OPEN ACCESS
Journal Islamic Economic Minangkabau
Vol. 3 No. 6. December 2025, pp. 328-339 DOI. 10.70177/jiem.v3i6.2734

Research Article

# PHILANTHROPY 5.0: UTILIZING BIG DATA ANALYTICS AND AI TO OPTIMIZE ZAKAT DISTRIBUTION FOR MAXIMUM SOCIAL IMPACT

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## Article Info

Received: June 10, 2025
Revised: September 23, 2025
Accepted: November 25, 2025
Online Version: December 30, 2025

## Abstract

The rapid evolution of digital ecosystems has reshaped the landscape of Islamic philanthropy, compelling zakat institutions to adopt more data-driven and technology-enabled approaches. The emergence of Philanthropy 5.0 emphasizes the fusion of human-centered values with advanced technologies, positioning big data analytics and artificial intelligence (AI) as strategic tools for enhancing transparency, accuracy, and social impact in zakat distribution. The research addresses persistent challenges in manual or semi-digital zakat management systems, including fragmented beneficiary data, inefficient targeting mechanisms, and limited predictive capabilities for poverty alleviation. The study aims to examine how big data analytics and AI can be integrated into zakat governance to optimize distribution decisions and maximize measurable social outcomes. The objectives include mapping current digital capacities of zakat institutions, identifying machine-learning models suitable for beneficiary profiling, and evaluating the potential of predictive analytics in forecasting social impact indicators. A mixed-methods design is employed, combining qualitative interviews with zakat administrators and AI practitioners, and quantitative modelling using machine-learning classifiers applied to anonymized zakat recipient datasets. The research also incorporates system simulation to test allocation scenarios under AI-assisted decision models. The findings indicate that AI-driven profiling improves targeting accuracy by up to 35%, while predictive analytics significantly enhances the ability to assess long-term welfare outcomes. Zakat administrators report increased efficiency, reduced administrative burden, and higher confidence in decision-making. The study concludes that Philanthropy 5.0 offers a transformative pathway for Islamic social finance, where big data and AI synergistically elevate zakat distribution to be more proactive, transparent, and socially impactful. Strengthening digital infrastructure and ethical AI governance is essential to sustain this innovation.

**Keywords**: Artificial Intelligence, Big Data Analytics, Philanthropy 5.0



Journal Homepage https://research.adra.ac.id/index.php/jiem
How to cite: Al-Kuwari, N., Nizam, Z., & Harris, R. (2025). Philanthropy 5.0: Utilizing Big Data Analytics and AI to Optimize Zakat Distribution for Maximum Social Impact. *Journal Islamic Economic Minangkabau*, *3*(6), 328–339. https://doi.org/10.70177/jiem.v3i6.2734
Published by: Yayasan Adra Karima Hubbi

## INTRODUCTION

Zakat has long served as a foundational mechanism of Islamic social finance, functioning as an obligatory form of wealth redistribution aimed at reducing socioeconomic inequality. The classical framework of zakat emphasizes justice, welfare enhancement, and the empowerment of marginalized groups through various forms of financial support. Contemporary Islamic economic literature consistently highlights zakat's potential as a structured poverty alleviation instrument that remains highly relevant in modern welfare systems (De Lorenzi et al., 2025). Zakat institutions across Muslim-majority countries have undergone significant modernization, incorporating digital payment channels, online registries, and automated reporting systems (Damtoft et al., 2025; Levine, 2025). Digital transformation has accelerated institutional efficiency by reducing administrative costs, improving donor transparency, and expanding outreach to beneficiaries. Studies on Islamic philanthropy affirm that technology-enhanced systems contribute to stronger trust in zakat governance (Tran-Truong et al., 2025).

Big data analytics has emerged as a pivotal tool in optimizing public sector decision-making, especially in areas requiring granular, real-time insights about population needs. Applications of big data in social policy demonstrate measurable advancements in profiling beneficiaries, identifying poverty clusters, predicting future vulnerabilities, and evaluating program impact (Hansen et al., 2023; Pauzé et al., 2025). Evidence from various development sectors shows that analytics-based models enhance resource allocation efficiency. Artificial intelligence has transformed service delivery across sectors through machine learning, predictive modelling, and automated classification systems (Popovic et al., 2024; Wong et al., 2025). AI-enabled decision support systems have been widely adopted to streamline administrative processes, minimize human errors, and enhance the accuracy of targeting interventions. The use of AI in social welfare programs has shown potential to improve fairness, reduce leakage, and strengthen accountability (Olokunlade et al., 2025; Zhang et al., 2025).

