

Measuring Public Spending Efficiency on Hifdz al-'Aql in East Java

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Abstract

This study examines the efficiency of local government functional spending in East Java in realizing *hifdz al-'aql* and investigates whether regional area and population size explain variations in spending efficiency. A quantitative approach was employed using a Two-Stage Data Envelopment Analysis (DEA) covering 38 regencies and cities from 2019 to 2023. The first stage applied an input-oriented Variable Returns to Scale (VRS) model, with functional spending on education, economy, tourism-culture, and public order-security as inputs and the Education Index, represented by Expected Years of Schooling and Mean Years of Schooling, as the output. The second stage employed panel regression to examine regional area and population size as exogenous determinants. The results reveal an average efficiency score of 0.630, indicating considerable scope for input optimization or reallocation while maintaining existing educational outcomes. Regional area and population size have no statistically significant effects on efficiency variations. From a Sharia perspective, this efficiency gap should not be directly equated with *isrāf*, but understood as a normative indication for improving the management of *al-māl al-'āmm* as an *amānah* to maximize *maṣlahah*. The study contributes to Islamic economic law by operationalizing *hifdz al-'aql* as an evaluative framework that integrates empirical spending efficiency with Sharia-oriented public financial governance.

Keywords: Data Envelopment Analysis; Government Spending Efficiency; Hifdz al-'Aql; Islamic Public Finance; Maqashid Shariah

Abstrak

Penelitian ini menganalisis efisiensi belanja fungsional pemerintah daerah di Jawa Timur dalam mewujudkan *hifdz al-'aql* serta menguji apakah luas wilayah dan jumlah penduduk menjelaskan variasi efisiensi belanja. Penelitian menggunakan pendekatan kuantitatif melalui Two-Stage Data Envelopment Analysis (DEA) terhadap 38 kabupaten/kota selama 2019–2023. Tahap pertama menerapkan model input-oriented dengan asumsi Variable Returns to Scale (VRS), menggunakan belanja fungsi pendidikan, ekonomi, pariwisata-budaya, serta ketertiban-keamanan sebagai input dan Indeks Pendidikan yang direpresentasikan oleh Harapan Lama Sekolah dan Rata-rata Lama Sekolah sebagai output. Tahap kedua menggunakan regresi panel untuk menguji luas wilayah dan jumlah penduduk sebagai determinan eksogen. Hasil penelitian menunjukkan skor efisiensi rata-rata sebesar 0,630, yang mengindikasikan adanya ruang yang cukup besar untuk optimalisasi atau realokasi input dengan tetap mempertahankan capaian pendidikan yang ada. Luas wilayah dan jumlah penduduk tidak berpengaruh

signifikan terhadap variasi efisiensi. Dalam perspektif syariah, kesenjangan efisiensi tersebut tidak dapat langsung dikategorikan sebagai *isrāf*, tetapi menjadi indikator normatif untuk memperbaiki pengelolaan *al-māl al-‘āmm* sebagai amanah guna memaksimalkan *maṣlaḥah*. Penelitian ini berkontribusi pada hukum ekonomi syariah dengan mengoperasionalkan *hifdz al-‘aql* sebagai kerangka evaluasi yang mengintegrasikan pengukuran empiris efisiensi belanja dengan tata kelola keuangan publik berorientasi syariah.

Kata Kunci: Data Envelopment Analysis; Efisiensi Belanja Pemerintah; *Hifdz al-‘Aql*; Keuangan Publik Islam; *Maqashid Shariah*

Introduction

The effectiveness and efficiency of local government spending are central to the discourse on public economics and fiscal decentralization in Indonesia. Fiscal decentralization has made the Regional Revenue and Expenditure Budget (*Anggaran Pendapatan dan Belanja Daerah*—APBD) the primary instrument for fostering regional welfare (Fadhil Rachmad et al., 2023). However, increased regional fiscal capacity has not been fully matched by optimal public service performance. Potential structural inefficiencies warrant an in-depth spending review at the local level (Prasetyo & Rifan, 2026).

This efficiency issue becomes increasingly relevant when development goals are confronted with a more holistic framework of values. In the Indonesian context, with 245 million Muslims (Ditjen Dukcapil Kemendagri, 2024), the ideal concept of development cannot be measured only by material economic growth, but also by the achievement of universal welfare (*maqashid al-syari‘ah*). As widely acknowledged, the ultimate objective of *maqashid al-syari‘ah* is development welfare encapsulated in five main pillars (Ashur, 2006), one of which is the preservation of intellect and reason (*hifzd al-‘aql*). Substantively, *hifzd al-‘aql* aligns with efforts to improve human resource quality (Al-Tamimi et al., 2026).

Several prior studies indicate that the *maqashid* index serves as a more comprehensive benchmark than the conventional Human Development Index (HDI) (Hasbi, 2023). In an empirical framework, *hifzd al-‘aql* can be reflected through educational attainment, specifically increases in Expected Years of Schooling (*Harapan Lama Sekolah*—HLS) and Mean Years of Schooling (*Rata-rata Lama Sekolah*—RLS), which are computed within the education index. This index's improvement is believed to reflect successful investment in preserving and developing society's intellectual potential (Rama & Yusuf, 2019).

On the other hand, the ethical and efficient allocation of government spending is the primary key to achieving *hifz al-‘aql*. Ariyadi (2025) emphasize that budget allocation must be measured based on its contribution to achieving the goals of *maqashid al-syari‘ah*. Therefore, this study focuses on expenditure by function, as defined in Government Regulation (*Peraturan*

Pemerintah) Number 12 of 2019 concerning the classification, types, objects, organization, functions, and planning of regional development.

Education function expenditure is the main functional allocation for preserving *ḥifẓ al-‘aql*, as it directly supports HLS (Hasbi, 2023) and RLS. Referring to Bedoui (2012), the criteria for supporting budget allocations relevant to *ḥifẓ al-‘aql* (in addition to the education function) include: economic function expenditure (finance), tourism and culture (reward for creative work), and order and security (freedom-security of life). These three function-based allocations support the socio-economic infrastructure that enables a conducive environment for intellectual development.

