

Perceived Digital Transformation and Zakat Governance in Indonesia: Critical Digital Governance, Accountability, and Muzakki Trust

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ABSTRACT

Purpose– This study examines respondent-level associations among perceived Digital Transformation Capability (DTC), perceived Critical Digital Governance (CDG), perceived Organizational Accountability (OA), and muzakki trust in Indonesian Zakat Management Organizations (OPZ). Because the measures were supplied by external users, DTC, CDG, and OA are interpreted as perceptions of observable organizational practices rather than direct measures of internal organizational capability.

Design/methodology/approach– A quantitative cross-sectional survey involved 250 muzakki (zakat payers) who had used OPZ digital services within the previous 12 months. The model was analyzed with PLS-SEM in SmartPLS 3. The individual muzakki is the unit of analysis, and the structural paths are interpreted as associations because all constructs were measured at one time from the same source.

Finding/Results– Perceived DTC was positively associated with perceived CDG ($\beta = 0.632$, $p < 0.001$) and perceived OA ($\beta = 0.223$, $p < 0.001$), while perceived CDG was positively associated with perceived OA ($\beta = 0.448$, $p < 0.001$). The DTC $\rightarrow$ CDG $\rightarrow$ OA indirect effect was significant ($\beta = 0.283$, $p < 0.001$) and, together with the significant positive direct DTC $\rightarrow$ OA path, indicates complementary partial mediation. By contrast, every direct and indirect path ending in muzakki trust was non-significant, and trust had $R^2 = 0.007$.

Originality/Value– The study develops an exploratory user-perception model linking digital capability, digital governance, and accountability in the zakat setting. CDG is retained as a provisional integrative construct covering traceability, transparency, data ethics and privacy, participatory oversight, inclusion, and complaint responsiveness. The evidence supports the governance-accountability portion of the model but does not establish a trust-formation mechanism or definitive validation of CDG as a reflective scale.

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1. Introduction

Digital zakat has expanded the ways Indonesian muzakki can interact with formal zakat institutions, yet the availability of a digital channel does not by itself establish stronger governance. Research on digital zakat shows that payment behavior is shaped by performance expectancy, facilitating conditions, literacy, trust, perceived risk, and other user evaluations, which means that technology adoption is only one part of the institutional relationship (Kasri & Yuniar, 2021; Hasyim et al., 2023; Mutmainah et al., 2024). The wider Islamic-finance literature also shows that financial technology creates new opportunities together with new requirements for governance, transparency, and responsible data use (Alshater et al., 2022). For OPZ, this tension is especially relevant because digital platforms are used not only to process transactions but also to communicate how entrusted religious-social funds are managed. The central issue is therefore not whether OPZ have adopted technology, but what muzakki can observe about the quality of governance surrounding that technology. This distinction provides the empirical starting point for the present study.

Governance is already a substantive concern in the zakat literature rather than a consequence that can be assumed to follow from digitalization. Studies of zakat institutions emphasize transparency, accountability, supervisory arrangements, fraud prevention, Sharia governance, and technology-enabled reporting as separate but connected elements of institutional quality (Widiastuti et al., 2021; Wahyuni-TD et al., 2021; Wahyudi et al., 2021; Zakiy et al., 2023). These concerns become more visible to muzakki when payment records, program information, privacy practices, complaint channels, and reporting are delivered through digital interfaces. At the same time, visible digital features provide only partial information about internal control, managerial routines, and organizational decision processes. A user may observe whether information is accessible and whether complaints are answered without knowing how the underlying information system is integrated or governed internally. The study therefore treats digital governance as a set of user-observable signals rather than as an audit of the internal governance architecture of an OPZ.

This distinction also affects the interpretation of Digital Transformation Capability. Digital-capability research conceptualizes transformation capability as an organizational property involving infrastructure, management, networks, data, and development activities (Baiyere et al., 2025; Volz et al., 2025; Orero-Blat et al., 2025). Such a construct is most directly assessed through managers, technical staff, organizational records, or multiple internal informants. In the present survey, however, all measures were supplied by muzakki, who can evaluate the visible quality, integration, responsiveness, and reliability of digital services but cannot be assumed to know internal system architecture or data-driven management routines. Treating these ratings as objective organizational capability would create a level-of-analysis mismatch between the concept and its measurement. For that reason, the revised model consistently uses perceived DTC, perceived CDG, and perceived OA and interprets them at the individual respondent level.

Trust introduces a second empirical tension because previous zakat research generally expects better governance and accountability to support institutional confidence, but the strength of this relationship varies across studies. Accountability, transparency, fairness, institutional

credibility, and social or digital communication have each been linked to muzakki trust or zakat compliance in different settings (Bin-Nashwan et al., 2021; Shafiyyah & Fithria, 2023; Hotimah & Suprayogi, 2023; Hamdani et al., 2024; Adiwijaya et al., 2024). This evidence gives a reasonable basis for testing trust as an outcome, but it does not justify assuming that digitally visible governance will have the same effect in every institution or sample. Trust may also be sensitive to the exact organizational referent used in the questionnaire, the respondent's prior experience, and the way trust items are worded. The present study therefore treats trust as an empirical test rather than as an inevitable consequence of digitalization or accountability. A null result is interpreted as a boundary of the proposed model, not as evidence for an unmeasured alternative mechanism.

The recent literature reveals a clear separation between studies of digital-zakat adoption and studies of zakat governance. Digital-zakat research has concentrated on payment intention, technology acceptance, perceived risk, financial technology, and user trust (Kasri & Yuniar, 2021; Hasyim et al., 2023; Mutmainah et al., 2024), whereas governance studies have examined accountability, transparency, Sharia governance, website disclosure, institutional performance, and fraud prevention (Widiastuti et al., 2021; Wahyuni-TD et al., 2021; Wahyudi et al., 2021; Zakiy et al., 2023). Research on public accountability further shows that reporting and stewardship remain central to how zakat institutions justify the use of entrusted resources (Narulitasari et al., 2023). What remains less developed is an empirical model that links users' perceptions of digital capability with the governance signals they observe and with their broader judgment of organizational accountability. The gap is not a lack of evidence that digital zakat exists, but a lack of clarity about how these user perceptions are connected. Addressing this gap requires a model that keeps digital capability, governance processes, accountability, and trust conceptually distinct.