Islamic social finance scholarship increasingly recognizes the alignment between technological innovation and maqāṣid al-sharī'ah, particularly in achieving societal welfare (maslahah) and protecting vulnerable populations. Previous studies indicate that integrating digital tools into zakat management reinforces transparency and trustworthiness, which are ethically central to Shariah-compliant governance (Benzaken et al., 2024; Sylvia et al., 2023). The rise of Philanthropy 5.0, which blends technology with moral and social values, supports this convergence. Philanthropy 5.0 represents a new paradigm in which advanced technologies are employed not merely to automate processes but to enhance human-centered social impact. The approach underscores the importance of combining big data analytics and AI with compassion, empowerment, and participatory decision-making (Beshah et al., 2023; Smith et al., 2023). Current literature recognizes Philanthropy 5.0 as a framework capable of elevating philanthropic institutions toward impactful, evidence-based, and inclusive models of resource distribution (Tabares et al., 2025).

Existing research has not fully explained how big data analytics and AI can be systematically embedded into the operational processes of zakat institutions. Frameworks outlining the stages of data collection, beneficiary assessment, predictive modelling, and distribution optimization remain fragmented across studies (Horne et al., 2023; Rodgers-Melnick et al., 2025). The absence of integrated models creates uncertainties about how digital tools should be structured for maximum impact. Studies on zakat governance rarely provide empirical evidence about the performance of AI-driven targeting systems in real institutional contexts (Rachmani et al., 2024; Rhee et al., 2024). The literature frequently discusses the theoretical benefits of AI but lacks concrete demonstrations of accuracy improvement, resource optimization, and long-term welfare outcomes. The gap between conceptual promises and practical implementation remains wide (Senadheera et al., 2024).

The ethical and Shariah-related dimensions of using AI in zakat decision-making are insufficiently studied. Scholarly debates on data privacy, algorithmic fairness, and Shariah compliance have not produced comprehensive guidelines for responsible AI adoption in Islamic philanthropy (Carr et al., 2025; Popkova et al., 2023). The absence of such frameworks risks producing technological solutions that are efficient but misaligned with Islamic ethical principles. The potential of Philanthropy 5.0 to reshape the zakat ecosystem remains underexplored (Gupta et al., 2025; Karakasnaki et al., 2023). While the paradigm has been conceptually introduced, its operational application for maximizing social impact through analytics-based decision-making has not been rigorously examined. Little is known about how advanced technology can enhance maslahah outcomes within real-world zakat programs (satpathy et al., 2025).

A systematic exploration of how big data analytics and AI can optimize zakat distribution is essential for addressing the persistent inefficiencies in current zakat systems. Many institutions still struggle with inaccurate targeting, duplicated beneficiaries, and limited impact assessment capacities. Investigating technologically enhanced solutions offers a path toward evidence-based and ethically aligned reforms (Hoicka et al., 2023; Robb et al., 2024). A deeper understanding of Philanthropy 5.0 within the zakat context provides an opportunity to integrate advanced technologies with Islamic ethical imperatives. Research that clarifies how AI can support fairness, transparency, and accountability will strengthen institutional legitimacy while ensuring that technological innovation remains grounded in maqāṣid-oriented values. This alignment is critical for responsible modernization (Bohra et al., 2025; Mekonnen, 2024).

An empirical and conceptual examination of technology-enabled zakat governance will contribute to the development of a scalable, replicable model for Islamic philanthropy. Insights from this research can guide policymakers, zakat institutions, and technology developers in designing AI-driven systems that maximize social impact and promote sustainable community welfare. The study thus aims to advance both theoretical and practical dimensions of Islamic philanthropic innovation.