Efficiency and effectiveness are paramount in public financial management, particularly in post-fiscal decentralization Indonesia. Public sector efficiency is measured by the local government's capability to optimally transform budget expenditures (inputs) into tangible development achievements (outputs) (Sekiguchi, 2019). However, within this study's analytical framework, spending efficiency is not merely viewed as an economic cost-saving mechanism. As Afonso et al. (2010) assert, it holds deep implications for policy legitimacy and effectiveness, while Prasetyo (2026) highlight its role in sustaining accountability and regional welfare.

From an ethical perspective, public expenditure efficiency is a fundamental prerequisite of *maqashid al-syari‘ah*. A *maqashid*-compliant budget allocation must be highly efficient to ensure resources are not squandered (*israf*) (Ariyadi, 2025; Chapra, 2008), enabling funds to be redirected toward fulfilling other essential needs within *al-daruriyyat al-khams* (Bedoui, 2012). Therefore, this study operationalizes function-based spending (education, economy, tourism-culture, and order-security) not just as standard fiscal variables, but as strategic inputs ethically mandated to achieve *ḥifẓ al-‘aql*.

Maqashid al-Syari‘ah (Ḥifẓ al-‘aql) as a Measurable Development Proxy

From an Islamic Economic Law perspective, public financial management is deeply rooted in the foundational principles of governance (*siyāsah syar‘iyyah*), trust (*amanah*), and collective justice (*‘adl*). Classical and contemporary scholars have extensively conceptualized that state expenditures represent a public trust (*amanah*) held by authorities to maximize social welfare (*mashlahah ‘ammah*). Al-Ghazali (*Al-Mushtashfa*) and al-Shatibi (*Al-Muwafaqat*) established that the ultimate purpose of Islamic jurisprudence is to preserve public benefit, classified into the five essential pillars (*al-daruriyyat al-khams*) (Al-Tamimi, et al., 2012).

Expanding upon classical foundations, Ibn Ashur (2006) reinterpreted *ḥifẓ al-‘aql* not merely as a passive prohibition against harm (e.g., intoxicants), but as a proactive, dynamic

obligation of the state to nurture human intellect, foster scientific inquiry, and build civilizational capacity (*'umran*). Similarly, Wahbah al-Zuhayli underscores that public wealth (*al-mal al-'amm*) must be allocated in alignment with ethical governance, where efficiency is not merely a utilitarian economic tool, but a moral and legal imperative (*wajib syar'i*) (Zuhayli, 2011). This perspective also aligns with recent *maqashid*-based policy evaluation in Islamic public finance, which emphasizes assessing the effectiveness of resource distribution not merely by the amount allocated, but by its ability to solve social problems, generate public benefit, and produce sustainable welfare outcomes (Rosidah et al., 2025).

In contemporary fiscal policy, *hifzd al-'aql* encompasses broader dimensions, including the development of human potential, intellectual empowerment, and equal access to knowledge. To operationalize this broader legal and philosophical concept into empirical scrutiny, this study utilizes the Education Index (comprising Expected Years of Schooling and Mean Years of Schooling) as measurable quantitative proxies (Ishak & Nasir, 2021). These indicators reflect the operational outcome of state efforts to fulfill its *amanah* toward intellectual preservation (Firdaus, 2018; Chapra, 2000). Thus, public expenditure on education is not treated only as an administrative budget category, but as a strategic instrument for strengthening human capability within the *maqashid* framework.

To transition *hifzd al-'aql* from a philosophical concept into a sharp empirical tool, this study adopts the education dimension of the Islamic Human Development Index (IHDI) (Anto, 2011; Rama & Yusuf, 2019; Alhadi, 2024). Specifically, *hifzd al-'aql* is proxied using the Education Index adopted by the Indonesian Central Bureau of Statistics (BPS), comprising two crucial sub-indicators: 1) Expected Years of Schooling (*Harapan Lama Sekolah*, HLS), which reflects the potential future duration of formal education and serves as an indicator of policy input commitment, and 2) Mean Years of Schooling (*Rata-Rata Lama Sekolah*, RLS), which represents the actual years adults have spent in formal education and reflects long-term output achievements.

By utilizing HLS and RLS, this study establishes a strict, measurable cause-and-effect relationship between regional functional spending and the specific achievements of *hifzd al-'aql* (Alhadi, 2024; Antonelli & Bonis, 2019). This alignment ensures that the efficiency analysis does not stop at measuring budget absorption but proceeds to evaluate whether regional spending can produce educational outcomes that are normatively aligned with *maqashid al-syari'ah*. Therefore, the resulting efficiency scores are expected to yield precise and targeted policy interpretations for improving education-oriented public welfare.

Two-Stage Data Envelopment Analysis (DEA) as the Analytical Tool

To operationalize the theoretical framework above, a robust methodological tool is required. The non-parametric Data Envelopment Analysis (DEA) method is the most appropriate approach for measuring the performance efficiency of Regencies/Cities in East Java (Ghasemi & Golami, 2024). Developed by Charnes, Cooper, and Rhodes (1978), DEA evaluates the relative performance of Decision-Making Units (DMUs) by comparing input-to-output ratios.

DEA is employed in this study due to its specific analytical advantages: a) Multi-Dimensional Capability: It simultaneously accommodates multiple functional spending inputs and development outputs without requiring an explicit functional form (Antonelli & Bonis, 2019; Ouertani et al., 2018). b) Flexibility: It does not demand assumptions regarding data distribution or production functions (Shadady & Alnori, 2024), unlike parametric methods such as Stochastic Frontier Analysis (SFA) (Sihaloho et al., 2019). c) Benchmarking: It effectively identifies efficient benchmark DMUs that form the efficiency frontier (Ghasemi & Gholami, 2024; Sekiguchi, 2019).