The theoretical problem is similarly one of integration rather than simply adding several theories to the same model. Stakeholder Theory explains why OPZ are answerable to muzakki, mustahik, regulators, amil, and the wider public and why disclosure and accountability matter to these groups (Freeman, 1984; Sawmar & Mohammed, 2021). Institutional Theory explains why regulatory, normative, and legitimacy pressures can encourage organizations to adopt digital practices and governance arrangements, while also allowing formal adoption to become decoupled from substantive practice (DiMaggio & Powell, 1983). Critical Theory of Technology adds a different concern by treating technological design as value-laden and directing attention to transparency, participation, inclusion, privacy, and control (Feenberg, 1991). CDG is proposed as an exploratory way to organize these user-visible governance concerns, but its six elements are conceptually heterogeneous and should not be treated as definitively reflective without stronger item-level validation. The theoretical integration therefore supports the content and proposed relationships of the model while leaving the final measurement form of CDG open to further testing.

Against this background, the study examines whether muzakki who perceive stronger DTC also report stronger CDG and OA, and whether these perceptions are associated with muzakki trust. It tests the direct associations among DTC, CDG, OA, and trust, the specific DTC → CDG → OA indirect association, the DTC → CDG → trust indirect association, and the serial DTC

→ CDG → OA → trust association. The study contributes theoretically by separating an empirically supported governance-accountability pathway from a trust pathway that may or may not receive support. It also contributes conceptually by treating CDG as a provisional integrative governance construct whose measurement specification still requires dedicated validation. Practically, the model identifies user-visible digital governance features that OPZ can make more transparent, traceable, privacy-protective, inclusive, participatory, and responsive. Because the design is cross-sectional and single-source, these contributions are framed as respondent-level associations rather than causal evidence about organizational transformation.

2. Literature Review & Hypothesis Development

Stakeholder Theory

Stakeholder Theory holds that organizations remain legitimate and sustainable by recognizing the interests and information rights of parties who affect or are affected by organizational activity (Freeman, 1984). For zakat institutions, governance is inseparable from stewardship because funds are entrusted for religious and social purposes. Governance mechanisms such as disclosure, stakeholder engagement, procedural fairness, and answerability can therefore be understood as ways of meeting stakeholder obligations rather than merely improving operational efficiency (Saad et al., 2014; Sawmar & Mohammed, 2021).

In an OPZ, stakeholders include muzakki (zakat payers), mustahik (zakat recipients/beneficiaries), amil, regulators, supervisory bodies, partner institutions, and the wider public. The present respondents are muzakki, so the empirical model captures only one stakeholder perspective. Stakeholder Theory is used specifically to explain why muzakki may evaluate whether an OPZ makes fund management, reporting, digital safeguards, and accountability visible. It also underpins the proposed association between perceived accountability and trust, while recognizing that other stakeholder groups may evaluate the same institution differently.

Institutional Theory

Institutional Theory explains how organizations respond to coercive, normative, and mimetic pressures in their organizational fields (DiMaggio & Powell, 1983). Regulations, professional expectations, technological norms, stakeholder scrutiny, and the practices of peer institutions can encourage organizations to adopt similar structures and procedures in pursuit of legitimacy. The theory does not imply that adoption automatically produces effective practice; formal digitalization may be decoupled from substantive governance if technology is adopted mainly to satisfy external expectations.

For OPZ, digital payment expectations, financial-reporting requirements, data-protection concerns, Sharia governance, and public scrutiny create institutional pressures to modernize services while demonstrating responsible stewardship. Zakat governance research documents the importance of institutional arrangements, supervisory mechanisms, transparency, and technology in strengthening governance quality (Abd Wahab & Abdul Rahman, 2011; Widiastuti et al., 2021; Zakiy et al., 2023). In this study, Institutional Theory motivates the proposed association between perceived digital capability and perceived governance, not a claim that respondents can directly observe internal institutional adaptation.

Critical Theory of Technology

Critical Theory of Technology rejects the assumption that technological systems are socially neutral. Technical arrangements embody choices about who can access a system, what information is visible, how users can participate, how data are controlled, and whose interests are prioritized (Feenberg, 1991). The perspective is therefore relevant when digitalization affects the governance of entrusted funds and personal data. It directs attention away from technology adoption alone and toward the institutional rules and values embedded in digital service design.

Applied to zakat, this perspective supports attention to traceability, transparency, privacy, inclusion, participation, and responsiveness. A digitally efficient platform can still produce governance concerns if users cannot understand fund flows, exercise meaningful oversight, protect personal data, access services equitably, or obtain a response to complaints. Critical Theory of Technology therefore provides the normative rationale for the CDG content domains, while the empirical study tests only muzakki perceptions of those domains.

Perceived Digital Transformation Capability

Digital Transformation Capability describes an organization's capacity to mobilize technology, management, infrastructure, networks, and development activities in pursuit of transformation goals (Baiyere et al., 2025). Broader digital-transformation research likewise emphasizes that organizational value does not arise from technology investment alone but from complementary capabilities and organizational conditions (Orero-Blat et al., 2025; Volz et al., 2025). In the zakat context, these ideas provide a useful organizational benchmark for thinking about digital maturity.

However, the operationalization in this study is explicitly perceptual. Muzakki can evaluate whether the digital service appears integrated, flexible, informative, reliable, and supportive of service delivery, but they cannot be assumed to know internal system architecture, staff competencies, data-governance routines, or management decision processes. The construct is therefore labeled perceived Digital Transformation Capability (DTC). Any inference about actual organizational capability would require manager-reported, archival, technical, or multi-informant evidence.