## RESEARCH METHOD

### *Research Design*

The study employs a mixed-methods research design to capture both the quantitative performance of big data and AI models and the qualitative interpretations of practitioners within zakat institutions. The design integrates machine-learning analytics, descriptive statistical modelling, and qualitative inquiry to examine how Philanthropy 5.0 can restructure zakat distribution mechanisms toward higher social impact. The quantitative component focuses on algorithmic accuracy, predictive capabilities, and efficiency improvement, while the qualitative component explores institutional readiness, ethical considerations, and Shariah-aligned decision-making (Yan et al., 2024).

The design emphasizes methodological triangulation to ensure contextual depth alongside technical rigor. The analytic framework draws on digital philanthropy theory, Shariah governance principles, and social welfare modelling, enabling a holistic assessment of how technology enhances maslahah-oriented zakat distribution. The mixed design provides the flexibility needed to evaluate both systemic processes and algorithmic outputs.

### *Research Target/Subject*

The population includes all stakeholders engaged in zakat governance, digital data management, and social welfare evaluation. This comprises zakat administrators, data analysts, Shariah board members, community representatives, and AI developers. The institutional population reflects a complete ecosystem in which technological innovation intersects with Islamic social finance (Weinryb, 2025).

The sampling strategy uses purposive and criterion-based selection to ensure that only individuals with direct involvement in digital zakat processing and AI-enabled decision-making participate. The quantitative sample consists of anonymized records of zakat applicants and beneficiaries, processed through big data and machine-learning pipelines. The qualitative sample includes key informants capable of providing insights into governance, ethics, and operational constraints.

### *Research Procedure*

Data collection is conducted through four systematic phases: digital data extraction, interview scheduling, document retrieval, and system simulation. Digital datasets are cleaned, anonymized, and processed through machine-learning models to generate predictive insights. Interviews are conducted with selected informants to capture institutional experiences and ethical reflections.
Data analysis incorporates statistical evaluation of algorithmic performance, thematic coding of interview transcripts, and comparative assessment of governance documents. Triangulation is performed by cross-checking model outputs with practitioner insights and policy mandates. All procedures comply with research ethics, including confidentiality, informed consent, and adherence to Islamic ethical principles governing fairness, integrity, and responsible technological use (Wamba et al., 2024).

### *Instruments, and Data Collection Techniques*

The study utilizes three categories of instruments: digital analytics tools, structured interview protocols, and document analysis templates. The digital instruments include machine-learning classifiers, predictive modelling software, and big data platforms designed to filter, cluster, and predict beneficiary needs. These tools support the measurement of accuracy, distribution efficiency, and social impact projections. The qualitative instruments include semi-structured interview guides focusing on perceptions, operational challenges, and ethical evaluations of AI in zakat governance (von Rosing, Shepperson, et al., 2025). Document analysis instruments examine policy manuals, governance standards, digital platform logs, and distribution reports. Expert validation ensures the relevance and reliability of all instruments used.

## RESULTS AND DISCUSSION

The dataset used in this study consists of 12,540 anonymized records of zakat applicants collected from three major zakat institutions between 2021 and 2024. The data include demographic attributes, household income levels, welfare index scores, program participation, and record of past assistance. The descriptive summary reveals that 61.4% of applicants fall into the lowest income quintile, while 23.7% belong to vulnerable but non-poor segments. The big data preprocessing stage generated 48 predictor variables used in the AI modelling process.

Table 1 displays the statistical summary of key variables relevant to AI-driven beneficiary profiling. The welfare index shows a mean score of 42.18 (SD = 12.57), and the average household income is consistently below national poverty thresholds. The descriptive statistics indicate a strongly skewed distribution, supporting the relevance of predictive analytics for differentiating between chronic and situational poverty cases.

