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External Auditors' Perception of Cloud Computing Use in Indonesia : A Study of Non-Big Four CPA Firm in Bali

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Abstract: *This study explores how cloud computing services enhance audit performance from the perspective of external auditors, focusing on factors influencing adoption among non-Big Four public accounting firms (PAFs). Employing a qualitative approach with an interpretive paradigm, data were collected through in-depth interviews and document analysis. A total of eight external auditors from non-Big Four PAFs in Bali participated in the study. The findings reveal that auditors perceive cloud computing as beneficial due to its ease of access, system reliability, enhanced information sharing, and improved data security. One participant stated, "Cloud platforms help us review client documents remotely and in real-time, which reduces delays in the audit process." Despite these advantages, concerns remain regarding data confidentiality and dependence on internet connectivity. The dominant theoretical lens guiding the analysis is the Technology-Organization-Environment (TOE) framework, supported by elements from the Technology Acceptance Model (TAM) and Institutional Theory. Practically, this study contributes by offering insights into how smaller firms can strategically adopt cloud technology to improve audit efficiency and competitiveness, while addressing institutional and organizational readiness.*

Introduction

The rapid development of information technology has driven various business entities and professionals to adopt digital solutions that support

their operational activities and financial reporting. One of the increasingly utilized technological innovations is cloud computing—a system that enables data storage and processing over the internet without reliance on local physical infrastructure. In the fields of accounting and auditing, cloud computing plays a strategic role in enhancing efficiency, accessibility, and collaboration among stakeholders.

In Indonesia, the adoption of cloud computing in auditing has gained traction, especially among Public Accounting Firms (PAFs) as part of their digital transformation efforts. Nevertheless, adoption is not solely determined by technological availability or regulatory frameworks—it is also significantly influenced by the perceptions, attitudes, and readiness of external auditors. Factors such as data security concerns, system reliability, and perceived ethical and professional risks remain central in shaping acceptance levels.

Lee, Kao, and Shuanhu (2014) note that the advancement of digital systems under the Industry 4.0 movement affects user expectations of innovation, speed, and transparency. In the accounting sector, integrated information systems can improve the quality and timeliness of financial reporting. However, despite these technological promises, research on cloud computing adoption among external auditors still yields mixed findings. For instance, Yigitbasioglu (2015), in his study in Australia, discovered that many non-Big Four firms preferred private cloud or leased data centers due to concerns about data confidentiality. These findings highlight the ongoing tension between technological innovation and professional risk perception.

Research Problem

Despite growing interest in cloud-based systems, why and how non-Big Four PAFs in Indonesia adopt—or refrain from adopting—cloud computing for audit processes remains underexplored. Given their limited infrastructure and resources compared to larger firms, non-Big Four PAFs represent a unique context where the motivations and barriers to cloud

adoption may differ significantly. Therefore, the central question is:

What are the perceptions, motivations, and concerns of external auditors in non-Big Four PAFs regarding the adoption of cloud computing in the audit process?

Research Objectives

This study aims to:

a. Explore external auditors' perceptions of cloud computing adoption in non-Big Four PAFs in Indonesia.
b. Identify the factors—technological, organizational, and institutional—that influence acceptance or resistance.
c. Understand how perceived risks (e.g., data confidentiality, system reliability) impact decision-making regarding cloud computing use.

Analyze the findings through relevant theoretical lenses such as the Technology-Organization-Environment (TOE) Framework, TAM, and Institutional Theory.

Novelty of the Study

This study offers three key contributions that distinguish it from prior research:

1. Contextual novelty: The focus on non-Big Four PAFs in East Java, Indonesia, introduces a new geographic and organizational setting not extensively covered in existing literature.
2. Theoretical integration: While previous studies applied individual models (e.g., TAM or DOI), this research integrates multiple frameworks (TOE, TAM, Institutional Theory) to provide a more holistic understanding.
3. Practical insight from SMEs: Since non-Big Four PAFs operate with SME-like constraints, the study sheds light on cloud adoption among resource-limited audit environments, a perspective that has been underrepresented.

Significance of the Study

Theoretical significance:

This research enriches the literature on technology adoption in the accounting profession by extending the applicability of innovation adoption theories to the context of small audit firms in developing countries. It demonstrates how external auditors' professional norms and risk perceptions interact with organizational and technological readiness.

Practical significance:

The findings offer actionable insights for:

a. PAFs, in assessing the readiness and strategies needed to integrate cloud systems in audits.
b. Cloud service providers, to understand and address auditors' specific concerns and expectations.
c. Regulators and professional bodies, in developing supportive policies and digital audit guidelines that align with the evolving needs of the profession.

Research Methods

Research Design

This research employs a qualitative case study approach, which serves as a framework to guide data collection, measurement, and analysis in order to address the formulated research questions. A case study strategy was chosen as it enables the researcher to examine a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and the context are not clearly evident. The study is situated within non-Big Four Public Accounting Firms (PAFs) operating in Bali and East Java, Indonesia.