Perceived Critical Digital Governance

Perceived Critical Digital Governance (CDG) is used in this study as an exploratory construct describing the extent to which muzakki perceive OPZ digital practices as traceable, transparent, ethically managed, privacy-protective, participatory, inclusive, and responsive. These concerns are grounded in zakat governance research that emphasizes transparency, accountability, stakeholder confidence, disclosure, and technology-enabled governance (Amalia, 2019; Widiastuti et al., 2021; Wahyudi et al., 2021; Wahyuni-TD et al., 2021). The construct is intended to organize user-visible governance signals rather than to certify internal control effectiveness.

The six CDG content domains, Digital Fund Traceability, Digital Transparency, Data Ethics and Privacy Protection, Participatory Digital Oversight, Digital Inclusion, and Digital Complaint Responsiveness, are conceptually heterogeneous. The original PLS model treated

their indicators as one construct, but the current manuscript does not have the item-level evidence needed to demonstrate that a reflective specification is superior to a composite/formative or higher-order alternative. Following construct-specification guidance (Diamantopoulos & Winklhofer, 2001; Jarvis et al., 2003), the single-construct treatment should therefore be read as provisional. CDG is differentiated from OA by treating CDG as governance process signals and OA as a broader judgment of organizational answerability.

Perceived Organizational Accountability

Organizational Accountability concerns an organization's obligation to explain and justify the use of entrusted resources, decisions, procedures, and outcomes to relevant stakeholders. Zakat-specific scholarship treats accountability as both an administrative and stewardship obligation and links it with financial reporting, internal control, governance, and public accountability (Saad et al., 2014; Mubtadi, 2019; Narulitasari et al., 2023). Website-based disclosure also illustrates how some accountability practices become visible to external users (Wahyudi et al., 2021).

Because this study surveys muzakki rather than managers or auditors, the construct is interpreted as perceived Organizational Accountability (OA). It captures the respondent's overall judgment of whether the OPZ appears answerable, transparent in its reporting, responsible in fund management, and able to explain program outcomes. This interpretation avoids treating a user rating as equivalent to an audit of internal accountability systems. It also distinguishes OA from CDG: CDG concerns how digital processes are governed, whereas OA concerns the broader perceived answerability of the organization.

Muzakki Trust

Trust in the present study refers to muzakki confidence that the OPZ is credible, competent, and dependable in carrying out its responsibilities. Because every respondent is a zakat payer, the outcome is more precisely interpreted as muzakki trust rather than the trust of all members of the public. This distinction matters because trust can be referent-specific: confidence in a particular OPZ, confidence in a digital platform, and generalized trust in zakat institutions are not necessarily equivalent constructs.

Zakat research generally indicates that trust is related to governance, accountability, transparency, institutional fairness, and digital-payment considerations, but the empirical pattern is not uniform (Ikhwandha & Hudayati, 2019; Assa'diyah & Pramono, 2019; Bin-Nashwan et al., 2021; Shafiyyah & Fithria, 2023; Hotimah & Suprayogi, 2023; Adiwijaya et al., 2024). Accordingly, the trust hypotheses are treated as tests rather than assumptions. A non-significant path may reflect a genuine weak association, but it can also arise from item targeting, restricted variance, referent mismatch, or sample heterogeneity; these alternatives require item-level or subgroup evidence before they can be distinguished.

Hypothesis Development

H1. Perceived Digital Transformation Capability → Perceived Critical Digital Governance

Perceived DTC reflects the extent to which a muzakki experiences an OPZ as digitally integrated, adaptable, and capable of supporting reliable digital services. Institutional Theory suggests that organizations respond to digital and governance expectations in their

institutional environment, while Critical Theory of Technology emphasizes that technological capacity requires governance if it is to serve stakeholder interests responsibly (DiMaggio & Powell, 1983; Feenberg, 1991). At the perception level, stronger visible digital capability is therefore expected to coexist with stronger perceptions of digital governance. H1: Perceived Digital Transformation Capability is positively associated with perceived Critical Digital Governance.

H2. Perceived Digital Transformation Capability → Perceived Organizational Accountability

Digital systems can make reporting, transaction records, service information, and organizational communication more accessible to users. Stakeholder Theory suggests that such information supports answerability when it helps stakeholders evaluate how the organization handles entrusted resources (Freeman, 1984). In the present user-perception model, a muzakki who experiences stronger digital capability may therefore also perceive the organization as more accountable. H2: Perceived Digital Transformation Capability is positively associated with perceived Organizational Accountability.

H3. Perceived Digital Transformation Capability → Muzakki Trust

Digital capability may contribute to user confidence by improving accessibility, reliability, and the perceived professionalism of digital services. Digital-zakat research shows that technology-related evaluations, risk, and trust can matter for payment behavior (Hasyim et al., 2023; Mutmainah et al., 2024). Nevertheless, digital capability and institutional trust are conceptually distinct. H3: Perceived Digital Transformation Capability is positively associated with muzakki trust.

H4. Perceived Critical Digital Governance → Perceived Organizational Accountability

CDG captures governance process signals that are visible in digital service use, including traceability, transparency, data protection, participation, inclusion, and responsiveness. These mechanisms can give stakeholders more information and more opportunities to evaluate organizational conduct. Stakeholder Theory therefore implies that stronger perceived governance processes should be associated with stronger perceived organizational answerability. H4: Perceived Critical Digital Governance is positively associated with perceived Organizational Accountability.

H5. Perceived Critical Digital Governance → Muzakki Trust

Governance can contribute to legitimacy when stakeholders perceive that organizational processes are transparent, fair, responsive, and protective of their interests (Sawmar & Mohammed, 2021). In digital zakat, privacy, transparency, and communication may also shape user confidence (Mutmainah et al., 2024). H5: Perceived Critical Digital Governance is positively associated with muzakki trust.

H6. Perceived Organizational Accountability → Muzakki Trust

Accountability provides stakeholders with a basis for evaluating whether an institution uses entrusted funds responsibly and can explain its actions. Zakat research frequently links accountability and transparency to muzakki trust, while also documenting variation across samples (Assa'diyah & Pramono, 2019; Hotimah & Suprayogi, 2023; Adiwijaya et al., 2024). H6: Perceived Organizational Accountability is positively associated with muzakki trust.