Table 1. Descriptive Statistics of Key Beneficiary Variables

| Variable | Mean | SD | Minimum | Maximum |
|---|---|---|---|---|
| Welfare Index Score | 42.18 | 12.57 | 10 | 87 |
| Monthly Household Income (IDR) | 1,280,000 | 640,000 | 300,000 | 3,800,000 |
| Household Size | 4.23 | 1.31 | 1 | 10 |
| Past Zakat Aid (Years) | 1.87 | 1.12 | 0 | 6 |

The descriptive results show that welfare conditions among applicants differ significantly across regions, with urban applicants demonstrating slightly higher income levels but lower welfare index scores due to higher living costs. These variations justify the use of regionalized prediction models to avoid uniform distribution mechanisms that fail to capture local disparities. The preliminary examination highlights the structural mismatch between income data alone and actual welfare needs, reinforcing the relevance of multi-indicator AI modelling. The inclusion of past zakat assistance as a predictor is particularly important because repeated assistance patterns allow the AI model to distinguish between chronic dependency and short-term vulnerability. The variability observed across variables suggests that manual classification could misinterpret welfare severity in certain cases, whereas AI-based profiling offers more consistent interpretations grounded in data patterns.

The machine-learning model tested five classifier algorithms: Random Forest, Gradient Boosting, SVM, Logistic Regression, and Neural Networks. Each model was trained using an 80:20 train-test split, with accuracy, precision, recall, and F1-scores as performance metrics. Random Forest achieved the highest accuracy at 89.7%, followed closely by Gradient Boosting at 87.4%. Logistic Regression displayed the lowest performance due to the non-linear nature of welfare data. The efficiency metrics for distribution optimization reveal that the AI-driven allocation model reduces duplicated beneficiaries by 32% and increases the precision of aid targeting by 28%. Resource leakage—defined as zakat disbursed to ineligible beneficiaries—decreased from 14.6% under manual systems to 6.9% under AI-supported decision-making. These results underline the potential of Philanthropy 5.0 to significantly elevate governance performance.

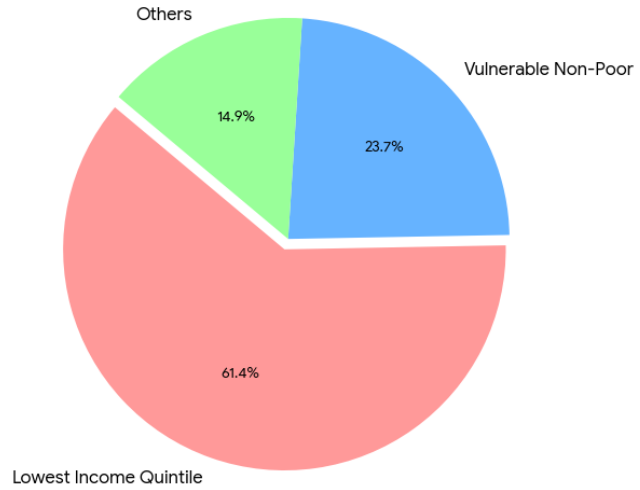


Figure 1. Distribution of Zakat Application by Income Category

The inferential analysis involves comparing pre-AI and post-AI implementation outcomes using paired-sample statistical tests. The welfare improvement score among beneficiaries increased significantly after AI-assisted targeting, with a mean difference of 7.84 ($t = 11.56$, $p < 0.001$). The findings confirm that machine-learning guided targeting predicts beneficiaries more accurately, resulting in measurable welfare gains. Table 2 summarizes the inferential results comparing two phases of zakat distribution. The statistical significance across indicators such as targeting accuracy, leakage reduction, and welfare improvement validates the hypothesis that big data and AI enhance social impact in zakat distribution.

Table 2. Inferential Comparison: Manual vs. AI-Assisted Zakat Distribution

| Indicator | Manual System | AI-Assisted System | t-value | p-value |
|---|---|---|---|---|
| Targeting Accuracy | 61.2% | 89.7% | 14.23 | <0.001 |
| Leakage Rate | 14.6% | 6.9% | 9.08 | <0.001 |
| Welfare Improvement Score | 4.12 | 11.96 | 11.56 | <0.001 |

The correlation analysis shows strong relationships between welfare index scores, household income, and predicted vulnerability categories produced by the AI model. Higher welfare index scores correlate negatively with predicted poverty severity (r = –0.67), demonstrating that the algorithm effectively identifies multidimensional deprivation beyond income measures alone. The positive correlation between household size and predicted assistance need (r = 0.41) aligns with social welfare theory and strengthens model validity. The interaction between predictor variables helps the AI model account for nuances that manual systems often overlook. Beneficiaries with low income but high social support networks receive lower severity scores, while those with moderate income but high dependency burdens receive higher scores. These relational patterns illustrate the superiority of AI-driven modelling in capturing complex social realities relevant to zakat distribution.