However, first-stage DEA scores are purely descriptive. To fulfill the objective of providing actionable policy recommendations, this study utilizes a Two-Stage Analysis. The efficiency scores generated in the first stage are subsequently regressed against exogenous variables (e.g., geographical and demographic factors) to ascertain why efficiencies vary across DMUs, thereby enabling precise policy formulation (Simar & Wilson, 2020).

Previous Studies and Research Positioning

Government expenditure efficiency is an intensive subject in public economics. Globally, DEA has been widely applied to local government spending (Afonso et al., 2010; Ouertani et al., 2018; Sekiguchi, 2019). In Indonesia, studies have analyzed spending efficiency across various sectors, including health in Maluku (Sihaloho, et al., 2019), education in Bantul (Parwoto et al., 2021), and regional services in West Sumatra (Trisyandi et al., 2016).

Regarding educational efficiency (relevant to *hifdz al-'aql*), previous researchers have utilized various inputs such as per capita education spending (Sabermahani et al., 2013), teacher ratios (Afonso & Aubyn, 2006; Salazar Cuellar, 2014), and education personnel ratios (Sabermahani et al., 2013). For outputs, RLS is intensively used (Ikhwan, 2020; Prasetyowati & Haryanto, 2018). Recent breakthroughs by Ikhwan (2020) and Alhadi (2024) tested efficiency against the aggregate IHDI across 34 Indonesian provinces, highlighting variations across *maqashid* pillars and confirming Farrell's (1957) principle that higher spending proportions do not guarantee higher efficiency.

While previous studies have successfully integrated DEA and IHDI, they predominantly evaluate efficiency across the five *maqashid* pillars in an aggregated or parallel manner. Consequently, the analysis of *hifzd al-‘aql* is diluted and lacks in-depth, singular focus. This study utilizes its analytical framework to fill this critical gap by explicitly narrowing the DEA Two-Stage Analysis exclusively to the *hifzd al-‘aql* pillar—proxied through HLS and RLS—at the Regency/City level. This concentrated approach transforms the *maqashid* theory from a broad evaluation tool into a sharp, focused instrument for local policy review.

Several previous studies have applied Data Envelopment Analysis (DEA) to measure the efficiency of regional spending. Among them, Alhadi (2024) and Ikhwan (2020) confirmed the relationship between spending efficiency and the Islamic Human Development Index (IHDI), which implicitly incorporates the *hifzd al-‘aql* dimension. Furthermore, Mukti & Auwalin (2020) utilized Bootstrap DEA and focused on the IHDI in general. However, a DEA analysis that explicitly focuses on the efficiency of regional functional spending toward the specific proxy of *hifzd al-‘aql* is still not found.

In addition to this significant gap in research proxies, DEA studies in the public sector often stop at calculating efficiency scores (Stage 1) (Sekiguchi, 2019). Yet, according to Putri & Prasetyia (2023), the identification of exogenous factors affecting inefficiency requires a Two-Stage Analysis to formulate well-targeted policy recommendations. Analyzing exogenous factors, such as regional area and population size, may be essential for formulating contextual policy recommendations.

Meanwhile, several studies that attempt to integrate the *maqashid al-syari‘ah* framework are often qualitative or limited to the more general IHDI level (Lubis, 2013). On the other hand, research that analyzes spending efficiency in East Java deeply during the critical period of 2019–2023 (global health crisis and economic recovery) is also still minimal. In fact, East Java is one of the largest economic centers in terms of scale and population (BPS, 2020).

Based on the background, value context, and identified empirical gaps, this study endeavors to provide a substantial contribution to the literature. The novelty of this research lies in the integration of the *maqashid al-syari‘ah* (*hifzd al-‘aql*) framework with the DEA Two-Stage Analysis model. This approach is expected to generate meaningful empirical findings on how local governments in East Java can optimize spending allocation to achieve development goals aligned with the values of welfare (*mashlahah*).

This study also aims to carefully analyze how efficient the functional spending allocation of Regency/City governments in East Java Province is in achieving the *hifzd al-‘aql* index during the 2019–2023 period. Furthermore, this study also intends to identify the geographical

and demographic determinant factors (regional area and population size) that underlie the variation in these efficiency levels.

Methods

This study employs a quantitative approach by combining descriptive and inferential statistics through a Two-Stage Efficiency Analysis design. The first stage measures relative efficiency using Data Envelopment Analysis (DEA), while the second stage identifies the determinants of inefficiency through panel data regression. This dual-layered approach is robust because it enables estimation of relative efficiency frontiers and statistical examination of exogenous factors that drive efficiency variation across regions (Simar & Wilson, 2020). The Decision-Making Units (DMUs) consist of all 38 Regency and City Governments in East Java Province, using pooled panel data over a five-year period from 2019 to 2023. To ensure empirical reliability, fiscal data on the realization of Regional Expenditure by Function were obtained from the Directorate General of Regional Financial Development under the Ministry of Home Affairs, while demographic and output data, including the Education Index, Regional Area, and Population, were collected from the Central Bureau of Statistics (*Badan Pusat Statistik*, BPS). The integration of fiscal and socio-demographic data provides a comprehensive empirical foundation for conducting the Two-Stage Efficiency Analysis.

The research variables are categorized according to the two analytical stages. In Stage 1, the input variables consist of functional spending allocations controlled by local governments, representing financial investments to achieve *hifzd al-'aql*. The output variable is the realization of *hifzd al-'aql*, proxied by the Education Index, which is derived from Expected Years of Schooling (HLS) and Mean Years of Schooling (RLS). This proxy is empirically relevant for measuring intellectual achievement influenced by public investment (Rahmawati & Muhsyaf, 2025). In Stage 2, two exogenous variables capture socio-demographic complexity affecting efficiency: Regional Area (X_1) and Population Size (X_2). Regional Area reflects economies of scale and logistical service costs, as geographically larger regions generally require higher public service delivery expenses. Meanwhile, Population Size represents demographic scale and the structural complexity of public service provision, allowing the regression model to account for differences in operational burdens across local governments.