H7. Mediation of Perceived Critical Digital Governance in the DTC–OA Association

If perceived digital capability is associated with governance and perceived governance is in turn associated with accountability, CDG may carry part of the DTC–OA association. This hypothesis concerns an indirect statistical association rather than a proven temporal process because all variables were measured simultaneously. H7: Perceived Critical Digital Governance statistically mediates the association between perceived Digital Transformation Capability and perceived Organizational Accountability.

H8. Mediation of Perceived Critical Digital Governance in the DTC–Trust Association

A parallel indirect relationship is plausible if digital capability is associated with stronger governance perceptions and governance perceptions are associated with trust. The hypothesis is retained as an empirical test, not as an assumption that governance must create trust. H8: Perceived Critical Digital Governance statistically mediates the association between perceived Digital Transformation Capability and muzakki trust.

H9. Serial Indirect Association through CDG and OA

The model also tests whether DTC is indirectly associated with trust through a sequence involving CDG and OA. Because the design is cross-sectional, the sequence represents a proposed ordering of associations and cannot establish temporal precedence. H9: Perceived Critical Digital Governance and perceived Organizational Accountability jointly form a serial indirect association between perceived Digital Transformation Capability and muzakki trust.

Conceptual Framework

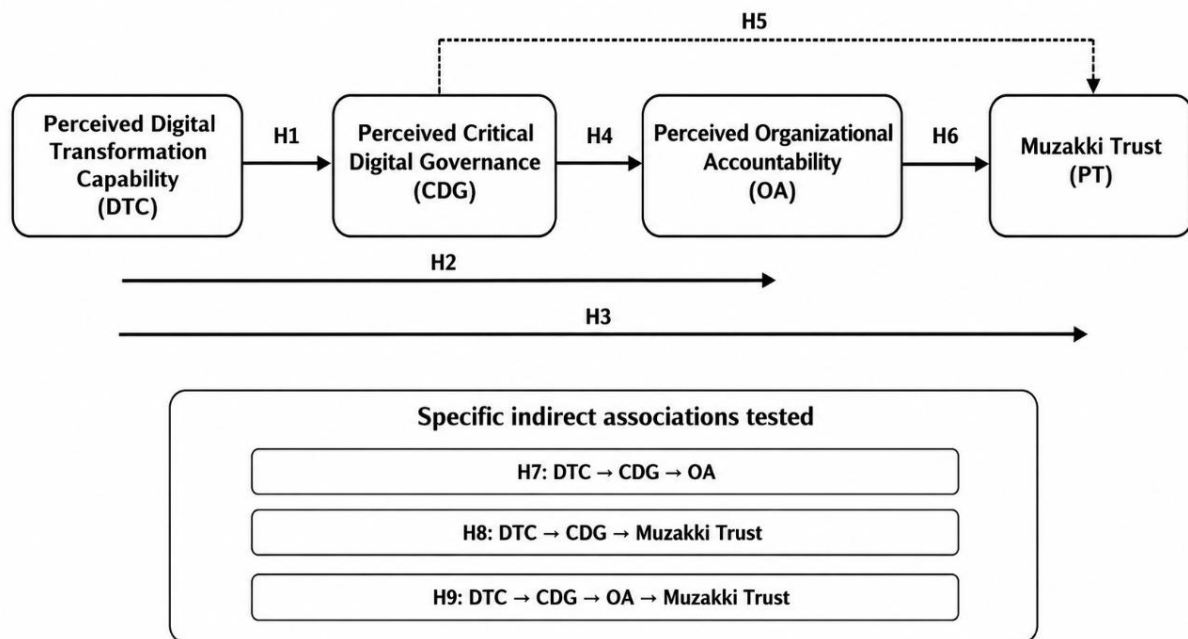


Figure 1. Conceptual Framework (Individual-Level Perception Model)

Figure 1 presents the structural model at the individual respondent level. DTC, CDG, and OA in the figure refer to perceived Digital Transformation Capability, perceived Critical Digital Governance, and perceived Organizational Accountability. The trust outcome labeled PT in the original model is interpreted in the revised manuscript as muzakki trust because the

respondents are zakat payers. The arrows represent hypothesized statistical associations, not demonstrated causal effects.

CDG is retained as the single construct used in the reported PLS model, while its six content domains, fund traceability, transparency, data ethics/privacy, participatory oversight, inclusion, and complaint responsiveness, are treated as conceptual components requiring further measurement-model validation. The framework tests direct associations, the DTC → CDG → OA indirect association, the DTC → CDG → trust indirect association, and the DTC → CDG → OA → trust serial indirect association.

3. Methodology

Research Design and Unit of Analysis

The study used a quantitative cross-sectional survey to test a theory-informed structural model linking perceived Digital Transformation Capability, perceived Critical Digital Governance, perceived Organizational Accountability, and muzakki trust. PLS-SEM was selected because the reported analysis evaluates multiple latent constructs, direct paths, and specific indirect effects within one model. The design is explanatory in the limited sense of testing hypothesized associations, but it cannot establish temporal precedence because every construct was measured at one point in time. The individual muzakki is therefore the unit of analysis, not the OPZ as an organization. Organizationally worded variables are interpreted as the respondent's perception of the OPZ digital-service context that the respondent knew or had used.

Setting, Population, and Sample

The research setting was the use of digital services provided by Zakat Management Organizations in Indonesia. The target population comprised muzakki who had experience with an OPZ digital service, and purposive sampling was used to identify respondents who matched the study criteria. Eligibility required respondents to be at least 18 years old, to have used an OPZ digital service within the previous 12 months, to have obtained information through an OPZ digital platform, and to participate voluntarily. The final sample consisted of 250 respondents. The available manuscript does not report a standardized distribution by BAZNAS, LAZ, or specific focal OPZ, so organization-level clustering and comparisons cannot be performed from the reported data. The specific calendar period of fieldwork is also not stated in the source manuscript and should be verified by the authors before submission.

