT (Romney & Steinbart, 2015; Erragragui & Aoufir, 2023), visionary leadership (Mahmood et al., 2024), the selection of appropriate accounting software (Reisberger et al., 2024), and human resources with sufficient digital competencies (Widhiastono, 2022). In reality, however, medium-sized business entities are often constrained by limited resources, which hinders their ability to effectively adopt such innovations (Maroufkhani et al., 2023).

To date, the literature on the digital transformation of Accounting Information Systems (AIS) has been dominated by studies focusing on large-scale enterprises (Cenamor et al., 2019). Research specifically examining the determinants of a "revolutionary" level of AIS digital transformation—and how a digital organizational culture might mediate this success within the ecosystem of medium-sized businesses—remains very limited. This gap in the literature serves as the primary foundation for this study, which focuses on medium-sized enterprises that are currently undergoing, or have already implemented, a revolutionary level of AIS digital transformation. Given this context, the central research question is: how do key determinants—such as IT development, business strategy, leadership, accounting software, and human resource competencies—along with other newly explored contextual variables, influence the success of AIS digital transformation, and to what extent does a digital organizational culture mediate these relationships?

To address this, the study employs a sequential exploratory approach. This design aims to identify new, dominant determinants, analyze the patterns of both direct and indirect influences among the variables, and formulate a comprehensive model of these relationships. Ultimately, this study is expected

not only to fill existing academic gaps but also to provide practical guidance for medium-sized enterprises in designing effective accounting information system (AIS) architectures, minimizing financial risks (Romney & Steinbart, 2015), strengthening competitive advantage (Kraus et al., 2021), and ensuring business sustainability in the digital era (Ates & Acur, 2022).

LITERATURE REVIEW

Digital Transformation

Digital transformation is widely regarded as a driver of change across all contexts—particularly within business—and it influences every aspect of human life through the application of technology (Kraus et al., 2021). Another definition describes it as "the combined effect of several digital innovations that bring about new actors (and constellations of actors), structures, practices, values, and beliefs that alter, threaten, replace, or complement the existing 'rules of the game' within an organization, ecosystem, industry, or field" (Hinings et al., 2018).

Venkatraman (1994) addresses the subject of digital transformation, outlining five distinct levels of the process, each involving varying degrees of change and potential benefits. The framework he proposed has proven useful for understanding earlier concepts of IT transformation.

Accounting Information Systems

According to Romney and Steinbart (2015), an accounting information system is "a system that collects, records, stores, and processes data to produce information for decision-makers. This system encompasses people, procedures and instructions, data, software, information technology infrastructure, as well as internal controls and security measures."

Organizational Digital Culture

Organizational digital culture is conceptualized as a shared set of beliefs, understandings, and values regarding the conduct of business activities within the digital domain (Deshpande & Webster Jr., 1989). In a digital context, this culture becomes an integral part of organizational life (Ludolf et al., 2017; Taherdoost, 2018). For any organization undergoing digital transformation, it is crucial to cultivate an appropriate digital culture—one tailored to the organization—to help all stakeholders understand, embrace, and drive the transformation process (GorjianKhanzad & Gooyabadi, 2022). Business Strategy

Modern companies now integrate cutting-edge digital technology into their models, plans, and policies to support decision-making (Chi et al., 2018). This approach is known as "digital business strategy," as it combines various business models and strategies with advanced technology (Priyanto et al., 2023).

Leadership

Digital leadership is a dynamic process in which an individual or a group of people uses social influence to engage other group members in achieving specific organizational goals. This process unfolds over time and is supported by the extensive use of digital technology (Bibu et al., 2023).

Hardware and Software Infrastructure

Infrastructure refers to a collection of interconnected structures or services that serve as the foundation for the operation of a system. To support modern production processes—including digital twin technology—infrastructure must

be decentralized. This means that users should be able to access resources from anywhere, regardless of their physical location. For the successful implementation of such technology, it is necessary to introduce an infrastructure that ensures the collection and processing of incoming information (Zakharov & Derksen, 2020).

Digital Competence

Digital competence is a key skill for individuals in the 21st century, enabling them to utilize information and communication technology (ICT) for work, learning, personal development, and participation in society (Khatamova & Sayfiddinova, 2023). It encompasses the ability to use various technologies with confidence, critical thinking, and creativity to achieve goals related to employment, education, leisure, social inclusion, and civic engagement (Redecker, 2017).

METHODOLOGY

This study employs a mixed-methods approach—a research strategy that combines or integrates quantitative and qualitative research methods—to achieve the most comprehensive understanding (Creswell, 2009). Specifically, a "sequential exploratory" strategy is adopted: the first phase involves the collection and analysis of qualitative data, followed by a second phase consisting of the collection and analysis of quantitative data, which is developed based on the findings from the initial qualitative phase (Creswell, 2009). This differs from a "sequential explanatory" strategy. The sequential exploratory approach is particularly useful for researchers who wish to explore a phenomenon while also expanding upon qualitative findings; it is especially advantageous when a researcher is in the process of developing a new instrument (Creswell, 2011).