The DEA model applied in this study is input-oriented under the assumption of Variable Returns to Scale (VRS). The input-oriented model is appropriate for evaluating government spending efficiency because local governments have greater managerial control over inputs, particularly budget execution, than over outputs such as educational indices, which are

influenced by broader socio-economic conditions over time (Shaddady & Alnori, 2024, 2024; Ouertani et al., 2018). Conceptually, this model identifies potential budget savings by addressing the question of how much an inefficient DMU can reduce expenditure inputs while maintaining the same output level (Simar & Wilson, 2020). In the context of public accountability, this approach aligns with the objective of optimizing limited fiscal resources (Antonelli & Bonis, 2019). Therefore, the input-oriented DEA model is widely used in public sector and state-funded institutional efficiency studies (Alhadi, 2024).

The analytical procedure is conducted in two main stages. The first stage is efficiency measurement, in which an input-oriented VRS DEA model is used to calculate the efficiency score (θ) for each decision-making unit (DMU). The second stage is determinant analysis, where the generated efficiency scores (θ) are treated as the dependent variable (Y) in a panel data regression model. This regression is then applied to examine the relationship between efficiency scores and the exogenous variables, namely area (X_1) and population (X_2).

The regression equation for the second stage is formulated as follows:

$$\theta_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \varepsilon_{it}$$

Where:

θ_{it}	=	The DEA efficiency score of DMU i at time t
α	=	Constant term
X_{1it}	=	Regional Area of DMU i at time t
X_{2it}	=	Population Size of DMU i at time t
$\beta_1 \beta_2$	=	Regression coefficients
ε_{it}	=	Error term

Methodologically, evaluating the determinants of DEA efficiency scores in the second stage requires careful econometric consideration because the dependent variable (θ_{it}) is strictly bounded between 0 and 1. While two-stage DEA approaches often use panel data regression to capture exogenous effects, bounded dependent variables can introduce bias in standard Ordinary Least Squares (OLS) estimators (Simar & Wilson, 2020).

To maintain analytical robustness, this study employs panel regression as an exploratory framework to test the influence of demographic scale (population) and geographic coverage (area). We acknowledge the bounded nature of the DEA scores as a methodological boundary, suggesting that future research may extend this framework using truncated regression with bootstrapping protocols or Tobit models to further refine parameter consistency. This regression analysis will identify the significance of geographical and demographic factors and their impact on DMUs' efficiency in allocating functional spending to achieve *hifzd al-'aql* during the 2019–2023 period.

Local Government Spending Efficiency Analysis

The input-oriented VRS DEA model provides a critical overview of the ability of 38 DMUs (Regencies/Cities) in East Java to transform functional spending into educational index achievements during 2019–2023. Based on the pooled data processed via MaxDEA, the average efficiency level across all Regencies/Cities in East Java indicates that, generally, spending allocation for *hifz al-‘aql* stands at 0.63 (medium efficient). This score signifies a substantial pure technical inefficiency; approximately 37% of the total functional spending (education, economy, tourism-culture, and order-security) could potentially be saved without reducing the existing output achievements.

These findings perfectly align with the arguments of Prasetyo & Rifan (2026), who highlight the persistence of structural inefficiencies post-fiscal decentralization. From a *Maqasid* perspective, this relative inefficiency does not automatically establish direct jurisprudential proof of intentional *israf* (wastefulness), but rather serves as a normative warning of sub-optimal resource management that risks reducing potential public welfare (*mashlahah*). Every Rupiah allocated beyond the ideal efficiency frontier represents lost potential resources that should ideally be reallocated to fulfill other pillars of *al-daruriyyat al-khams*, such as *hifz al-nafs* (health/life) or *hifz al-maal* (economic development).

Table 1. Summary of DEA Efficiency Scores for Selected DMUs (2019–2023)

Classification	DMU (Regency/City)	Year	Efficiency Score (θ)	Status
Efficiency Frontier	Kota Madiun	2023	1.00	Efficient (Benchmark)
(Perfect Efficiency)	Kota Malang	2023	1.00	Efficient (Benchmark)
	Kab. Banyuwangi	2022	1.00	
	Kab. Banyuwangi	2023	1.00	
	Kab. Ngawi	2019	1.00	
	Kab. Ngawi	2020	1.00	
Lowest Efficiency	Kota Surabaya	2022	0.11	Highly Inefficient
(Structural) Inefficiency	Kota Surabaya	2023	0.11	Highly Inefficient
Overall Average	All 38 DMUs in East Java	2019-2023	0.630	Medium Efficient

Source: Secondary Data, processed (2026)

The first-stage analysis maps local governments' ability to translate functional spending into educational index achievements. Based on the aggregate data of the 38 DMUs across East Java from 2019 to 2023, the overall average efficiency score stands at 0.630, indicating a "medium efficient" status. This empirical finding reveals a substantial pure technical

inefficiency gap across the province; on average, local governments could potentially reduce or reallocate 37% of their functional spending (encompassing education, economy, tourism-culture, and order-security) without compromising their current output in the *hifzd al-'aql* (preservation of intellect) dimension.

Within this performance spectrum, the DEA computation identifies several DMUs on the efficiency frontier (score = 1.000). Cities such as Madiun and Malang in 2023, alongside regencies like Banyuwangi (2022, 2023) and Ngawi (2019, 2020), achieved maximum efficiency status. These regions produced highly competitive educational index outputs while maintaining relatively minimal, proportional functional spending inputs compared with other regions. Consequently, these benchmark DMUs serve as a mandatory peer-group reference for underperforming local governments.