This approach is aligned with the interpretive paradigm, emphasizing participants' subjective experiences and meanings they assign to cloud

computing adoption. As emphasized by Keirl and Miller in Moleong (2010), qualitative research is based on observing individuals in their natural environments and interpreting their views using their own language and concepts. This paradigm allows the researcher to explore how auditors interpret the utility, risks, and institutional meanings of adopting cloud technology in audit engagements.

Type and Source of Data

The study utilizes qualitative data, which are non-numeric and expressed in the form of words, narratives, or visual documentation (Yaumi & Damopolii, 2014; Sugiyono et al., 2015). Primary data were collected from interviews with selected auditors, while secondary data were obtained from documentation, firm policies, and relevant organizational reports.

Data Collection Techniques

The research employed the snowball sampling technique (Neuman, 2005) to identify participants. Initial contacts were asked to refer the researcher to other knowledgeable individuals within their firms. Data were collected using two main techniques:

a. Semi-structured interviews: Designed to capture in-depth views on cloud computing usage, perceived risks, benefits, and organizational readiness.
b. Documentation: Included audit planning templates, IT policy manuals, and digital infrastructure guidelines.

Interviews followed a structured conversational flow—take-off, flight, and landing—starting from general questions about audit operations and narrowing down to specific practices and perceptions regarding cloud computing. Interviews were conducted face-to-face and via online calls, lasting between 45 and 90 minutes each.

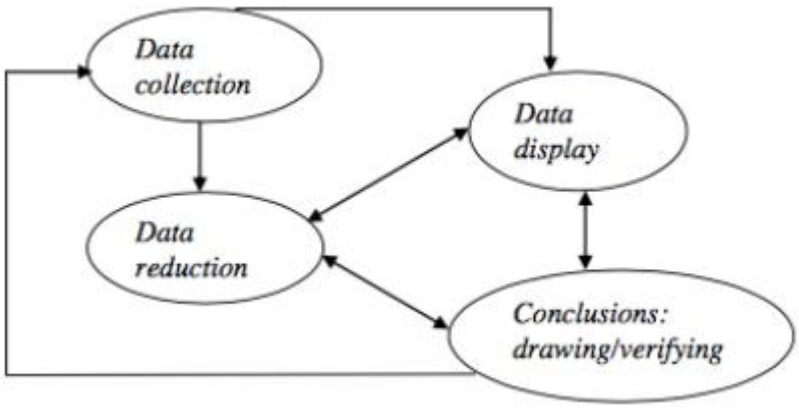

Figure 1. Components of Data Analysis (Interactive Model)

Informant Profile

A total of eight external auditors from five non-Big Four Public Accounting Firms (PAFs) in Bali and East Java participated in this study. These participants were selected based on their role, level of experience, and direct involvement with audit practices and technological tools within their respective firms.

Table 1. Informant Profile

No.	Code	Position	Years of Experience	Main Role	Region
1	A1	Audit Partner	12 years	Strategic IT decisions, audit quality assurance	Bali
2	A2	Audit Partner	15 years	Technology policy, client engagement strategies	East Java
3	B1	Senior Auditor	8 years	Team supervision, cloud system oversight	Bali
4	B2	Senior Auditor	7 years	Audit documentation, system evaluation	East Java

No.	Code	Position	Years of Experience	Main Role	Region
5	B3	Senior Auditor	6 years	Field audit execution, mentoring junior staff	Bali
6	C1	Junior Auditor	4 years	Data input, use of cloud tools in audit process	East Java
7	C2	Junior Auditor	3 years	Risk assessment support, audit evidence gathering	Bali
8	C3	Junior Auditor	3 years	System user, document retrieval	East Java

Result and Discussion

This study identified several key themes related to the adoption of cloud computing in audit practices among non-Big Four Public Accounting Firms (PAFs). The analysis is structured around four major themes derived through thematic coding: System Quality, Service Quality, Organizational Trust, and External Pressures. Each theme is supported by quotes from informants and is discussed in comparison with previous literature.

System Quality and Auditor Performance

High system quality enables external auditors to complete tasks more efficiently and with greater accuracy. Respondents consistently emphasized the importance of availability, reliability, and user-friendliness of cloud platforms.

a. Quote A1: "Cloud systems really help us access files anytime—even during client meetings. The audit trail is clearer and faster to verify."

b. Quote B2: "When the system crashes or loads slowly, it delays the entire fieldwork schedule. We can't afford that during tight deadlines."

This aligns with DeLone and McLean's (2003) concept of system quality, which posits that systems with greater availability, flexibility, and response speed are more likely to support organizational performance. Similar findings were reported by Yigitbasioglu (2015), who noted that user satisfaction increases when system speed and availability meet expectations.