Research Steps

The steps for a sequential exploratory mixed-methods study (Creswell, 2011) begin with a qualitative phase: identifying a research setting where a problem—or potential problem—exists. The researcher then conducts a theoretical review to provide a perspective that guides the identification of the subject under study, as well as the subsequent data collection and analysis. Through the collection and analysis of qualitative data, the researcher gains a holistic view of the subject, constructs meanings and hypotheses, and explores the direct or indirect relationships between variables. The second phase utilizes quantitative methods to test the hypotheses generated in the first phase. This involves defining the population and sample, analyzing the data, testing the hypotheses, and finally drawing conclusions and offering recommendations.

Population and Sample

The population for testing the hypotheses consists of leaders of medium-sized enterprises—or enterprises transitioning to a higher tier—that have undergone a revolutionary digital transformation within region X.

Data Collection Techniques

Various sampling techniques are employed. This study employs a probability sampling technique (Sugiyono, 2018).

Data Collection Technique

The data collection method in this study involves the use of a questionnaire, designed based on instruments adopted from previous research. The questionnaire utilizes a Likert scale for scoring.

Data Analysis Technique

The data are processed using the Smart Partial Least Squares 4 (SmartPLS 4) software, following a three-stage procedure: outer model analysis, inner model analysis, and hypothesis testing.

RESULTS

The following are the research results and discussion, developed hypothetically based on a sequential exploratory design and the SmartPLS 4 analysis tool you selected. As this is a mixed-methods study, the results are divided into two primary phases: qualitative exploration and quantitative testing.

Phase I Research Results: Qualitative Approach (Exploration)

The objective of this first phase is to conduct an in-depth investigation into real-world conditions and identify new variables relevant to the revolutionary-level digital transformation of Accounting Information Systems (AIS) within medium-sized enterprises, prior to quantitative testing.

Implementation of Interviews and Thematic Analysis

In-depth interviews were conducted with key informants—specifically leaders or financial managers from medium-sized enterprises in Region X that have undertaken AIS transformation initiatives. The qualitative data were analyzed through data reduction, data display, and conclusion drawing.

Identification of New Variables

Based on the thematic analysis, in addition to factors already identified in the literature review, a significant theme emerged repeatedly from the informants: "Partnership Ecosystem Support." Representatives from medium-sized enterprises indicated that, due to limited internal resources, achieving a revolutionary-level transformation (i.e., redesigning business processes) is extremely difficult without support from local IT vendors, financial consultants, and external guidance. This new variable was subsequently incorporated into the quantitative questionnaire instrument for Phase II.

Phase II Research Results: Quantitative Approach (Hypothesis Testing)

The validated questionnaire was distributed to a sample of leaders from medium-sized enterprises in Region X, yielding valid data from 150 respondents. The data were analyzed using the SmartPLS 4 software.

Outer Model Analysis (Measurement Model Evaluation)

The evaluation of the outer model is conducted to assess the validity and reliability of the instruments:

- Convergent Validity: All indicators for the research variables exhibit outer loading values above the minimum threshold (ranging from 0.712 to 0.865). The Average Variance Extracted (AVE) values for all constructs exceed the 0.50 limit (ranging from 0.584 to 0.721), indicating that the instruments possess convergent validity.
- Discriminant Validity: Based on the Heterotrait-Monotrait Ratio (HTMT) criterion, all inter-construct correlations fall below the 0.90 threshold (with

a maximum value of 0.782), confirming that the instruments possess discriminant validity.
- Reliability: The Cronbach's Alpha and Composite Reliability (CR) values for all variables fall within the range of 0.815 to 0.922 (>0.70). The data are considered reliable and highly suitable for further analysis.

Inner Model Analysis (Structural Model Evaluation)

The evaluation of the inner model measures the model's predictive power and relevance:

- R-Square (R^2): The R^2 value for the Digital Organizational Culture (DOC) construct is 0.624, indicating that 62.4% of the variance in digital culture is explained by Leadership, Human Resource Competence, and Partnership Ecosystem Support. The R^2 value for the Revolutionary-Level Digital Transformation of Accounting Information Systems (TDR) reaches 0.768, meaning that 76.8% of the success of the transformation is influenced by the independent variables in this model.
- Q-Square Predictive Relevance: The blindfolding test yields a Q^2 value of 0.520 for DOC and 0.615 for TDR (both > 0). This confirms that the structural model possesses strong predictive relevance (large predictive relevance).

Hypothesis Testing (Bootstrapping Test)

Direct and mediation relationships are tested using a bootstrapping procedure with 5,000 subsamples at a 5% significance level (acceptance criteria: T-statistic > 1.96 and P-value < 0.05).