The ability of these benchmark DMUs to maximize outputs with proportionate inputs underscores the importance of agile fiscal management in regional governance. Recent empirical studies in public economics support this phenomenon; Prasetyo & Rifan (2026) in their analysis of Indonesian municipalities found that high fiscal capacity often leads to "budgetary slack" if not managed with strict performance indicators. By contrast, benchmark regions like Madiun and Banyuwangi demonstrate that strategic, targeted interventions—rather than merely inflating the budget ceiling—are the most effective mechanisms for accelerating human capital development and securing the objectives of *hifzd al-'aql*.

Conversely, the model starkly highlights profound structural inefficiency at the opposite end of the spectrum, most notably in Surabaya City, which recorded the lowest efficiency score of 0.110 in both 2022 and 2023. This is a critical anomaly; as the provincial capital and the economic epicenter with the largest Regional Budget (APBD) in East Java, Surabaya possesses immense fiscal capacity. However, the DEA model mathematically proves that massive spending does not automatically translate into relative efficiency. The city's astronomical input in functional expenditures yields an educational index that, while nominally high, is deeply disproportionate and inefficient when measured against the sheer volume of funds absorbed.

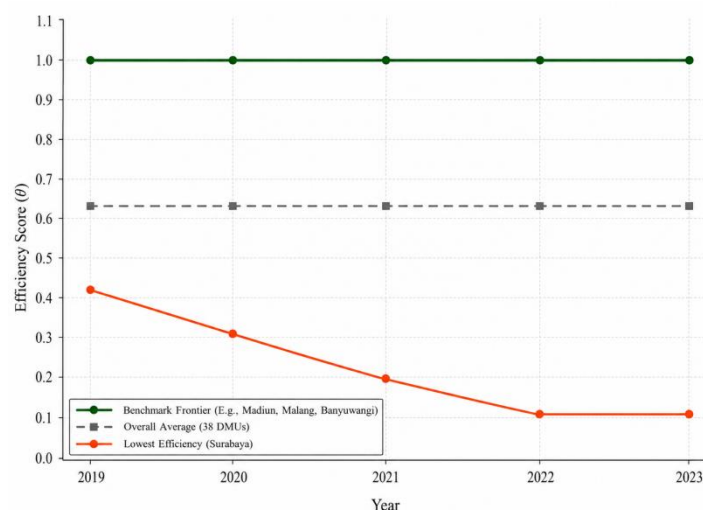


Figure 1. DEA Efficiency Score Trends (2019-2023)

This severe structural inefficiency necessitates an immediate, in-depth spending review, particularly regarding the allocation and execution of education and security function expenditures. The pure technical inefficiency gap between heavily funded, inefficient DMUs and their benchmark peers requires urgent internal systemic improvements in regional fiscal oversight, planning, and execution. In this context, the effectiveness of internal oversight relies heavily on the quality of the regional apparatus. As demonstrated by Antonio, Laela, and Antonio, M. S., Laela, S. F., & Alhadi, F. (2020). Personal competence and internal audit effectiveness: The moderating effect of Islamic spiritual quotient: A case study of Islamic financial institutions in Indonesia. *International Journal of Innovation, Creativity and Change*, 11(8), 1-18., the integration of professional competence with an Islamic Spiritual Quotient (ISQ)—embodying prophetic principles such as *amanah* (trustworthiness) and *fathanah* (competence)—significantly enhances internal audit effectiveness. This ethical oversight framework is crucial for preventing fiscal leakages and ensuring that regional spending remains accountable. Furthermore, these findings corroborate the study by Alhadi, F., Firdaus, A., & Ali, Z. M. (2024). Government Expenditure Efficiency Towards Islamic Human Development Index (IHDI): Data Envelopment Analysis Application. *IRTIQO': Postgraduate Journal of Islamic Economics, Finance and Accounting Studies*, 3(1), 101-137., which recorded pervasive inefficiencies within the *hifzd al- 'aql* pillar. Statistically, the model indicates relative technical inefficiency rather than direct legal misconduct. However, normatively, allocating massive fiscal resources without achieving proportional educational output creates a structural risk of lost opportunity costs, which conflicts with the principle of prudent wealth management in Islamic public finance.

For inefficient local governments, the input-oriented DEA model does not merely criticize; it mathematically prescribes a quantifiable ideal input ratio target. To migrate toward the efficiency frontier, these underperforming regions are required to systematically reduce or reallocate their functional spending by the measured inefficiency percentage (such as the 89% reduction target implicitly suggested for Surabaya) without sacrificing the existing quality of educational outcomes. This mathematical prescription forces local governments to abandon input-heavy paradigms and adopt outcome-oriented budgetary discipline, mirroring the fiscal behaviors of their benchmark peers.

Ultimately, this multi-layered analysis justifies a paradigm shift in how regional development is evaluated in post-decentralization Indonesia. The challenge of achieving *hifzd al-'aql* in East Java is clearly not merely an issue of funding scarcity or inadequate fiscal transfers from the central government. Rather, it is fundamentally a crisis of transformational quality—how effectively, strategically, and ethically the localized budget is converted into tangible, high-quality development outcomes that genuinely serve the intellectual welfare of the society.

Determinants of Spending Inefficiency Analysis

The second stage tests the impact of exogenous environmental factors on the efficiency scores. The F-test results of the overall regression model indicate that the model is statistically significant ($\text{Prob} > F = 0.0000$). This means that regional area (X_1) and population size (X_2), in conjunction with the constant, possess a significant collective capability to explain the variation in local government spending efficiency scores in East Java.

However, the regression results reveal that the population variable (X_2) holds a negative coefficient ($\beta = -0.0006029$) but is not statistically significant ($P = 0.431$). Although insignificant, the negative direction indicates that, *ceteris paribus*, an increase in population size tends to decrease regional spending efficiency in achieving *hifzd al-'aql*. This aligns with preliminary hypotheses and prior literature identifying diseconomies of scale or demographic pressures on public service provision. A massive population demands substantial budget allocations, rendering the marginal effect of increased spending on educational index improvements relatively minuscule (Sari & Widyawati, 2025).