Thematic Table 1: System Quality Dimensions Identified by Respondents

Dimension	Description	Illustrative Quote
Availability	Access to system anytime/anywhere	"Even during site visits, I can open the files." – A1
Reliability	Stable system operation	"It rarely crashes, which is a big help." – C1
Ease of Use	Intuitive interface and low learning curve	"New staff can use it after short training." – B3

Service Quality and User Satisfaction

Service quality from cloud providers is another decisive factor. Respondents discussed aspects such as provider responsiveness, data backup protocols, and system maintenance support.

a. Quote C2: "We once lost access due to maintenance, but the provider had already emailed us beforehand—it made us trust them more."
b. Quote B1: "Customer support responds fast. When we had login issues, they solved it in one call."

These insights reinforce DeLone & McLean's (2003) model, which identifies responsiveness, reliability, and assurance as drivers of user satisfaction in system service quality. Clemons and Chen (2011) also highlighted that professional service and clear communication from providers are critical for sustaining trust in cloud systems.

Organizational Trust and Internal Decision-Making

Organizational trust, particularly from top management, plays a critical role in whether cloud technology is adopted. In some firms, management's openness to innovation was a driver; in others, risk aversion prevailed.

a. Quote A2: "The firm's leadership still worries about cloud data being breached—even though we've had zero incidents."
b. Quote B3: "We adopted cloud because our managing partner believes it's the future of auditing."

This finding echoes Institutional Theory, where norms and internal leadership culture shape organizational behavior. Marston et al. (2011) also observed that in SME contexts, trust and risk perception at the leadership level significantly affect technological decision-making.

External Pressures and Environmental Factors

External pressures such as client expectations and regulatory trends were also cited as factors influencing cloud adoption.

a. Quote C3: "Some clients now expect us to use online portals—they don't want to send paper anymore."\
b. Quote A1: "We saw how other firms moved to cloud during COVID. That influenced our decision too."

These findings align with the Technology-Organization-Environment (TOE) framework (Tornatzky & Fleischer, 1990), which suggests that external environment—including market pressure and industry practices—affects innovation adoption. Egwutuoha et al. (2013)

likewise reported that audit firms under competitive pressure are more likely to innovate with cloud technology.

Conclusion and Recommendation

The findings of this study provide valuable guidance for various stakeholders involved in the digital transformation of the audit profession:

a. For External Auditors: Cloud computing enhances mobility, efficiency, and collaboration in audit engagements. Auditors should increase their digital literacy and actively participate in training programs that integrate cloud tools with audit procedures. Improved system access and data availability allow auditors to respond more swiftly to client needs and perform more effective audit procedures.
b. For Public Accounting Firm (PAF) Owners and Management: Adoption of cloud computing should be aligned with firm strategy and client expectations. Managers are advised to evaluate the security features of public cloud providers, ensure proper data governance policies are in place, and invest in scalable cloud infrastructure suited for small-to-medium audit operations. Embracing cloud technology can provide competitive advantages, particularly in terms of operational cost, document management, and staff collaboration.
c. For Government and Professional Bodies: Regulatory support is essential to promote secure, standardized, and ethical use of cloud services in the audit sector. This includes the issuance of cloud-specific audit standards, developing audit technology guidelines, and conducting outreach programs to improve awareness of digital transformation in the accounting profession. Partnerships with cloud providers can also be leveraged to build tailored cloud solutions for non-Big Four PAFs.
d. For Cloud Service Providers: Understanding the unique needs of non-Big Four PAFs is crucial. Providers should design flexible and cost-effective solutions that meet the compliance, security, and

performance expectations of small audit firms. Dedicated onboarding and support teams may also help build trust and accelerate adoption.

Limitations

This study is limited by its geographical scope (East Java and Bali), which may not fully capture variations in cloud adoption practices across other regions of Indonesia. Additionally, the study's qualitative design and reliance on snowball sampling may limit the generalizability of findings and introduce potential referral bias. The research focuses on the perspectives of external auditors, without incorporating insights from clients, IT administrators, or regulatory officials who may also influence or be affected by cloud adoption.

Suggestions for Future Research

To deepen the understanding of cloud computing adoption in the audit sector, future research may consider the following directions:

1. Expand the study to cover more diverse regions and include comparisons across different organizational sizes and types of audit firms.
2. Employ a mixed-methods approach, combining in-depth qualitative insights with quantitative surveys to validate patterns across larger samples.
3. Include multi-stakeholder perspectives, such as IT personnel, audit clients, cloud vendors, and regulators, to better understand ecosystem-wide impacts.
4. Explore longitudinal studies to assess how perceptions, barriers, and outcomes of cloud adoption evolve over time in non-Big Four firms.

Investigate the link between cloud adoption and audit quality indicators, such as error detection rates, reporting timeliness, and client satisfaction. These directions will help establish a more holistic

understanding of digital transformation in auditing and inform policies, training, and investments for sustainable innovation.

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