Instrument and Construct Operationalization

Data were collected with a structured questionnaire containing four focal constructs measured on a five-point Likert scale from 1 = strongly disagree to 5 = strongly agree. DTC was interpreted as perceived Digital Transformation Capability, OA as perceived Organizational Accountability, and PT as muzakki trust because all responses were provided by zakat payers. CDG covered six conceptual domains: Digital Fund Traceability, Digital Transparency, Data Ethics and Privacy Protection, Participatory Digital Oversight, Digital Inclusion, and Digital Complaint Responsiveness. The source manuscript states that the instrument was adapted from relevant literature, subjected to expert judgment, and piloted before the main survey. However, the archived manuscript does not reproduce the complete item list, item-generation

record, expert-rating statistics, or pilot item diagnostics. Accordingly, this revision retains the reported instrument but treats the new CDG scale as provisional rather than as a fully validated reflective measure.

Validity and Reliability Procedures

The reported measurement-model assessment included Cronbach's alpha, rho_A, Composite Reliability, Average Variance Extracted, and the Fornell-Larcker criterion. These statistics provide evidence about internal consistency, convergent validity, and preliminary discriminant validity under the measurement specification used in the original SmartPLS model. The method section of the source manuscript also referred to factor loadings and HTMT, but their numerical values are not present in the reported output. For a newly proposed and heterogeneous CDG construct, those missing item-level diagnostics are important because the data currently available cannot establish whether a reflective, composite/formative, or higher-order specification is most appropriate (Diamantopoulos & Winklhofer, 2001; Jarvis et al., 2003). The single-source design also leaves common-method variance as a plausible concern, even though confidentiality and voluntary participation provided procedural safeguards (Podsakoff et al., 2003). No unreported validity or reliability statistic is reconstructed in this revision.

Data Collection Procedure

The questionnaire was administered online using Google Forms and distributed through digital communication channels to respondents who met the purposive criteria. Before completing the questionnaire, participants received information about the purpose of the study, confidentiality of their responses, voluntary participation, and their right to discontinue. Completed responses were screened for completeness before statistical analysis. The procedure matched the digital-service experience required for inclusion and allowed geographically dispersed muzakki to participate. Because the manuscript does not retain a standardized focal-OPZ identifier in the reported dataset, the collection procedure supports individual-level analysis but not multilevel inference about differences among OPZ.

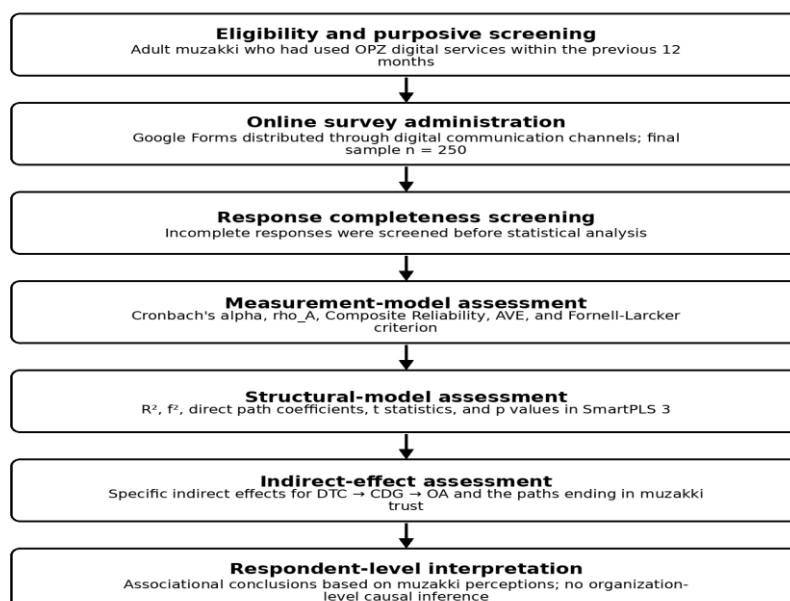


Figure 2. Research Procedure and Analytical Sequence

PLS-SEM Analysis

PLS-SEM was conducted in SmartPLS 3. The reported output supports presentation of Cronbach's alpha, rho_A, Composite Reliability, AVE, the Fornell-Larcker matrix, R², f², path coefficients, t statistics, p values, and specific indirect effects. Hypotheses were evaluated from the sign and statistical significance of the reported path coefficients, while mediation was classified from the direct and specific indirect paths following the logic of Zhao et al. (2010). Current PLS-SEM guidance also recommends reporting outer loadings, HTMT, bootstrapped confidence intervals, predictive-relevance measures, and model diagnostics where appropriate (Henseler et al., 2015; Hair et al., 2019). Numerical outer loadings, HTMT, CMB diagnostics, Q², SRMR, and bootstrapped confidence intervals are not available in the source manuscript and are not inferred. All path interpretations therefore remain associational and are limited to the statistics explicitly reported in the manuscript.

4. Results and Discussion

Table 1. Respondent Characteristics

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	104	41.6
	Female	146	58.4
Last education	Senior high school	60	24.0
	Diploma (D3)	62	24.8
	Bachelor's degree (S1)	66	26.4
	Master's degree (S2)	62	24.8
Work	Employee	45	18.0
	Self-employed	67	26.8
	Civil servant	69	27.6
	Student	69	27.6

A total of 250 muzakki participated. Women comprised 146 respondents (58.4%) and men 104 (41.6%). Education was relatively distributed across senior high school (24.0%), diploma (24.8%), bachelor's degree (26.4%), and master's degree (24.8%). These characteristics describe the individual survey respondents and should not be interpreted as characteristics of OPZ organizations.

Employment backgrounds were also heterogeneous: 69 respondents were civil servants (27.6%), 69 students (27.6%), 67 self-employed (26.8%), and 45 employees (18.0%). The available respondent profile does not contain a focal-OPZ distribution that would allow the sample to be separated by BAZNAS, LAZ, or individual institution. Organization-level clustering and between-OPZ differences therefore remain untested.