The lack of statistical significance ($P > 0.05$) demonstrates that, when controlling for regional area and the constant, population size is not a robust independent determinant for explaining efficiency score disparities among Regencies/Cities in East Java. Other variables omitted from the model—such as bureaucratic quality, per capita regional revenue, or

corruption levels—likely play a much more dominant role in dictating inefficiency, corresponding with the findings of Wildani et al. (2023).

Regarding the regional area variable (X_1), the analysis shows that its coefficient is virtually eliminated or approaches zero ($\beta = 0$). This illustrates that geographic size does not exert a unique, significant influence on spending efficiency. In the context of East Java, this implies that the logistical costs and complexities of providing educational services are not dictated solely by raw territorial expanse, but rather by specific population distributions or topographies unmeasured by X_1 .

Given the zero coefficient of X_1 , it can be concluded that regional area is not an exogenous factor demanding specific consideration when formulating *hifzd al-‘aql* efficiency policies in East Java. Furthermore, the significant and positive constant ($\beta \approx 0.688$) reveals a baseline efficiency average of approximately 68.8% attributable to unobserved factors outside the regression model (assuming area and population are zero). This value strongly indicates that internal structural and managerial determinants (Nurrahman et al., 2025)—such as political commitment (Olanubi, 2025)—are the true, albeit unmeasured, primary drivers of inefficiency. In the perspective of Islamic Economic Law, this empirical reality highlights the critical role of governance ethics. Public financial allocation is bound by the legal governance maxim '*tasarruf al-imam 'ala al-ra'iyah manutun bi al-maslahah*' (the authority's actions over subjects must be dictated by public interest), making administrative efficiency a legal and moral mandate (*wajib shar'i*).

The empirical findings of this study offer highly specific, *maqashid*-compliant policy recommendations that intersect directly with existing regional development trajectories. Currently, the East Java Provincial Government and the central administration are heavily focused on accelerating human capital development to align with the national vision of Golden Indonesia 2045 (*Indonesia Emas 2045*), a long-term goal fundamentally reliant on educational excellence. However, the discovery of structural inefficiencies indicates that merely increasing the educational budget ceiling—as mandated by constitutional spending thresholds—is insufficient. Therefore, local public financial policies must pivot from input-heavy paradigms to outcome-oriented frameworks, ensuring that every fiscal intervention ethically and effectively secures the preservation of intellect (*hifzd al-‘aql*).

First, local governments must radically shift their focus toward internal managerial efficiency and good governance grounded in Islamic legal principles. Internal governance must embody *amanah* (trustworthiness and strict public accountability) and '*adl* (justice in resource distribution). Addressing managerial gaps requires elevating bureaucratic competence

alongside moral integrity to prevent fiscal leakage and ensure public funds directly serve intellectual elevation (*hifzd al-‘aql*).

Second, the operationalization of a *Maqasid*-compliant spending review is imperative. Local governments should use benchmark DMUs to audit spending efficacy. From a legal perspective, this review serves as an institutional mechanism to honor public trust (*amanah*), ensuring that public wealth (*al-mal al-‘amm*) is spent effectively to maximize societal welfare without structural slack.

Third, there must be a strategic recalibration of how geographic parameters influence local fiscal policies and budget distribution. The empirical elimination of the regional area variable as a primary trigger for spending inefficiency necessitates a re-evaluation of local grant and fiscal transfer formulas, such as the regional derivative formulations of the General Allocation Fund (DAU) or specific provincial assistance programs. Future regional fiscal transfer policies within East Java do not need to assign heavy, disproportionate weights to territorial expanse when subsidizing educational service provision. Instead, financial assistance should be heavily weighted towards institutional performance incentives and localized systemic complexities that genuinely impede educational access.

Ultimately, these synchronized policy recalibrations will construct a more resilient, efficient, and ethically grounded fiscal posture for local governments. By disregarding irrelevant geographic excuses, optimizing bureaucratic execution through performance-based budgeting, and enforcing rigorous benchmarking and spending reviews, local administrations can institutionalize the protection of intellectual development. This ensures that the pursuit of *hifzd al-‘aql* is not merely an abstract philosophical concept within Islamic public finance, but a legally binding, budget-backed reality that sustainably elevates the Mean Years of Schooling (RLS) and Expected Years of Schooling (HLS) across East Java.

Public Spending Efficiency within the Sharia Framework of Hifdz al-‘Aql

The efficiency of public spending acquires a broader meaning when examined through the framework of *hifdz al-‘aql*. The DEA results show an average efficiency score of 0.630 across 38 regencies and cities in East Java during 2019–2023, indicating that the observed educational outcomes were achieved with a level of functional expenditure that remained below the relative efficiency frontier. In an input-oriented interpretation, the estimated gap represents approximately 37% potential input reduction or reallocation while maintaining the existing level of educational outcomes. From a Sharia perspective, however, this finding should not be reduced to a fiscal argument for expenditure cuts. The more fundamental issue concerns

whether public resources have been managed proportionately and effectively to generate *maṣlaḥah*, particularly through the preservation and development of human intellect.

This interpretation is rooted in the classical conception of *maqāṣid al-sharī'ah*. Al-Ghazālī places the preservation of intellect (*hifdz al-'aql*) among the essential interests that Sharia seeks to protect, alongside religion, life, progeny, and wealth (Ghazali, 1993). Al-Shāṭibī subsequently systematizes these interests within *al-darūriyyāt al-khams*, emphasizing that the realization of *maṣlaḥah* and prevention of harm constitute the substantive orientation of Sharia. Within this framework, expenditure directed toward education cannot be regarded merely as an administrative budget category (Syatibi, 1997). It represents an institutional means through which public authority contributes to an essential objective of Sharia: maintaining and developing the intellectual capacity of society. The existing conceptual framework of the analysis similarly positions public expenditure within *siyāsah shar'īyyah*, *amānah*, justice, and *maṣlaḥah 'āmmah*.