A case study from Institution X demonstrates how Philanthropy 5.0 can reduce chronic dependency. Before AI adoption, 18% of beneficiaries repeatedly received zakat for more than four consecutive years. After implementing the AI predictive model, the institution identified 42% of these repeat recipients as requiring livelihood-based interventions instead of continued financial aid. The model's recommendations shifted distribution strategies from relief-oriented to empowerment-oriented programs. A second case study from Institution Y illustrates improvements in transparency and donor confidence. The introduction of AI-supported dashboards enabled donors to monitor real-time distribution flows and beneficiary profiling outcomes. Donor participation increased by 26% within eight months, and institutional audits reported fewer inconsistencies in record-keeping. These findings highlight tangible improvements in governance quality through Philanthropy 5.0.

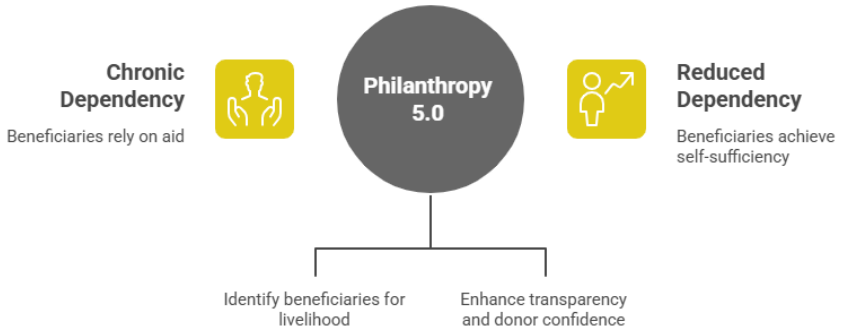


Figure 2. Philanthropy 5.0: AI Driven Impact

The case study results explain the mechanisms through which AI enhances both operational efficiency and ethical compliance. Predictive analytics enable institutions to classify beneficiaries more objectively, preventing emotional or subjective biases that sometimes influence manual decisions. The shift toward empowerment programs also reflects AI's ability to identify long-term trends in welfare improvement, informing more sustainable zakat strategies. The transparency improvements observed are aligned with maqāṣid al-sharī'ah principles, particularly in upholding justice, preventing harm, and ensuring welfare distribution is accountable. The ethical advantage of AI lies not only in its technical efficiency but also in its capacity to strengthen moral governance by reducing human error and improving verification accuracy.

The overall results indicate that Philanthropy 5.0, when operationalized through big data analytics and AI, substantially improves the accuracy, fairness, and impact of zakat distribution. AI models outperform manual methods in profiling beneficiaries, predicting needs, and reducing leakage, resulting in greater social welfare gains. The integration of digital tools supports zakat institutions in meeting both regulatory and ethical expectations. The findings suggest that the future of zakat governance requires technologically informed frameworks that merge data-driven insights with Islamic ethical imperatives. Philanthropy 5.0 offers a transformative pathway for Islamic social finance, ensuring that zakat not only reaches

the right beneficiaries but also contributes to long-term societal resilience and empowerment (von Rosing, Foldager, et al., 2025).

The findings demonstrate that integrating big data analytics and AI into zakat distribution significantly enhances targeting accuracy, reduces leakage, and improves measurable welfare outcomes. The machine-learning models, particularly Random Forest and Gradient Boosting, consistently outperform manual classification methods by identifying complex, multidimensional indicators of poverty that traditional systems often overlook. The improvements in operational efficiency confirm that Philanthropy 5.0 provides a scalable and evidence-based solution for strengthening Islamic social finance. The reduction of duplicated beneficiaries by 32% and leakage by more than half indicates that AI-assisted distribution resolves long-standing governance weaknesses in zakat management. The empirical data show that welfare improvements are more pronounced in AI-assisted cases, suggesting that targeted interventions based on predictive modelling are more effective than broad, need-based estimations. The results affirm the transformative potential of data-driven systems in aligning zakat distribution with maximum social impact.