Table 2. Internal Consistency and Convergent Evidence

Construct	Cronbach's Alpha	rho_A	Composite Reliability	AVE	Information
Perceived CDG	0.865	0.867	0.899	0.597	CR/AVE criteria met
Perceived DTC	0.883	0.886	0.911	0.631	CR/AVE criteria met
Perceived OA	0.823	0.823	0.883	0.653	CR/AVE criteria met
Muzakki Trust	0.937	0.993	0.942	0.766	CR/AVE criteria met

The reported internal-consistency statistics are high for all four constructs. Cronbach's alpha ranges from 0.823 to 0.937 and Composite Reliability from 0.883 to 0.942. Under the measurement specification used in the original PLS model, these values indicate internally

consistent scores. They should not, by themselves, be interpreted as evidence that the CDG construct form is definitively reflective or that the construct has completed new-scale validation.

AVE values range from 0.597 to 0.766 and exceed the conventional 0.50 criterion, providing convergent evidence at the construct level under the retained specification. For CDG, the AVE of 0.597 is compatible with convergent evidence but does not resolve whether six heterogeneous governance elements should be modeled reflectively, formatively, or hierarchically. That decision requires the item wording, outer loadings/weights, collinearity diagnostics, and explicit construct-development evidence.

Table 3. Fornell–Larcker Criterion

Construct	Perceived CDG	Perceived DTC	Perceived OA	Muzakki Trust
Perceived CDG	0.773			
Perceived DTC	0.632	0.794		
Perceived OA	0.589	0.507	0.808	
Muzakki Trust	0.071	0.022	0.008	0.875

The Fornell–Larcker matrix shows diagonal square roots of AVE of 0.773 for perceived CDG, 0.794 for perceived DTC, 0.808 for perceived OA, and 0.875 for muzakki trust. The corresponding inter-construct correlations are 0.632 between DTC and CDG, 0.589 between CDG and OA, 0.507 between DTC and OA, and only 0.008–0.071 between trust and the other constructs.

These values satisfy the Fornell–Larcker comparison in the reported matrix, but the manuscript does not contain the HTMT matrix that the original method section stated was assessed. Discriminant validity should therefore be described as preliminarily supported rather than fully established. The relatively substantial CDG–OA correlation (0.589) also reinforces the conceptual need to keep governance-process indicators distinct from broader accountability judgments and to examine item-level cross-loading or HTMT evidence when the original output is available.

Table 4. Coefficient of Determination (R^2)

Endogenous Variables	R Square	R Square Adjusted	Interpretation
Perceived CDG	0.400	0.397	Moderate
Perceived OA	0.377	0.372	Moderate
Muzakki Trust	0.007	-0.005	Very low

Perceived CDG has $R^2 = 0.400$ (adjusted $R^2 = 0.397$), indicating that perceived DTC explains a moderate share of its variance. Perceived OA has $R^2 = 0.377$ (adjusted $R^2 = 0.372$), indicating that perceived DTC and CDG together explain a moderate share of the variance in accountability perceptions. These are explanatory statistics within the respondent-level model and do not quantify actual organization-level governance performance.

The trust result is qualitatively different. Muzakki trust has $R^2 = 0.007$ and adjusted $R^2 = -0.005$, meaning that the three predictors jointly explain only 0.7% of the observed variance in trust in this sample. The near-zero value is a central null finding. It does not, without additional measurement and subgroup analysis, establish a ‘digital trust paradox’ or identify which omitted variables are responsible.

Table 5. Effect Size (f^2)

Path	f^2	Interpretation
DTC → CDG	0.666	Large
DTC → OA	0.048	Small
DTC → Muzakki Trust	0.000	No effect
CDG → OA	0.194	Medium
CDG → Muzakki Trust	0.007	No effect
OA → Muzakki Trust	0.001	No effect

Effect-size results are consistent with the R^2 pattern. The DTC → CDG relationship has $f^2 = 0.666$ (large), CDG → OA has $f^2 = 0.194$ (medium), and DTC → OA has $f^2 = 0.048$ (small). These values indicate that the main explanatory concentration of the model lies in the perceived digital-governance–accountability portion.

All relationships ending in muzakki trust have effect sizes close to zero ($f^2 = 0.000$ – 0.007). Thus, even before considering statistical significance, the reported model provides very little incremental explanation of trust. This result warrants a measurement and referent audit of the trust construct rather than a strong post hoc substantive narrative.

Table 6. Direct-Path Hypothesis Tests

Hypothesis	Path	Path Coefficient (β)	t-Statistic	p-value	Decision
H1	DTC → CDG	0.632	14.406	<.001	Supported
H2	DTC → OA	0.223	3.815	<.001	Supported
H3	DTC → Muzakki Trust	-0.028	0.229	0.819	Not supported
H4	CDG → OA	0.448	8.187	<.001	Supported
H5	CDG → Muzakki Trust	0.116	1.012	0.312	Not supported
H6	OA → Muzakki Trust	-0.046	0.428	0.669	Not supported

The direct-path results support H1, H2, and H4. Perceived DTC is positively associated with perceived CDG ($\beta = 0.632$, $t = 14.406$, $p < 0.001$) and perceived OA ($\beta = 0.223$, $t = 3.815$, $p < 0.001$). Perceived CDG is also positively associated with perceived OA ($\beta = 0.448$, $t = 8.187$, $p < 0.001$). These paths are statistically strong within the cross-sectional perception model, but they do not establish that DTC temporally ‘builds’ CDG or that CDG subsequently ‘causes’ accountability.

H3, H5, and H6 are not supported. The DTC → trust path is $\beta = -0.028$ ($p = 0.819$), the CDG → trust path is $\beta = 0.116$ ($p = 0.312$), and the OA → trust path is $\beta = -0.046$ ($p = 0.669$). Their small coefficients, together with the very low trust R^2 , indicate that the proposed predictors are not empirically useful explanations of trust in the present specification.

Table 7. Specific Indirect Effects and Mediation

Hypothesis	Mediation Path	Path Coefficient (β)	t-Statistic	p-value	Decision
H7	DTC → CDG → OA	0.283	7.118	<.001	Supported; complementary partial
H8	DTC → CDG → Muzakki Trust	0.073	1.007	0.315	Not supported
H9	DTC → CDG → OA → Muzakki Trust	-0.013	0.424	0.672	Not supported

The DTC → CDG → OA specific indirect effect is positive and significant ($\beta = 0.283$, $t = 7.118$, $p < 0.001$), supporting H7. Because the direct DTC → OA path is also positive and significant

($\beta = 0.223$, $p < 0.001$), the pattern is most accurately classified as complementary partial mediation (Zhao et al., 2010). The sum of the reported direct and specific indirect coefficients is 0.506, showing that both the direct and governance-linked components contribute to the DTC–OA association.