The contemporary development of *maqāṣid* further strengthens this interpretation. Ibn 'Āshūr expands *hifdz al-'aql* beyond the preventive dimension traditionally associated with protecting reason from impairment (Ashur, 1978). Intellectual preservation also entails strengthening education, knowledge, scientific inquiry, and the human capacities required for social and civilizational development. Accordingly, Expected Years of Schooling (HLS) and Mean Years of Schooling (RLS) can be understood as empirical proxies for one important dimension of *hifdz al-'aql*. They do not exhaust the entire meaning of intellectual preservation in Sharia, but they provide observable indicators of whether public policy contributes to expanding educational opportunities and accumulated educational attainment.

This distinction is important. *Hifdz al-'aql* is normatively broader than an Education Index. It encompasses the protection, cultivation, and productive use of human reason. HLS and RLS therefore represent an operational approximation of this objective rather than its complete measurement. Such an interpretation avoids reducing *maqāṣid al-sharī'ah* to statistical indicators while still allowing its normative objectives to interact with empirical public-policy evaluation. The relationship between *maqāṣid* and quantitative measurement is consequently functional: the indicators reveal a measurable dimension of intellectual welfare, whereas *maqāṣid al-sharī'ah* supplies the normative standard for interpreting why that welfare matters.

The average efficiency score of 0.630 should therefore be interpreted as a question of how effectively public wealth is transformed into intellectual benefit, rather than simply how much expenditure can be eliminated. This distinction is fundamental in Islamic public finance.

Efficiency does not mean spending as little as possible. An expenditure can be relatively large and remain consistent with Sharia when it is necessary, proportionate, and capable of generating substantial public benefit. Conversely, expenditure may satisfy formal budgetary procedures yet remain normatively problematic when significant resources produce disproportionately limited benefits. Thus, the Sharia criterion is not fiscal minimalism, but the proportional relationship between public resources and the *maṣlahah* generated through their use.

This reasoning is closely related to the status of *al-māl al-‘āmm*. Public resources are not merely financial assets under governmental control; they constitute an *amānah* whose utilization must be directed toward legitimate public interests. Wahbah al-Zuhaylī's approach to protecting and using wealth provides an important basis for connecting *hifdz al-māl* with responsible public expenditure (Zuhayli, 2011). Preserving wealth does not mean withholding resources from education or other essential public services. Rather, it requires protecting wealth from unjustified dissipation while simultaneously ensuring its productive utilization for legitimate social needs. The existing Sharia framework similarly associates *al-māl al-‘āmm* with ethical governance and the effective generation of public welfare.

In this respect, *hifdz al-māl* and *hifdz al-‘aql* should not be treated as competing objectives. They are mutually reinforcing. Responsible management of *al-māl al-‘āmm* preserves fiscal capacity, while productive educational expenditure transforms that fiscal capacity into intellectual development. Spending efficiency lies at the intersection of these two objectives. Resources should neither be unnecessarily withheld in the name of fiscal prudence nor expended without sufficient consideration of their educational and social outcomes. Chapra's conception of Islamic development similarly places material resources within the broader objective of comprehensive human welfare, thereby making resource efficiency instrumental rather than an end in itself. The article's theoretical framework already connects budget efficiency with the possibility of redirecting resources toward other dimensions of *al-ḍarūriyyāt al-khams*.

The principle governing public authority can be further expressed through the legal maxim *taṣarruf al-imām ‘alā al-ra‘iyyah manūṭun bi al-maṣlahah*: the exercise of authority over public affairs is contingent upon the realization of public benefit. This maxim's relevance to fiscal management lies in its limitation of governmental discretion. Authority over public resources is not normatively unrestricted; its legitimacy is tied to *maṣlahah*. Consequently, one cannot assess the successful realization of an expenditure budget solely through budget absorption. The relevant question is also whether the resources entrusted to public authorities have produced benefits commensurate with their fiscal cost.

The differences in efficiency across local governments make this principle empirically relevant. In 2023, Madiun City and Malang City; in 2022 and 2023, Banyuwangi Regency; and in 2019 and 2020, Ngawi Regency reached an efficiency score of 1.000 and formed the observed efficiency frontier. By contrast, Surabaya recorded a score of 0.110 in both 2022 and 2023. These disparities demonstrate that greater fiscal input does not automatically translate into proportionately greater educational outcomes. Viewed through *hifdz al-‘aql*, therefore, the central concern shifts from the nominal size of expenditure to the capacity of public institutions to transform available resources into educational *maṣlahah*.

Nevertheless, technical inefficiency must be distinguished carefully from the Sharia concept of *isrāf*. The prohibition of *isrāf* establishes an ethical limitation against excessive or disproportionate utilization of resources, while *tabdhīr* concerns the dissipation of wealth in ways that lack legitimate benefit. A DEA score below 1.000, however, does not by itself establish that a local government has committed *isrāf*. DEA identifies relative technical inefficiency by comparing the relationship between inputs and outputs across DMUs. It does not determine intention, legal authorization, corruption, misuse of funds, the necessity of particular expenditure items, or other factual elements required for a juridical assessment.

Accordingly, the estimated 37% efficiency gap should not be interpreted as meaning that 37% of public expenditure constitutes *isrāf*, *tabdhīr*, or unlawful spending. Instead, the result serves as a normative warning that the transformation of public resources into educational outcomes may be improved. This distinction is already implicit in the empirical findings, which recognize that relative inefficiency does not constitute direct jurisprudential proof of intentional wastefulness. The Sharia significance of DEA therefore lies primarily in its capacity to identify situations that warrant further evaluation of proportionality, benefit, and fiscal responsibility.