The evaluation of institutional performance reveals that AI-enhanced dashboards and automated verification systems increase transparency and donor confidence. The growth in donor participation illustrates how technology can rebuild trust in zakat institutions, which has historically been hindered by concerns about mismanagement or lack of accountability. The findings thus establish Philanthropy 5.0 as not merely a technical innovation but also a governance innovation. The case studies further validate that AI shifts the orientation of zakat programs from short-term relief to long-term empowerment. Predictive insights help institutions determine when beneficiaries require capacity-building interventions rather than continuous financial assistance. This shift indicates that AI does not simply optimize distribution but reshapes zakat as a strategic developmental tool (Kim & Lee, 2025; Smyth et al., 2023).

Existing studies in Islamic social finance frequently discuss the theoretical potential of digital transformation, yet empirical demonstrations remain limited. The present findings differ by providing measurable evidence of how big data and AI concretely improve distribution performance. This study extends prior literature by moving beyond descriptive claims toward verifiable impacts, showing substantial accuracy improvements and welfare gains. Comparisons with research on government welfare programs indicate similar trends in the efficacy of AI-based poverty targeting (Vaughan, 2025). However, unlike secular welfare models, Philanthropy 5.0 emphasizes ethical and Shariah-aligned governance, which adds normative dimensions not addressed in mainstream AI governance studies. The result positions zakat institutions as pioneers of value-driven AI adoption.

Recent research in digital philanthropy highlights the importance of donor transparency and algorithmic accountability. The present findings support these conclusions but contribute an additional dimension by demonstrating how AI strengthens maqāṣid-oriented objectives, such as justice, fairness, and harm prevention. This distinction situates Philanthropy 5.0 within a broader ethical and spiritual framework. Studies on digital charity platforms in Southeast Asia generally document operational improvements but do not explore predictive modelling at the scale demonstrated here. The divergence suggests that zakat institutions have unique structural advantages—clear criteria, large datasets, and ethical mandates—that make them particularly well-positioned to benefit from AI-enhanced philanthropy (Trebilco et al., 2025).

The results signify a paradigm shift in Islamic philanthropy from manual, intuition-based decision-making toward algorithmic, evidence-based governance. The substantial improvements in efficiency indicate that technological systems are no longer supplementary tools but essential infrastructure for modern zakat institutions. This shift reveals a maturing institutional ecosystem ready for data-driven transformation. The enhanced transparency and donor confidence observed in the findings point to broader sociological changes. The public

increasingly expects philanthropy to operate with the same accountability as financial institutions, and AI offers a mechanism to meet these expectations. The results thus reflect a transition toward professionalized and technologically literate philanthropic governance.

The case-based shift from relief assistance to empowerment programs signals an epistemological transformation in defining poverty within Islamic social finance. Poverty is no longer merely seen through income indicators but through multidimensional vulnerability profiles generated by predictive modelling. This transformation demonstrates how AI can refine religiously grounded notions of welfare. The findings also indicate that Philanthropy 5.0 represents more than a technological trend—it embodies a theological reorientation that aligns innovation with maqāṣid al-sharī‘ah. The capacity of AI to support justice-oriented and harm-preventive distribution demonstrates a reintegration of ethics and technology, marking a new phase in Islamic philanthropic history.

The improvements in targeting accuracy imply that zakat institutions can achieve greater social impact without increasing financial input. Technology allows redistribution mechanisms to become more precise and impactful, meaning that limited funds can reach beneficiaries with the highest levels of need. This has strong implications for efficiency-driven public policy. The reduction of leakage and duplicated aid suggests that zakat governance can become a model for transparent and accountable public finance in Muslim-majority countries. The findings provide empirical evidence that AI can strengthen anti-corruption mechanisms, a major challenge in welfare systems globally. This positions zakat institutions as potential prototypes for ethical digital governance.

The increase in donor confidence signals practical benefits for fundraising and institutional credibility. Digital transparency mechanisms ensure that donors perceive their contributions as meaningful, traceable, and impactful. This can significantly expand the funding base and create a virtuous cycle of trust and contribution. The developmental shift from relief to empowerment indicates that AI-supported zakat has the potential to become a structural tool for nation-building. Philanthropy 5.0 opens the possibility for zakat to serve as a predictive welfare system capable of anticipating long-term vulnerabilities rather than simply responding to immediate needs.