H8 and H9 are not supported. The DTC $\rightarrow$ CDG $\rightarrow$ trust indirect effect is $\beta = 0.073$ ($p = 0.315$), and the serial DTC $\rightarrow$ CDG $\rightarrow$ OA $\rightarrow$ trust indirect effect is $\beta = -0.013$ ($p = 0.672$). The model therefore supports a governance–accountability mediation pattern but not a trust-formation mediation pattern. Since all variables were measured simultaneously, ‘mediation’ here denotes an indirect statistical association under the proposed ordering rather than verified temporal mediation.

Reporting completeness and trust diagnostic note. The available manuscript output does not include item-level descriptive distributions, outer loadings, HTMT values, a numerical common-method-bias diagnostic, Q^2 , SRMR, or bootstrapped confidence intervals. These statistics cannot be reconstructed from the aggregate tables and are not reported as if they had been observed. Their absence is especially important for the new CDG construct and the near-zero trust results. A definitive re-submission should extract these diagnostics from the original SmartPLS project or raw data; until then, conclusions are limited to the statistics shown in Tables 2–7.

Discussion

The most coherent empirical pattern appears in the perceived DTC, CDG, and OA portion of the model. Muzakki who evaluated an OPZ's digital capability more favorably also tended to report stronger digital-governance and accountability perceptions, while CDG was itself positively associated with OA. This pattern is consistent with zakat research that treats technology, governance, disclosure, and accountability as connected institutional concerns rather than independent administrative features (Widiastuti et al., 2021; Wahyuni-TD et al., 2021; Wahyudi et al., 2021; Zakiy et al., 2023). Stakeholder Theory helps explain why these visible features may be evaluated together because muzakki need information that allows them to judge how entrusted funds and digital interactions are handled. At the same time, the finding concerns respondents' evaluations, not an objective audit of organizational routines. Its contribution lies in showing that, from the muzakki perspective, visible digital capability and governance are closely aligned with perceived answerability.

The DTC $\rightarrow$ CDG relationship is the strongest structural association in the model ($\beta = 0.632$; $f^2 = 0.666$). Institutional Theory offers one interpretation: OPZ operating under digital-service expectations, regulatory scrutiny, and legitimacy pressures may present capability and governance practices as mutually reinforcing features of their digital presence. Critical Theory of Technology adds that digital systems become governance-relevant when design choices affect information visibility, privacy, participation, inclusion, and control. Zakat studies that emphasize technology-enabled governance and website accountability are compatible with this interpretation (Widiastuti et al., 2021; Wahyudi et al., 2021), while broader digital-capability research likewise argues that organizational value depends on more than technology investment alone (Baiyere et al., 2025; Volz et al., 2025). The present data, however,

do not show that internal digital capability caused governance quality because the respondents did not observe internal systems directly. A more precise reading is that favorable perceptions of digital capability coexist strongly with favorable perceptions of digital governance in this sample.

The accountability results provide a second layer of evidence. Both perceived DTC ($\beta = 0.223$) and perceived CDG ($\beta = 0.448$) are positively associated with perceived OA, which is consistent with the expectation that accessible digital records, transparent information, and responsive governance can provide stakeholders with a clearer basis for judging organizational answerability. Zakat scholarship has repeatedly linked accountability with stewardship, disclosure, governance, and institutional responsibility (Sawmar & Mohammed, 2021; Narulitasari et al., 2023; Zakiy et al., 2023). Within Stakeholder Theory, this association is plausible because accountability depends partly on whether stakeholders can obtain and evaluate information about organizational conduct. Nevertheless, CDG and OA are conceptually adjacent, and the CDG domain of digital transparency may overlap with broader accountability judgments. The coefficient should therefore be interpreted together with the need for item-level HTMT, cross-loading, and wording checks rather than as proof that the two constructs are fully distinct.

H7 gives the clearest support for the proposed indirect mechanism. The $DTC \rightarrow CDG \rightarrow OA$ specific indirect effect is positive and significant ($\beta = 0.283$), while the direct $DTC \rightarrow OA$ path remains positive and significant, which corresponds to complementary partial mediation under Zhao et al. (2010). Statistically, governance perceptions account for part of the association between digital-capability perceptions and accountability perceptions, but they do not exhaust that association. The result extends the direct-path findings by indicating that CDG is not merely correlated with DTC and OA separately; it also carries a meaningful portion of their statistical relationship. This interpretation fits the theoretical proposition that technological capability becomes relevant to accountability partly through the governance conditions under which digital processes are experienced. Because all constructs were measured simultaneously, the analysis cannot demonstrate that DTC occurred first or that CDG subsequently produced OA. The mediation result should therefore be read as an indirect association under the proposed theoretical ordering, not as a verified temporal process.

The trust findings sharply limit the reach of that mechanism. Trust correlates only 0.022 with DTC, 0.071 with CDG, and 0.008 with OA, its R^2 is 0.007, and H3, H5, H6, H8, and H9 are all unsupported. This pattern differs from studies that report links between muzakki trust and accountability, transparency, governance, institutional credibility, or digital engagement (Bin-Nashwan et al., 2021; Shafiyyah & Fithria, 2023; Hotimah & Suprayogi, 2023; Hamdani et al., 2024; Adiwijaya et al., 2024). Variation in earlier findings also shows, however, that accountability and transparency do not operate identically in every sample, so the present null result should not be treated as logically impossible. The data indicate only that the three predictors used here explain almost none of the variation in trust in this sample. They do not show that digitalization or accountability are generally irrelevant to trust in zakat institutions.