Such a distinction also prevents efficiency from being interpreted as an Islamic justification for indiscriminate austerity. An expenditure reduction that weakens educational access, diminishes teaching quality, widens educational inequality, or reduces opportunities for intellectual development would conflict with the substantive objective of *hifdz al-‘aql*. Conversely, additional expenditure may be normatively justified where it demonstrably improves educational access and outcomes. The appropriate Sharia response to inefficiency is therefore not automatically to spend less, but to spend more effectively and proportionately. Resources identified as potentially inefficient may be reorganized, redirected, or improved to achieve a greater level of *maṣlahah* from the available fiscal capacity.

This perspective gives a more substantive meaning to the estimated 37% potential input adjustment. Rather than treating it solely as potential fiscal savings, it may be understood as

fiscal space to improve *maṣlaḥah*. Where efficiency gains can genuinely be achieved without reducing educational outcomes, the released resources could be redirected to improve educational quality, reach underserved populations, strengthen learning infrastructure, or support other dimensions of *al-ḍarūriyyāt al-khams*. The objective is therefore not the mechanical contraction of expenditure, but the optimization of *al-māl al-‘āmm* according to the hierarchy and interrelationship of public needs.

The second-stage analysis adds another dimension to this interpretation. Regional area and population do not individually explain variations in efficiency. This finding should be interpreted cautiously. It does not establish that managerial weakness, bureaucratic capacity, political commitment, or governance quality necessarily causes inefficiency, because these factors are not directly measured in the model. Rather, it indicates that geographical size and population alone cannot explain the observed variations. This leaves room for subsequent analysis of institutional and governance factors without attributing causality to variables not empirically tested.

From the perspective of *siyāsah shar‘iyyah*, this empirical limitation is significant in itself. Managing *al-māl al-‘āmm* requires not only compliance with formal expenditure rules but also institutional competence, accountability, and the capacity to orient fiscal decisions toward *maṣlaḥah*. *Amānah* in public finance therefore has both ethical and institutional dimensions. It requires integrity in safeguarding public resources as well as competence in transforming those resources into socially beneficial outcomes. In this sense, an outcome-oriented spending review can serve as an institutional mechanism for examining whether expenditure patterns remain consistent with the substantive objectives of *hifdz al-‘aql*.

The integration of DEA and *maqāṣid al-sharī‘ah* consequently produces a different understanding of public spending efficiency from conventional cost minimization. DEA identifies the relative distance between fiscal inputs and educational outputs, whereas *maqāṣid* explains the normative significance of that distance. An efficiency gap matters not simply because money might be saved, but because inefficient utilization of public wealth creates an opportunity cost to *maṣlaḥah*. Resources tied to relatively unproductive allocations cannot simultaneously be used to strengthen educational outcomes or address other essential dimensions of welfare. This is where fiscal efficiency becomes directly relevant to Islamic economic law.

Public spending efficiency within the framework of *hifdz al-‘aql* can therefore be understood as the proportionate, accountable, and benefit-oriented transformation of *al-māl al-‘āmm* into intellectual and educational welfare. Al-Ghazālī and al-Shāṭibī provide the normative

foundation through *maṣlaḥah* and *al-darūriyyāt al-khams*; Ibn ‘Āshūr broadens *hifdz al-‘aql* toward the active development of human intellectual capacity; Wahbah al-Zuhaylī reinforces the responsible protection and utilization of wealth; while Chapra connects the objectives of Sharia with comprehensive human development. Read through these perspectives, fiscal efficiency is neither synonymous with expenditure reduction nor merely a technical concern of public economics. It represents an aspect of Sharia-oriented public governance in which public wealth, as an *amānah*, must be managed so that its utilization generates the greatest attainable *maṣlaḥah* while strengthening the realization of *hifdz al-‘aql*.

Conclusion

This study demonstrates that the functional spending of regency and city governments in East Java has not yet achieved optimal efficiency in realizing *hifdz al-‘aql*, as represented by educational outcomes during 2019–2023. The first-stage DEA produces an average efficiency score of 0.630, indicating a substantial gap between fiscal inputs and the educational outputs achieved, while several local governments, including Madiun City, Malang City, Banyuwangi Regency, and Ngawi Regency, form the relative efficiency frontier. The second-stage analysis shows that regional area and population size do not have statistically significant effects on variations in efficiency, indicating that these two geographical and demographic factors alone are insufficient to explain differences in spending performance across local governments. From the perspective of *maqāṣid al-sharī‘ah*, these findings position public spending efficiency as more than a technical fiscal concern: it reflects the responsibility to transform *al-māl al-‘āmm*, as an *amānah*, into the greatest attainable *maṣlaḥah* through the realization of *hifdz al-‘aql*. The estimated efficiency gap should therefore not be equated directly with *isrāf* or interpreted as a prescription for indiscriminate expenditure cuts; rather, it indicates scope for improving the proportionality, allocation, and utilization of public resources so that educational and intellectual welfare can be achieved more effectively.

This study is limited by the operationalization of *hifdz al-‘aql* through educational indicators, particularly Expected Years of Schooling (HLS) and Mean Years of Schooling (RLS), which capture only part of the broader meaning of intellectual preservation and development in *maqāṣid al-sharī‘ah*. The second-stage analysis is also restricted to regional area and population size and therefore cannot establish whether institutional, managerial, or governance factors account for the unexplained variations in efficiency. In addition, the bounded nature of DEA efficiency scores requires caution in interpreting the exploratory panel

regression results. Future research should expand the measurement of *hifdz al-'aql* by incorporating indicators of educational quality, literacy, learning achievement, access, and other dimensions of intellectual development, while also testing institutional and fiscal determinants such as bureaucratic quality, governance capacity, corruption-related indicators, and fiscal independence. Methodologically, subsequent studies may employ truncated regression with bootstrap procedures or other estimators appropriate for bounded DEA scores and extend the analysis across provinces or periods to assess the robustness of the efficiency patterns. Such developments would strengthen the empirical operationalization of *maqāṣid al-sharī'ah* and provide a more comprehensive basis for evaluating Sharia-oriented public spending governance.

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