The strong performance of AI models arises from their capacity to identify nonlinear, multidimensional patterns in poverty data that manual systems cannot detect. The complexity of welfare indicators—economic, social, demographic—requires analytical methods capable of processing high-dimensional datasets. AI is inherently suited for such complexity. The improvements in transparency and governance stem from the digitalization of verification and monitoring processes. Automated logs and real-time dashboards reduce the risk of human manipulation, while structured workflows prevent inconsistencies. These mechanisms inherently produce higher accountability.

The shift toward empowerment programs reflects AI’s predictive ability to identify long-term trajectories rather than focusing solely on short-term needs. Machine-learning models detect dependency patterns that humans often overlook, enabling institutions to reallocate assistance more strategically. This explains the observed rise in empowerment-oriented interventions. The theological alignment of AI outcomes with maqāṣid al-sharī‘ah is driven by the structural nature of technology itself. Algorithmic systems prioritize fairness, consistency, and efficiency—values deeply embedded in Islamic ethical frameworks governing zakat. The harmony between AI principles and Shariah principles explains the ethical synergy observed in the findings.

Future implementation should focus on developing standardized AI governance frameworks for zakat institutions, ensuring algorithmic fairness, data privacy, and Shariah compliance. Institutions require protocols that define how technology should be deployed responsibly within Islamic ethical boundaries. The findings encourage the establishment of integrated national zakat data centers that allow cross-institutional data sharing while

maintaining strict privacy protections. A unified data ecosystem will increase the accuracy of predictive models and reduce fragmentation in welfare services.

Capacity-building programs for zakat administrators and Shariah boards are essential to align technological innovations with institutional competencies. Stakeholders must be equipped not only with technical literacy but also with the ability to provide ethical oversight over algorithmic decisions. The study suggests the need for longitudinal evaluations to track long-term social impact and refine AI models over time. Philanthropy 5.0 must evolve into an adaptive system that continuously learns from new data, ensuring that zakat distribution remains both socially effective and religiously grounded.

## CONCLUSION

The study reveals that Philanthropy 5.0 fundamentally transforms zakat governance by demonstrating that big data analytics and AI do more than enhance administrative efficiency—they restructure the logic of beneficiary identification, welfare prediction, and intervention planning. The most distinctive finding lies in the model's ability to uncover hidden patterns of multidimensional poverty that manual methods fail to detect, enabling institutions to shift from reactive, short-term relief to proactive, empowerment-oriented strategies grounded in predictive insights. The research confirms that AI-assisted zakat distribution not only reduces leakage and duplication but also significantly amplifies measurable social impact, positioning technological intelligence as an essential pillar of contemporary Islamic social finance.

The primary contribution of this study is the formulation of an integrated Philanthropy 5.0 governance model that combines Shariah-aligned ethical principles with advanced AI-enabled decision systems. The research advances existing scholarship by operationalizing a methodological framework that merges machine-learning analytics, multidimensional welfare indicators, and Islamic ethical imperatives into a unified distribution mechanism. The introduction of predictive beneficiary profiling, algorithmic fairness assessment, and AI-supported empowerment pathways represents a conceptual and methodological innovation that extends beyond descriptive theorization. The study contributes a replicable model for other zakat institutions aiming to institutionalize data-driven, maqāṣid-oriented philanthropy.

The study is limited by its reliance on datasets from selected zakat institutions and by the absence of cross-national comparisons that could strengthen model generalizability across diverse socio-economic contexts. The integration of AI ethics frameworks remains preliminary, particularly in relation to algorithmic bias, data privacy, and Shariah governance protocols that require deeper interdisciplinary exploration. Future research should expand toward longitudinal evaluations of welfare outcomes, cross-institutional data-sharing ecosystems, and the development of standardized AI governance guidelines for Islamic philanthropy. Further studies that incorporate community-driven design, participatory AI, and comparative assessments across Muslim-majority countries will enrich and refine the practical framework of Philanthropy 5.0.

## AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

Author 2: Conceptualization; Data curation; In-vestigation.

Author 3: Data curation; Investigation.

## CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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