Before a new theoretical explanation is attached to the trust result, measurement and referent issues need to be ruled out. If trust items referred to zakat institutions in general while DTC, CDG, and OA items were interpreted in relation to a particular digital service experience, the constructs would not share a common organizational referent. Restricted variance, ambiguous wording, coding direction, or differences in prior OPZ experience could also reduce associations, but the present manuscript does not provide item-level distributions or outer loadings that would allow those possibilities to be tested. Variables such as religiosity, institutional reputation, social-impact visibility, and prior experience are theoretically relevant in the wider zakat literature, but they were not measured in this model and cannot be used as explanations of the current findings (Adiwijaya et al., 2024; Hamdani et al., 2024). For the same reason, the earlier language of a 'digital trust paradox' or a digital-governance 'hygiene factor' would overstate what the evidence shows. A better interpretation is that trust formation remains unresolved and requires a dedicated measurement audit and a broader model.

The CDG construct itself is an important part of the study's conceptual novelty, but its status should remain provisional. The six proposed elements, fund traceability, transparency, data ethics and privacy, participatory oversight, inclusion, and complaint responsiveness, are normatively coherent for digital zakat governance and connect directly with stakeholder and technology-governance concerns. They are not necessarily interchangeable manifestations of one latent trait, because an OPZ could be strong in privacy and traceability while weaker in inclusion or participation. Construct-specification research warns that such patterns may require a composite, formative, or higher-order representation rather than a single reflective specification (Diamantopoulos & Winklhofer, 2001; Jarvis et al., 2003). The reported reliability and AVE statistics show internal consistency under the retained model, but they do not by themselves resolve the direction of measurement or establish final scale validity. Future validation should publish the exact items, expert-review process, pilot diagnostics, outer loadings or weights, HTMT, and comparisons among plausible specifications. This measurement work is necessary if CDG is to become a transferable construct rather than only an organizing concept for the present model.

Taken together, the findings position the study more clearly within the zakat-governance literature. The empirical contribution is not evidence that digital transformation automatically produces public trust; it is evidence that muzakki perceptions of digital capability, digital governance, and accountability form a coherent cluster of associations, with CDG partially carrying the DTC-OA relationship. For OPZ managers, the most defensible practical implication is to make governance observable through traceable transactions, accessible reporting, explicit privacy practices, inclusive access, participatory channels, and responsive complaint handling. For regulators, the results are compatible with continued attention to transparency, supervision, accountability, and technology-enabled governance, priorities already emphasized in zakat research (Sawmar & Mohammed, 2021; Widiastuti et al., 2021; Wahyuni-TD et al., 2021). Stronger causal and organization-level claims require a different design in which managers or records measure DTC and governance, muzakki measure trust and service experience, and respondents are linked to a specific focal OPZ. Longitudinal or multi-wave data would also be needed to establish whether changes in capability or

governance precede changes in accountability and trust. This narrower positioning strengthens the study by separating the pathway supported by the data from the trust mechanism that remains open for further investigation.

5. Conclusion and Suggestion

This study shows that the respondent-level model is most informative for the relationship among perceived Digital Transformation Capability, perceived Critical Digital Governance, and perceived Organizational Accountability. Perceived DTC is positively associated with CDG and OA, and perceived CDG is positively associated with OA. The significant DTC → CDG → OA indirect effect, together with the significant direct DTC → OA path, is consistent with complementary partial mediation. These findings indicate that governance perceptions account for part of the association between perceived digital capability and perceived accountability. Because the evidence is cross-sectional and single-source, the results should be understood as an associational pattern among muzakki evaluations rather than as a temporal sequence of organizational transformation.

The proposed extension to muzakki trust is not supported. DTC, CDG, and OA have near-zero relationships with trust, the direct and indirect trust paths are non-significant, and trust has $R^2 = 0.007$. The study therefore does not infer a digital trust paradox or attribute the null result to unmeasured emotional, religious, reputational, or social-impact mechanisms. For practice, OPZ can still strengthen user-visible traceability, transparency, privacy protection, inclusion, participation, and complaint responsiveness because these features are relevant governance objectives and are associated with accountability perceptions in the present model. Future research should determine whether those practices influence trust when constructs are tied to a specific focal OPZ and measured with multi-source, item-level, and longitudinal evidence.

6. Limitations and Future Research

Several limitations define the boundary of these findings. First, DTC, CDG, and OA were reported by external muzakki, so the scores represent perceptions of organizational practices rather than direct measures of internal capability, governance routines, or audit-based accountability. Second, the reported dataset does not provide a standardized focal-OPZ identifier or distribution by BAZNAS and LAZ, which prevents clustering, multilevel analysis, and organization-level comparison. Third, the study is cross-sectional and single-source, so temporal order cannot be established and common-method variance remains a plausible concern. Fourth, the specific fieldwork period is not reported in the source manuscript and should be confirmed before submission. These limitations mean that the current analysis is strongest as an individual-level model of stakeholder perceptions rather than as evidence about differences among OPZ organizations.

Measurement limitations are equally important. CDG is newly proposed and combines six conceptually heterogeneous governance elements, but the manuscript does not reproduce the exact items, expert-validation statistics, pilot item diagnostics, outer loadings, HTMT, or evidence comparing reflective with composite/formative or higher-order specifications. The trust construct also shows near-zero relationships with the rest of the model, yet item distributions, coding checks, outer loadings, and the exact focal referent are unavailable, so

measurement and substantive explanations cannot be distinguished. Numerical CMB diagnostics, Q^2 , SRMR, and bootstrapped confidence intervals are also absent from the reported output and should be extracted from the original SmartPLS project or raw data if available. Future studies should use multi-source measurement, retain one focal OPZ per respondent, collect sufficient organization-level identifiers for clustered analysis, and use longitudinal or multi-wave designs when temporal mediation is of interest. Trust research should first establish item quality and referent consistency before testing additional factors such as OPZ experience, digital-zakat frequency, OPZ type, religiosity, institutional reputation, and perceived social impact.

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Declaration of AI and AI-assisted technologies in the writing process

During the preparation of this manuscript, the authors used Gemini AI to assist with language improvement, grammar, and manuscript organization. All content was subsequently reviewed and revised by the authors, who take full responsibility for the accuracy and integrity of the manuscript.

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