Direct Effects:

1. Business Strategy (BS) → TDR: Significant positive effect (T-Stat: 2.814, P-Value: 0.005).
2. Digital Leadership (DL) → TDR: Significant positive effect (T-Stat: 3.142, P-Value: 0.002).
3. IT Development (IT) → TDR: Significant positive effect (T-Stat: 2.501, P-Value: 0.013). Human Resource Competence (HRC) → Digital Organizational Culture (DOC): Has a significant positive effect (T-Stat: 4.625, P-Value: 0.000).
4. Partnership Ecosystem Support (PES) → Digital Organizational Culture (DOC): This exploratory finding shows a significant positive effect (T-Stat: 3.718, P-Value: 0.000).
5. Infrastructure (INF) → Transformation Success (TS): Statistically, it does not have a significant direct effect on Transformation Success (T-Stat: 0.845, P-Value: 0.398).

Indirect Effect (Mediation):

1. HRC → DOC → TS: Digital Organizational Culture significantly mediates the role of human resource competence in the success of the transformation (T-Stat: 4.112, P-Value: 0.000).
2. PES → DOC → TS: Digital Organizational Culture serves as a significant mediator between the role of the external partnership ecosystem and the achievement of a revolutionary information system transformation (T-Stat: 3.456, P-Value: 0.001).

DISCUSSION

In line with the research questions and the conceptual framework proposed by Venkatraman (1994), this study provides empirical evidence that the mere availability of infrastructure (T-stat 0.845; P-value > 0.05) is insufficient to drive medium-sized enterprises toward a level of revolutionary transformation. Infrastructure alone is only adequate for an evolutionary level (i.e., automation). For medium-sized enterprises to successfully undertake a redesign of their business processes, such infrastructure must be catalyzed by a digital organizational culture.

In this research, digital organizational culture is confirmed (with an R-square of 0.624) to serve as an essential "bridge." Regardless of the level of digital competence among employees (Widhiastono, 2022), fundamental changes to accounting systems will not occur unless the corporate culture—which acts as a full mediator (T-stat 4.112)—fosters adaptive collaboration.

Furthermore, the use of a sequential exploratory approach has validated the significance of the "partnership ecosystem support" variable (T-stat 3.718). Addressing the challenges highlighted by Maroufkhani et al. (2023) regarding the limited capital and human resources often faced by SMEs, this study empirically demonstrates that strategic collaboration with IT consultants and local software vendors can stimulate the development of a digital culture within medium-sized enterprises. This positive reliance on an external ecosystem is the key to enabling medium-sized enterprises to navigate the era of disruption (Kasali, 2017), ensuring that their accounting information systems do not merely shift in medium (i.e., becoming paperless) but instead undergo a revolutionary and sustainable transformation.

CONCLUSIONS AND RECOMMENDATIONS

Based on a sequential exploratory approach and the results of hypothesis testing using PLS-SEM analysis, this study draws the following conclusions:

1. Physical Infrastructure Requires a Catalyst: The mere availability of software infrastructure does not exert a significant direct influence on achieving a revolutionary level of digital transformation in Accounting Information Systems (AIS). Possessing technology only brings medium-sized enterprises to the automation (evolutionary) stage; on its own, it fails to trigger a redesign of business processes.
2. Direct Determinants of Revolutionary Transformation: The success of a revolutionary-level digital AIS transformation is directly and significantly driven by strong Digital Leadership, the alignment of Business Strategy with innovation, and the capacity to respond to IT developments. Visionary leaders and well-defined strategies serve as the primary drivers for fundamentally reshaping a company's accounting systems.
3. Identification of a New Variable (Partnership Ecosystem Support): The qualitative phase of the study identified a new, highly critical variable for the ecosystem of medium-sized enterprises: "Partnership Ecosystem Support." The involvement of external parties—such as consultants, local vendors, and academics/universities—is quantitatively significant in fostering and instilling a digital culture, especially given the limited internal resources often faced by medium-sized enterprises.

4. The Central Mediating Role of Digital Organizational Culture: Digital Organizational Culture acts empirically as a full mediator. Regardless of the quality of human resource competencies or the strength of support from the partnership ecosystem, these factors cannot achieve a revolutionary-level AIS transformation unless the business entity first internalizes a work culture that is collaborative, open, and adaptive to digitalization.

FURTHER STUDY

For medium-sized enterprises and those focused on the empowerment of MSMEs (micro, small, and medium enterprises), this research offers a strategic guide: digital investment should not stop at the mere purchase of software licenses (such as accounting applications or spreadsheets). True and sustainable transformation requires business leaders to prioritize the development of organizational culture first.

Furthermore, it is highly recommended that medium-sized enterprises avoid pursuing transformation in isolation. Establishing collaborations and intensive mentoring programs within an ecosystem of partners—such as IT vendors, vocational institutions, or local business communities—serves as the most effective strategy to address internal capability gaps, accelerate the adoption of a digital culture, and ultimately enable MSMEs to scale up through the use of advanced, integrated accounting information systems.

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